IENC Feature Catalogue

Edition 2.5.1

2021-04-21

Introduction

The IENC Feature Catalogue is based on features, attributes and enumerations of following Data Dictionaries

Data Dictionary Name	Token	Owner	Place of Publishment
HYDRO Data Dictionary	HYDRO	IHO	http://registry.iho.int
IENC Data Dictionary	IENC	IEHG	http://registry.iho.int

Used Abbreviations

Feature Types

G	Geo
M	Meta
C	Cartographic
O	Collection
I	Information

Feature Primitives

P	Point
L	Line
A	Area
N	None

Use of Feature Attribute Bindings

O	Optional
M	Mandatory
C	Conditional mandatory

Type of Attribute Use

F	Feature
N	National
S	Spatial
C	Cartographic

Type of Attribute Value

E	Enumeration
L	List
F	Float
I	Integer
T	Text
S	Structured text

Feature	Accuracy of data

Acronym: M_ACCY Code: 300

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.

Attribute Bindings:

acronym	usage	constraints
POSACC	O	unit = "m" decimal digits = "2"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
CATTEV	M	value list = "4,5,6"
INFORM	O	
NINFOM	O	
SOUACC	O	unit = "m" decimal digits = "2"
TXTDSC	O	
NTXTDS	O	
VERACC	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"

Feature	Administration Area (Named)

Acronym: ADMARE Code: 1

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A defined (and possibly named) administration area.

Attribute Bindings:

acronym	usage	constraints
JRSDTN	M	value list = "1,2,3"
NATION	M	format = "cc"
CONDTN	C	value list = "3"
OBJNAM	M	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Aggregation

Acronym: C_AGGR Code: 400

Type: O

Primitive: N

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Used to identify an aggregation of two or more objects. This aggregation may be named.

Attribute Bindings:

acronym	usage	constraints
NOBJNM	O	
unlocd	C	
OBJNAM	M	
INFORM	O	
NINFOM	O	
NTXTDS	O	
PICREP	O	
SCAMIN	O	min = "1"
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

Feature	Airport/airfield

Acronym: AIRARE Code: 2

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATAIR	O	value list = "1,2,4,6"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Association

Acronym: C_ASSO Code: 401

Type: O

Primitive: N

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Used to identify an association between two or more objects. The association may be named.

Attribute Bindings:

acronym	usage	constraints
NOBJNM	O	
OBJNAM	O	
INFORM	O	
NINFOM	O	
NTXTDS	O	
PICREP	O	
SCAMIN	M	min = "1"
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

Feature	Beacon, cardinal

Acronym: BCNCAR Code: 5

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A beacon is a prominent, specially constructed object forming a conspicuous mark as a fixed aid to navigation 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)

Attribute Bindings:

acronym	usage	constraints
PICREP	O	
CONDTN	O	value list = "1,2,3,5"
HEIGHT	O	unit = "m" decimal digits = "2"
VERLEN	O	unit = "m" decimal digits = "1"
BCNSHP	M	value list = "1,2,3,4,5,6,7"
CATCAM	M	value list = "1,2,3,4"
COLOUR	M	value list = "2,6"
COLPAT	M	value list = "1"
MARSYS	C	value list = "1,2"
INFORM	O	
NINFOM	O	
OBJNAM	O	
NOBJNM	O	
CONRAD	O	value list = "3"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
DATSTA	O	format = "ccyymmdd"

acronym	usage	constraints
DATEND	O	format = "ccyymmdd"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Beacon, isolated danger

Acronym: BCNISD Code: 6

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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 NP 735, 5th Edition)

Attribute Bindings:

acronym	usage	constraints
BCNSHP	M	value list = "1,2,3,4,5"
COLOUR	M	value list = "2,3"
COLPAT	M	value list = "1"
CONRAD	O	value list = "3"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Beacon, lateral

Acronym: BCNLAT Code: 7

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
BCNSHP	M	value list = "1"
CATLAM	M	value list = "1,2"
COLOUR	M	value list = "1,2,3,4"
COLPAT	C	value list = "1"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"

acronym	usage	constraints
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Beacon, safe water

Acronym: BCNSAW Code: 8

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
PICREP	O	
CONDTN	O	value list = "1,2,3,5"
HEIGHT	O	unit = "m" decimal digits = "2"
VERLEN	O	unit = "m" decimal digits = "1"
BCNSHP	M	value list = "1,2,3,4,5,6,7"
COLOUR	M	value list = "1,3"
COLPAT	M	value list = "2"
MARSYS	C	value list = "1,2"
CONRAD	O	value list = "3"
INFORM	O	
NINFOM	O	
OBJNAM	O	
NOBJNM	O	
TXTDSC	O	
NTXTDS	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"

acronym	usage	constraints
PEREND	O	format = "ccyymmdd"
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17,18"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…""

Feature	Beacon, special purpose/general

Acronym: BCNSPP Code: 9

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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 features, 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.

Attribute Bindings:

acronym	usage	constraints
MARSYS	C	value list = "1,2"
CONDTN	O	value list = "1,2,3,5"
COLPAT	O	value list = "1,2,3,4,5,6"
HEIGHT	O	unit = "m" decimal digits = "2"
VERLEN	O	unit = "m" decimal digits = "1"
BCNSHP	M	value list = "1,2,3,4,5,6,7"
CATSPM	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
CONRAD	M	value list = "3"
OBJNAM	O	
NOBJNM	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
INFORM	O	

acronym	usage	constraints
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
NTXTDS	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
STATUS	O	value list = "5"

Feature	Building, single

Acronym: BUISGL Code: 12

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CONVIS	O	value list = "1,2"
FUNCTN	C	value list = "2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42"
CONDTN	O	value list = "1,2,3,4,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Built-up area

Acronym: BUAARE Code: 13

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATBUA	O	value list = "1,2,3,4,5"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
unlocd	C	

Feature	Buoy, cardinal

Acronym: BOYCAR Code: 14

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
BOYSHP	M	value list = "1,2,3,4,5,6,8"
CATCAM	M	value list = "1,2,3,4"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
CONRAD	O	value list = "3"
MARSYS	C	value list = "1,2"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
NOBJNM	C	
OBJNAM	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	

acronym	usage	constraints
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Buoy, isolated danger

Acronym: BOYISD Code: 16

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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 isolated danger buoy is a buoy moored on or above an isolated danger of limited extent, which has navigable water all around it. (UKHO NP 735, 5th Edition)

Attribute Bindings:

acronym	usage	constraints
BOYSHP	M	value list = "4,5"
COLOUR	M	value list = "2,3"
COLPAT	M	value list = "1"
CONRAD	O	value list = "3"
MARSYS	C	value list = "1,2"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
NOBJNM	C	
OBJNAM	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Buoy, lateral

Acronym: BOYLAT Code: 17

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
BOYSHP	M	value list = "1,2,3,4,5,6,8"
CATLAM	M	value list = "1,2,3,4"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
CONRAD	O	value list = "3"
MARSYS	C	value list = "1,2"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
NOBJNM	C	
OBJNAM	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"

acronym	usage	constraints
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
typatn	O	value list = "1,2,3"
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Buoy, safe water

Acronym: BOYSAW Code: 18

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
BOYSHP	M	value list = "1,2,3,4,5,6,8"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	M	value list = "1,2,3,4,5,6"
CONRAD	C	value list = "3"
MARSYS	C	value list = "1,2"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Buoy, special purpose/general

Acronym: BOYSPP Code: 19

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.

Attribute Bindings:

acronym	usage	constraints
BOYSHP	M	value list = "1,2,3,4,5,6,8"
CATSPM	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
CONRAD	O	value list = "3"
MARSYS	C	value list = "1,2"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	

acronym	usage	constraints
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
typatn	O	value list = "1,2,3"
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Cable area

Acronym: CBLARE Code: 20

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An area which contains one or more submarine cables.

Attribute Bindings:

acronym	usage	constraints
CATCBL	O	value list = "1,3,4,5,6"
STATUS	C	value list = "5,18"
RESTRN	O	value list = "1,38"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"

Feature	Cable, submarine

Acronym: CBLSUB Code: 22

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATCBL	O	value list = "1,3,4,5,6"
STATUS	C	value list = "5,18"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Canal

Acronym: CANALS Code: 23

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Cargo Transhipment Area

Acronym: CTSARE Code: 25

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
DATEND	O	format = "ccyymmdd"
DATSTA	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
INFORM	O	
NINFOM	O	
STATUS	O	value list = "2,4,5"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Causeway

Acronym: CAUSWY Code: 26

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
CONDTN	O	value list = "1,2,3,5"
WATLEV	M	value list = "2,4"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Caution area

Acronym: CTNARE Code: 27

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
NOBJNM	O	
OBJNAM	O	
INFORM	M	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Coastguard station

Acronym: CGUSTA Code: 29

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
COMCHA	M	format = "[[XXXX];[XXXX];….]"
OBJNAM	O	
NOBJNM	O	
STATUS	C	value list = "1,2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18"
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
PICREP	O	

Feature	Coastline

Acronym: COALNE Code: 30

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATCOA	O	value list = "1,2,3,4,5,6,7,8,9,10,11"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	decimal digits = "2" unit = "m"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Conveyor

Acronym: CONVYR Code: 34

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATCON	M	value list = "2"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PRODCT	O	value list = "1,2,3,4,5,6,7,8,14,15,17,21,22"
VERCLR	O	unit = "m" decimal digits = "2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	

Feature	Coverage

Acronym: M_COVR Code: 302

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATCOV	M	value list = "1,2"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"

Feature	Crane

Acronym: CRANES Code: 35

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATCRN	O	value list = "2,3,4,5"
VERCLR	O	unit = "m" decimal digits = "2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Dam

Acronym: DAMCON Code: 38

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATDAM	M	value list = "1,2,3"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
NATCON	O	value list = "1,2,3,4,5,6,7,8,9"
CONDTN	O	value list = "1,2,3,5"
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
OBJNAM	O	
NOBJNM	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Daymark

Acronym: DAYMAR Code: 39

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
TOPSHP	M	value list = "1-33"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Depth area

Acronym: DEPARE Code: 42

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
DRVAL1	M	unit = "m" decimal digits = "2"
DRVAL2	M	unit = "m" decimal digits = "2"
INFORM	C	
NINFOM	O	
QUASOU	C	value list = "1,2,8,10,11"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Depth contour

Acronym: DEPCNT Code: 43

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
VALDCO	M	unit = "m" decimal digits = "2"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
PICREP	O	
INFORM	O	
NINFOM	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Dredged area

Acronym: DRGARE Code: 46

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
DRVAL1	O	unit = "m" decimal digits = "2"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Dry dock

Acronym: DRYDOC Code: 47

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
DRVAL1	O	unit = "m" decimal digits = "2"
HORCLR	O	unit = "m" decimal digits = "2"
HORLEN	O	unit = "m" decimal digits = "2"
HORWID	O	unit = "m" decimal digits = "2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Dumping ground

Acronym: DMPGRD Code: 48

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-09-08

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).

Attribute Bindings:

acronym	usage	constraints
CATDPG	M	value list = "2,4,5"
RESTRN	C	value list = "1,3,5,7,8,24"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Dyke

Acronym: DYKCON Code: 49

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
HEIGHT	O	unit = "m" decimal digits = "2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Fairway

Acronym: FAIRWY Code: 51

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.)

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Fence/wall

Acronym: FNCLNE Code: 52

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATFNC	M	value list = "1,4"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Ferry route

Acronym: FERYRT Code: 53

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATFRY	M	value list = "1,2"
STATUS	C	value list = "2,3,4,5,8,9,12,14,16,17"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
unlocd	C	

Feature	Fishing facility

Acronym: FSHFAC Code: 55

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.

Attribute Bindings:

acronym	usage	constraints
CATFIF	O	value list = "1,2,3,4"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
STATUS	C	value list = "2,4,5"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
VERLEN	O	unit = "m" decimal digits = "1"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Floating dock

Acronym: FLODOC Code: 57

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
DRVAL1	O	unit = "m" decimal digits = "2"
HORCLR	O	unit = "m" decimal digits = "2"
HORLEN	O	unit = "m" decimal digits = "2"
HORWID	O	unit = "m" decimal digits = "2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
sdrlev	O	
sdrval	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	

Feature	Fog signal

Acronym: FOGSIG Code: 58

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATFOG	M	value list = "1,2,3,4,5,6,7,8,9,10"
SIGFRQ	O	unit = "Hz" min = "0"
SIGGEN	O	value list = "1,2"
SIGGRP	C	format = "(c)(c)..."
SIGPER	C	unit = "s" decimal digits = "2"
SIGSEQ	C	format = "LL.L + (EE.E)"
VALMXR	O	unit = "nm" decimal digits = "1"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"

acronym	usage	constraints
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Fortified Structure

Acronym: FORSTC Code: 59

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A structure for the military defence of a site.

Attribute Bindings:

acronym	usage	constraints
CATFOR	M	value list = "1,2,3,4,5,6"
CONDTN	O	value list = "2"
CONVIS	O	value list = "1,2"
NATCON	O	value list = "1,2,6,7"
OBJNAM	O	
NOBJNM	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Free port area

Acronym: FRPARE Code: 60

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Gate

Acronym: GATCON Code: 61

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATGAT	M	value list = "2,4"
HORCLR	M	unit = "m" decimal digits = "2"
VERCLR	O	unit = "m" decimal digits = "2"
VERDAT	O	value list = "4,23,30"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
unlocd	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Gridiron

Acronym: GRIDRN Code: 62

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A structure in the intertidal zone serving as a support for vessels at low stages of the tide to permit work on the exposed portion of the vessel's hull. Also called careening grid. (adapted from IHO Dictionary, S-32, 5th Edition, 649)

Attribute Bindings:

acronym	usage	constraints
HORLEN	O	unit = "m" decimal digits = "1"
HORWID	O	unit = "m" decimal digits = "1"
VERLEN	O	unit = "m" decimal digits = "1"
NATCON	O	value list = "2,6"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
STATUS	O	value list = "4,8,14"
CONDTN	O	value list = "1,2,5"
WATLEV	O	value list = "3,4"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
PICREP	O	
TXTDSC	O	
NTXTDS	O	

Feature	Harbour facility

Acronym: HRBFAC Code: 64

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATHAF	M	value list = "5"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	M	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Hulk

Acronym: HULKES Code: 65

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A permanently moored ship.

Attribute Bindings:

acronym	usage	constraints
CATHLK	M	value list = "1,2,3,4,5"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Lake

Acronym: LAKARE Code: 69

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Land area

Acronym: LNDARE Code: 71

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Land region

Acronym: LNDRGN Code: 73

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CONDTN	C	value list = "1,2,3,5"
OBJNAM	M	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
CATLND	O	value list = "2,9,11,12"

Feature	Landmark

Acronym: LNDMRK Code: 74

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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).

Attribute Bindings:

acronym	usage	constraints
CATLMK	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22"
CONVIS	M	value list = "1"
FUNCTN	C	value list = "2-42"
CONDTN	O	value list = "1,2,3,4,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
VERLEN	O	unit = "defined in hunits" decimal digits = "1"
COLOUR	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"

Feature	Light

Acronym: LIGHTS Code: 75

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATLIT	C	value list = "1,4,5,6,12,13,14,15"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
EXCLIT	C	value list = "1,2,3,4"
LITCHR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,25,26,27,28,29"
LITVIS	C	value list = "3,4,7,8"
MLTYLT	C	min = "2"
ORIENT	C	unit = "deg" decimal digits = "2"
SECTR1	C	unit = "deg" decimal digits = "2"
SECTR2	C	unit = "deg" decimal digits = "2"
SIGGRP	C	format = "(c)(c)..."
SIGPER	C	unit = "s" decimal digits = "2"
SIGSEQ	C	format = "LL.L + (EE.E)"
STATUS	C	value list = "2,3,4,5.8,9,12,14,16,17"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	C	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	

acronym	usage	constraints
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HEIGHT	O	unit = "defined in hunits" decimal digits = "1"
VALNMR	O	

Feature	Magnetic Variation

Acronym: MAGVAR Code: 81

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
NTXTDS	O	
VALMAG	M	format = "sxx.xx"
VALACM	M	format = "sxx.xx"
RYRMGV	M	format = "ccyy"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"

Feature	Marine farm/culture

Acronym: MARCUL Code: 82

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-08-12

Definition: An assemblage of cages, nets, rafts and floats or posts where fish, including shellfish, are artificially cultivated.

Attribute Bindings:

acronym	usage	constraints
CATMFA	M	value list = "1,2,3,4"
EXPSOU	C	value list = "1,2,3"
VALSOU	C	unit = "m" decimal digits = "2"
QUASOU	O	value list = "1,2,3,4,6,7,8,9"
SOUACC	C	unit = "m" decimal digits = "2"
WATLEV	C	value list = "1,2,3,4,5,7"
STATUS	C	value list = "2,4,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
PICREP	O	

acronym	usage	constraints
TXTDSC	O	
NTXTDS	O	

Feature	Military practice area

Acronym: MIPARE Code: 83

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An area within which naval, military or aerial exercises are carried out. Also called an exercise area.

Attribute Bindings:

acronym	usage	constraints
RESTRN	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,,2715,16,17,18,19,20,21,22,23,24,25,26"
CATMPA	O	value list = "2,3,4,5,6"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
NTXTDS	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
STATUS	O	value list = "2,4,5"

Feature	Mooring/Warping facility

Acronym: MORFAC Code: 84

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATMOR	M	value list = "1,2,3,4,5,7"
NATCON	O	value list = "1,2,3,4,5,6,7,8,9"
WATLEV	O	value list = "1,2,3,4,5"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
COLOUR	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
BOYSHP	C	value list = "2,3,7"

acronym	usage	constraints
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Nautical Publication Information

Acronym: M_NPUB Code: 305

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Used to relate additional nautical information or publications to the data.

Attribute Bindings:

acronym	usage	constraints
TXTDSC	M	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Navigation line

Acronym: NAVLNE Code: 85

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATNAV	C	value list = "1,2,3"
ORIENT	M	unit = "deg" decimal digits = "2"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	New Object

Acronym: NEWOBJ Code: 163

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2012-01-01

Definition: A new feature specified by the IMO and that affects safety of navigation which cannot adequately be encoded by any existing object class for use in an S-57 data set.

Attribute Bindings:

acronym	usage	constraints
CLSNAM	M	
CLSDEF	M	
SYMINS	M	
DATEND	O	format = "ccyymmdd"
DATSTA	O	format = "ccyymmdd"
INFORM	M	
NINFOM	O	
OBJNAM	O	
NOBJNM	O	
TXTDSC	O	
NTXTDS	O	
PEREND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
PICREP	O	
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Obstruction

Acronym: OBSTRN Code: 86

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATOBS	O	value list = "1,2,3,4,5,6,7,8,9,10,11"
NATSUR	C	value list = "9"
VALSOU	C	unit = "m" decimal digits = "2"
WATLEV	C	value list = "1,2,3,4,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
EXPSOU	C	value list = "1,2,3"
NATCON	O	value list = "1,2,3,4,6,7,8"
QUASOU	O	value list = "2,6,7,8"
HORACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Offshore platform

Acronym: OFSPLF Code: 87

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
INFORM	O	
NINFOM	O	
CATOFP	M	value list = "1,2,3,4,5,6,7,9"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	O	value list = "1,2,3,4,5,6"
CONDTN	O	value list = "1,2,5"
CONRAD	O	value list = "1,2,3"
CONVIS	O	value list = "1,2"
HEIGHT	O	unit = "m" decimal digits = "2"
NATCON	O	value list = "2,7,8"
OBJNAM	O	
NOBJNM	O	
PRODCT	O	value list = "1,2,18,19"
STATUS	O	value list = "2,4,7,12,16,17"
VERLEN	O	unit = "m" decimal digits = "1"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
DATSTA	O	format = "ccyymmdd"

acronym	usage	constraints
DATEND	O	format = "ccyymmdd"
PICREP	O	
TXTDSC	O	
NTXTDS	O	

Feature	Offshore production area

Acronym: OSPARE Code: 88

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An area off or away from the shore within which there are production facilities.

Attribute Bindings:

acronym	usage	constraints
INFORM	O	
NINFOM	O	
CATPRA	M	value list = "4,9"
CONDTN	O	value list = "1,2,3,4,5"
CONRAD	O	value list = "1,2,3"
CONVIS	O	value list = "1,2"
NATCON	O	value list = "2,7,8"
OBJNAM	O	
NOBJNM	O	
RESTRN	M	value list = "1,2,7,8,14"
STATUS	O	value list = "2,4,7,12,16,17"
VERLEN	O	unit = "m" decimal digits = "1"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PICREP	O	
TXTDSC	O	
NTXTDS	O	

acronym	usage	constraints
HEIGHT	O	unit = "m" decimal digits = "2"

Feature	Oil barrier

Acronym: OILBAR Code: 89

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A construction to dam oil flow on water.

Attribute Bindings:

acronym	usage	constraints
CATOLB	O	value list = "1,2"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Pile

Acronym: PILPNT Code: 90

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CONDTN	O	value list = "1,2,3,5"
OBJNAM	C	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
VERLEN	O	unit = "defined in hunits" decimal digits = "1"
HEIGHT	O	unit = "defined in hunits" decimal digits = "1"
COLOUR	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
HORACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	

Feature	Pilot boarding place

Acronym: PILBOP Code: 91

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATPIL	O	value list = "1,2,3"
COMCHA	O	format = "[[XXXX];[XXXX];…]"
PILDST	O	
NPLDST	O	
OBJNAM	O	
NOBJNM	O	
STATUS	C	value list = "1,2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"

Feature	Pipeline area

Acronym: PIPARE Code: 92

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An area containing one or more pipelines.

Attribute Bindings:

acronym	usage	constraints
CATPIP	O	value list = "2,3,4,6"
PRODCT	O	value list = "1,2,3,4,5,6,7,8,14,15,17,21,22"
RESTRN	M	value list = "1,38"
STATUS	C	value list = "18"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Pipeline, submarine/on land

Acronym: PIPSOL Code: 94

Type: G

Primitive: P,L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.

Attribute Bindings:

acronym	usage	constraints
CATPIP	O	value list = "2,3,4,6"
PRODCT	O	value list = "1,2,3,4,5,6,7,8,14,15,17,21,22"
STATUS	C	value list = "18"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Pontoon

Acronym: PONTON Code: 95

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"

Feature	Production/storage area

Acronym: PRDARE Code: 97

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATPRA	O	value list = "1,2,3,4,5,6,7,8,9,10"
PRODCT	O	value list = "1,2,4,5,6,7,14,15,17,21,22"
CONVIS	O	value list = "1,2"
STATUS	O	value list = "2,12,16,17"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
SCAMIN	M	min = "1"
NTXTDS	O	

Feature	Pylon/bridge support

Acronym: PYLONS Code: 98

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATPYL	M	value list = "1,2,3,4,5"
WATLEV	M	value list = "1,2,3,4,5"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Quality of data

Acronym: M_QUAL Code: 308

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An area within which a uniform assessment of the quality of the data exists.

Attribute Bindings:

acronym	usage	constraints
CATZOC	O	value list = "1,2,3,4,5,6"
DRVAL1	O	unit = "m" decimal digits = "2"
POSACC	O	unit = "m" decimal digits = "2"
SOUACC	O	unit = "m" decimal digits = "2"
SUREND	O	format = "ccyymmdd"
SURSTA	O	format = "ccyymmdd"
TECSOU	C	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

Feature	Radar line

Acronym: RADLNE Code: 99

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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).

Attribute Bindings:

acronym	usage	constraints
ORIENT	M	unit = "deg" decimal digits = "2"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Radar station

Acronym: RADSTA Code: 102

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.)

Attribute Bindings:

acronym	usage	constraints
CATRAS	M	value list = "1"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Radar transponder beacon

Acronym: RTPBCN Code: 103

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATRTB	M	value list = "1,2,3"
RADWAL	O	format = "xx.x-b,xx.x-b,...] xx.x = value in meter, b = band"
SIGGRP	O	format = "(c)(c)..."
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

acronym	usage	constraints
STATUS	O	value list = "5"

Feature	Railway

Acronym: RAILWY Code: 106

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Recommended track

Acronym: RECTRC Code: 109

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATTRK	M	value list = "1,2"
ORIENT	M	unit = "deg" decimal digits = "2"
DRVAL1	O	unit = "m" decimal digits = "2"
DRVAL2	O	unit = "m" decimal digits = "2"
TRAFIC	M	value list = "1,2,3,4"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Recommended traffic lane part

Acronym: RCTLPT Code: 110

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A recommended traffic lane part is an area of a recommended direction of traffic control area within which traffic flow is generally along one bearing. (IHO Definition)

Attribute Bindings:

acronym	usage	constraints
ORIENT	M	unit = "deg" decimal digits = "2"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
TXTDSC	O	
NTXTDS	O	
PICREP	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
SCAMIN	M	min = "1"
STATUS	O	value list = "5"

Feature	Rescue Station

Acronym: RSCSTA Code: 111

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-09-17

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

Attribute Bindings:

acronym	usage	constraints
catrsc	M	value list = "1,2,4,5,6,7,8,9"
STATUS	O	value list = "2,4,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
NTXTDS	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
PICREP	O	

Feature	Restricted area

Acronym: RESARE Code: 112

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
RESTRN	M	value list = "1,7,8,38"
CATREA	C	value list = "1,12"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
CATTEV	O	value list = "4,5,6"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
NTXTDS	O	

acronym	usage	constraints
STATUS	O	value list = "5"

Feature	River

Acronym: RIVERS Code: 114

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Road

Acronym: ROADWY Code: 116

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATROD	M	value list = "1,2,3,4"
NATCON	O	value list = "4,5"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Runway

Acronym: RUNWAY Code: 117

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A defined rectangular area, on a land aerodrome, prepared for the landing and take-off run of aircraft along its length.

Attribute Bindings:

acronym	usage	constraints
CATRUN	O	value list = "1,2"
CONVIS	O	value list = "1,2"
NATCON	O	value list = "4,5"
OBJNAM	O	
NOBJNM	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
STATUS	O	value list = "5"

Feature	Sand waves

Acronym: SNDWAV Code: 118

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.

Attribute Bindings:

acronym	usage	constraints
VERLEN	O	unit = "m" decimal digits = "1"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
SORDAT	O	format = "ccyymmdd"
SORIND	O	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Sea area/named water area

Acronym: SEAARE Code: 119

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATSEA	O	value list = "5,12,13,51,52,53,54,57,58,59"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	M	
NOBJNM	O	
INFORM	C	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	C	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
NTXTDS	O	

Feature	Seabed Area

Acronym: SBDARE Code: 121

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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).

Attribute Bindings:

acronym	usage	constraints
NATQUA	C	value list = "1,2,3,4"
NATSUR	C	value list = "1,2,3,4,5,6,7,8,9,18"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Shoreline construction

Acronym: SLCONS Code: 122

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATSLC	M	value list = "1,2,4,5,6,7,8,9,10,11,12,13,14,15,16"
NATCON	C	value list = "1,2,3,4,5,6,7,8,9"
STATUS	C	value list = "2,3,4,8,9,12,14,16,17"
WATLEV	O	value list = "1,2,3,4,5"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	C	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Silo/tank

Acronym: SILTNK Code: 125

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute Bindings:

acronym	usage	constraints
CATSIL	O	value list = "1,2,3,4"
PRODCT	O	value list = "1,2,3,4,5,6,7,8,14,15,17,21,22"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Slope topline

Acronym: SLOTOP Code: 126

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The upper marking of a slope, e.g. the ridge line or the separation line between two different gradients.

Attribute Bindings:

acronym	usage	constraints
CATSLO	M	value list = "1,2,3,6"
NATSUR	O	value list = "1,2,3,4,5,6,7,8,9,11,14,17,18"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
NTXTDS	O	

Feature	Sloping ground

Acronym: SLOGRD Code: 127

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An inclined surface (adapted from IHO Dictionary, S-32, 5th Edition, 4776).

Attribute Bindings:

acronym	usage	constraints
CATSLO	M	value list = "1,2,3,6"
NATSUR	O	value list = "1,2,3,4,5,6,7,8,9,11,14,17,18"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Small craft facility

Acronym: SMCFAC Code: 128

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A place at which a service generally of interest to small craft or pleasure boats is available.

Attribute Bindings:

acronym	usage	constraints
CATSCF	M	value list = "1-33"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Sounding

Acronym: SOUNDG Code: 129

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A measured water depth or spot which has been reduced to a vertical datum (may be a drying height).

Attribute Bindings:

acronym	usage	constraints
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
TECSOU	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14"
SOUACC	O	unit = "m" decimal digits = "2"

Feature	Survey reliability

Acronym: M_SREL Code: 310

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: An area within which a uniform assessment of the reliability of source survey information exists.

Attribute Bindings:

acronym	usage	constraints
QUAPOS	C	value list = "4,10"
QUASOU	M	value list = "1,2,8,10,11"
SURATH	M	
SUREND	M	format = "ccyymmdd,ccyymm"
SURSTA	M	format = "ccyymmdd,ccyymm"
SURTYP	C	value list = "2"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

Feature	Tidal stream - flood/ebb

Acronym: TS_FEB Code: 160

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The 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)

Attribute Bindings:

acronym	usage	constraints
CAT_TS	M	value list = "1,2,3"
CURVEL	O	unit = "knot (kt)" decimal digits = "1"
ORIENT	O	unit = "deg" decimal digits = "2"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
OBJNAM	O	
NOBJNM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Tideway

Acronym: TIDEWY Code: 143

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A natural 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)

Attribute Bindings:

acronym	usage	constraints
PICREP	O	
OBJNAM	O	
NOBJNM	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	

Feature	Topmark

Acronym: TOPMAR Code: 144

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
TOPSHP	M	value list = "1-33"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	C	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Traffic separation scheme boundary

Acronym: TSSBND Code: 146

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The outer limit of a traffic lane part or a traffic separation scheme roundabout. (S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.185, November 2000).

Attribute Bindings:

acronym	usage	constraints
CATTSS	O	value list = "1,2,"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
STATUS	O	value list = "1,2,3,4,6,7,8,9,11,12,13,14,15,16,17,18"

Feature	Traffic separation scheme crossing

Acronym: TSSCRS Code: 147

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A defined area where traffic lanes cross. (S- 57 Edition 3.1, Appendix A – Chapter 1, Page 1.186, November 2000).

Attribute Bindings:

acronym	usage	constraints
CATTSS	O	value list = "1,2"
RESTRN	C	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,16,17,18,19,20,21,22,23,24,25,27"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
STATUS	C	value list = "1,3,6,9"
SCAMIN	M	min = "1"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	O	format = "ccyymmdd"
SORIND	O	format = "cc,cc,ccccc,c…"

Feature	Traffic separation scheme lane part

Acronym: TSSLPT Code: 148

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A traffic separation scheme lane part is an area of a traffic lane in which the direction of flow of traffic is generally along one bearing. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.187, November 2000).

Attribute Bindings:

acronym	usage	constraints
CATTSS	O	value list = "1,2"
ORIENT	C	unit = "deg" decimal digits = "2"
RESTRN	C	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,16,17,18,19,20,21,22,23,24,25,27"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SCAMIN	M	min = "1"
SORDAT	O	format = "ccyymmdd"
SORIND	O	format = "cc,cc,ccccc,c…"

Feature	Traffic separation zone

Acronym: TSEZNE Code: 150

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-08-11

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).

Attribute Bindings:

acronym	usage	constraints
CATTSS	M	value list = "1,2"
STATUS	C	value list = "3,9"
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
TXTDSC	C	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
OBJNAM	O	
NOBJNM	O	
PICREP	O	
NTXTDS	O	

Feature	Tunnel

Acronym: TUNNEL Code: 151

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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.

Attribute Bindings:

acronym	usage	constraints
BURDEP	O	unit = "m" decimal digits = "1"
HORCLR	C	unit = "m" decimal digits = "2"
VERCLR	C	unit = "m" decimal digits = "2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
PEREND	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
NTXTDS	O	
unlocd	O	
HORACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Two-way route part

Acronym: TWRTPT Code: 152

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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).

Attribute Bindings:

acronym	usage	constraints
ORIENT	M	unit = "deg" decimal digits = "2"
TRAFIC	M	value list = "1,2,3,4"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	

Feature	Underwater/awash rock

Acronym: UWTROC Code: 153

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A concreted mass of stony material or coral which dries, is awash or is below the water surface.

Attribute Bindings:

acronym	usage	constraints
VALSOU	M	unit = "m" decimal digits = "2"
WATLEV	M	value list = "1,2,3,4,5"
NATSUR	O	value list = "5,9,11,14,18"
QUASOU	O	value list = "1,2,8,10,11"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
EXPSOU	C	value list = "1,2,3"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Unsurveyed area

Acronym: UNSARE Code: 154

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-07-29

Definition: An area for which no bathymetric survey information is available.

Attribute Bindings:

acronym	usage	constraints
QUASOU	C	value list = "2,8"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
NTXTDS	O	
TXTDSC	O	
PICREP	O	

Feature	Vegetation

Acronym: VEGATN Code: 155

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Collections of, or individual plants.

Attribute Bindings:

acronym	usage	constraints
CATVEG	M	value list = "6,11,13"
CONVIS	O	value list = "1,2"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Water turbulence

Acronym: WATTUR Code: 156

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The disturbance of water caused by the interaction of any combination of waves, currents, tidal streams, wind, shoal patches and obstructions.

Attribute Bindings:

acronym	usage	constraints
CATWAT	M	value list = "6"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
NTXTDS	O	
PICREP	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"

Feature	Weed/Kelp

Acronym: WEDKLP Code: 158

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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)

Attribute Bindings:

acronym	usage	constraints
CATWED	M	value list = "1,2,3,4"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
TXTDSC	O	
NTXTDS	O	
PICREP	O	

Feature	Wreck

Acronym: WRECKS Code: 159

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The ruined remains of a stranded or sunken vessel which has been rendered useless. (IHO Dictionary, S-32, 5th Edition, 6027)

Attribute Bindings:

acronym	usage	constraints
CATWRK	M	value list = "1,2,3,4,5"
VALSOU	C	unit = "m" decimal digits = "2"
WATLEV	O	value list = "1,2,3,4,5"
QUASOU	O	value list = "1,2,8,10,11"
TECSOU	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14"
STATUS	O	value list = "12,16,17,18"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
EXPSOU	C	value list = "1,2,3"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
CATTEV	O	value list = "4,5,6"

Feature	Anchor berth

Acronym: achbrt Code: 17000

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
catach	O	value list = "1,2,3,4,5,6,7,9,10,11,12,13"
clsdng	O	value list = "1,2,3,4,5"
restrn	O	value list = "1,2,7,8,13,14,27,28,29,30,31,32,33,34,35,36,38"
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17"
NATSUR	O	value list = "1,2,3,4,5,6,7,8,9,11,14,17,18"
unlocd	C	
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Anchorage area

Acronym: achare Code: 17001

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
catach	O	value list = "1,2,3,4,5,6,7,9,10,11,12,13"
clsdng	O	value list = "1,2,3,4,5"
restrn	O	value list = "1,2,7,8,13,14,27,28,29,30,31,32,33,34,35,36,38"
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17"
NATSUR	O	value list = "1,2,3,4,5,6,7,8,9,11,14,17,18"
unlocd	C	
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Beacon, lateral

Acronym: bcnlat Code: 17028

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
BCNSHP	M	value list = "1,5"
catlam	M	value list = "1-27"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
dirimp	C	value list = "1,2,3,4"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"

acronym	usage	constraints
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
typatn	O	value list = "1,2,3"
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Berth

Acronym: berths Code: 17010

Type: G

Primitive: P,L,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
catbrt	O	value list = "1,2,3,4,5,6,7,8,9"
clsdng	O	value list = "1,2,3,4,5"
DRVAL1	O	unit = "m" decimal digits = "2"
QUASOU	C	value list = "1,2,8,10,11"
SOUACC	C	unit = "m" decimal digits = "2"
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17"
trshgd	O	value list = "1,2,3,4,5,6,7,8,9,10"
unlocd	C	
verdat	C	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"

acronym	usage	constraints
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Bridge

Acronym: bridge Code: 17011

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
CATBRG	M	value list = "1,3,4,5,7,9,10,11,12,13"
HORCLR	O	unit = "m" decimal digits = "2"
VERCCL	C	unit = "m" decimal digits = "2"
VERCLR	C	unit = "m" decimal digits = "2"
VERCOP	C	unit = "m" decimal digits = "2"
hunits	C	value list = "1,2,3,4,5,6"
unlocd	C	
verdat	C	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
wtwdis	C	decimal digits = "3"
CONDTN	C	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	C	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"

acronym	usage	constraints
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
elevwl	O	unit = "m" decimal digits = "2"
reflev	O	value list = "1,2,3,4,5,6,7,8,9,10"
refgag	C	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Bridge Arch Aggregation

Acronym: c_brga Code: 18003

Type: O

Primitive: N

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2012-08-03

Definition: A collection of the bridge arch elements comprising an entire bridge arch.

Attribute Bindings:

acronym	usage	constraints
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
PICREP	O	
TXTDSC	O	
NTXTDS	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"

Feature	Bunker station

Acronym: bunsta Code: 17054

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A station, at which a ship is able to bunker fuel, water or ballast or to obtain electrical power supply.

Attribute Bindings:

acronym	usage	constraints
bunves	M	value list = "1,2"
catbun	O	value list = "1,2,3,4"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
catvol	C	value list = "1,2"
catfrq	C	value list = "1,2"

acronym	usage	constraints
amoamp	C	
allcon	O	
catplg	O	
shrnum	O	
HORACC	O	unit = "m" decimal digits = "1"
VERACC	O	unit = "m" decimal digits = "1"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Buoy, lateral

Acronym: boylat Code: 17029

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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 right-hand or left-hand side of a channel limit in the waterway.

Attribute Bindings:

acronym	usage	constraints
BOYSHP	M	value list = "1,2,3,4,5,6,8"
catlam	M	value list = "1-27"
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
CONRAD	O	value list = "3"
marsys	C	value list = "1,2,9,10,11,12,13,14,15"
OBJNAM	C	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"

acronym	usage	constraints
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
typatn	O	value list = "1,2,3"
mmsico	O	format = "xxxxxxxxx"
STATUS	O	value list = "5"

Feature	Cable, overhead

Acronym: cblohd Code: 17012

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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).

Attribute Bindings:

acronym	usage	constraints
catcbl	M	value list = "1,3,4,5,6,7"
VERCLR	M	unit = "m" decimal digits = "1"
hunits	O	value list = "1,2,3,4,5,6"
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
wtwdis	O	decimal digits = "3"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
refgag	C	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Checkpoint

Acronym: chkpnt Code: 17027

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
catchp	M	value list = "1,2"
NATION	M	format = "cc"
unlocd	C	
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Communication area

Acronym: comare Code: 17055

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Indicates the coverage of an area, in which a vessel has to report or may request information.

Attribute Bindings:

acronym	usage	constraints
catcom	O	value list = "1,2,3,4,5,6,7,8,9"
COMCHA	M	format = "[[XXXX];[XXXX];...]"
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	

Feature	Conveyor

Acronym: convyr Code: 17034

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
CATCON	M	value list = "2"
PRODCT	O	value list = "1,2,3,4,5,6,7,8,14,15,17,21,22"
VERCLR	O	unit = "m" decimal digits = "2"
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Crane

Acronym: cranes Code: 17030

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
CATCRN	O	value list = "2,3,4,5"
VERCLR	O	unit = "m" decimal digits = "2"
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
unlocd	C	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"

acronym	usage	constraints
CATTEV	O	value list = "4,5,6"

Feature	Current, non-gravitational

Acronym: curent Code: 17019

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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.

Attribute Bindings:

acronym	usage	constraints
curvhw	C	unit = "km/h" decimal digits = "1"
curvlw	C	unit = "km/h" decimal digits = "1"
curvmw	C	unit = "km/h" decimal digits = "1"
curvow	C	unit = "km/h" decimal digits = "1"
dirimp	C	value list = "1,2,3,4"
hignam	C	
lownam	C	
meanam	C	
othnam	C	
ORIENT	C	unit = "deg" decimal digits = "2"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"

acronym	usage	constraints
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Daymark

Acronym: daymar Code: 17035

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2009-09-11

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)

Attribute Bindings:

acronym	usage	constraints
COLOUR	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13"
COLPAT	C	value list = "1,2,3,4,5,6"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
TOPSHP	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33"
ORIENT	C	unit = "deg" decimal digits = "2"
dirimp	C	value list = "1,2,3,4"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	

acronym	usage	constraints
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Depth area

Acronym: depare Code: 17003

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
DRVAL1	M	unit = "m" decimal digits = "2"
DRVAL2	M	unit = "m" decimal digits = "2"
eleva1	C	unit = "m" decimal digits = "2"
eleva2	C	unit = "m" decimal digits = "2"
QUASOU	C	value list = "1,2,8,10,11"
hunits	M	value list = "1,2,3,4,5,6"
wtwdis	M	decimal digits = "3"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Distance mark

Acronym: dismar Code: 17004

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A distance mark indicates the distance measured from an origin and consists of a distinct location without special installation, used to serve as a reference along the waterway. (Adapted from S-57 Standard). Due to the natural or historic changes in the waterway the distance can deviate from the real distance to the origin.

Attribute Bindings:

acronym	usage	constraints
CATDIS	M	value list = "1,2,3,4"
hunits	M	value list = "1,2,3,4,5,6"
unlocd	C	
wtwdis	M	decimal digits = " 1"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	

Feature	Exceptional navigation structure

Acronym: excnst Code: 17070

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An exceptional navigational construction like aqueduct, lift-lock, etc.

Attribute Bindings:

acronym	usage	constraints
catexs	M	value list = "1,2,3,4,5"
DRVAL1	M	unit = "m" decimal digits = "2"
unlocd	C	
verdat	C	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
hunits	M	value list = "1,2,3,4,5,6"
wtwdis	M	decimal digits = "3"
CONDTN	O	value list = "1,2,3,5"
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
sdrlev	O	

acronym	usage	constraints
sdrval	O	unit = "m" decimal digits = "2"
OBJNAM	O	
NOBJNM	O	
horclw	C	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Ferry route

Acronym: feryrt Code: 17013

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
catfry	M	value list = "4"
NOBJNM	O	
OBJNAM	O	
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17"
INFORM	O	
NINFOM	O	
NTXTDS	O	
PICREP	O	
SCAMIN	M	min = "1"
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
unlocd	C	

Feature	Floating dock

Acronym: flodoc Code: 17025

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
DRVAL1	O	unit = "m" decimal digits = "2"
HORCLR	O	unit = "m" decimal digits = "2"
HORLEN	O	unit = "m" decimal digits = "2"
horcll	O	unit = "m" decimal digits = "2"
horclw	O	unit = "m" decimal digits = "2"
HORWID	O	unit = "m" decimal digits = "2"
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"

acronym	usage	constraints
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
sdrlev	O	
sdrval	O	unit = "m" decimal digits = "2"
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Gate

Acronym: gatcon Code: 17031

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
CATGAT	M	value list = "2,4"
HORCLR	M	unit = "m" decimal digits = "2"
VERCLR	O	unit = "m" decimal digits = "2"
hunits	C	value list = "1,2,3,4,5,6"
wtwdis	O	decimal digits = "3"
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
unlocd	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	

acronym	usage	constraints
vcrval	O	unit = "m" decimal digits = "2"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Harbour area (administrative)

Acronym: hrbare Code: 17014

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The term "harbour" applies only to the area of water with the works necessary for its formation, protections and maintenance (International Maritime Dictionary, 2d. Edition). A harbour area not only covers the area of water but also the area of land which supplies the harbour installations.

Attribute Bindings:

acronym	usage	constraints
cathbr	O	value list = "1,2,3,4,5"
unlocd	C	
CONDTN	C	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Harbour basin

Acronym: hrbbsn Code: 17056

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An enclosed area of water surrounded by quay walls constructed to provide means for the transfer of cargos from and to ships (International Maritime Dictionary, 2d. Edition).

Attribute Bindings:

acronym	usage	constraints
HORLEN	O	unit = "m" decimal digits = "2"
HORWID	O	unit = "m" decimal digits = "2"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Harbour facility

Acronym: hrbfac Code: 17015

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
cathaf	M	value list = "4,6,9,12,13,16,17"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Hulk

Acronym: hulkes Code: 17020

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A permanently moored ship.

Attribute Bindings:

acronym	usage	constraints
cathlk	O	value list = "1,2,3,4,5,6"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

acronym	usage	constraints
STATUS	O	value list = "5"

Feature	Lock basin

Acronym: lokbsn Code: 17016

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
horcll	M	unit = "m" decimal digits = "2"
horclw	M	unit = "m" decimal digits = "2"
HORLEN	O	unit = "m" decimal digits = "2"
HORWID	O	unit = "m" decimal digits = "2"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Lock basin part

Acronym: lkbspt Code: 17058

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A lock basin is divided into several lock basin parts, if this lock basin has one ground level but several gates.

Attribute Bindings:

acronym	usage	constraints
horcll	M	unit = "m" decimal digits = "2"
horclw	M	unit = "m" decimal digits = "2"
HORLEN	O	unit = "m" decimal digits = "2"
HORWID	O	unit = "m" decimal digits = "2"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"
STATUS	O	value list = "5"

Feature	Maximum permitted ship dimensions

Acronym: lg_sdm Code: 18001

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Waterway or waterway section for which a juridical regulation with respect to the maximum permitted vessel dimensions exists.

Attribute Bindings:

acronym	usage	constraints
lg_rel	O	value list = "1,2,3,4"
lg_des	O	
lc_csi	O	value list = "1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32"
lc_cse	O	value list = "1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32"
lc_asi	O	value list = "1,2,3,5,6,7,8,9,10"
lc_ase	O	value list = "1,2,3,5,6,7,8,9,10"
lc_cci	O	value list = "1,2,4,5,6,7,8,9"
lc_cce	O	value list = "1,2,4,5,6,7,8,9"
lg_bme	O	unit = "m" decimal digits = "2"
lg_lgs	O	unit = "m" decimal digits = "2"
lg_drt	O	unit = "m" decimal digits = "2"
lg_wdp	O	decimal digits = "1"
lg_wdu	O	value list = "1,2,3"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"

acronym	usage	constraints
SORIND	C	format = "cc,cc,ccccc,c..."
lg_pbr	O	

Feature	Maximum permitted vessel speed

Acronym: lg_vsp Code: 18002

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Waterway or waterway section for which a juridical regulation with respect to the maximum permitted vessel speed exists.

Attribute Bindings:

acronym	usage	constraints
lg_rel	O	value list = "1,2,3,4"
lg_des	O	
lc_csi	O	value list = "1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32"
lc_cse	O	value list = "1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32"
lc_asi	O	value list = "1,2,3,5,6,7,8,9,10"
lc_ase	O	value list = "1,2,3,5,6,7,8,9,10"
lc_cci	O	value list = "1,2,4,5,6,7,8,9"
lc_cce	O	value list = "1,2,4,5,6,7,8,9"
lg_wdu	O	value list = "1,2,3"
lg_spd	O	unit = "km/h" decimal digits = "2"
lg_spr	O	value list = "1,2,3"
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
lg_pbr	O	

Feature	Navigational system of marks

Acronym: m_nsys Code: 17018

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An area within which a specific system of navigational marks applies and/or a common direction of buoyage.

Attribute Bindings:

acronym	usage	constraints
marsys	M	value list = "1,2,9,10,11,12,13,14,15"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
ORIENT	C	unit = "deg" decimal digits = "2"

Feature	Notice mark

Acronym: notmrk Code: 17050

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A signboard used to indicate prohibitions, regulations, restrictions, recommendations and general information which apply to a waterway or a section of a waterway

Attribute Bindings:

acronym	usage	constraints
addmrk	O	value list = "1,2,3,4,5"
catnmk	M	value list = "1 - 123"
dirimp	O	value list = "1,2,3,4,5"
disipd	O	unit = "m" decimal digits = "1"
disipu	O	unit = "m" decimal digits = "1"
disbk1	O	unit = "m" decimal digits = "1"
disbk2	O	unit = "m" decimal digits = "1"
fnctnm	M	value list = "1,2,3,4,5"
marsys	O	value list = "1,2,9,10,11,12,13,14,15"
ORIENT	C	unit = "deg" decimal digits = "2"
STATUS	O	value list = "2,3,4,5,8,9,12,14,16,17"
bnkwtw	O	value list = "1,2"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	

acronym	usage	constraints
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
mmsico	O	format = "xxxxxxxxx"

Feature	Pipeline, overhead

Acronym: pipohd Code: 17024

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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.

Attribute Bindings:

acronym	usage	constraints
CATPIP	M	value list = "2,3,4,6"
PRODCT	M	value list = "1,2,3,4,5,6,7,8,14,15,17,21,22"
VERCLR	M	unit = "m" decimal digits = "2"
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
hunits	O	value list = "1,2,3,4,5,6"
wtwdis	O	decimal digits = "3"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"

acronym	usage	constraints
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
vcrlev	O	
vcrval	O	unit = "m" decimal digits = "2"
refgag	C	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Pontoon

Acronym: ponton Code: 17021

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

acronym	usage	constraints
STATUS	O	value list = "5"

Feature	Port area

Acronym: prtare Code: 17059

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Apart from harbours a port includes a city or borough with accommodation and facilities for landing passengers and goods and some amount of overseas trade. A port may possess a harbour but a harbour is not necessarily a port (International Maritime Dictionary, 2d. Edition).

Attribute Bindings:

acronym	usage	constraints
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Radio calling-in point

Acronym: rdocal Code: 17017

Type: G

Primitive: P,L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
catcom	M	value list = "1,2,3,4,5,6,7,8"
COMCHA	M	format = "[[XXXX];[XXXX];….]"
ORIENT	M	unit = "deg" decimal digits = "2"
TRAFIC	M	value list = "1,2,3,4"
OBJNAM	O	
NOBJNM	O	
unlocd	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	C	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

acronym	usage	constraints
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Refuse dump

Acronym: refdmp Code: 17062

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: At a refuse dump ships are able to unload their refuse like waste oil or black water.

Attribute Bindings:

acronym	usage	constraints
catrfd	O	value list = "1,2,3,4"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Restricted area

Acronym: resare Code: 17005

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
CATREA	O	value list = "1,4,5,9,12,19,22,23,25,26,33"
restrn	M	value list = "1,2,7,8,13,14,27,28,29,30,31,32,33,34,35,36,37,38,40,41"
NATSUR	O	value list = "1,2,3,4,5,6,7,8,9,11,14,17,18"
OBJNAM	O	
NOBJNM	O	
INFORM	C	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	C	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Sensor

Acronym: sensor Code: 18004

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2011-12-19

Definition: A device that responds to a physical stimulus (as heat, light, sound, pressure, magnetism or a particular motion) and transmits a resulting impulse (as for measurement or operating a control).

Attribute Bindings:

acronym	usage	constraints
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
catsen	M	value list = "1,2"
fnctsn	M	value list = "1"
SCAMIN	M	min = "1"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c…"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
TXTDSC	O	
PICREP	O	
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Shoreline Construction

Acronym: slcons Code: 17032

Type: G

Primitive: L,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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

Attribute Bindings:

acronym	usage	constraints
catslc	M	value list = "2,7,8,9,18,19,20"
NATCON	O	value list = "1,2,3,4,5,6,7,8,9"
watlev	C	value list = "1,2,3,4,8,9"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Signal station, traffic

Acronym: sistat Code: 17007

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
catsit	M	value list = "2,6,8,10"
dirimp	O	value list = "1,2,3,4"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
unlocd	C	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Signal station, warning

Acronym: sistaw Code: 17008

Type: G

Primitive: P

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

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)

Attribute Bindings:

acronym	usage	constraints
catsiw	M	value list = "15,16,18"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	C	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Sounding datum

Acronym: m_sdat Code: 17022

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An area of uniform sounding datum.

Attribute Bindings:

acronym	usage	constraints
verdat	M	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

Feature	Terminal

Acronym: termnl Code: 17064

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A terminal covers that area on shore which provides buildings and constructions for the transfer of cargo or passengers from and to ships.

Attribute Bindings:

acronym	usage	constraints
cathaf	M	value list = "1,3,7,8,10,11"
trshgd	O	value list = "1,2,3,4,5,6,7,8,9,10"
unlocd	C	
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Time Schedule - in general

Acronym: tisdge Code: 17068

Type: O

Primitive: N

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A schedule listing events and the times at which they will take place (www.wordiq.com/dictionary).

Attribute Bindings:

acronym	usage	constraints
aptref	O	
cattab	M	value list = "1,2"
dirimp	O	value list = "1,2,3,4"
schref	M	
shptyp	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12,13,14,15"
useshp	M	value list = "1,2,3"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
STATUS	O	value list = "5"

Feature	Turning basin

Acronym: trnbsn Code: 17065

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An area of water or enlargement of a channel used for turning vessels (International Maritime Dictionary, 2d Edition).

Attribute Bindings:

acronym	usage	constraints
HORCLR	O	unit = "m" decimal digits = "2"
unlocd	C	
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Underwater rock / awash rock

Acronym: uwtroc Code: 17033

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A concreted mass of stony material or coral which dries, is awash or is below the water surface.

Attribute Bindings:

acronym	usage	constraints
VALSOU	M	unit = "m" decimal digits = "2"
watlev	M	value list = "1,2,3,4,8,9"
NATSUR	O	value list = "5,9,11,14,18"
QUASOU	O	value list = "1,2,8,10,11"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
NTXTDS	O	
EXPSOU	C	value list = "1,2,3"
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Feature	Vehicle transfer

Acronym: vehtrf Code: 17069

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A place where vehicles can be loaded or unloaded from the inland vessel with onboard or on-shore facilities.

Attribute Bindings:

acronym	usage	constraints
catvtr	M	value list = "1,2,3,4,5,6"
HEIGHT	M	unit = "m" decimal digits = "2"
unlocd	C	
verdat	O	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
CONDTN	O	value list = "1,2,3,5"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
vcrlev	O	

acronym	usage	constraints
vcrval	O	unit = "m" decimal digits = "2"
NTXTDS	O	
STATUS	O	value list = "5"

Feature	Vertical datum

Acronym: m_vdat Code: 17023

Type: M

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An area of uniform vertical datum.

Attribute Bindings:

acronym	usage	constraints
verdat	M	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."

Feature	Waterway area

Acronym: wtware Code: 17066

Type: G

Primitive: A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: An area in which uniform general information of the waterway exists.

Attribute Bindings:

acronym	usage	constraints
catccl	M	value list = "1,2,3,4,5,6,7,8,9,10,11,12"
dirimp	M	value list = "1,2,3,4"
unlocd	C	
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
STATUS	O	value list = "5"
NTXTDS	O	

Feature	Waterway axis

Acronym: wtwaxs Code: 17051

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The waterway axis can be defined by e.g: - the middle line of a fairway, (Definition of fairway: That part of a river, harbour; etc. 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.). - the middle line of a waterway (Definition of waterway: The waterway covers the entire area of a river or canal).

Attribute Bindings:

acronym	usage	constraints
catccl	O	value list = "1,2,3,4,5,6,7,8,9,10,11,12"
OBJNAM	M	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
STATUS	O	value list = "5"
NTXTDS	O	

Feature	Waterway gauge

Acronym: wtwgag Code: 17067

Type: G

Primitive: P,A

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A waterway gauge is an instrument for measuring water levels

Attribute Bindings:

acronym	usage	constraints
catgag	O	value list = "1,2,3,4,5"
disipd	O	unit = "m" decimal digits = "1"
disipu	O	unit = "m" decimal digits = "1"
ELEVAT	O	unit = "m" decimal digits = "2"
higwat	O	unit = "m" decimal digits = "2"
hignam	O	
lowwat	O	unit = "m" decimal digits = "2"
lownam	O	
meawat	O	unit = "m" decimal digits = "2"
meanam	O	
othwat	O	unit = "m" decimal digits = "2"
othnam	O	
reflev	O	value list = "1,2,3,4,5,6,7,8,9,10"
sdrlev	O	
unlocd	C	
vcrlev	O	
verdat	O	value list = "12,23,24,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
hunits	O	value list = "1,2,3,4,5,6"
wtwdis	O	decimal digits = "3"
CONDTN	O	value list = "1,2,3,5"

acronym	usage	constraints
OBJNAM	C	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
STATUS	O	value list = "5"
sdrval	O	unit = "m" decimal digits = "2"
vcrval	O	unit = "m" decimal digits = "2"
NTXTDS	O	

Feature	Waterway profile

Acronym: wtwprf Code: 17052

Type: G

Primitive: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: A waterway profile is an imaginary (i.e., physically non-existent) line across the waterway.

Attribute Bindings:

acronym	usage	constraints
hunits	M	value list = "1,2,3,5,6"
wtwdis	M	decimal digits = "3"
HEIGHT	C	unit = "m" decimal digits = "2"
reflev	C	value list = "1,2,3,4,5,6,7,8,9,10"
verdat	C	value list = "12,23,24,30,31,32,33,34,35,36,37,38,39,40,41,42,43,45"
OBJNAM	O	
NOBJNM	O	
INFORM	O	
NINFOM	O	
SCAMIN	M	min = "1"
PICREP	O	
TXTDSC	O	
DATSTA	O	format = "ccyymmdd"
DATEND	O	format = "ccyymmdd"
PERSTA	O	format = "ccyymmdd"
PEREND	O	format = "ccyymmdd"
SORDAT	C	format = "ccyymmdd"
SORIND	C	format = "cc,cc,ccccc,c..."
STATUS	O	value list = "5"
sdrlev	O	

acronym	usage	constraints
sdrval	O	unit = "m" decimal digits = "2"
NTXTDS	O	
HORACC	O	unit = "m" decimal digits = "2"
VERACC	O	unit = "m" decimal digits = "2"
CATTEV	O	value list = "4,5,6"

Attribute	Beacon shape

Acronym: BCNSHP Code: 2

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: BCNSHP_1 Date accepted: 2000-11-01 Name: stake, pole, perch, post Definition: an elongated wood or metal pole, embedded in the bottom to serve as a navigational aid or a support for a navigational aid. (adapted from IHO Dictionary S-32, 5th Edition, 4960)
2	DD Name: HYDRO Code: BCNSHP_2 Date accepted: 2000-11-01 Name: withy Definition: a tree without roots stuck or spoiled into the bottom of the sea to serve as a navigational aid.
3	DD Name: HYDRO Code: BCNSHP_3 Date accepted: 2000-11-01 Name: beacon tower Definition: a solid structure of the order of 10 metres in height used as a navigational aid.
4	DD Name: HYDRO Code: BCNSHP_4 Date accepted: 2000-11-01 Name: lattice beacon Definition: a structure consisting of strips of metal or wood crossed or interlaced to form a structure to serve as an aid to navigation or as a support for an aid to navigation.
5	DD Name: HYDRO Code: BCNSHP_5 Date accepted: 2000-11-01 Name: pile beacon Definition: a long heavy timber(s) or section(s) of steel, wood, concrete, etc., forced into the seabed to serve as an aid to navigation or as a support for an aid to navigation.(Adapted from IHO Dictionary, S-32, 5th Edition, 3840 and Navigation Dictionary, US National Oceanic and Atmospheric Administration - NOAA, 1969)

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: BCNSHP_6 Date accepted: 2000-11-01 Name: cairn Definition: a mound of stones, usually conical or pyramidal, raised specifically for maritime navigation. (adapted from IHO Dictionary, S-32, 5th Edition, 601).
7	DD Name: HYDRO Code: BCNSHP_7 Date accepted: 2000-11-01 Name: buoyant beacon Definition: a tall spar-like beacon fitted with a permanently submerged buoyancy chamber, the lower end of the body is secured to seabed sinker either by a flexible joint or by a cable under tension. (IHO Specifications, M-4, 459.1)

Attribute	Buoy shape

Acronym: BOYSHP Code: 4

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: BOYSHP_1 Date accepted: 2000-11-01 Name: conical (nun, ogival) Definition: the upper part of the body above the water-line, or the greater part of the superstructure, has approximately the shape or the appearance of a pointed cone with the point upwards.
2	DD Name: HYDRO Code: BOYSHP_2 Date accepted: 2000-11-01 Name: can (cylindrical) Definition: the upper part of the body above the water-line, or the greater part of the superstructure, has the shape of a cylinder, or a truncated cone that approximates to a cylinder, with a flat end uppermost.
3	DD Name: HYDRO Code: BOYSHP_3 Date accepted: 2000-11-01 Name: spherical Definition: the upper part of the body above the water-line, or the greater part of the superstructure, has the shape of a part of a sphere.
4	DD Name: HYDRO Code: BOYSHP_4 Date accepted: 2000-11-01 Name: pillar Definition: the upper part of the body above the water-line, or the greater part of the superstructure is a narrow vertical structure, pillar or lattice tower.
5	DD Name: HYDRO Code: BOYSHP_5 Date accepted: 2000-11-01 Name: spar (spindle) Definition: the upper part of the body above the water-line, or the greater part of the superstructure, has the form of a pole, or of a very long cylinder, floating upright.

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: BOYSHP_6 Date accepted: 2000-11-01 Name: barrel (tun) Definition: the upper part of the body above the water-line, or the greater part of the superstructure, has the form of a barrel or cylinder floating horizontally.
7	DD Name: HYDRO Code: BOYSHP_7 Date accepted: 2000-11-01 Name: super-buoy Definition: a very large buoy, generally more than 5m in diameter
8	DD Name: HYDRO Code: BOYSHP_8 Date accepted: 2000-11-01 Name: ice buoy Definition: a specially constructed shuttle shaped buoy which is used in ice conditions.

Attribute	Buried depth

Acronym: BURDEP Code: 5

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The depth below the sea bed to which an object is buried.

Attribute	Category of airport/airfield

Acronym: CATAIR Code: 7

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATAIR_1 Date accepted: 2000-11-01 Name: military aeroplane airport Definition: a large military airfield usually equipped with a control tower, hangars and accommodation for the receiving and discharging of passengers or cargo. (adapted from The Macquarie Dictionary, 1988)
2	DD Name: HYDRO Code: CATAIR_2 Date accepted: 2000-11-01 Name: civil aeroplane airport Definition: a large airfield usually equipped with a control tower, hangars and accommodation for the receiving and discharging of passengers or cargo. (The Macquarie Dictionary, 1988)
4	DD Name: HYDRO Code: CATAIR_4 Date accepted: 2000-11-01 Name: civil heliport Definition: a landing place for helicopters, often the roof of a building. (The Macquarie Dictionary, 1988)
6	DD Name: HYDRO Code: CATAIR_6 Date accepted: 2000-11-01 Name: small planes airfield Definition: an area of land set aside for the take-off and landing of small aeroplanes.

Attribute	Category of bridge

Acronym: CATBRG Code: 9

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATBRG_1 Date accepted: 2000-11-01 Name: fixed bridge Definition: a bridge having permanent horizontal and vertical alignment. (McGraw-Hill Dictionary of Scientific and Technical Terms, 3rd Edition, 1984)
3	DD Name: HYDRO Code: CATBRG_3 Date accepted: 2000-11-01 Name: swing bridge Definition: a movable bridge (or span thereof) which rotates in a horizontal plane about a vertical pivot to allow the passage of vessels. (adapted from McGraw-Hill Encyclopaedia of Science and Technology, 7th Edition, 1992)
4	DD Name: HYDRO Code: CATBRG_4 Date accepted: 2000-11-01 Name: lifting bridge Definition: a movable bridge (or span thereof) which is capable of being lifted vertically to allow vessels to pass beneath. (adapted from IHO Dictionary, S-32, 5th Edition, 547)
5	DD Name: HYDRO Code: CATBRG_5 Date accepted: 2000-11-01 Name: bascule bridge Definition: a counterpoise bridge rotated in a vertical plane about an axis at one or both ends. Also called a balance. (IHO Dictionary, S-32, 5th Edition, 545)
7	DD Name: HYDRO Code: CATBRG_7 Date accepted: 2000-11-01 Name: draw bridge Definition: a general name for bridges of which part or the entire span of the bridge may be raised or

Value	Data Dictionary (DD) Reference
	drawn aside to allow ships to pass through. IHO Dictionary, S-32, 5th Edition, 546)
9	DD Name: HYDRO Code: CATBRG_9 Date accepted: 2000-11-01
	Name: footbridge
	Definition: a bridge structure used only for pedestrian traffic. (McGraw-Hill Dictionary of Scientific and Technical Terms, 3rd Edition, 1984)
11	DD Name: HYDRO Code: CATBRG_11 Date accepted: 2000-11-01
	Name: aqueduct
	Definition: a bridge supporting an artificially elevated channel, for the conveyance of water. (adapted from The New Shorter English Dictionary, 1993)
12	DD Name: HYDRO Code: CATBRG_12 Date accepted: 2000-11-01
	Name: suspension bridge
	Definition: a fixed bridge consisting of either a roadway or a truss suspended from two or more cables which pass over towers and are anchored by backstays to a firm foundation. (McGraw-Hill Encyclopedia of Science and Technology, 7th Edition, 1992)
13	DD Name: IENC Code: CATBRG_13 Date accepted: 2000-11-01
	Name: bridge arch
	Definition: an arched bridge with known clearances

Attribute	Category of built-up area

Acronym: CATBUA Code: 10

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATBUA_1 Date accepted: 2000-11-01 Name: urban area Definition: an area predominantly occupied by man-made structures used for residential, commercial, and industrial purposes. (Nautical Chart Manual, US Department of Commerce, 1992)
2	DD Name: HYDRO Code: CATBUA_2 Date accepted: 2000-11-01 Name: settlement Definition: a small collection of dwellings in a remote area.
3	DD Name: HYDRO Code: CATBUA_3 Date accepted: 2000-11-01 Name: village Definition: a collection of houses in a rural district, usually smaller than a town.
4	DD Name: HYDRO Code: CATBUA_4 Date accepted: 2000-11-01 Name: town Definition: any considerable collection of dwellings and other buildings larger than a village, but not incorporated as a city.
5	DD Name: HYDRO Code: CATBUA_5 Date accepted: 2000-11-01 Name: city Definition: a major town inhabited by a large permanent community with all essential services.

Attribute	Category of cable

Acronym: CATCBL Code: 11

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATCBL_1 Date accepted: 2000-11-01 Name: power line Definition: a cable used for the supply of electricity.
3	DD Name: HYDRO Code: CATCBL_3 Date accepted: 2000-11-01 Name: transmission line Definition: multiple un-insulated cables usually supported by steel lattice towers. Such features are generally more prominent than normal power lines.
4	DD Name: HYDRO Code: CATCBL_4 Date accepted: 2000-11-01 Name: telephone Definition: a cable used for the transmission of telephone signals.
5	DD Name: HYDRO Code: CATCBL_5 Date accepted: 2000-11-01 Name: telegraph Definition: a cable used for the transmission of telegraph signals.
6	DD Name: HYDRO Code: CATCBL_6 Date accepted: 2000-11-01 Name: mooring cable/chain Definition: a cable or chain used to secure a mooring buoy or other floating structure.

Attribute	Category of cardinal mark

Acronym: CATCAM Code: 13

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATCAM_1 Date accepted: 2000-11-01 Name: north cardinal mark Definition: Quadrant bounded by the true bearing NW-NE taken from the point of interest it should be passed to the north side of the mark.
2	DD Name: HYDRO Code: CATCAM_2 Date accepted: 2000-11-01 Name: east cardinal mark Definition: Quadrant bounded by the true bearing NE-SE taken from the point of interest it should be passed to the east side of the mark.
3	DD Name: HYDRO Code: CATCAM_3 Date accepted: 2000-11-01 Name: south cardinal mark Definition: Quadrant bounded by the true bearing SE-SW taken from the point of interest it should be passed to the south side of the mark.
4	DD Name: HYDRO Code: CATCAM_4 Date accepted: 2000-11-01 Name: west cardinal mark Definition: Quadrant bounded by the true bearing SW-NW taken from the point of interest it should be passed to the west side of the mark.

Attribute	Category of coastline

Acronym: CATCOA Code: 15

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATCOA_1 Date accepted: 2000-11-01 Name: steep coast Definition: a coast backed by rock or earth cliffs, gives a good radar return and is useful for visual identification from a considerable distance off, where cliffs alternate with low lying coast along the shoreline. (IHO Chart Specifications, M-4)
2	DD Name: HYDRO Code: CATCOA_2 Date accepted: 2000-11-01 Name: flat coast Definition: a level coast with no obvious topographic features.
3	DD Name: HYDRO Code: CATCOA_3 Date accepted: 2000-11-01 Name: sandy shore Definition: a shoreline area made up of sand, i.e. loose material consisting of small but easily distinguishable, separate grains, between 0.0625 and 2.000 millimetres in diameter. (adapted from IHO Dictionary, S-32, 5th Edition, 4497)
4	DD Name: HYDRO Code: CATCOA_4 Date accepted: 2000-11-01 Name: stony shore Definition: a shoreline area made up of rock and rock fragments ranging in size from pebbles and gravel to boulders or large rock masses. (adapted from IHO Dictionary, S-32, 5th Edition, 5059)
5	DD Name: HYDRO Code: CATCOA_5 Date accepted: 2000-11-01 Name: shingly shore Definition: a shoreline area made up of rounded, often flat waterworn rock fragments larger than

Value	Data Dictionary (DD) Reference
	approximately 16 millimetres. (adapted from IHO Dictionary, S-32, 5th Edition, 4683)
6	DD Name: HYDRO Code: CATCOA_6 Date accepted: 2000-11-01
	Name: glacier (seaward end)
	Definition: projecting seaward extension of glacier, usually afloat. Also called glacier tongue. (IHO Hydrographic Dictionary, S-32, 5th Edition, 2043)
7	DD Name: HYDRO Code: CATCOA_7 Date accepted: 2000-11-01
	Name: mangrove
	Definition: one of several genera of tropical trees or shrubs which produce many prop roots and grow along low lying coasts into shallow water. (IHO Hydrographic Dictionary, S-32, 5th Edition, 3064)
8	DD Name: HYDRO Code: CATCOA_8 Date accepted: 2000-11-01
	Name: marshy shore
	Definition: a shoreline area made up of spongy land saturated with water. It may have a shallow covering of water, usually with a considerable amount of vegetation appearing above the surface. (adapted from IHO Dictionary, S-32, 5th Edition, 5240)
9	DD Name: HYDRO Code: CATCOA_9 Date accepted: 2000-11-01
	Name: coral reef
	Definition: a reef, often of large extent, composed chiefly of coral and its derivatives. (IHO Dictionary, S-32, 5th Edition, 1063)
10	DD Name: HYDRO Code: CATCOA_10 Date accepted: 2000-11-01
	Name: ice coast
	Definition: a vertical cliff forming the seaward edge of an ice shelf, ranging in height from 2m to 50m or more above sea level.
11	DD Name: HYDRO Code: CATCOA_11 Date accepted: 2000-11-01
	Name: shelly shore
	Definition: a shoreline area made up of shells i.e. made up of the hard outside covering of marine animals.

Attribute	Category of conveyor

Acronym: CATCON Code: 17

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATCON_2 Date accepted: 2000-11-01 Name: belt conveyor Definition: a conveyor along which material or people are transported by means of a moving belt.

Attribute	Category of coverage

Acronym: CATCOV Code: 18

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATCOV_1 Date accepted: 2000-11-01 Name: coverage available Definition: continuous coverage of spatial objects is available within this area.
2	DD Name: HYDRO Code: CATCOV_2 Date accepted: 2000-11-01 Name: no coverage available Definition: an area containing no spatial objects.

Attribute	Category of crane

Acronym: CATCRN Code: 19

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATCRN_2 Date accepted: 2000-11-01 Name: container crane/gantry Definition: a high speed, shore-based crane used in the lift-on/lift-off operation of specially constructed containers. (adapted from Nautical Chart Manual, US Department of Commerce, Coast and Geodetic Survey, 7th Edition)
3	DD Name: HYDRO Code: CATCRN_3 Date accepted: 2000-11-01 Name: sheerlegs Definition: a tripodal structure used in dockyards and harbours for stepping masts or lifting loads in to and out of vessels.
4	DD Name: HYDRO Code: CATCRN_4 Date accepted: 2000-11-01 Name: travelling crane Definition: a crane mounted on rails (track) that can move (usually parallel to the wharf face) in order to load and unload cargo vessels. (Canadian Hydrographic Service)
5	DD Name: HYDRO Code: CATCRN_5 Date accepted: 2000-11-01 Name: A-frame Definition: a type of crane shaped like the letter "A". They are often positioned on river banks or the coastline and are used for lifting logs from logging trucks and depositing them in the water. (Canadian Hydrographic Service)

Attribute	Category of dam

Acronym: CATDAM Code: 20

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATDAM_1 Date accepted: 2000-11-01 Name: weir Definition: a dam erected across a river to raise the level of the water. A fence of stakes set in a river or along the shore as a trap for fish.
2	DD Name: HYDRO Code: CATDAM_2 Date accepted: 2000-11-01 Name: dam 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)
3	DD Name: HYDRO Code: CATDAM_3 Date accepted: 2000-11-01 Name: flood barrage Definition: an opening dam across a channel which, when required, is closed to control flood waters. (IHO Chart Specifications, M-4 326.7)

Attribute	Category of distance mark

Acronym: CATDIS Code: 21

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATDIS_1 Date accepted: 2000-11-01 Name: distance mark not physically installed Definition: a point at which a distance from an origin along a feature is given for information, but at which no specific marker exists.
2	DD Name: HYDRO Code: CATDIS_2 Date accepted: 2000-11-01 Name: visible mark, pole Definition: a point at which a distance from an origin along a feature is given for information and which is marked by a pole.
3	DD Name: HYDRO Code: CATDIS_3 Date accepted: 2000-11-01 Name: visible mark, board Definition: a point at which a distance from an origin along a feature is given for information and which is marked by a board.
4	DD Name: HYDRO Code: CATDIS_4 Date accepted: 2000-11-01 Name: visible mark, unknown shape Definition: a point at which a distance from an origin along a feature is given for information and which is physically marked, but the shape of the mark is not known or not given.

Attribute	Category of dumping ground

Acronym: CATDPG Code: 23

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-09-08

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATDPG_2 Date accepted: 2010-09-08 Name: chemical waste dumping ground Definition: an area at sea where chemical waste is dumped.
4	DD Name: HYDRO Code: CATDPG_4 Date accepted: 2010-09-08 Name: explosives dumping ground Definition: an area at sea where explosives are dumped.
5	DD Name: HYDRO Code: CATDPG_5 Date accepted: 2010-09-08 Name: spoil ground Definition: an area at sea where dredged material is deposited. Also called dumping ground. (IHO Dictionary, S-32, 5th Edition, 4930)

Attribute	Category of fence/wall

Acronym: CATFNC Code: 24

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATFNC_1 Date accepted: 2000-11-01 Name: fence Definition: a man made barrier used as an enclosure or boundary or for protection. (Digital Geographic Information Working Group -DGIWG, Oct. 1987)
4	DD Name: HYDRO Code: CATFNC_4 Date accepted: 2000-11-01 Name: wall Definition: a fence constructed from masonry or stone.

Attribute	Category of ferry

Acronym: CATFRY Code: 25

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATFRY_1 Date accepted: 2000-11-01 Name: 'free-moving' ferry Definition: a ferry which may have routes that vary with weather, tide and traffic. (adapted from M-4)
2	DD Name: HYDRO Code: CATFRY_2 Date accepted: 2000-11-01 Name: cable ferry Definition: a ferry that follows a fixed route guided by a cable. (adapted from IHO Specifications, M-4)

Attribute	Category of fishing facility

Acronym: CATFIF Code: 26

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of fishing facility

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATFIF_1 Date accepted: 2000-11-01 Name: fishing stake Definition: a pole or stake placed in shallow water to outline a fishing ground or to catch fish
2	DD Name: HYDRO Code: CATFIF_2 Date accepted: 2000-11-01 Name: fish trap Definition: a structure (usually portable) for catching fish
3	DD Name: HYDRO Code: CATFIF_3 Date accepted: 2000-11-01 Name: fish weir Definition: a fence of stakes or stones set in a river or along the shore to trap fish
4	DD Name: HYDRO Code: CATFIF_4 Date accepted: 2000-11-01 Name: tunny net Definition: a net built at sea for catching tunny.

Attribute	Category of fog signal

Acronym: CATFOG Code: 27

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATFOG_1 Date accepted: 2000-11-01 Name: explosive Definition: a signal produced by the firing of explosive charges. (Admiralty List of Lights and Fog Signals)
2	DD Name: HYDRO Code: CATFOG_2 Date accepted: 2000-11-01 Name: diaphone Definition: a diaphone uses compressed air and generally emits a powerful low-pitched sound, which often concludes with a brief sound of suddenly lowered pitch, termed the 'grunt'. (Admiralty List of Lights and Fog Signals)
3	DD Name: HYDRO Code: CATFOG_3 Date accepted: 2000-11-01 Name: siren Definition: a siren uses compressed air and exists in a variety of types which differ considerably in their sound and power. (Admiralty List of Lights and Fog Signals)
4	DD Name: HYDRO Code: CATFOG_4 Date accepted: 2000-11-01 Name: nautophone Definition: a horn having a diaphragm oscillated by electricity (IHO Dictionary, S-32, 5th Edition, 3371).
5	DD Name: HYDRO Code: CATFOG_5 Date accepted: 2000-11-01 Name: reed Definition: a reed uses compressed air and emits a weak, high pitched sound. (Admiralty List of Lights and Fog Signals)

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: CATFOG_6 Date accepted: 2000-11-01 Name: tyfon Definition: a diaphragm horn which operates under the influence of compressed air or steam (IHO Dictionary, S-32, 5th Edition, 5717).
7	DD Name: HYDRO Code: CATFOG_7 Date accepted: 2000-11-01 Name: bell Definition: a ringing sound with a short range. The apparatus may be operated automatically, by hand or by wave action. (IHO Chart Specifications, M-4, 452.5)
8	DD Name: HYDRO Code: CATFOG_8 Date accepted: 2000-11-01 Name: whistle Definition: a distinctive sound made by a jet of air passing through an orifice. The apparatus may be operated automatically, by hand or by air being forced up a tube by waves acting on a buoy. (IHO Chart Specifications, M-4, 452.6)
9	DD Name: HYDRO Code: CATFOG_9 Date accepted: 2000-11-01 Name: gong Definition: a sound produced by vibration of a disc when struck. The apparatus may be operated automatically, by hand or by wave action. (IHO Chart Specifications, M-4, 452.7)
10	DD Name: HYDRO Code: CATFOG_10 Date accepted: 2000-11-01 Name: horn Definition: a horn uses compressed air or electricity to vibrate a diaphragm and exists in a variety of types which differ greatly in their sound and power. (Admiralty List of Lights and Fog Signals)

Attribute	Category of fortified structure

Acronym: CATFOR Code: 28

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of fortified structure

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATFOR_1 Date accepted: 2000-11-01 Name: castle Definition: a large fortified building or structure
2	DD Name: HYDRO Code: CATFOR_2 Date accepted: 2000-11-01 Name: fort Definition: a fortified enclosure, building, or position able to be defended against an enemy
3	DD Name: HYDRO Code: CATFOR_3 Date accepted: 2000-11-01 Name: battery Definition: a fortified structure on which artillery is mounted
4	DD Name: HYDRO Code: CATFOR_4 Date accepted: 2000-11-01 Name: blockhouse Definition: a concrete structure strengthened to give protection against enemy fire, with apertures to allow defensive gunfire
5	DD Name: HYDRO Code: CATFOR_5 Date accepted: 2000-11-01 Name: martello tower Definition: a round fort for coastal defence
6	DD Name: HYDRO Code: CATFOR_6 Date accepted: 2000-11-01 Name: redoubt

Value Data Dictionary (DD) Reference

Definition: an outwork or fieldwork usually square or polygonal and without flanking defences.

Attribute	Category of gate

Acronym: CATGAT Code: 29

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATGAT_2 Date accepted: 2000-11-01 Name: flood barrage gate Definition: an opening gate used to control flood water.
4	DD Name: HYDRO Code: CATGAT_4 Date accepted: 2000-11-01 Name: lock gate Definition: lock gates are the massive hinged doors at each end of a lock. (adapted from IHO Dictionary, S-32, 5th Edition, 2882)

Attribute	Category of harbour facility

Acronym: CATHAF Code: 30

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
5	DD Name: HYDRO Code: CATHAF_5 Date accepted: 2000-11-01 Name: yacht harbour/marina Definition: a harbour with facilities for small boats and yachts (IHO Dictionary, S-32, 5th Edition, 3095).

Attribute	Category of hulk

Acronym: CATHLK Code: 31

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATHLK_1 Date accepted: 2000-11-01 Name: floating restaurant Definition: a permanently moored floating structure, such as an old ship, used as a restaurant.
2	DD Name: HYDRO Code: CATHLK_2 Date accepted: 2000-11-01 Name: historic ship Definition: a ship of historical interest permanently moored as a tourist attraction.
3	DD Name: HYDRO Code: CATHLK_3 Date accepted: 2000-11-01 Name: museum Definition: a permanently moored floating structure, such as an old ship, used as a museum.
4	DD Name: HYDRO Code: CATHLK_4 Date accepted: 2000-11-01 Name: accommodation Definition: a permanently moored floating structure, such as an old ship, used for accommodation.
5	DD Name: HYDRO Code: CATHLK_5 Date accepted: 2000-11-01 Name: floating breakwater Definition: a permanently moored floating structure, often constructed from old ships, used as a breakwater.

Attribute	Category of land region

Acronym: CATLND Code: 34

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of land region

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATLND_2 Date accepted: 2000-11-01 Name: marsh Definition: an area of wet, often spongy ground that is subject to frequent flooding or tidal inundations, but not considered to be continually under water. It is characterized by the growth of non woody plants and by the lack of trees
9	DD Name: HYDRO Code: CATLND_9 Date accepted: 2000-11-01 Name: agricultural land Definition: areas used for cultivation of the soil, the breeding of livestock etc. and general farming.
11	DD Name: HYDRO Code: CATLND_11 Date accepted: 2000-11-01 Name: parkland Definition: a piece of ground kept for ornament and/or recreation or maintained in its natural state as a public property or area.
12	DD Name: HYDRO Code: CATLND_12 Date accepted: 2000-11-01 Name: swamp Definition: an area of spongy land saturated with water. It may have a shallow covering of water, usually with a considerable amount of vegetation appearing above the surface.

Attribute	Category of landmark

Acronym: CATLMK Code: 35

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATLMK_1 Date accepted: 2000-11-01 Name: cairn 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, 5th Edition, 601)
2	DD Name: HYDRO Code: CATLMK_2 Date accepted: 2000-11-01 Name: cemetery Definition: an area of land for burying the dead.
3	DD Name: HYDRO Code: CATLMK_3 Date accepted: 2000-11-01 Name: chimney Definition: a vertical structure containing a passage or flue for discharging smoke and gases. (Digital Geographic Information Standard - DIGEST)
4	DD Name: HYDRO Code: CATLMK_4 Date accepted: 2000-11-01 Name: dish aerial Definition: a parabolic aerial for the receipt and transmission of high frequency radio signals. (IHO Dictionary, S-32, 5th Edition, 1400)
5	DD Name: HYDRO Code: CATLMK_5 Date accepted: 2000-11-01 Name: flagstaff (flagpole) Definition: a staff or pole on which flags are raised. (Digital Geographic Information Standard - DIGEST 1.28)

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: CATLMK_6 Date accepted: 2000-11-01 Name: flare stack Definition: a tall structure used for burning-off waste oil or gas. (IHO Dictionary, S-32, 5th Edition, 1836). Normally showing a flame and located at refineries (IHO Chart specifications, M-4).
7	DD Name: HYDRO Code: CATLMK_7 Date accepted: 2000-11-01 Name: mast Definition: a straight vertical piece of timber or a hollow cylinder. (adapted from Digital Geographic Information Standard - DIGEST)
8	DD Name: HYDRO Code: CATLMK_8 Date accepted: 2000-11-01 Name: wind sock Definition: a tapered fabric sleeve mounted so as to catch and swing with the wind, thus indicating the wind direction. (Navigation dictionary, US National Oceanic and Atmospheric Administration - NOAA, 1969)
9	DD Name: HYDRO Code: CATLMK_9 Date accepted: 2000-11-01 Name: monument Definition: a structure erected or maintained as a memorial to a person or event. (Digital Geographic Information Standard - DIGEST)
10	DD Name: HYDRO Code: CATLMK_10 Date accepted: 2000-11-01 Name: column (pillar) Definition: a cylindrical or slightly tapering body of considerably greater length than diameter erected vertically. (Oxford English Dictionary)
11	DD Name: HYDRO Code: CATLMK_11 Date accepted: 2000-11-01 Name: memorial plaque Definition: a slab of metal, usually ornamented, erected as a memorial to a person or event.
12	DD Name: HYDRO Code: CATLMK_12 Date accepted: 2000-11-01 Name: obelisk Definition: a tapering shaft usually of stone or concrete, square or rectangular in section, with a pyramidal apex. (Adapted from Oxford English Dictionary)
13	DD Name: HYDRO Code: CATLMK_13 Date accepted: 2000-11-01 Name: statue Definition: a representation of a human, animal or fantasy figure in marble, bronze, etc.
14	DD Name: HYDRO Code: CATLMK_14 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference
	Name: cross
	Definition: a monument, or other structure in form of a cross. (Funk and Wagnalls Dictionary)
15	DD Name: HYDRO Code: CATLMK_15 Date accepted: 2000-11-01
	Name: dome
	Definition: a landmark comprising a hemispherical or spheroidal shaped structure (adapted from the Macquarie Dictionary).
16	DD Name: HYDRO Code: CATLMK_16 Date accepted: 2000-11-01
	Name: radar scanner
	Definition: a device used for directing a radar beam through a search pattern (adapted from Navigation Dictionary, US National Oceanic and Atmospheric Administration - NOAA, 1969)
17	DD Name: HYDRO Code: CATLMK_17 Date accepted: 2000-11-01
	Name: tower
	Definition: a relatively tall structure which may be used for observation, support, storage or communication etc. (Digital Geographic Information Working Group -DGIWG, Oct. 1987)
18	DD Name: HYDRO Code: CATLMK_18 Date accepted: 2000-11-01
	Name: windmill
	Definition: a wind driven system of vanes attached to a tower like structure (excluding wind-generated power plants). (Digital Geographic Information Standard - DIGEST)
19	DD Name: HYDRO Code: CATLMK_19 Date accepted: 2000-11-01
	Name: windmotor
	Definition: a modern structure for the use of windpower. (IHO Chart Specifications, M-4)
20	DD Name: HYDRO Code: CATLMK_20 Date accepted: 2000-11-01
	Name: spire/minaret
	Definition: a tall conical or pyramid-shaped structure often built on the roof or tower of a building, especially a church or mosque. (adapted from The New Shorter Oxford English Dictionary, 1993)
21	DD Name: HYDRO Code: CATLMK_21 Date accepted: 2000-11-01
	Name: large rock or boulder on land
	Definition: an isolated rocky formation or a single large stone (IHO Dictionary, S-32, 5th Edition).

Attribute	Category of lateral mark

Acronym: CATLAM Code: 36

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATLAM_1 Date accepted: 2000-11-01 Name: port-hand lateral mark Definition: indicates the port boundary of a navigational channel or suggested route when proceeding in the 'conventional direction of buoyage'.
2	DD Name: HYDRO Code: CATLAM_2 Date accepted: 2000-11-01 Name: starboard-hand lateral mark Definition: indicates the starboard boundary of a navigational channel or suggested route when proceeding in the 'conventional direction of buoyage'.
3	DD Name: HYDRO Code: CATLAM_3 Date accepted: 2000-11-01 Name: preferred channel to starboard lateral mark Definition: at a point where a channel divides, when proceeding in the 'conventional direction of buoyage', the preferred channel (or primary route) is indicated by a modified port-hand lateral mark.
4	DD Name: HYDRO Code: CATLAM_4 Date accepted: 2000-11-01 Name: preferred channel to port lateral mark Definition: at a point where a channel divides, when proceeding in the 'conventional direction of buoyage', the preferred channel (or primary route) is indicated by a modified starboard-hand lateral mark.

Attribute	Category of lights

Acronym: CATLIT Code: 37

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATLIT_1 Date accepted: 2000-11-01 Name: directional function Definition: a light illuminating a sector of very narrow angle and intended to mark a direction to follow. (IHO Dictionary, S-32, 5th Edition, 2778)
4	DD Name: HYDRO Code: CATLIT_4 Date accepted: 2000-11-01 Name: leading light Definition: a light associated with other lights so as to form a leading line to be followed. (adapted from IHO Dictionary, S-32, 5th Edition, 2794)
5	DD Name: HYDRO Code: CATLIT_5 Date accepted: 2000-11-01 Name: aero light Definition: an aero light is established for aeronautical navigation and may be of higher power than marine lights and visible from well offshore
6	DD Name: HYDRO Code: CATLIT_6 Date accepted: 2000-11-01 Name: air obstruction light Definition: a light marking an obstacle which constitutes a danger to air navigation
12	DD Name: HYDRO Code: CATLIT_12 Date accepted: 2000-11-01 Name: front Definition: terms used with leading lights to describe the position of the light on the lead as viewed from seaward.

Value	Data Dictionary (DD) Reference
13	DD Name: HYDRO Code: CATLIT_13 Date accepted: 2000-11-01 Name: rear Definition: terms used with leading lights to describe the position of the light on the lead as viewed from seaward.
14	DD Name: HYDRO Code: CATLIT_14 Date accepted: 2000-11-01 Name: lower Definition: terms used with leading lights to describe the position of the light on the lead as viewed from seaward.
15	DD Name: HYDRO Code: CATLIT_15 Date accepted: 2000-11-01 Name: upper Definition: terms used with leading lights to describe the position of the light on the lead as viewed from seaward.

Attribute	Category of marine farm/culture

Acronym: CATMFA Code: 38

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-08-12

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATMFA_1 Date accepted: 2010-08-12 Name: crustaceans Definition: hard shelled animals, for example crabs or lobsters
2	DD Name: HYDRO Code: CATMFA_2 Date accepted: 2010-08-12 Name: oysters/mussels Definition: edible bivalve molluscs
3	DD Name: HYDRO Code: CATMFA_3 Date accepted: 2010-08-12 Name: fish Definition: vertebrate cold blooded animal with gills, living in water.
4	DD Name: HYDRO Code: CATMFA_4 Date accepted: 2010-08-12 Name: seaweed Definition: the general name for marine plants of the Algae class which grow in long narrow ribbons. (International Maritime Dictionary, 2nd Ed.)

Attribute	Category of military practice area

Acronym: CATMPA Code: 39

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of military practice area

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATMPA_2 Date accepted: 2000-11-01 Name: torpedo exercise area Definition: an area within which exercises are carried out with torpedos
3	DD Name: HYDRO Code: CATMPA_3 Date accepted: 2000-11-01 Name: submarine exercise area Definition: an area within which submarine exercises are carried out.
4	DD Name: HYDRO Code: CATMPA_4 Date accepted: 2000-11-01 Name: firing danger area Definition: areas for bombing and missile exercises.
5	DD Name: HYDRO Code: CATMPA_5 Date accepted: 2000-11-01 Name: mine-laying practice area Definition: an area within which mine laying exercises are carried out.
6	DD Name: HYDRO Code: CATMPA_6 Date accepted: 2000-11-01 Name: small arms firing range Definition: an area for shooting pistols, rifles and machine guns etc. at a target.

Attribute	Category of mooring/warping facility

Acronym: CATMOR Code: 40

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATMOR_1 Date accepted: 2000-11-01 Name: dolphin Definition: a post or group of posts, which may support a deck, used for mooring or warping a vessel. (IHO Dictionary, S-32, 5th Edition, 1433)
3	DD Name: HYDRO Code: CATMOR_3 Date accepted: 2000-11-01 Name: bollard Definition: small shaped post, mounted on a wharf or dolphin used to secure ship=s lines.
5	DD Name: HYDRO Code: CATMOR_5 Date accepted: 2000-11-01 Name: post or pile Definition: a long heavy timber or section of steel, wood, concrete, etc., forced into the seabed to serve as a mooring facility. (IHO Dictionary, S-32, 5th Edition, 3840)
7	DD Name: HYDRO Code: CATMOR_7 Date accepted: 2000-11-01 Name: mooring buoy Definition: a buoy secured to the bottom by permanent moorings with means for mooring a vessel by use of its anchor chain or mooring lines. (IHO Dictionary, S-32, 5th Edition, 575)
4	DD Name: HYDRO Code: CATMOR_4 Date accepted: 2000-11-01 Name: tie-up wall Definition: a tie-up wall is a section of wall designated for tying-up vessels awaiting transit. Bollards and mooring devices are available for both large and small ships.

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATMOR_2 Date accepted: 2000-11-01 Name: deviation dolphin Definition: a post or group of posts, which a vessel may swing around for compass adjustment.

Attribute	Category of navigation line

Acronym: CATNAV Code: 41

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATNAV_1 Date accepted: 2000-11-01 Name: clearing line Definition: a straight line that marks the boundary between a safe and a dangerous area or that passes clear of a navigational danger. (adapted from IHO Dictionary, S-32, 5th Edition, 826)
2	DD Name: HYDRO Code: CATNAV_2 Date accepted: 2000-11-01 Name: transit line Definition: a line passing through one or more fixed marks.
3	DD Name: HYDRO Code: CATNAV_3 Date accepted: 2000-11-01 Name: leading line bearing a recommended track Definition: a line passing through one or more clearly defined objects, along the path of which a vessel can approach safely up to a certain distance off. (Adapted from IHO Dictionary, S-32, 5th Edition, 2696)

Attribute	Category of obstruction

Acronym: CATOBS Code: 42

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATOBS_1 Date accepted: 2000-11-01 Name: snag/stump Definition: a tree, branch or broken pile embedded in the ocean floor, river or lake bottom and not visible on the surface, forming thereby a hazard to vessels. (IHO Dictionary, S-32, 5th Edition, 4794)
2	DD Name: HYDRO Code: CATOBS_2 Date accepted: 2000-11-01 Name: wellhead Definition: a submarine structure projecting some distance above the seabed and capping a temporarily abandoned or suspended oil or gas well. (IHO Dictionary, S-32, 5th Edition, 5976)
3	DD Name: HYDRO Code: CATOBS_3 Date accepted: 2000-11-01 Name: diffuser Definition: a structure on an outfall through which liquids are discharged. The structure will usually project above the level of the outfall and can be an obstruction to navigation.
4	DD Name: HYDRO Code: CATOBS_4 Date accepted: 2000-11-01 Name: crib Definition: a permanent structure set in the water, framed with wooden beams and filled with rocks or boulders. They are used to anchor log booms or support other constructions, e.g. submerged outfalls, diffusers etc.. They may always be dry, submerged or cover and uncover.
5	DD Name: HYDRO Code: CATOBS_5 Date accepted: 2000-11-01 Name: fish haven Definition: areas established by private interests, usually sport fishermen, to simulate natural reefs and

Value Data Dictionary (DD) Reference

wrecks that attract fish. The reefs are constructed by dumping assorted junk in areas which may be of very small extent or may stretch a considerable distance along a depth contour. Also called fishery reefs.

6 DD Name: HYDRO Code: CATOBS_6 Date accepted: 2000-11-01

Name: foul area

Definition: an area of numerous unidentified dangers to navigation. The area serves as a warning to the mariner that all dangers are not identified individually and that navigation through the area may be hazardous. Commonly used to encode areas behind danger lines on navigation charts. (adapted from IHO Dictionary, S-32, 5th Edition, 1915)

7 DD Name: HYDRO Code: CATOBS_7 Date accepted: 2000-11-01

Name: foul ground

Definition: areas over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing. (IHO Chart Specifications, M-4, 442.8)

8 DD Name: HYDRO Code: CATOBS_8 Date accepted: 2000-11-01

Name: ice boom

Definition: floating barriers, anchored to the bottom, used to deflect the path of floating ice in order to prevent the obstruction of locks, intakes, etc., and to prevent damage to bridge piers and other structures. (Canadian Hydrographic Service, Chart specifications).

9 DD Name: HYDRO Code: CATOBS_9 Date accepted: 2000-11-01

Name: ground tackle

Definition: equipment such as anchors, concrete blocks, chains and cables, etc., used to position floating structures such as trot and mooring buoys etc.

10 DD Name: HYDRO Code: CATOBS_10 Date accepted: 2000-11-01

Name: boom

Definition: a floating barrier used to protect a river or harbour mouth or to create a sheltered area for storage purposes. (IHO Dictionary, S-32, 5th Edition, 505).

11 DD Name: HYDRO Code: CATOBS_11 Date accepted: 2011-02-23

Name: fishing net

Definition: a piece of open-meshed material made of twine, cord, or something similar, used for catching fish

Attribute	Category of offshore platform

Acronym: CATOFP Code: 43

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of offshore platform

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATOFP_1 Date accepted: 2000-11-01 Name: oil derrick/rig Definition: a temporary mobile structure, either fixed or floating, used in the exploration stages of oil and gas fields. (IHO Dictionary, S-32, 5th Edition)
2	DD Name: HYDRO Code: CATOFP_2 Date accepted: 2000-11-01 Name: production platform Definition: a term used to indicate a permanent offshore structure equipped to control the flow of oil or gas. It does not include entirely submarine structures. (IHO Dictionary, S-32, 5th Edition, 4037)
3	DD Name: HYDRO Code: CATOFP_3 Date accepted: 2000-11-01 Name: observation/research platform Definition: a platform from which one=s surroundings or events can be observed, noted or recorded such as for scientific study. (adapted from IHO Dictionary, S-32, 5th Edition, 3493/3500)
4	DD Name: HYDRO Code: CATOFP_4 Date accepted: 2000-11-01 Name: articulated loading platform (ALP) Definition: a metal lattice tower, buoyant at one end and attached at the other by a universal joint to a concrete filled base on the sea bed. The platform may be fitted with a helicopter platform, emergency accommodation and hawser/hose retrieval. (adapted from United Kingdom Hydrographic Office CSDO 607.2 (12), May 1994)
5	DD Name: HYDRO Code: CATOFP_5 Date accepted: 2000-11-01 Name: single anchor leg mooring

Value	Data Dictionary (DD) Reference
	Definition: a rigid frame or tube with a buoyancy device at its upper end , secured at its lower end to a universal joint on a large steel or concrete base resting on the sea bed, and at its upper end to a mooring buoy by a chain or wire. (adapted from United Kingdom Hydrographic Office CSDO 607.2 (12), May 1994)
6	DD Name: HYDRO Code: CATOFP_6 Date accepted: 2000-11-01
	Name: mooring tower
	Definition: a platform secured to the sea bed and surmounted by a turntable to which ships moor. (adapted from United Kingdom Hydrographic Office CSDO 607.2 (12), May 1994)
7	DD Name: HYDRO Code: CATOFP_7 Date accepted: 2000-11-01
	Name: artificial island
	Definition: a man-made structure usually built for the exploration or exploitation of marine resources, marine scientific research, tidal observations, etc. (adapted from IHO Dictionary, S-32, 5th Edition, 240)
9	DD Name: HYDRO Code: CATOFP_9 Date accepted: 2000-11-01
	Name: accommodation platform
	Definition: a platform used primarily for eating, sleeping and recreation purposes.

Attribute	Category of oil barrier

Acronym: CATOLB Code: 44

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATOLB_1 Date accepted: 2000-11-01 Name: oil retention (high pressure pipe) Definition: a pipe with holes from which air blows. When the air bubbles reach the surface they form a barrier which prevents the spread of oil. (Kort- og Matrikelstyrelsen, Denmark)
2	DD Name: HYDRO Code: CATOLB_2 Date accepted: 2000-11-01 Name: floating oil barrier Definition: a floating tube shaped structure, with a curtain (2 metre) hanging under it, below the surface, which prevents the spread of oil. (Kort- og Matrikelstyrelsen, Denmark)

Attribute	Category of pilot boarding place

Acronym: CATPIL Code: 46

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of pilot boarding place.

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATPIL_1 Date accepted: 2000-11-01 Name: boarding by pilot-cruising vessel Definition: pilot boards from a cruising vessel.
2	DD Name: HYDRO Code: CATPIL_2 Date accepted: 2000-11-01 Name: boarding by helicopter Definition: pilot boards by helicopter which comes out from the shore.
3	DD Name: HYDRO Code: CATPIL_3 Date accepted: 2000-11-01 Name: pilot comes out from shore Definition: pilot boards from a vessel which comes out from the shore on request.

Attribute	Category of pipeline/pipe

Acronym: CATPIP Code: 47

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATPIP_2 Date accepted: 2000-11-01 Name: outfall pipe Definition: a pipe (generally a sewer or drainage pipe) discharging in to the sea or a river.
3	DD Name: HYDRO Code: CATPIP_3 Date accepted: 2000-11-01 Name: intake pipe Definition: a pipe taking water from a river or other body of water, to drive a mill or supply a canal, waterworks, etc. (IHO Dictionary, S-32, 5th Edition, 2468)
4	DD Name: HYDRO Code: CATPIP_4 Date accepted: 2000-11-01 Name: sewer Definition: a pipe in a sewage system for carrying water or sewage to a disposal area.
6	DD Name: HYDRO Code: CATPIP_6 Date accepted: 2000-11-01 Name: supply pipe Definition: a pipe used for supplying of gas or liquid product.

Attribute	Category of production area

Acronym: CATPRA Code: 48

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATPRA_1 Date accepted: 2000-11-01 Name: quarry Definition: an excavation in solid rock from which building stone, limestone, etc. is removed.
2	DD Name: HYDRO Code: CATPRA_2 Date accepted: 2000-11-01 Name: mine Definition: an excavation in the earth for the purpose of extracting earth materials.
3	DD Name: HYDRO Code: CATPRA_3 Date accepted: 2000-11-01 Name: stockpile Definition: a reserve stock of material, equipment or other supplies.
4	DD Name: HYDRO Code: CATPRA_4 Date accepted: 2000-11-01 Name: power station area Definition: a stationary plant containing apparatus for large-scale conversion of some form of energy (hydraulic, steam, chemical, nuclear, etc.) into electrical energy.
5	DD Name: HYDRO Code: CATPRA_5 Date accepted: 2000-11-01 Name: refinery area Definition: a system of process units used to convert crude petroleum into fuels, lubricants and other petroleum-derived products.
6	DD Name: HYDRO Code: CATPRA_6 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference
	Name: timber yard
	Definition: a storage area for wood used for building, carpentry or joinery.
7	DD Name: HYDRO Code: CATPRA_7 Date accepted: 2000-11-01
	Name: factory area
	Definition: a group of buildings where goods are manufactured.
8	DD Name: HYDRO Code: CATPRA_8 Date accepted: 2000-11-01
	Name: tank farm
	Definition: an area in which a number of large-capacity storage tanks are located, generally used for crude oil or petroleum products.
9	DD Name: HYDRO Code: CATPRA_9 Date accepted: 2000-11-01
	Name: wind farm
	Definition: an area in which numerous wind motors are located.
10	DD Name: HYDRO Code: CATPRA_10 Date accepted: 2000-11-01
	Name: slag heap/spoil heap
	Definition: hill of refuse from a mine, industrial plant etc. on land (adapted from Concise Oxford Dictionary).

Attribute	Category of pylon

Acronym: CATPYL Code: 49

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATPYL_1 Date accepted: 2000-11-01 Name: power transmission pylon/pole Definition: a vertical construction consisting, for example, of a steel framework or of pre-stressed concrete, to support a power transmission cable or line. (adapted from Digital Geographic Information Standard - DIGEST FACC 1.2)
2	DD Name: HYDRO Code: CATPYL_2 Date accepted: 2000-11-01 Name: telephone/telegraph pylon/pole Definition: a pylon or pole used to support a telephone or telegraph line. (Digital Geographic Information Standard - DIGEST FACC 1.2)
3	DD Name: HYDRO Code: CATPYL_3 Date accepted: 2000-11-01 Name: aerial cableway/sky pylon Definition: a tower or pylon supporting steel cables which convey cars, buckets, or other suspended carrier units. (adapted from Digital Geographic Information Standard - DIGEST FACC 1.2)
4	DD Name: HYDRO Code: CATPYL_4 Date accepted: 2000-11-01 Name: bridge pylon/tower Definition: a tower, abutment or pylon from which a bridge deck is suspended. (adapted from Digital Geographic Information Standard - DIGEST FACC 1.2)
5	DD Name: HYDRO Code: CATPYL_5 Date accepted: 2000-11-01 Name: bridge pier Definition: a support in the form of a pillar or pier for the spans of a bridge. (adapted from Digital

Value	Data Dictionary (DD) Reference
	Geographic Information Standard - DIGEST FACC 1.2)

Attribute	Category of radar station

Acronym: CATRAS Code: 51

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATRAS_1 Date accepted: 2000-11-01 Name: radar surveillance station Definition: a radar station established for traffic surveillance. (IHO Dictionary, S-32, 5th Edition, 4144)

Attribute	Category of radar transponder beacon

Acronym: CATRTB Code: 52

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATRTB_1 Date accepted: 2000-11-01 Name: ramark, radar beacon transmitting continuously Definition: a radar marker beacon which continuously transmits a signal appearing as a radial line on a radar screen, the line indicating the direction of the beacon. Ramarks are intended primarily for marine use. The name 'ramark' is derived from the words radar marker. (IHO Dictionary, S-32, 5th Edition, 4208)
2	DD Name: HYDRO Code: CATRTB_2 Date accepted: 2000-11-01 Name: racon, radar transponder beacon Definition: a radar beacon which returns a coded signal which provides identification of the beacon, as well as range and bearing. The range and bearing are indicated by the location of the first character received on the radar screen. The name 'racon' is derived from the words radar beacon. (IHO Dictionary, S-32, 5th Edition, 4132)
3	DD Name: HYDRO Code: CATRTB_3 Date accepted: 2000-11-01 Name: leading racon/radar transponder beacon Definition: a radar beacon that may be used (in conjunction with at least one other radar beacon) to indicate a leading line.

Attribute	Category of recommended track

Acronym: CATTRK Code: 54

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATTRK_1 Date accepted: 2000-11-01 Name: based on a system of fixed marks Definition: a straight route (known as a recommended track, range or leading line), which comprises at least two structures (usually beacons or daymarks) and/or natural features, which may carry lights and/or top-marks. The structures/features are positioned so that when observed to be in line, a vessel can follow a known bearing with safety. (adapted from International Association of Lighthouse Authorities - IALA Aids to Navigation Guide, 1990)
2	DD Name: HYDRO Code: CATTRK_2 Date accepted: 2000-11-01 Name: not based on a system of fixed marks Definition: a route (known as a recommended track or preferred route) which is not based on a series of structures or features in line.

Attribute	Category of restricted area

Acronym: CATREA Code: 56

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
4	DD Name: HYDRO Code: CATREA_4 Date accepted: 2000-11-01 Name: nature reserve Definition: a tract of land managed so as to preserve it's flora, fauna, physical features, etc.
5	DD Name: HYDRO Code: CATREA_5 Date accepted: 2000-11-01 Name: bird sanctuary Definition: a place where birds are bred and protected.
9	DD Name: HYDRO Code: CATREA_9 Date accepted: 2000-11-01 Name: military area Definition: an area controlled by the military in which restrictions may apply. (Hydrographic Service, Royal Australian Navy)
12	DD Name: HYDRO Code: CATREA_12 Date accepted: 2000-11-01 Name: navigational aid safety zone Definition: an area around a navigational aid which vessels are prohibited from entering.
19	DD Name: HYDRO Code: CATREA_19 Date accepted: 2000-11-01 Name: waiting area Definition: an area reserved for vessels waiting to enter a harbour.
22	DD Name: HYDRO Code: CATREA_22 Date accepted: 2000-11-01 Name: fish sanctuary

Value	Data Dictionary (DD) Reference
	Definition: a place where fish are protected.
23	DD Name: HYDRO Code: CATREA_23 Date accepted: 2000-11-01
	Name: ecological reserve
	Definition: a tract of land managed so as to preserve the relation of plants and living creatures to each other and to their surroundings.
25	DD Name: HYDRO Code: CATREA_25 Date accepted: 2000-11-01
	Name: swinging area
	Definition: an area where vessels turn. (Service Hydrographique et Océanographique de la Marine, France).
26	DD Name: HYDRO Code: CATREA_26 Date accepted: 2000-11-01
	Name: water skiing area
	Definition: an area within which people may water ski and therefore vessel movement may be restricted.
1	DD Name: HYDRO Code: CATREA_1 Date accepted: 2000-11-01
	Name: offshore safety zone
	Definition: the area around an offshore installation within which vessels are prohibited from entering without permission; special regulations protect installations within a safety zone and vessels of all nationalities are required to respect the zone
33	DD Name: IENC Code: CATREA_33 Date accepted: 2017-11-06
	Name: ship pollution emission control
	Definition: an area set up to regulate ship pollution emissions

Attribute	Category of road

Acronym: CATROD Code: 57

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATROD_1 Date accepted: 2000-11-01 Name: motorway Definition: a main road with separate carriageways and limited access, specially constructed and controlled for fast motor traffic.
2	DD Name: HYDRO Code: CATROD_2 Date accepted: 2000-11-01 Name: major road Definition: a hard surfaced (metalled) road; a main through route.
3	DD Name: HYDRO Code: CATROD_3 Date accepted: 2000-11-01 Name: minor road Definition: a secondary road for local traffic.
4	DD Name: HYDRO Code: CATROD_4 Date accepted: 2000-11-01 Name: track/path Definition: track - a rough path or way formed by use. path - a way or track laid down for walking or made by continual treading.

Attribute	Category of runway

Acronym: CATRUN Code: 58

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of runway

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATRUN_1 Date accepted: 2000-11-01 Name: aeroplane runway Definition: a level stretch of land where aeroplanes take off and land
2	DD Name: HYDRO Code: CATRUN_2 Date accepted: 2000-11-01 Name: helicopter landing pad Definition: a site on which helicopters may land and take off

Attribute	Category of sea area

Acronym: CATSEA Code: 59

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
13	DD Name: HYDRO Code: CATSEA_13 Date accepted: 2000-11-01 Name: shoal Definition: an offshore hazard to surface navigation that is composed of unconsolidated material.
51	DD Name: HYDRO Code: CATSEA_51 Date accepted: 2000-11-01 Name: canal Definition: an artificial water course used for navigation.
53	DD Name: HYDRO Code: CATSEA_53 Date accepted: 2000-11-01 Name: river Definition: a relatively large natural stream of water.
52	DD Name: HYDRO Code: CATSEA_52 Date accepted: 2000-11-01 Name: lake Definition: a large body of water entirely surrounded by land.
12	DD Name: HYDRO Code: CATSEA_12 Date accepted: 2000-11-01 Name: narrows Definition: a navigable narrow part of a bay, strait, river, etc.
54	DD Name: HYDRO Code: CATSEA_54 Date accepted: 2000-11-01 Name: reach Definition: a straight section of a river, specially a navigable river between two bends or an arm of the

Value	Data Dictionary (DD) Reference
	sea extending into the land
5	DD Name: HYDRO Code: CATSEA_5 Date accepted: 2000-11-01 Name: bay Definition: an indentation in the coastline
57	DD Name: IENC Code: CATSEA_57 Date accepted: 2014-12-10 Name: chute Definition: an inclined plane, sloping channel, or passage down or through which things may pass
58	DD Name: IENC Code: CATSEA_58 Date accepted: 2014-12-10 Name: backwater/slough Definition: a body of water (as an inlet or tributary) that is out of the main current of a larger body
59	DD Name: IENC Code: CATSEA_59 Date accepted: 2014-12-10 Name: bend Definition: a curve or change in direction of a watercourse or river

Attribute	Category of shoreline construction

Acronym: CATSLC Code: 60

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATSLC_1 Date accepted: 2000-11-01 Name: breakwater Definition: a structure protecting a shore area, harbour, anchorage, or basin from waves. (IHO Dictionary, S-32, 5th Edition, 542)
2	DD Name: HYDRO Code: CATSLC_2 Date accepted: 2000-11-01 Name: groyne (groin) Definition: a low artificial wall-like structure of durable material extending from the land to seaward for a particular purpose, such as to prevent coast erosion (adapted from IHO Dictionary, S-32, 5th Edition, 2525 and IHO Chart Specifications, M-4)
4	DD Name: HYDRO Code: CATSLC_4 Date accepted: 2000-11-01 Name: pier (jetty) Definition: a long, narrow structure extending into the water to afford a berthing place for vessels, to serve as a promenade, etc. (IHO Dictionary, S-32, 5th Edition, 3833)
5	DD Name: HYDRO Code: CATSLC_5 Date accepted: 2000-11-01 Name: promenade pier Definition: a pier built only for recreational purposes. (IHO Chart Specifications, M-4)
6	DD Name: HYDRO Code: CATSLC_6 Date accepted: 2000-11-01 Name: wharf (quay) Definition: a structure serving as a berthing place for vessels. (IHO Dictionary, S-32, 5th Edition, 5985)

Value	Data Dictionary (DD) Reference
7	DD Name: HYDRO Code: CATSLC_7 Date accepted: 2000-11-01 Name: training wall Definition: a wall or bank, often submerged, built to direct or confine the flow of a river or tidal current, or to promote a scour action. (Adapted from IHO Dictionary, S-32, 5th Edition, 5586 and IHO Chart Specifications, M-4).
8	DD Name: HYDRO Code: CATSLC_8 Date accepted: 2000-11-01 Name: rip rap Definition: A layer of broken rock, cobbles, boulders, or fragments of sufficient size to resist the erosive forces of flowing water and wave action. (Adapted from Marine Chart Manual, US National Oceanic and Atmospheric Administration - NOAA, 1992)
9	DD Name: HYDRO Code: CATSLC_9 Date accepted: 2000-11-01 Name: revetment Definition: facing of stone or other material, either permanent or temporary, placed along the edge of a stream, river or canal to stabilize the bank and to protect it from the erosive action of the stream. (Adapted from IHO Dictionary, S-32, 5th Edition, 4379)
10	DD Name: HYDRO Code: CATSLC_10 Date accepted: 2000-11-01 Name: sea wall Definition: an embankment or wall for protection against waves or tidal action along a shore or water front. (IHO Dictionary, S-32, 5th Edition, 4584)
11	DD Name: HYDRO Code: CATSLC_11 Date accepted: 2000-11-01 Name: landing steps Definition: steps at the shoreline as the connection between land and water on different levels.
12	DD Name: HYDRO Code: CATSLC_12 Date accepted: 2000-11-01 Name: ramp 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, which may include rails. (Adapted from IHO Dictionary, S-32, 5th Edition, 4209)
13	DD Name: HYDRO Code: CATSLC_13 Date accepted: 2000-11-01 Name: slipway 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, 5th Edition, 4775)
14	DD Name: HYDRO Code: CATSLC_14 Date accepted: 2000-11-01 Name: fender

Value Data Dictionary (DD) Reference

Definition: a protective structure designed to cushion the impact of a vessel and prevent damage.

15 DD Name: HYDRO Code: CATSLC_15 Date accepted: 2000-11-01

Name: solid face wharf

Definition: a wharf consisting of a solid wall of concrete, masonry, wood etc., such that the water cannot circulate freely under the wharf. The type of construction affects ship-handling; for example, a solid face wharf may give shelter from tidal streams, but under certain circumstances a cushion of water may build up between such a wharf and a ship attempting to berth at it, causing difficulties in ship handling. (Capt. A. Rae, pilot, Port of Halifax and Mr. R. Morash, wharf building engineer, Transport Canada)

16 DD Name: HYDRO Code: CATSLC_16 Date accepted: 2000-11-01

Name: open face wharf

Definition: a wharf supported on piles or other structures which allow free circulation of water under the wharf. (Capt. A. Rae, pilot, Port of Halifax and Mr. R. Morash, wharf building engineer, Transport Canada)

Attribute	Category of silo/tank

Acronym: CATSIL Code: 63

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2008-01-31

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATSIL_1 Date accepted: 2000-11-01 Name: silo in general Definition: a generally cylindrical tower used for storing fodder or grain.
2	DD Name: HYDRO Code: CATSIL_2 Date accepted: 2000-11-01 Name: tank in general Definition: a fixed structure for storing liquids. (IHO Dictionary, S-32, 5th Edition, 5290)
3	DD Name: HYDRO Code: CATSIL_3 Date accepted: 2000-11-01 Name: grain elevator Definition: a storage building for grain. Usually a tall frame, metal or concrete structure with an especially compartmented interior. (The New Encyclopaedia Britannica Micropaedia, 15th Edition).
4	DD Name: HYDRO Code: CATSIL_4 Date accepted: 2000-11-01 Name: water tower Definition: a tower with an elevated container used to hold water.

Attribute	Category of slope

Acronym: CATSLO Code: 64

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: CATSLO_2 Date accepted: 2000-11-01 Name: embankment Definition: an artificial elevation constructed from earth, stone, etc. carrying a road, railway or similar or serving to dam water.
3	DD Name: HYDRO Code: CATSLO_3 Date accepted: 2000-11-01 Name: dune Definition: a mound, ridge or hill of drifted material on the sea coast or in a desert. (adapted from IHO Dictionary, S-32, 5th Edition, 1496)
6	DD Name: HYDRO Code: CATSLO_6 Date accepted: 2000-11-01 Name: cliff Definition: land rising abruptly for a considerable distance above the water or surrounding land. (IHO Dictionary, S-32, 5th Edition, 829)
1	DD Name: HYDRO Code: CATSLO_1 Date accepted: 2000-11-01 Name: cutting Definition: an excavation through high ground for a road, canal, etc.

Attribute	Category of small craft facility

Acronym: CATSCF Code: 65

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATSCF_1 Date accepted: 2000-11-01 Name: visitor's berth Definition: a berth set aside for the use of visiting vessels.
2	DD Name: HYDRO Code: CATSCF_2 Date accepted: 2000-11-01 Name: nautical club Definition: a club for mariners generally associated with other small craft facilities.
3	DD Name: HYDRO Code: CATSCF_3 Date accepted: 2000-11-01 Name: boat hoist Definition: a hoist for lifting boats out of the water.
4	DD Name: HYDRO Code: CATSCF_4 Date accepted: 2000-11-01 Name: sailmaker Definition: a place where sails are made or may be taken for repair.
5	DD Name: HYDRO Code: CATSCF_5 Date accepted: 2000-11-01 Name: boatyard Definition: a place on shore where boats may be built, stored and repaired.
6	DD Name: HYDRO Code: CATSCF_6 Date accepted: 2000-11-01 Name: public inn Definition: a public house providing food, drink and accommodation. (The Collins Reference English

Value	Data Dictionary (DD) Reference
	Dictionary, 1992)
7	DD Name: HYDRO Code: CATSCF_7 Date accepted: 2000-11-01 Name: restaurant Definition: a commercial establishment serving food. (The Collins Reference Dictionary, 1992)
8	DD Name: HYDRO Code: CATSCF_8 Date accepted: 2000-11-01 Name: chandler Definition: a dealer in ships' supplies. (The Collins Reference Dictionary, 1992)
9	DD Name: HYDRO Code: CATSCF_9 Date accepted: 2000-11-01 Name: provisions Definition: a place where food and other such supplies are available.
10	DD Name: HYDRO Code: CATSCF_10 Date accepted: 2000-11-01 Name: doctor Definition: a place where a doctor is available to provide medical attention.
11	DD Name: HYDRO Code: CATSCF_11 Date accepted: 2000-11-01 Name: pharmacy Definition: a place where medical drugs are dispensed.
12	DD Name: HYDRO Code: CATSCF_12 Date accepted: 2000-11-01 Name: water tap Definition: a place where fresh water is available.
13	DD Name: HYDRO Code: CATSCF_13 Date accepted: 2000-11-01 Name: fuel station Definition: a place where fuel is available.
14	DD Name: HYDRO Code: CATSCF_14 Date accepted: 2000-11-01 Name: electricity Definition: a place where a connection to an electrical supply is available.
15	DD Name: HYDRO Code: CATSCF_15 Date accepted: 2000-11-01 Name: bottle gas Definition: a place where bottled gas is available.

Value	Data Dictionary (DD) Reference
16	DD Name: HYDRO Code: CATSCF_16 Date accepted: 2000-11-01 Name: showers Definition: a place where showers are available.
17	DD Name: HYDRO Code: CATSCF_17 Date accepted: 2000-11-01 Name: launderette Definition: a place where there are facilities for washing clothes.
18	DD Name: HYDRO Code: CATSCF_18 Date accepted: 2000-11-01 Name: public toilets Definition: a place where toilets are available for public use.
19	DD Name: HYDRO Code: CATSCF_19 Date accepted: 2000-11-01 Name: post box Definition: a place where mail may be posted.
20	DD Name: HYDRO Code: CATSCF_20 Date accepted: 2000-11-01 Name: public telephone Definition: a place where a telephone is available for public use.
21	DD Name: HYDRO Code: CATSCF_21 Date accepted: 2000-11-01 Name: refuse bin Definition: a place where refuse may be dumped.
22	DD Name: HYDRO Code: CATSCF_22 Date accepted: 2000-11-01 Name: car park Definition: a place where cars may be parked.
23	DD Name: HYDRO Code: CATSCF_23 Date accepted: 2000-11-01 Name: parking for boats and trailers Definition: a place on shore where boats and/or trailers may be parked.
24	DD Name: HYDRO Code: CATSCF_24 Date accepted: 2000-11-01 Name: caravan site Definition: a place where caravans may be parked or where caravan accommodation is provided.
25	DD Name: HYDRO Code: CATSCF_25 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference
	Name: camping site
	Definition: a place where visitors may pitch tents and camp.
26	DD Name: HYDRO Code: CATSCF_26 Date accepted: 2000-11-01
	Name: sewerage pump-out station
	Definition: a place where sewerage may be pumped off a vessel.
27	DD Name: HYDRO Code: CATSCF_27 Date accepted: 2000-11-01
	Name: emergency telephone
	Definition: a place where a telephone is available for emergency use only.
28	DD Name: HYDRO Code: CATSCF_28 Date accepted: 2000-11-01
	Name: landing/launching place for boats
	Definition: a place where boats may be landed or launched.
29	DD Name: HYDRO Code: CATSCF_29 Date accepted: 2000-11-01
	Name: visitors mooring
	Definition: a mooring set aside for the use of visiting vessels.
30	DD Name: HYDRO Code: CATSCF_30 Date accepted: 2000-11-01
	Name: scrubbing berth
	Definition: a place where vessels may berth for the purpose of careening.
31	DD Name: HYDRO Code: CATSCF_31 Date accepted: 2000-11-01
	Name: picnic area
	Definition: a place where people may go to eat a picnic.
32	DD Name: HYDRO Code: CATSCF_32 Date accepted: 2000-11-01
	Name: mechanics workshop
	Definition: a place where mechanical repairs can be undertaken to engines or other vessel equipment.
33	DD Name: HYDRO Code: CATSCF_33 Date accepted: 2000-11-01
	Name: guard and/or security service
	Definition: a place where a vessel is patrolled by a security service or stored in a secure lockup.

Attribute	Category of special purpose mark

Acronym: CATSPM Code: 66

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
9	DD Name: HYDRO Code: CATSPM_9 Date accepted: 2000-11-01 Name: ODAS (Ocean-Data-Acquisition-System) Definition: Ocean Data Acquisition System (IHO Dictionary, S-32, 5th Edition, 5953
15	DD Name: HYDRO Code: CATSPM_15 Date accepted: 2000-11-01 Name: LANBY (Large Automatic Navigational Buoy) Definition: a large buoy designed to take the place of a lightship where construction of an offshore light station is not feasible. (IHO Dictionary, S-32, 5th Edition, 2656)
53	DD Name: HYDRO Code: CATSPM_53 Date accepted: 2000-11-01 Name: wellhead mark Definition: a mark indicating a borehole that produces or is capable of producing oil or natural gas. (adapted from IHO Dictionary, S-32, 5th Edition, 5971)
56	DD Name: HYDRO Code: CATSPM_56 Date accepted: 2000-11-01 Name: artificial reef mark Definition: a mark indicating the existence or the extent of an artificial reef.
1	DD Name: HYDRO Code: CATSPM_1 Date accepted: 2000-11-01 Name: firing danger area mark Definition: a mark used to indicate a firing danger area, usually at sea.
2	DD Name: HYDRO Code: CATSPM_2 Date accepted: 2000-11-01

Value Data Dictionary (DD) Reference

Name: target mark

Definition: any object toward which something is directed. The distinctive marking or instrumentation of a ground point to aid its identification on a photograph.

3 DD Name: HYDRO Code: CATSPM_3 Date accepted: 2000-11-01

Name: marker ship mark

Definition: a mark marking the position of a ship which is used as a target during some military exercise.

4 DD Name: HYDRO Code: CATSPM_4 Date accepted: 2000-11-01

Name: degaussing range mark

Definition: a mark used to indicate a degaussing range,

5 DD Name: HYDRO Code: CATSPM_5 Date accepted: 2000-11-01

Name: barge mark

Definition: a mark of relevance to barges.

6 DD Name: HYDRO Code: CATSPM_6 Date accepted: 2000-11-01

Name: cable mark

Definition: a mark used to indicate the position of submarine cables or the point at which they run on land.

7 DD Name: HYDRO Code: CATSPM_7 Date accepted: 2000-11-01

Name: spoil ground mark

Definition: a mark used to indicate the limit of a spoil ground.

8 DD Name: HYDRO Code: CATSPM_8 Date accepted: 2000-11-01

Name: outfall mark

Definition: a mark used to indicate the position of an outfall or the point at which it leaves the land.

10 DD Name: HYDRO Code: CATSPM_10 Date accepted: 2000-11-01

Name: recording mark

Definition: a mark used to record data for scientific purposes.

11 DD Name: HYDRO Code: CATSPM_11 Date accepted: 2000-11-01

Name: seaplane anchorage mark

Definition: a mark used to indicate a seaplane anchorage.

12 DD Name: HYDRO Code: CATSPM_12 Date accepted: 2000-11-01

Name: recreation zone mark

Value Data Dictionary (DD) Reference

Definition: a mark used to indicate a recreation zone.

13 DD Name: HYDRO Code: CATSPM_13 Date accepted: 2000-11-01

Name: private mark

Definition: a privately maintained mark

14 DD Name: HYDRO Code: CATSPM_14 Date accepted: 2000-11-01

Name: mooring mark

Definition: a mark indicating a mooring or moorings.

16 DD Name: HYDRO Code: CATSPM_16 Date accepted: 2000-11-01

Name: leading mark

Definition: aids to navigation or other indicators so located as to indicate the path to be followed. Leading marks identify a leading line when they are in transit

17 DD Name: HYDRO Code: CATSPM_17 Date accepted: 2000-11-01

Name: measured distance mark

Definition: a mark forming part of a transit indicating one end of a measured distance.

18 DD Name: HYDRO Code: CATSPM_18 Date accepted: 2000-11-01

Name: notice mark

Definition: a notice board or sign indicating information to the mariner.

19 DD Name: HYDRO Code: CATSPM_19 Date accepted: 2000-11-01

Name: TSS mark

Definition: a mark indicating a traffic separation scheme

20 DD Name: HYDRO Code: CATSPM_20 Date accepted: 2000-11-01

Name: anchoring prohibited mark

Definition: a mark indicating an anchoring prohibited area.

21 DD Name: HYDRO Code: CATSPM_21 Date accepted: 2000-11-01

Name: berthing prohibited mark

Definition: a mark indicating that berthing is prohibited.

22 DD Name: HYDRO Code: CATSPM_22 Date accepted: 2000-11-01

Name: overtaking prohibited mark

Definition: a mark indicating that overtaking is prohibited.

Value	Data Dictionary (DD) Reference
23	DD Name: HYDRO Code: CATSPM_23 Date accepted: 2000-11-01 Name: two-way traffic prohibited mark Definition: a mark indicating a one-way route.
24	DD Name: HYDRO Code: CATSPM_24 Date accepted: 2000-11-01 Name: 'reduced wake' mark Definition: a mark indicating that vessels must not generate excessive wake.
25	DD Name: HYDRO Code: CATSPM_25 Date accepted: 2000-11-01 Name: speed limit mark Definition: a mark indicating that a speed limit applies.
26	DD Name: HYDRO Code: CATSPM_26 Date accepted: 2000-11-01 Name: stop mark Definition: a mark indicating the place where the bow of a ship must stop when traffic lights show red.
27	DD Name: HYDRO Code: CATSPM_27 Date accepted: 2000-11-01 Name: general warning mark Definition: a mark indicating that special caution must be exercised in the vicinity of the mark.
28	DD Name: HYDRO Code: CATSPM_28 Date accepted: 2000-11-01 Name: 'sound ship's siren' mark Definition: a mark indicating that a ship should sound its siren or horn.
29	DD Name: HYDRO Code: CATSPM_29 Date accepted: 2000-11-01 Name: restricted vertical clearance mark Definition: a mark indicating the minimum vertical space available for passage.
30	DD Name: HYDRO Code: CATSPM_30 Date accepted: 2000-11-01 Name: maximum vessel's draught mark Definition: a mark indicating the maximum draught of vessel permitted.
31	DD Name: HYDRO Code: CATSPM_31 Date accepted: 2000-11-01 Name: restricted horizontal clearance mark Definition: a mark indicating the minimum horizontal space available for passage.
32	DD Name: HYDRO Code: CATSPM_32 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference				
	Name:	strong current warning mark			
	Definition:	a mark warning of strong currents.			
33	DD Name:	HYDRO	Code: CATSPM_33	Date accepted:	2000-11-01
	Name:	berthing permitted mark			
	Definition:	a mark indicating that berthing is allowed.			
34	DD Name:	HYDRO	Code: CATSPM_34	Date accepted:	2000-11-01
	Name:	overhead power cable mark			
	Definition:	a mark indicating an overhead power cable.			
35	DD Name:	HYDRO	Code: CATSPM_35	Date accepted:	2000-11-01
	Name:	'channel edge gradient' mark			
	Definition:	a mark indicating the gradient of the slope of a dredge channel edge.			
36	DD Name:	HYDRO	Code: CATSPM_36	Date accepted:	2000-11-01
	Name:	telephone mark			
	Definition:	a mark indicating the presence of a telephone.			
37	DD Name:	HYDRO	Code: CATSPM_37	Date accepted:	2000-11-01
	Name:	ferry crossing mark			
	Definition:	a mark indicating that a ferry route crosses the ship route; often used with a 'sound ship's siren' mark.			
39	DD Name:	HYDRO	Code: CATSPM_39	Date accepted:	2000-11-01
	Name:	pipeline mark			
	Definition:	a mark used to indicate the position of submarine pipelines or the point at which they run on to the land.			
40	DD Name:	HYDRO	Code: CATSPM_40	Date accepted:	2000-11-01
	Name:	anchorage mark			
	Definition:	a mark indicating an anchorage area.			
41	DD Name:	HYDRO	Code: CATSPM_41	Date accepted:	2000-11-01
	Name:	clearing mark			
	Definition:	a mark used to indicate a clearing line.			
42	DD Name:	HYDRO	Code: CATSPM_42	Date accepted:	2000-11-01

Value	Data Dictionary (DD) Reference
	Name: control mark
	Definition: a mark indicating the location at which a restriction or requirement exists.
43	DD Name: HYDRO Code: CATSPM_43 Date accepted: 2000-11-01
	Name: diving mark
	Definition: a mark indicating that diving may take place in the vicinity.
44	DD Name: HYDRO Code: CATSPM_44 Date accepted: 2000-11-01
	Name: refuge beacon
	Definition: a mark providing or indicating a place of safety.
45	DD Name: HYDRO Code: CATSPM_45 Date accepted: 2000-11-01
	Name: foul ground mark
	Definition: a mark indicating a foul ground.
46	DD Name: HYDRO Code: CATSPM_46 Date accepted: 2000-11-01
	Name: yachting mark
	Definition: a mark installed for use by yachtsmen.
47	DD Name: HYDRO Code: CATSPM_47 Date accepted: 2000-11-01
	Name: heliport mark
	Definition: a mark indicating an area where helicopters may land.
48	DD Name: HYDRO Code: CATSPM_48 Date accepted: 2000-11-01
	Name: GPS mark
	Definition: a mark indicating a location at which a GPS position has been accurately determined.
49	DD Name: HYDRO Code: CATSPM_49 Date accepted: 2000-11-01
	Name: seaplane landing mark
	Definition: a mark indicating an area where sea-planes land.
50	DD Name: HYDRO Code: CATSPM_50 Date accepted: 2000-11-01
	Name: entry prohibited mark
	Definition: a mark indicating that entry is prohibited.
51	DD Name: HYDRO Code: CATSPM_51 Date accepted: 2000-11-01
	Name: work in progress mark
	Definition: a mark indicating that work (generally construction) is in progress.

Value	Data Dictionary (DD) Reference
52	DD Name: HYDRO Code: CATSPM_52 Date accepted: 2000-11-01 Name: mark with unknown purpose Definition: a mark whose detailed characteristics are unknown.
54	DD Name: HYDRO Code: CATSPM_54 Date accepted: 2000-11-01 Name: channel separation mark Definition: a mark indicating the point at which a channel divides separately into two channels.
55	DD Name: HYDRO Code: CATSPM_55 Date accepted: 2000-11-01 Name: marine farm mark Definition: a mark indicating the existence of a fish, mussel, oyster or pearl farm/culture.

Attribute	Category of temporal variation

Acronym: CATTEV Code: 19000

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2019-05-13

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

Enumerations:

Value	Data Dictionary (DD) Reference
4	DD Name: HYDRO Code: CATTEV_4 Date accepted: 2019-05-13 Name: likely to change Definition:
5	DD Name: HYDRO Code: CATTEV_5 Date accepted: 2019-05-13 Name: unlikely to change Definition:
6	DD Name: HYDRO Code: CATTEV_6 Date accepted: 2019-05-13 Name: unassessed Definition:

Attribute	Category of Tidal stream

Acronym: CAT_TS Code: 188

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of Tidal stream

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CAT_TS_1 Date accepted: 2000-11-01 Name: flood stream Definition: the horizontal movement of water associated with the rising tide. Flood streams generally set towards the shore, or in the direction of the tide progression. Also called flood, flood current or ingoing stream. (Adapted from IHO Dictionary, S-32, 5th Edition)
2	DD Name: HYDRO Code: CAT_TS_2 Date accepted: 2000-11-01 Name: ebb stream Definition: the horizontal movement of water associated with falling tide. Ebb streams generally set seaward, or in the opposite direction to the tide progression. Also called ebb, ebb current or outgoing stream. (Adapted from IHO Dictionary, S-32, 5th Edition)
3	DD Name: HYDRO Code: CAT_TS_3 Date accepted: 2000-11-01 Name: other tidal flow Definition: any other horizontal movement of water associated with tides, eg. rotary flow.

Attribute	Category of traffic separation scheme

Acronym: CATTSS Code: 67

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-08-11

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATTSS_1 Date accepted: 2010-08-11 Name: IMO - adopted Definition: a defined Traffic Separation Scheme that has been adopted as an IMO routing measure.
2	DD Name: HYDRO Code: CATTSS_2 Date accepted: 2010-08-11 Name: not IMO - adopted Definition: a defined Traffic Separation Scheme that has not been adopted as an IMO routing measure.

Attribute	Category of vegetation

Acronym: CATVEG Code: 68

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: CATVEG_6 Date accepted: 2000-11-01 Name: wood in general (inc mixed wood) Definition: growing trees densely occupying a tract of land. (The Concise Oxford Dictionary)
13	DD Name: HYDRO Code: CATVEG_13 Date accepted: 2000-11-01 Name: tree in general Definition: a woody perennial plant, having a self supporting main stem or trunk.
11	DD Name: HYDRO Code: CATVEG_11 Date accepted: 2000-11-01 Name: reed Definition: any of various water or marsh plants with a firm stem

Attribute	Category of water turbulence

Acronym: CATWAT Code: 69

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of water turbulence

Enumerations:

Value	Data Dictionary (DD) Reference
6	DD Name: IENC Code: CATWAT_6 Date accepted: 2014-07-11 Name: under water turbulence Definition:

Attribute	Category of weed/kelp

Acronym: CATWED Code: 70

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Category of week/kelp

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATWED_1 Date accepted: 2000-11-01 Name: kelp Definition: a giant plant sometimes 60 metres long with no roots, it is anchored by hold-fasts or tendrils up to 10 metres long, that cling to rock. Gas filled bubbles on fronds act as floats keeping the kelp just below the surface. (Earth Sciences References, Mary McNeil)
2	DD Name: HYDRO Code: CATWED_2 Date accepted: 2000-11-01 Name: sea weed Definition: general name for marine plants of the algae class which grow in long narrow ribbons. Also called sea grass. (International Maritime Dictionary, 2nd Edition)
3	DD Name: HYDRO Code: CATWED_3 Date accepted: 2000-11-01 Name: sea grass Definition: any grasslike marine alga. Eelgrass is one of the best known seagrasses. (IHO Dictionary, S-32, 5th Edition, 4565)
4	DD Name: HYDRO Code: CATWED_4 Date accepted: 2000-11-01 Name: sargasso Definition: a certain type of sea weed, or more generally, a large floating mass of this sea weed. (IHO Dictionary, S-32, 5th Edition, 4501)

Attribute	Category of wreck

Acronym: CATWRK Code: 71

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATWRK_1 Date accepted: 2000-11-01 Name: non-dangerous wreck Definition: a wreck which is not considered to be dangerous to surface navigation.
2	DD Name: HYDRO Code: CATWRK_2 Date accepted: 2000-11-01 Name: dangerous wreck Definition: a wreck which is considered to be dangerous to surface navigation.
3	DD Name: HYDRO Code: CATWRK_3 Date accepted: 2000-11-01 Name: distributed remains of wreck Definition: (foul ground) an area over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing. (IHO Chart Specifications, M-4)
4	DD Name: HYDRO Code: CATWRK_4 Date accepted: 2000-11-01 Name: wreck showing mast/masts Definition: wreck of which only the mast(s) is visible at the sounding datum indicated.
5	DD Name: HYDRO Code: CATWRK_5 Date accepted: 2000-11-01 Name: wreck showing any portion of hull or superstructure Definition: wreck of which any portion of the hull or superstructure is visible at the sounding datum indicated.

Attribute	Category of zone of confidence in data

Acronym: CATZOC Code: 72

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CATZOC_1 Date accepted: 2000-11-01 Name: zone of confidence A1 Definition:
2	DD Name: HYDRO Code: CATZOC_2 Date accepted: 2000-11-01 Name: zone of confidence A2 Definition:
3	DD Name: HYDRO Code: CATZOC_3 Date accepted: 2000-11-01 Name: zone of confidence B Definition:
4	DD Name: HYDRO Code: CATZOC_4 Date accepted: 2000-11-01 Name: zone of confidence C Definition:
5	DD Name: HYDRO Code: CATZOC_5 Date accepted: 2000-11-01 Name: zone of confidence D Definition:
6	DD Name: HYDRO Code: CATZOC_6 Date accepted: 2000-11-01 Name: zone of confidence U (data not assessed) Definition:

Attribute	Colour

Acronym: COLOUR Code: 75

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: COLOUR_1 Date accepted: 2000-11-01 Name: white Definition:
2	DD Name: HYDRO Code: COLOUR_2 Date accepted: 2000-11-01 Name: black Definition:
3	DD Name: HYDRO Code: COLOUR_3 Date accepted: 2000-11-01 Name: red Definition:
4	DD Name: HYDRO Code: COLOUR_4 Date accepted: 2000-11-01 Name: green Definition:
5	DD Name: HYDRO Code: COLOUR_5 Date accepted: 2000-11-01 Name: blue Definition:
6	DD Name: HYDRO Code: COLOUR_6 Date accepted: 2000-11-01 Name: yellow Definition:

Value	Data Dictionary (DD) Reference					
7	DD Name:	HYDRO	Code:	COLOUR_7	Date accepted:	2000-11-01
	Name:	grey				
	Definition:					
8	DD Name:	HYDRO	Code:	COLOUR_8	Date accepted:	2000-11-01
	Name:	brown				
	Definition:					
9	DD Name:	HYDRO	Code:	COLOUR_9	Date accepted:	2000-11-01
	Name:	amber				
	Definition:					
10	DD Name:	HYDRO	Code:	COLOUR_10	Date accepted:	2000-11-01
	Name:	violet				
	Definition:					
11	DD Name:	HYDRO	Code:	COLOUR_11	Date accepted:	2000-11-01
	Name:	orange				
	Definition:					
12	DD Name:	HYDRO	Code:	COLOUR_12	Date accepted:	2000-11-01
	Name:	magenta				
	Definition:					
13	DD Name:	HYDRO	Code:	COLOUR_13	Date accepted:	2000-11-01
	Name:	pink				
	Definition:					

Attribute	Colour pattern

Acronym: COLPAT Code: 76

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: COLPAT_1 Date accepted: 2000-11-01 Name: horizontal stripes Definition: straight bands or stripes of differing colours painted horizontally.
2	DD Name: HYDRO Code: COLPAT_2 Date accepted: 2000-11-01 Name: vertical stripes Definition: straight bands or stripes of differing colours painted vertically.
3	DD Name: HYDRO Code: COLPAT_3 Date accepted: 2000-11-01 Name: diagonal stripes Definition: straight bands or stripes of differing colours painted diagonally (ie not horizontally or vertically).
4	DD Name: HYDRO Code: COLPAT_4 Date accepted: 2000-11-01 Name: squared Definition: often referred to as checker plate, where alternate colours are used to create squares similar to a chess or draught board. The pattern may be straight or diagonal.
5	DD Name: HYDRO Code: COLPAT_5 Date accepted: 2000-11-01 Name: stripes (direction unknown) Definition: straight bands or stripes of differing colours painted in an unknown direction.
6	DD Name: HYDRO Code: COLPAT_6 Date accepted: 2000-11-01 Name: border stripe

Value Data Dictionary (DD) Reference

Definition: a band or stripe of colour which is displayed around the outer edge of the object, which may also form a border to an inner pattern or plain colour.

Attribute	Communication channel

Acronym: COMCHA Code: 77

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Condition

Acronym: CONDTN Code: 81

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-11-16

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CONDTN_1 Date accepted: 2010-11-16 Name: under construction Definition: a structure that is in the process of being built.
2	DD Name: HYDRO Code: CONDTN_2 Date accepted: 2010-11-16 Name: ruined Definition: a structure in a decayed or deteriorated condition resulting from neglect or disuse, or a damaged structure in need of repair.(IHO Dictionary, S-32, 5th Edition, 4456)
3	DD Name: HYDRO Code: CONDTN_3 Date accepted: 2010-11-16 Name: under reclamation Definition: an area of the sea that is being reclaimed as land, usually by the dumping of earth and other material.
4	DD Name: HYDRO Code: CONDTN_4 Date accepted: 2010-11-16 Name: wingless Definition: a windmill or windmotor from which the turbine blades are missing.
5	DD Name: HYDRO Code: CONDTN_5 Date accepted: 2010-11-16 Name: planned construction Definition: an area where a future construction is planned

Attribute	Conspicuous, radar

Acronym: CONRAD Code: 82

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CONRAD_1 Date accepted: 2000-11-01 Name: radar conspicuous Definition: an object which returns a strong radar echo. (IHO Dictionary, S-32, 5th Edition, 4142)
2	DD Name: HYDRO Code: CONRAD_2 Date accepted: 2000-11-01 Name: not radar conspicuous Definition: an object which does not return a particularly strong radar echo.
3	DD Name: HYDRO Code: CONRAD_3 Date accepted: 2000-11-01 Name: radar conspicuous (has radar reflector) Definition: an object which returns a strong radar echo, having a radar reflector.

Attribute	Conspicuous, visually

Acronym: CONVIS Code: 83

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: CONVIS_1 Date accepted: 2000-11-01 Name: visually conspicuous Definition: term applied to an object either natural or artificial which is distinctly and notably visible from seaward. (IHO Dictionary, S-32, 5th Edition, 984)
2	DD Name: HYDRO Code: CONVIS_2 Date accepted: 2000-11-01 Name: not visually conspicuous Definition: an object which is visible from seaward, but is not conspicuous.

Attribute	Current velocity

Acronym: CURVEL Code: 84

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Current velocity

Attribute	Date end

Acronym: DATEND Code: 85

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Date start

Acronym: DATSTA Code: 86

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Depth range value 1

Acronym: DRVAL1 Code: 87

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The minimum (shoalest) value of a depth range.

Attribute	Depth range value 2

Acronym: DRVAL2 Code: 88

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The maximum (deepest) value of a depth range.

Attribute	Elevation

Acronym: ELEVAT Code: 90

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Exhibition condition of light

Acronym: EXCLIT Code: 92

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: EXCLIT_1 Date accepted: 2000-11-01 Name: light shown without change of character Definition: a light shown throughout the 24 hours without change of character. IHO Chart Specifications, M-4
2	DD Name: HYDRO Code: EXCLIT_2 Date accepted: 2000-11-01 Name: daytime light Definition: a light which is only exhibited by day.
3	DD Name: HYDRO Code: EXCLIT_3 Date accepted: 2000-11-01 Name: fog light Definition: a light which is exhibited in fog or conditions of reduced visibility.
4	DD Name: HYDRO Code: EXCLIT_4 Date accepted: 2000-11-01 Name: night light Definition: a light which is only exhibited at night.

Attribute	Exposition of sounding

Acronym: EXPSOU Code: 93

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2010-08-12

Definition: Indicates objects with a 'value of sounding' not within the range of depth of the surrounding depth area.

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: EXPSOU_1 Date accepted: 2010-08-12 Name: within the range of depth of the surrounding depth area Definition: the depth corresponds to the depth range of the surrounding depth area. i.e. the depth is not shoaler than the minimum depth of the surrounding depth area or deeper than the maximum depth of the surrounding depth area.
2	DD Name: HYDRO Code: EXPSOU_2 Date accepted: 2010-08-12 Name: shoaler than the range of depth of the surrounding depth area Definition: the depth is shoaler than the minimum depth of the surrounding depth area.
3	DD Name: HYDRO Code: EXPSOU_3 Date accepted: 2010-08-12 Name: deeper than the range of depth of the surrounding depth area Definition: the depth is deeper than the maximum depth of the surrounding depth area.

Attribute	Function

Acronym: FUNCTN Code: 94

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: FUNCTN_2 Date accepted: 2000-11-01 Name: harbour-master's office Definition: the office of the local official who has charge of mooring and berthing of vessels, collecting harbour fees, etc. (adapted from IHO Dictionary, S-32, 5th Edition, 2191)
3	DD Name: HYDRO Code: FUNCTN_3 Date accepted: 2000-11-01 Name: custom office Definition: an office which is charged with enforcing customs regulations.
4	DD Name: HYDRO Code: FUNCTN_4 Date accepted: 2000-11-01 Name: health office Definition: the office which is charged with the administration of health laws and sanitary inspections. (adapted from The New Shorter Oxford English Dictionary, 1993)
5	DD Name: HYDRO Code: FUNCTN_5 Date accepted: 2000-11-01 Name: hospital Definition: an institution or establishment providing medical or surgical treatment for the ill or wounded. (The New Shorter Oxford English Dictionary, 1993)
6	DD Name: HYDRO Code: FUNCTN_6 Date accepted: 2000-11-01 Name: post office Definition: the public department, agency or organisation responsible primarily for the collection, transmission and distribution of mail. (The New Shorter Oxford English Dictionary, 1993)

Value	Data Dictionary (DD) Reference
7	DD Name: HYDRO Code: FUNCTN_7 Date accepted: 2000-11-01 Name: hotel Definition: an establishment, especially of a comfortable or luxurious kind, where paying visitors are provided with accommodation, meals and other services. (The New Shorter Oxford English Dictionary, 1993)
8	DD Name: HYDRO Code: FUNCTN_8 Date accepted: 2000-11-01 Name: railway station Definition: a building with platforms where trains arrive, load, discharge and depart. (The New Shorter Oxford English Dictionary, 1993)
9	DD Name: HYDRO Code: FUNCTN_9 Date accepted: 2000-11-01 Name: police station Definition: the office of the local police force.
10	DD Name: HYDRO Code: FUNCTN_10 Date accepted: 2000-11-01 Name: water-police station Definition: the headquarters of a local water-police force.
11	DD Name: HYDRO Code: FUNCTN_11 Date accepted: 2000-11-01 Name: pilot office Definition: the office or headquarters of pilots; the place where the services of a pilot may be obtained. (IHO Dictionary, S-32, 5th Edition, 3845)
12	DD Name: HYDRO Code: FUNCTN_12 Date accepted: 2000-11-01 Name: pilot lookout Definition: a distinctive structure on shore from which personnel keep watch upon events at sea or along the coast. (IHO Dictionary, S-32, 5th Edition, 2917)
13	DD Name: HYDRO Code: FUNCTN_13 Date accepted: 2000-11-01 Name: bank office Definition: an office for custody, deposit, loan, exchange or issue of money. (adapted from The New Shorter Oxford English Dictionary, 1993)
14	DD Name: HYDRO Code: FUNCTN_14 Date accepted: 2000-11-01 Name: headquarters for district control Definition: the quarters of an executive officer (director, manager, etc.) with responsibility for an administrative area.

Value	Data Dictionary (DD) Reference
15	DD Name: HYDRO Code: FUNCTN_15 Date accepted: 2000-11-01 Name: transit shed/warehouse Definition: a building or part of a building for storage of wares or goods. (adapted from The New Shorter Oxford English Dictionary, 1993)
16	DD Name: HYDRO Code: FUNCTN_16 Date accepted: 2000-11-01 Name: factory Definition: a building or buildings with equipment for manufacturing; a workshop. (The New Shorter Oxford English Dictionary, 1993)
17	DD Name: HYDRO Code: FUNCTN_17 Date accepted: 2000-11-01 Name: power station Definition: a stationary plant containing apparatus for large scale conversion of some form of energy (such as hydraulic, steam, chemical or nuclear energy) into electrical energy. (McGraw-Hill Dictionary of Scientific and Technical Terms, 3rd Edition, 1984)
18	DD Name: HYDRO Code: FUNCTN_18 Date accepted: 2000-11-01 Name: administrative Definition: a building for the management of affairs. (adapted from The New Shorter Oxford English Dictionary, 1993)
19	DD Name: HYDRO Code: FUNCTN_19 Date accepted: 2000-11-01 Name: educational facility Definition: a building concerned with education (eg. school, college, university, etc.)
20	DD Name: HYDRO Code: FUNCTN_20 Date accepted: 2000-11-01 Name: church Definition: a building for public Christian worship. (The New Shorter Oxford English Dictionary, 1993)
21	DD Name: HYDRO Code: FUNCTN_21 Date accepted: 2000-11-01 Name: chapel Definition: a place for Christian worship other than a parish, cathedral or church, especially one attached to a private house or institution. (The New Shorter Oxford English Dictionary, 1993)
22	DD Name: HYDRO Code: FUNCTN_22 Date accepted: 2000-11-01 Name: temple Definition: a building for public Jewish worship. (adapted from The New Shorter Oxford English Dictionary, 1993)

Value	Data Dictionary (DD) Reference
23	DD Name: HYDRO Code: FUNCTN_23 Date accepted: 2000-11-01 Name: pagoda Definition: a Hindu or Buddhist temple or sacred building. (The New Shorter Oxford English Dictionary, 1993)
24	DD Name: HYDRO Code: FUNCTN_24 Date accepted: 2000-11-01 Name: shinto shrine Definition: a building for public Shinto worship. (adapted from The New Shorter Oxford English Dictionary, 1993)
25	DD Name: HYDRO Code: FUNCTN_25 Date accepted: 2000-11-01 Name: buddhist temple Definition: see pagoda.
26	DD Name: HYDRO Code: FUNCTN_26 Date accepted: 2000-11-01 Name: mosque Definition: a Muslim place of worship. (The New Shorter Oxford English Dictionary, 1993)
27	DD Name: HYDRO Code: FUNCTN_27 Date accepted: 2000-11-01 Name: marabout Definition: a shrine marking the burial place of a Muslim holy man. (The New Shorter Oxford English Dictionary, 1993)
28	DD Name: HYDRO Code: FUNCTN_28 Date accepted: 2000-11-01 Name: lookout Definition: keeping a watch upon events at sea or along the coast. (adapted from IHO Dictionary, S-32,5th Edition,2917)
29	DD Name: HYDRO Code: FUNCTN_29 Date accepted: 2000-11-01 Name: communication Definition: transmitting and/or receiving electronic communication signals. (adapted from Digital Geographic Information Standard - DIGEST)
30	DD Name: HYDRO Code: FUNCTN_30 Date accepted: 2000-11-01 Name: television Definition: broadcast of television signals.
31	DD Name: HYDRO Code: FUNCTN_31 Date accepted: 2000-11-01 Name: radio

Value Data Dictionary (DD) Reference

Definition: broadcast of radio signals.

32 DD Name: HYDRO Code: FUNCTN_32 Date accepted: 2000-11-01

Name: radar

Definition: a method, system or technique of using beamed, reflected, and timed radio waves for detecting, locating, or tracking objects, and for measuring altitudes. (IHO Dictionary, S-32, 5th Edition,4158)

33 DD Name: HYDRO Code: FUNCTN_33 Date accepted: 2000-11-01

Name: light support

Definition: supporting a light

34 DD Name: HYDRO Code: FUNCTN_34 Date accepted: 2000-11-01

Name: microwave

Definition: broadcasting and receiving signals using microwaves.

35 DD Name: HYDRO Code: FUNCTN_35 Date accepted: 2000-11-01

Name: cooling

Definition: dissipating heat.

36 DD Name: HYDRO Code: FUNCTN_36 Date accepted: 2000-11-01

Name: observation

Definition: a place from which the surroundings can be observed but at which a watch is not habitually maintained. (adapted from IHO Dictionary, S-32, 5th Edition,2917)

37 DD Name: HYDRO Code: FUNCTN_37 Date accepted: 2000-11-01

Name: time ball

Definition: a visual time signal in form of a ball

38 DD Name: HYDRO Code: FUNCTN_38 Date accepted: 2000-11-01

Name: clock

Definition: visual time signal. (adapted from S-32, 5th Edition, 5536)

39 DD Name: HYDRO Code: FUNCTN_39 Date accepted: 2000-11-01

Name: control

Definition: used to control the flow of air, rail, or marine traffic. (Digital Geographic Information Standard - DIGEST)

40 DD Name: HYDRO Code: FUNCTN_40 Date accepted: 2000-11-01

Name: airship mooring

Value	Data Dictionary (DD) Reference
	Definition: a facility to secure an airship. (adapted from Digital Geographic Information Standard - DIGEST)
41	DD Name: HYDRO Code: FUNCTN_41 Date accepted: 2000-11-01
	Name: stadium
	Definition: a large usually unroofed building with tiers of seats for spectators
42	DD Name: HYDRO Code: FUNCTN_42 Date accepted: 2000-11-01
	Name: bus station
	Definition: a location at which buses arrive and from which they depart.

Attribute	Height

Acronym: HEIGHT Code: 95

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Horizontal Accuracy

Acronym: HORACC Code: 97

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Horizontal clearance

Acronym: HORCLR Code: 98

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The width of an object, such as a canal or a tunnel, which is available for safe navigation. This may, or may not, be the same as the total physical width of the object.

Attribute	Horizontal length

Acronym: HORLEN Code: 99

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A measurement of the longer of two linear axis. (Digital Geographic Information Working Group -DGIWG, Oct.87)

Attribute	Horizontal width

Acronym: HORWID Code: 100

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: A measurement of the shorter of two linear axis. (Digital Geographic Information Working Group -DGIWG, Oct.87)

Attribute	Information

Acronym: INFORM Code: 102

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Textual information about the object.

Attribute	Information in national language

Acronym: NINFOM Code: 300

Use Type: N

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Textual information in national language characters

Attribute	Jurisdiction

Acronym: JRSDTN Code: 103

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: JRSDTN_1 Date accepted: 2000-11-01 Name: international Definition: involving more than one country; covering more than one national area.
2	DD Name: HYDRO Code: JRSDTN_2 Date accepted: 2000-11-01 Name: national Definition: an area administered or controlled by a single nation.
3	DD Name: HYDRO Code: JRSDTN_3 Date accepted: 2000-11-01 Name: national sub-division Definition: an area smaller than the nation in which it lies.

Attribute	Light characteristic

Acronym: LITCHR Code: 107

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: LITCHR_1 Date accepted: 2000-11-01 Name: fixed Definition: a signal light that shows continuously, in any given direction, with constant luminous intensity and colour. (IHO Dictionary, S-32, 5th Edition, 2780)
2	DD Name: HYDRO Code: LITCHR_2 Date accepted: 2000-11-01 Name: flashing Definition: a rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal duration. (IHO Dictionary, S-32, 5th Edition, 2783)
3	DD Name: HYDRO Code: LITCHR_3 Date accepted: 2000-11-01 Name: long-flashing Definition: a flashing light in which a single flash of not less than two seconds duration is regularly repeated. (IHO Dictionary, S-32, 5th Edition, 2796)
4	DD Name: HYDRO Code: LITCHR_4 Date accepted: 2000-11-01 Name: quick-flashing Definition: a light exhibiting without interruption very rapid regular alternations of light and darkness. (IHO Dictionary, S-32, 5th Edition, 2803)
7	DD Name: HYDRO Code: LITCHR_7 Date accepted: 2000-11-01 Name: isophased Definition: a light with all durations of light and darkness equal. (IHO Dictionary, S-32, 5th Edition, 2779)

Value	Data Dictionary (DD) Reference
9	DD Name: HYDRO Code: LITCHR_9 Date accepted: 2000-11-01 Name: interrupted quick-flashing Definition: a quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration. (IHO Dictionary, S-32, 5th Edition, 2790)
5	DD Name: HYDRO Code: LITCHR_5 Date accepted: 2000-11-01 Name: very quick-flashing Definition: a flashing light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute
6	DD Name: HYDRO Code: LITCHR_6 Date accepted: 2000-11-01 Name: ultra quick flashing Definition: a flashing light in which flashes are repeated at a rate of not less than 160 flashes per minute
8	DD Name: HYDRO Code: LITCHR_8 Date accepted: 2000-11-01 Name: occulting Definition: a rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration
10	DD Name: HYDRO Code: LITCHR_10 Date accepted: 2000-11-01 Name: interrupted very quick-flashing Definition: a light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration
11	DD Name: HYDRO Code: LITCHR_11 Date accepted: 2000-11-01 Name: interrupted ultra quick-flashing Definition: a light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration
12	DD Name: HYDRO Code: LITCHR_12 Date accepted: 2000-11-01 Name: morse Definition: a rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code
13	DD Name: HYDRO Code: LITCHR_13 Date accepted: 2000-11-01 Name: fixed/flash Definition:
28	DD Name: HYDRO Code: LITCHR_28 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference				
	Name: alternating				
	Definition: a signal light that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity				
14	DD Name: HYDRO	Code:	LITCHR_14	Date accepted:	2000-11-01
	Name: flash/long-flash				
	Definition:				
15	DD Name: HYDRO	Code:	LITCHR_15	Date accepted:	2000-11-01
	Name: occulting/flash				
	Definition:				
16	DD Name: HYDRO	Code:	LITCHR_16	Date accepted:	2000-11-01
	Name: fixed/long-flash				
	Definition:				
17	DD Name: HYDRO	Code:	LITCHR_17	Date accepted:	2000-11-01
	Name: occulting alternating				
	Definition:				
18	DD Name: HYDRO	Code:	LITCHR_18	Date accepted:	2000-11-01
	Name: long-flash alternating				
	Definition:				
19	DD Name: HYDRO	Code:	LITCHR_19	Date accepted:	2000-11-01
	Name: flash alternating				
	Definition:				
20	DD Name: HYDRO	Code:	LITCHR_20	Date accepted:	2000-11-01
	Name: group alternating				
	Definition:				
25	DD Name: HYDRO	Code:	LITCHR_25	Date accepted:	2000-11-01
	Name: quick-flash plus long-flash				
	Definition:				
26	DD Name: HYDRO	Code:	LITCHR_26	Date accepted:	2000-11-01
	Name: very quick-flash plus long-flash				

Value	Data Dictionary (DD) Reference					
	Definition:					
27	DD Name:	HYDRO	Code:	LITCHR_27	Date accepted:	2000-11-01
	Name:	ultra quick-flash plus long-flash				
	Definition:					
29	DD Name:	HYDRO	Code:	LITCHR_29	Date accepted:	2000-11-01
	Name:	fixed and alternating flashing				
	Definition:					

Attribute	Light visibility

Acronym: LITVIS Code: 108

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2008-01-31

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
4	DD Name: HYDRO Code: LITVIS_4 Date accepted: 2000-11-01 Name: intensified Definition: a light in a sector is intensified (i.e. has longer range than other sectors). (Bundesamt für Seeschiffahrt und Hydrographie, Germany)
7	DD Name: HYDRO Code: LITVIS_7 Date accepted: 2000-11-01 Name: obscured Definition: said of the arc of a light sector designated by its limiting bearings in which the light is not visible from seaward. (IHO Dictionary, S-32, 5th Edition, 3492)
8	DD Name: HYDRO Code: LITVIS_8 Date accepted: 2000-11-01 Name: partially obscured Definition: this value specifies that parts of the sector are obscured.
3	DD Name: HYDRO Code: LITVIS_3 Date accepted: 2000-11-01 Name: faint Definition: a decrease in the apparent intensity of a light which may occur in the case of partial obstructions.

Attribute	Marks navigational - System of

Acronym: MARSYS Code: 109

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: MARSYS_1 Date accepted: 2000-11-01 Name: IALA A Definition: navigational aids conform to the International Association of Lighthouse Authorities - IALA A system.
2	DD Name: HYDRO Code: MARSYS_2 Date accepted: 2000-11-01 Name: IALA B Definition: navigational aids conform to the International Association of Lighthouse Authorities - IALA B system.

Attribute	Multiplicity of lights

Acronym: MLTYLT Code: 110

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The number of lights of identical character that exist as a co-located group.

Attribute	Nationality

Acronym: NATION Code: 111

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The nationality of the specific object.

Attribute	Natural surface

Acronym: NATSUR Code: 113

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2008-01-31

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: NATSUR_1 Date accepted: 2000-11-01 Name: mud Definition: soft, wet earth
2	DD Name: HYDRO Code: NATSUR_2 Date accepted: 2000-11-01 Name: clay Definition: (particles of less than 0.002 mm); stiff, sticky earth that becomes hard when baked.
3	DD Name: HYDRO Code: NATSUR_3 Date accepted: 2000-11-01 Name: silt Definition: (particles of 0.002-0.0625 mm); when dried on hand will rub off easily.
4	DD Name: HYDRO Code: NATSUR_4 Date accepted: 2000-11-01 Name: sand Definition: (particles of 0.0625-2.0 mm); tiny grains of crushed or worn rock.
5	DD Name: HYDRO Code: NATSUR_5 Date accepted: 2000-11-01 Name: stone Definition: a general term for rock fragments ranging in size from pebbles and gravel to boulders or a large rock mass. (IHO Dictionary, S-32, 5th Edition, 5059)
6	DD Name: HYDRO Code: NATSUR_6 Date accepted: 2000-11-01 Name: gravel

Value	Data Dictionary (DD) Reference
	Definition: (particles of 2.0-4.0 mm); small stones with coarse sand.
7	DD Name: HYDRO Code: NATSUR_7 Date accepted: 2000-11-01
	Name: pebbles
	Definition: (particles of 4.0-64.0 mm); small stones made smooth and round by being rolled in water.
8	DD Name: HYDRO Code: NATSUR_8 Date accepted: 2000-11-01
	Name: cobbles
	Definition: (particles of 64.0-256.0 mm); stones worn round and smooth by water and used for paving.
9	DD Name: HYDRO Code: NATSUR_9 Date accepted: 2000-11-01
	Name: rock
	Definition: any formation of natural origin that constitutes an integral part of the lithosphere. The natural occurring material that forms firm, hard, and solid masses. (adapted from IHO Dictionary, S-32, 5th Edition, 4415)
11	DD Name: HYDRO Code: NATSUR_11 Date accepted: 2000-11-01
	Name: lava
	Definition: the fluid or semi-fluid matter flowing from a volcano. The substance that results from the cooling of the molten rock. Part of the ocean bed is composed of lava. (IHO Dictionary, S-32, 5th Edition, 2680)
14	DD Name: HYDRO Code: NATSUR_14 Date accepted: 2000-11-01
	Name: coral
	Definition: hard calcareous skeletons of many tribes of marine polyps. (IHO Dictionary, S-32, 5th Edition, 1061)
17	DD Name: HYDRO Code: NATSUR_17 Date accepted: 2000-11-01
	Name: shells
	Definition: exoskeletons of various water dwelling animals. (adapted from IHO Dictionary, S-32, 5th Edition, 4680)
18	DD Name: HYDRO Code: NATSUR_18 Date accepted: 2000-11-01
	Name: boulder
	Definition: a rounded rock with diameter of 256 mm or larger. (adapted from IHO Dictionary, S-32, 5th Edition, 527)

Attribute	Nature of construction

Acronym: NATCON Code: 112

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: NATCON_1 Date accepted: 2000-11-01 Name: masonry Definition: constructed of brick or stone.
2	DD Name: HYDRO Code: NATCON_2 Date accepted: 2000-11-01 Name: concreted Definition: constructed of concrete, a material made of sand and gravel that is united by cement into a hardened mass used for roads, foundations, etc. (adapted from the Illustrated Contemporary Dictionary, Encyclopaedic Edition, 1978)
3	DD Name: HYDRO Code: NATCON_3 Date accepted: 2000-11-01 Name: loose boulders Definition: constructed from large stones or blocks of concrete, often placed loosely for protection against waves or water turbulence.
4	DD Name: HYDRO Code: NATCON_4 Date accepted: 2000-11-01 Name: hard surfaced Definition: constructed with a surface of hard material, usually a term applied to roads surfaced with asphalt or concrete.
5	DD Name: HYDRO Code: NATCON_5 Date accepted: 2000-11-01 Name: unsurfaced Definition: constructed with no extra protection, usually a term applied to roads not surfaced with a hard material.

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: NATCON_6 Date accepted: 2000-11-01 Name: wooden Definition: constructed from wood.
7	DD Name: HYDRO Code: NATCON_7 Date accepted: 2000-11-01 Name: metal Definition: constructed from metal.
8	DD Name: HYDRO Code: NATCON_8 Date accepted: 2000-11-01 Name: glass reinforced plastic (GRP) Definition: constructed from a plastic material strengthened with fibres of glass.
9	DD Name: HYDRO Code: NATCON_9 Date accepted: 2000-11-01 Name: painted Definition: the application of paint to some other construction or natural feature.

Attribute	Nature of surface - qualifying terms

Acronym: NATQUA Code: 114

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Nature of surface - qualifying terms

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: NATQUA_1 Date accepted: 2000-11-01 Name: Fine Definition: falls within the smallest size continuum for a particular nature of surface term
2	DD Name: HYDRO Code: NATQUA_2 Date accepted: 2000-11-01 Name: Medium Definition: falls within the moderate size continuum for a particular nature of surface term
3	DD Name: HYDRO Code: NATQUA_3 Date accepted: 2000-11-01 Name: Coarse Definition: falls within the largest size continuum for a particular nature of surface term
4	DD Name: HYDRO Code: NATQUA_4 Date accepted: 2000-11-01 Name: Broken Definition: fractured or in pieces

Attribute	Object class definition

Acronym: CLSDEF Code: 18027

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2015-01-01

Definition: Specifies the defining characteristics of a ‘new object’.

Attribute	Object class name

Acronym: CLSNAM Code: 18028

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2015-01-01

Definition: Specifies the descriptive name of a ‘new object’ feature object class.

Attribute	Object name

Acronym: OBJNAM Code: 116

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The individual name of an object.

Attribute	Object name in national language

Acronym: NOBJNM Code: 301

Use Type: N

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Name of object in national language characters

Attribute	Orientation

Acronym: ORIENT Code: 117

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The angular distance measured from true north to the major axis of the object. (Digital Geographic Information Working Group -DGIWG, Oct.87)

Attribute	Periodic date end

Acronym: PEREND Code: 118

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Periodic date start

Acronym: PERSTA Code: 119

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Pictorial representation

Acronym: PICREP Code: 120

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Pilot district

Acronym: PILDST Code: 121

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The area within which a particular pilotage service operates.

Attribute	Pilot district in national language

Acronym: NPLDST Code: 302

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Pilot district (c…): string of national language characters

Attribute	Positional Accuracy

Acronym: POSACC Code: 401

Use Type: F,S

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The best estimate of the accuracy of a position. The expected input is the maximum of the two-dimensional error. The error is assumed to be positive and negative. The plus/minus character shall not be encoded.

Attribute	Product

Acronym: PRODCT Code: 123

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: PRODCT_1 Date accepted: 2000-11-01 Name: oil Definition: a thick, slippery liquid that will not dissolve in water, usually petroleum based in the context of storage tanks. (adapted from the Oxford Minidictionary, Third Edition)
2	DD Name: HYDRO Code: PRODCT_2 Date accepted: 2000-11-01 Name: gas Definition: a substance with particles that can move freely, usually a fuel substance in the context of storage tanks. (adapted from the Oxford Minidictionary, Third Edition)
3	DD Name: HYDRO Code: PRODCT_3 Date accepted: 2000-11-01 Name: water Definition: a colourless, odourless, tasteless liquid that is a compound of hydrogen and oxygen. (adapted from the Oxford Minidictionary, Third Edition)
4	DD Name: HYDRO Code: PRODCT_4 Date accepted: 2000-11-01 Name: stone Definition: a general term for rock fragments. (IHO Dictionary, S-32, 5th Edition, 5059)
5	DD Name: HYDRO Code: PRODCT_5 Date accepted: 2000-11-01 Name: coal Definition: a hard black mineral that is burned as fuel. (adapted from the Oxford Minidictionary, Third Edition)

Value	Data Dictionary (DD) Reference
6	DD Name: HYDRO Code: PRODCT_6 Date accepted: 2000-11-01 Name: ore Definition: a solid rock or mineral from which metal is obtained. (adapted form the Oxford Minidictionary, Third Edition)
7	DD Name: HYDRO Code: PRODCT_7 Date accepted: 2000-11-01 Name: chemicals Definition: any substance obtained by or used in a chemical process. (adapted from the Oxford Minidictionary, Third Edition)
8	DD Name: HYDRO Code: PRODCT_8 Date accepted: 2000-11-01 Name: drinking water Definition: water that is suitable for human consumption. (adapted from the Oxford Minidictionary, Third Edition)
14	DD Name: HYDRO Code: PRODCT_14 Date accepted: 2000-11-01 Name: sand Definition: tiny grains of crushed or worn rock. (adapted from the Oxford Minidictionary, Third Edition)
15	DD Name: HYDRO Code: PRODCT_15 Date accepted: 2000-11-01 Name: timber Definition: wood prepared for use in building or carpentry. (adapted from the Oxford Minidictionary, Third Edition)
17	DD Name: HYDRO Code: PRODCT_17 Date accepted: 2000-11-01 Name: scrap metal Definition: discarded metal suitable for being reprocessed. (adapted from the Oxford Minidictionary, Third Edition)
21	DD Name: HYDRO Code: PRODCT_21 Date accepted: 2000-11-01 Name: cement Definition: a substance made of powdered lime and clay, mixed with water. (adapted from the Websters New World Dictionary)
22	DD Name: HYDRO Code: PRODCT_22 Date accepted: 2000-11-01 Name: grain Definition: a small hard seed, especially that of any cereal plant such as wheat, rice, corn, rye etc. (adapted from the Websters New World Dictionary)

Value	Data Dictionary (DD) Reference
18	DD Name: HYDRO Code: PRODCT_18 Date accepted: 2000-11-01 Name: liquified natural gas (LNG) Definition: a compressed gas consisting of flammable light hydrocarbons and derived from natural gas.
19	DD Name: HYDRO Code: PRODCT_19 Date accepted: 2000-11-01 Name: liquified petroleum gas (LPG) Definition: a compressed gas consisting of flammable light hydrocarbons and derived from petroleum. (adapted from Websters Third New)

Attribute	Quality of position

Acronym: QUAPOS Code: 402

Use Type: F,S

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
4	DD Name: HYDRO Code: QUAPOS_4 Date accepted: 2000-11-01 Name: approximate Definition: a position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 metres of its correct geographic location. Also may apply to an object whose position does not remain fixed. (adapted from IHO Dictionary, S-32, 213, 3967, and IHO Specifications, M-4, 424.1)
10	DD Name: HYDRO Code: QUAPOS_10 Date accepted: 2000-11-01 Name: precisely known Definition: a position that is of a known value, such as the position of an anchor berth or other defined object.

Attribute	Quality of sounding measurement

Acronym: QUASOU Code: 125

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: QUASOU_1 Date accepted: 2000-11-01 Name: depth known Definition: the depth from chart datum to the bottom is a known value.
2	DD Name: HYDRO Code: QUASOU_2 Date accepted: 2000-11-01 Name: depth unknown Definition: the depth from chart datum to the bottom is unknown.
3	DD Name: HYDRO Code: QUASOU_3 Date accepted: 2000-11-01 Name: doubtful sounding Definition: a depth that may be less than indicated. (adapted from IHO Dictionary, S-32, 5th Edition, 4840)
4	DD Name: HYDRO Code: QUASOU_4 Date accepted: 2000-11-01 Name: unreliable sounding Definition: a depth that is considered to be an unreliable value.
6	DD Name: HYDRO Code: QUASOU_6 Date accepted: 2000-11-01 Name: least depth known Definition: the shoalest depth over a feature is of known value. (adapted from IHO Dictionary, S-32, 5th Edition, 2705)
7	DD Name: HYDRO Code: QUASOU_7 Date accepted: 2000-11-01 Name: least depth unknown, safe clearance at depth shown

Value	Data Dictionary (DD) Reference
	Definition: the least depth over a feature is unknown, but there is considered to be safe clearance at this depth.
8	DD Name: HYDRO Code: QUASOU_8 Date accepted: 2000-11-01
	Name: value reported (not surveyed)
	Definition: depth value obtained from a report, but not fully surveyed.
9	DD Name: HYDRO Code: QUASOU_9 Date accepted: 2000-11-01
	Name: value reported (not confirmed)
	Definition: depth value obtained from a report, which it has not been possible to confirm.
10	DD Name: HYDRO Code: QUASOU_10 Date accepted: 2000-11-01
	Name: maintained depth
	Definition: the depth at which a channel is kept by human influence, usually by dredging. (IHO Dictionary, S-32, 5th Edition, 3057)
11	DD Name: HYDRO Code: QUASOU_11 Date accepted: 2000-11-01
	Name: not regularly maintained
	Definition: depths may be altered by human influence, but will not be routinely maintained.

Attribute	Radar wave length

Acronym: RADWAL Code: 126

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The distance between two successive peaks (or other points of identical phase) on an electromagnetic wave in the radar band of the electromagnetic spectrum.

Attribute	Reference year for magnetic variation

Acronym: RYRMGV Code: 130

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The reference calendar year for magnetic variation values.

Attribute	Restriction

Acronym: RESTRN Code: 131

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: RESTRN_1 Date accepted: 2000-11-01 Name: anchoring prohibited Definition: an area within which anchoring is not permitted.
2	DD Name: HYDRO Code: RESTRN_2 Date accepted: 2000-11-01 Name: anchoring restricted Definition: a specified area designated by appropriate authority, within which anchoring is restricted in accordance with certain specified conditions.
3	DD Name: HYDRO Code: RESTRN_3 Date accepted: 2000-11-01 Name: fishing prohibited Definition: an area within which fishing is not permitted.
4	DD Name: HYDRO Code: RESTRN_4 Date accepted: 2000-11-01 Name: fishing restricted Definition: a specified area designated by appropriate authority, within which fishing is restricted in accordance with certain specified conditions.
5	DD Name: HYDRO Code: RESTRN_5 Date accepted: 2000-11-01 Name: trawling prohibited Definition: an area within which trawling is not permitted.
6	DD Name: HYDRO Code: RESTRN_6 Date accepted: 2000-11-01

Value Data Dictionary (DD) Reference

Name: trawling restricted

Definition: a specified area designated by appropriate authority, within which trawling is restricted in accordance with certain specified conditions.

7 DD Name: HYDRO Code: RESTRN_7 Date accepted: 2000-11-01

Name: entry prohibited

Definition: an area within which navigation and/or anchoring is prohibited.

8 DD Name: HYDRO Code: RESTRN_8 Date accepted: 2000-11-01

Name: entry restricted

Definition: a specified area designated by appropriate authority, within which navigation is restricted in accordance with certain specified conditions.

9 DD Name: HYDRO Code: RESTRN_9 Date accepted: 2000-11-01

Name: dredging prohibited

Definition: an area within which dredging is not permitted.

10 DD Name: HYDRO Code: RESTRN_10 Date accepted: 2000-11-01

Name: dredging restricted

Definition: a specified area designated by appropriate authority, within which dredging is restricted in accordance with certain specified conditions.

11 DD Name: HYDRO Code: RESTRN_11 Date accepted: 2000-11-01

Name: diving prohibited

Definition: an area within which diving is not permitted.

12 DD Name: HYDRO Code: RESTRN_12 Date accepted: 2000-11-01

Name: diving restricted

Definition: a specified area designated by appropriate authority, within which diving is restricted in accordance with certain specified conditions.

13 DD Name: HYDRO Code: RESTRN_13 Date accepted: 2000-11-01

Name: no wake

Definition: mariners must adjust the speed of their vessels to reduce the wave or wash which may cause erosion or disturb moored vessels.

14 DD Name: HYDRO Code: RESTRN_14 Date accepted: 2000-11-01

Name: area to be avoided

Definition: an IMO designated area to be avoided, defined as a routeing measure.

Value	Data Dictionary (DD) Reference
15	DD Name: HYDRO Code: RESTRN_15 Date accepted: 2000-11-01 Name: construction prohibited Definition: the erection of permanent or temporary fixed structures or artificial islands is prohibited.
16	DD Name: HYDRO Code: RESTRN_16 Date accepted: 2000-11-01 Name: discharging prohibited Definition: an area within which discharging or dumping is prohibited
17	DD Name: HYDRO Code: RESTRN_17 Date accepted: 2000-11-01 Name: discharging restricted Definition: a specified area designated by an appropriate authority, within which discharging or dumping is restricted in accordance with specified conditions.
18	DD Name: HYDRO Code: RESTRN_18 Date accepted: 2000-11-01 Name: industrial or mineral exploration/development prohibited Definition: an area within which industrial or mineral exploration and development are prohibited.
19	DD Name: HYDRO Code: RESTRN_19 Date accepted: 2000-11-01 Name: industrial or mineral exploration/development restricted Definition: a specified area designated by an appropriate authority, within which industrial or mineral exploration and development is restricted in accordance with certain specified conditions.
20	DD Name: HYDRO Code: RESTRN_20 Date accepted: 2000-11-01 Name: drilling prohibited Definition: an area within which excavating a hole on the sea-bottom with a drill is prohibited.
21	DD Name: HYDRO Code: RESTRN_21 Date accepted: 2000-11-01 Name: drilling restricted Definition: a specified area designated by an appropriate authority, within which excavating a hole on the sea-bottom with a drill is restricted in accordance with certain specified conditions.
22	DD Name: HYDRO Code: RESTRN_22 Date accepted: 2000-11-01 Name: removal of historical artifacts prohibited Definition: an area within which the removal of historical artifacts is prohibited.
23	DD Name: HYDRO Code: RESTRN_23 Date accepted: 2000-11-01 Name: cargo transhipment (lightering) prohibited Definition: an area in which cargo transhipment (lightering) is prohibited.

Value	Data Dictionary (DD) Reference
24	DD Name: HYDRO Code: RESTRN_24 Date accepted: 2000-11-01 Name: dragging prohibited Definition: an area in which the dragging of anything along the bottom, e.g. bottom trawling, is prohibited.
25	DD Name: HYDRO Code: RESTRN_25 Date accepted: 2000-11-01 Name: stopping prohibited Definition: an area in which a vessel is prohibited from stopping.
26	DD Name: HYDRO Code: RESTRN_26 Date accepted: 2000-11-01 Name: landing prohibited Definition: an area in which landing is prohibited.
27	DD Name: HYDRO Code: RESTRN_27 Date accepted: 2000-11-01 Name: speed restricted Definition: an area within which speed is restricted.
38	DD Name: IENC Code: restrn_38 Date accepted: 2000-11-01 Name: use of spuds prohibited Definition: The use of anchoring spuds (telescopic piles) is prohibited

Attribute	Scale minimum

Acronym: SCAMIN Code: 133

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Sector limit one

Acronym: SECTR1 Code: 136

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2008-01-31

Definition: A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner=s Dictionary, 2nd Edition) Sector limit 1 specifies the first limit of the sector. The order of sector limit 1 and sector limit 2 is clockwise around the central object (e.g. a light).

Attribute	Sector limit two

Acronym: SECTR2 Code: 137

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2008-01-31

Definition: A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner=s Dictionary, 2nd Edition) The sector limit 2 specifies the second limit of the sector. The order of sector limit 1 and sector limit 2 is clockwise around the central object (e.g. a light).

Attribute	Signal frequency

Acronym: SIGFRQ Code: 139

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The frequency of a signal.

Attribute	Signal generation

Acronym: SIGGEN Code: 140

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: SIGGEN_1 Date accepted: 2000-11-01 Name: automatically Definition: signal generation is initiated by a self regulating mechanism such as a timer or light sensor.
2	DD Name: HYDRO Code: SIGGEN_2 Date accepted: 2000-11-01 Name: by wave action Definition: the signal is generated by the motion of the sea surface such as a bell in a buoy.

Attribute	Signal group

Acronym: SIGGRP Code: 141

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The number of signals, the combination of signals or the morse character(s) within one period of full sequence.

Attribute	Signal period

Acronym: SIGPER Code: 142

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The time occupied by an entire cycle of intervals of light and eclipse.

Attribute	Signal sequence

Acronym: SIGSEQ Code: 143

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The sequence of times occupied by intervals of light and eclipse for all 'light characteristics' except for occulting where the sequence of times is occupied by intervals of eclipse and light.

Attribute	Sounding accuracy

Acronym: SOUACC Code: 144

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The best estimate of the accuracy of the sounding data. The maximum of the one-dimensional error. The error is assumed to be positive and negative. The plus/minus character shall not be encoded.

Attribute	Source date

Acronym: SORDAT Code: 147

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Source indication

Acronym: SORIND Code: 148

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Information about the source of the object.

Attribute	Status

Acronym: STATUS Code: 149

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: STATUS_2 Date accepted: 2000-11-01 Name: occasional Definition: acting on special occasions; happening irregularly. (The Concise Oxford Dictionary, 7th Edition)
3	DD Name: HYDRO Code: STATUS_3 Date accepted: 2000-11-01 Name: recommended Definition: presented as worthy of confidence, acceptance, use, etc. (The Macquarie Dictionary, 1988)
4	DD Name: HYDRO Code: STATUS_4 Date accepted: 2000-11-01 Name: not in use Definition: no longer used for the purpose intended; disused.
8	DD Name: HYDRO Code: STATUS_8 Date accepted: 2000-11-01 Name: private Definition: not in public ownership or operation.
9	DD Name: HYDRO Code: STATUS_9 Date accepted: 2000-11-01 Name: mandatory Definition: compulsory; enforced. (The Concise Oxford Dictionary, 7th Edition)
12	DD Name: HYDRO Code: STATUS_12 Date accepted: 2000-11-01 Name: illuminated Definition: lit by floodlights, strip lights, etc.

Value	Data Dictionary (DD) Reference
14	DD Name: HYDRO Code: STATUS_14 Date accepted: 2000-11-01 Name: public Definition: belonging to, available to, used or shared by, the community as a whole and not restricted to private use. (adapted from The New Shorter Oxford English Dictionary, 1993)
16	DD Name: HYDRO Code: STATUS_16 Date accepted: 2000-11-01 Name: watched Definition: looked at or observed over a period of time especially so as to be aware of any movement or change. (adapted from The New Shorter Oxford English Dictionary, 1993)
17	DD Name: HYDRO Code: STATUS_17 Date accepted: 2000-11-01 Name: un-watched Definition: usually automatic in operation, without any permanently-stationed personnel to superintend it. (adapted from IHO Dictionary, S-32, 5th Edition, 2814)
18	DD Name: HYDRO Code: STATUS_18 Date accepted: 2000-11-01 Name: existence doubtful Definition: an object that has been reported but has not been definitely determined to exist.
7	DD Name: HYDRO Code: STATUS_7 Date accepted: 2000-11-01 Name: temporary Definition: meant to last only for a time. (The Concise Oxford Dictionary)
1	DD Name: HYDRO Code: STATUS_1 Date accepted: 2000-11-01 Name: permanent Definition: intended to last or function indefinitely
5	DD Name: HYDRO Code: STATUS_5 Date accepted: 2000-11-01 Name: periodic/intermittent Definition: recurring at intervals
6	DD Name: HYDRO Code: STATUS_6 Date accepted: 2000-11-01 Name: reserved Definition: set apart for some specific use.
11	DD Name: HYDRO Code: STATUS_11 Date accepted: 2000-11-01 Name: extinguished Definition: no longer lit

Value	Data Dictionary (DD) Reference
13	DD Name: HYDRO Code: STATUS_13 Date accepted: 2000-11-01 Name: historic Definition: famous in history; of historical interest
15	DD Name: HYDRO Code: STATUS_15 Date accepted: 2000-11-01 Name: synchronized Definition: occur at a time, coincide in point of time, be contemporary or simultaneous

Attribute	Survey authority

Acronym: SURATH Code: 150

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The authority which was responsible for the survey.

Attribute	Survey date - end

Acronym: SUREND Code: 151

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The end date of the survey.

Attribute	Survey date - start

Acronym: SURSTA Code: 152

Use Type: F

Value Type: S

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The start date of the survey.

Attribute	Survey type

Acronym: SURTYP Code: 153

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: HYDRO Code: SURTYP_2 Date accepted: 2000-11-01 Name: controlled survey Definition: a thorough survey usually conducted with reference to guidelines.

Attribute	Symbol instruction

Acronym: SYMINS Code: 18029

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2015-01-01

Definition: This specifies the S-52 Presentation Library symbol instruction to be adopted in ECDIS for the new object class (as specified in the S-52 Symbol Library - Addendum to S-52 Presentation Library).

Attribute	Technique of sounding measurement

Acronym: TECSOU Code: 156

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: TECSOU_1 Date accepted: 2000-11-01 Name: found by echo-sounder Definition: the depth was determined by using an instrument that determines depth of water by measuring the time interval between emission of a sonic or ultrasonic signal and return of its echo from the bottom. (adapted from IHO Dictionary, S-32, 1547)
2	DD Name: HYDRO Code: TECSOU_2 Date accepted: 2000-11-01 Name: found by side-scan-sonar Definition: the depth was computed from a record produced by active sonar in which fixed acoustic beams are directed into the water perpendicularly to the direction of travel to scan the bottom and generate a record of the bottom configuration. (adapted from IHO Dictionary, S-32, 4710)
3	DD Name: HYDRO Code: TECSOU_3 Date accepted: 2000-11-01 Name: found by multi-beam Definition: the depth was determined by using a wide swath echo sounder that uses multiple beams to measure depths directly below and transverse to the ship's track. (adapted from IHO Dictionary, S-32, 3339)
4	DD Name: HYDRO Code: TECSOU_4 Date accepted: 2000-11-01 Name: found by diver Definition: the depth was determined by a person skilled in the practice of diving. (adapted from IHO Dictionary, S-32, 1422)
5	DD Name: HYDRO Code: TECSOU_5 Date accepted: 2000-11-01 Name: found by lead-line

Value Data Dictionary (DD) Reference

Definition: the depth was determined by using a line, graduated with attached marks and fastened to a sounding lead. (adapted from IHO Dictionary, S-32, 2698)

6 DD Name: HYDRO Code: TECSOU_6 Date accepted: 2000-11-01

Name: swept by wire-drag

Definition: the given area was determined to be free from navigational dangers to a certain depth by towing a buoyed wire at the desired depth by two launches, or a least depth was identified using the same technique. (adapted from IHO Dictionary, S-32, 5248, 6013)

7 DD Name: HYDRO Code: TECSOU_7 Date accepted: 2000-11-01

Name: found by laser

Definition: the depth was determined by using an instrument that measures distance by emitting timed pulses of laser light and measuring the time between emission and reception of the reflected pulses. (adapted from IHO Dictionary, S-32, 2763)

8 DD Name: HYDRO Code: TECSOU_8 Date accepted: 2000-11-01

Name: swept by vertical acoustic system

Definition: the given area has been swept using a system comprised of multiple echo sounder transducers attached to booms deployed from the survey vessel.

9 DD Name: HYDRO Code: TECSOU_9 Date accepted: 2000-11-01

Name: found by electromagnetic sensor

Definition: the depth was determined by using an instrument that compares electromagnetic signals. (adapted from IHO Dictionary, S-32, 1571)

10 DD Name: HYDRO Code: TECSOU_10 Date accepted: 2000-11-01

Name: photogrammetry

Definition: the depth was determined by applying mathematical techniques to photographs. (adapted from IHO Dictionary, S-32, 3791)

11 DD Name: HYDRO Code: TECSOU_11 Date accepted: 2000-11-01

Name: satellite imagery

Definition: the depth was determined by using instruments placed aboard an artificial satellite. (adapted from IHO Dictionary, S-32, 4509)

12 DD Name: HYDRO Code: TECSOU_12 Date accepted: 2000-11-01

Name: found by levelling

Definition: the depth was determined by using levelling techniques to find the elevation of the point relative to a datum. (adapted from IHO Dictionary, S-32, 2741)

13 DD Name: HYDRO Code: TECSOU_13 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference
	Name: swept by side-scan-sonar
	Definition: the given area was determined to be free from navigational dangers to a certain depth by towing a side-scan-sonar. (adapted from IHO Dictionary, S-32, 5248, 4710) [415.2]
14	DD Name: HYDRO Code: TECSOU_14 Date accepted: 2000-11-01
	Name: computer generated
	Definition: the sounding was determined from a bottom model constructed using a computer.

Attribute	Textual description

Acronym: TXTDSC Code: 158

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

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

Attribute	Textual description in national language

Acronym: NTXTDS Code: 304

Use Type: N

Value Type: T

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The file name of an external text file that contains the text in a national language.

Attribute	Topmark/daymark shape

Acronym: TOPSHP Code: 171

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: TOPSHP_1 Date accepted: 2000-11-01 Name: cone, point up Definition: is where the vertex points up.
2	DD Name: HYDRO Code: TOPSHP_2 Date accepted: 2000-11-01 Name: cone, point down Definition: is where the vertex points down.
3	DD Name: HYDRO Code: TOPSHP_3 Date accepted: 2000-11-01 Name: sphere Definition: a body the surface of which is at all points equidistant from the centre. (The New Shorter Oxford English Dictionary. 1993. vol 2). Spheres are commonly used as International Association of Lighthouse Authorities - IALA topmarks (safe water).
4	DD Name: HYDRO Code: TOPSHP_4 Date accepted: 2000-11-01 Name: 2 spheres Definition: two black spheres are commonly used as an International Association of Lighthouse Authorities - IALA topmark (isolated danger).
5	DD Name: HYDRO Code: TOPSHP_5 Date accepted: 2000-11-01 Name: cylinder (can) Definition: a solid geometrical figure generated by straight lines fixed in direction and describing with one of point a closed curve, especially a circle (in which case the figure is circular cylinder, it's ends being parallel circles). (The New Shorter Oxford English Dictionary. 1993. vol 2). Cylinders are commonly used as

Value	Data Dictionary (DD) Reference
	International Association of Lighthouse Authorities - IALA topmarks (lateral).
6	DD Name: HYDRO Code: TOPSHP_6 Date accepted: 2000-11-01
	Name: board
	Definition: usually of rectangular shape, made from timber or metal and used to provide a contrast with the natural background of a daymark. The actual daymark is often painted on to this board.
7	DD Name: HYDRO Code: TOPSHP_7 Date accepted: 2000-11-01
	Name: x-shape (St. Andrew's cross)
	Definition: having a shape or a cross-section like the capital letter X. (The New Shorter Oxford English Dictionary. 1993. vol 2). An x-shape as an International Association of Lighthouse Authorities - IALA topmark should be 3 dimensional in shape. It is made of at least three crossed bars.
8	DD Name: HYDRO Code: TOPSHP_8 Date accepted: 2000-11-01
	Name: upright cross (St George's cross)
	Definition: a cross with one vertical member and one horizontal member, i.e. similar in shape to the character '+'.
9	DD Name: HYDRO Code: TOPSHP_9 Date accepted: 2000-11-01
	Name: cube, point up
	Definition: a cube standing on one of its vertexes.
10	DD Name: HYDRO Code: TOPSHP_10 Date accepted: 2000-11-01
	Name: 2 cones, point to point
	Definition: 2 cones, one above the other, with their vertices together in the centre.
11	DD Name: HYDRO Code: TOPSHP_11 Date accepted: 2000-11-01
	Name: 2 cones, base to base
	Definition: 2 cones, one above the other, with their bases together in the centre and their vertices pointing up and down.
12	DD Name: HYDRO Code: TOPSHP_12 Date accepted: 2000-11-01
	Name: rhombus (diamond)
	Definition: a plane figure having four equal sides and equal opposite angles (two acute and two obtuse); an oblique equilateral parallelogram. (The New Shorter Oxford English Dictionary. 1993. vol 2)
13	DD Name: HYDRO Code: TOPSHP_13 Date accepted: 2000-11-01
	Name: 2 cones (points upward)
	Definition: 2 cones, one above the other, with their their vertices pointing up

Value	Data Dictionary (DD) Reference
14	DD Name: HYDRO Code: TOPSHP_14 Date accepted: 2000-11-01 Name: 2 cones (points downward) Definition: 2 cones, one above the other, with their their vertices pointing down
15	DD Name: HYDRO Code: TOPSHP_15 Date accepted: 2000-11-01 Name: besom, point up (broom or perch) Definition: a bundle of rods or twigs. (The New Shorter Oxford English Dictionary. 1993. vol 1)
16	DD Name: HYDRO Code: TOPSHP_16 Date accepted: 2000-11-01 Name: besom, point down (broom or perch) Definition: a bundle of rods or twigs. (The New Shorter Oxford English Dictionary. 1993. vol 1)
17	DD Name: HYDRO Code: TOPSHP_17 Date accepted: 2000-11-01 Name: flag Definition: a flag mounted on a short pole.
18	DD Name: HYDRO Code: TOPSHP_18 Date accepted: 2000-11-01 Name: sphere over rhombus Definition: A sphere located above a rhombus.
19	DD Name: HYDRO Code: TOPSHP_19 Date accepted: 2000-11-01 Name: square Definition: a plane figure with four right angles and four equal straight sides (The New Shorter Oxford English Dictionary. 1993. vol 2)
20	DD Name: HYDRO Code: TOPSHP_20 Date accepted: 2000-11-01 Name: rectangle, horizontal Definition: a plane figure with four right angles and four straight sides, opposite sides being parallel and equal in length where the two longer opposite sides are standing horizontally (The New Shorter Oxford English Dictionary. 1993. vol 2).
21	DD Name: HYDRO Code: TOPSHP_21 Date accepted: 2000-11-01 Name: rectangle, vertical Definition: a plane figure with four right angles and four straight sides, opposite sides being parallel and equal in length where the two longer opposite sides are standing vertically (The New Shorter Oxford English Dictionary. 1993. vol 2).
22	DD Name: HYDRO Code: TOPSHP_22 Date accepted: 2000-11-01 Name: trapezium, up

Value Data Dictionary (DD) Reference

Definition: a quadrilateral having one pair of opposite sides parallel which stands on its longer parallel side. (The New Shorter Oxford English Dictionary. 1993. vol 2).

23 DD Name: HYDRO Code: TOPSHP_23 Date accepted: 2000-11-01

Name: trapezium, down

Definition: a quadrilateral having one pair of opposite sides parallel which stands on its shorter parallel side. (The New Shorter Oxford English Dictionary. 1993. vol 2).

24 DD Name: HYDRO Code: TOPSHP_24 Date accepted: 2000-11-01

Name: triangle, point up

Definition: a figure having three angles and three sides with point up. (New Shorter Oxford English Dictionary. 1993. vol 2)

25 DD Name: HYDRO Code: TOPSHP_25 Date accepted: 2000-11-01

Name: triangle, point down

Definition: a figure having three angles and three sides with point down. (New Shorter Oxford English Dictionary. 1993. vol 2)

26 DD Name: HYDRO Code: TOPSHP_26 Date accepted: 2000-11-01

Name: circle

Definition: a perfectly round plane figure whose circumference is everywhere equidistant from its centre. (The New Shorter Oxford English Dictionary. 1993. vol 1)

27 DD Name: HYDRO Code: TOPSHP_27 Date accepted: 2000-11-01

Name: two upright crosses (one over the other)

Definition: two upright crosses, generally vertically disposed one above the other.

28 DD Name: HYDRO Code: TOPSHP_28 Date accepted: 2000-11-01

Name: T-shape

Definition: having a shape like the capital letter T.

29 DD Name: HYDRO Code: TOPSHP_29 Date accepted: 2000-11-01

Name: triangle pointing up over a circle

Definition: a triangle, vertex uppermost, located above a circle.

30 DD Name: HYDRO Code: TOPSHP_30 Date accepted: 2000-11-01

Name: upright cross over a circle

Definition: an upright cross located above a circle.

31 DD Name: HYDRO Code: TOPSHP_31 Date accepted: 2000-11-01

Value	Data Dictionary (DD) Reference				
	Name:	rhombus over a circle			
	Definition:	a rhombus located above a circle.			
32	DD Name:	HYDRO	Code: TOPSHP_32	Date accepted:	2000-11-01
	Name:	circle over a triangle pointing up			
	Definition:	a circle located over a triangle, vertex uppermost.			
33	DD Name:	HYDRO	Code: TOPSHP_33	Date accepted:	2000-11-01
	Name:	other shape (see INFORM)			
	Definition:				

Attribute	Traffic flow

Acronym: TRAFIC Code: 172

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: TRAFIC_1 Date accepted: 2000-11-01 Name: inbound Definition: traffic flow in a general direction toward a port or similar destination.
2	DD Name: HYDRO Code: TRAFIC_2 Date accepted: 2000-11-01 Name: outbound Definition: traffic flow in a general direction away from a port or similar point of origin.
3	DD Name: HYDRO Code: TRAFIC_3 Date accepted: 2000-11-01 Name: one-way Definition: traffic flow in one general direction only.
4	DD Name: HYDRO Code: TRAFIC_4 Date accepted: 2000-11-01 Name: two-way Definition: traffic flow in two generally opposite directions.

Attribute	Value of annual change in magnetic variation

Acronym: VALACM Code: 173

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The annual change in magnetic variation values.

Attribute	Value of depth contour

Acronym: VALDCO Code: 174

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The depth of a sea bottom contour.

Attribute	Value of magnetic variation

Acronym: VALMAG Code: 176

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The magnetic variation value.

Attribute	Value of maximum range

Acronym: VALMXR Code: 177

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The extreme distance at which an object can be seen or a signal detected.

Attribute	Value of nominal range

Acronym: VALNMR Code: 178

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The nominal range at which an object can be seen or a signal detected

Attribute	Value of sounding

Acronym: VALSOU Code: 179

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The value of the measurement of a sounding relative to the chart datum.

Attribute	Vertical Accuracy

Acronym: VERACC Code: 180

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The one-dimensional error. The error is assumed to be positive and negative. The plus/minus character shall not be encoded.

Attribute	Vertical clearance

Acronym: VERCLR Code: 181

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The vertical clearance measured from the plane towards the object overhead.

Attribute	Vertical clearance, closed

Acronym: VERCCL Code: 182

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The vertical clearance of an object in closed condition (e.g. a closed lifting bridge) measured from the plane towards the object overhead.

Attribute	Vertical clearance, open

Acronym: VERCOP Code: 183

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: The vertical clearance of an object in opened condition (e.g. an opened lifting bridge) measured from the plane towards the object overhead.

Attribute	Vertical datum

Acronym: VERDAT Code: 185

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2001-05-31

Definition: Vertical datum

Enumerations:

Value	Data Dictionary (DD) Reference
4	DD Name: HYDRO Code: VERDAT_4 Date accepted: 2001-05-31 Name: Lowest low water Definition: an arbitrary level conforming to the lowest tide observed at a place, or some what lower.
24	DD Name: HYDRO Code: VERDAT_24 Date accepted: 2000-11-01 Name: Local datum Definition: an arbitrary datum defined by a local harbour authority, from which levels and tidal heights are measured by this authority.
23	DD Name: HYDRO Code: VERDAT_23 Date accepted: 2000-11-01 Name: Lowest astronomical tide Definition: (LAT) - the lowest tide level which can be predicted to occur under average meterological conditions and under any combination of astronomical conditions. (IHO Dictionary, S-32, 5th Edition, 2936)
30	DD Name: HYDRO Code: VERDAT_30 Date accepted: 2000-11-01 Name: Highest astronomical tide Definition: (HAT) - the highest tidal level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. (IHO Dictionary, S-32, 5th Edition, 2244).

Attribute	Vertical length

Acronym: VERLEN Code: 186

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition: Vertical length

Attribute	Water level effect

Acronym: WATLEV Code: 187

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: HYDRO Date accepted: 2000-11-01

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: HYDRO Code: WATLEV_1 Date accepted: 2000-11-01 Name: partly submerged at high water Definition: partially covered and partially dry at high water.
2	DD Name: HYDRO Code: WATLEV_2 Date accepted: 2000-11-01 Name: always dry Definition: not covered at high water under average meteorological conditions.
3	DD Name: HYDRO Code: WATLEV_3 Date accepted: 2000-11-01 Name: always under water/submerged Definition: remains covered by water at all times under average meteorological conditions.
4	DD Name: HYDRO Code: WATLEV_4 Date accepted: 2000-11-01 Name: covers and uncovers Definition: expression intended to indicate an area of a reef or other projection from the bottom of a body of water which periodically extends above and is submerged below the surface. Also referred to as dries or uncovers. (IHO Dictionary, S-32, 5th Edition, 1111)
5	DD Name: HYDRO Code: WATLEV_5 Date accepted: 2000-11-01 Name: awash Definition: flush with, or washed by the waves at low water under average meteorological conditions. (adapted from IHO Dictionary, S-32, 5th Edition, 308)
7	DD Name: HYDRO Code: WATLEV_7 Date accepted: 2000-11-01

Value Data Dictionary (DD) Reference

Name: floating

Definition: resting or moving on the surface of a liquid without sinking (Concise Oxford Dictionary)

Attribute	Additional mark

Acronym: addmrk Code: 17050

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Shape and position of an additional board on a notice mark

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: addmrk_1 Date accepted: 2001-05-31 Name: top (board) Definition: a rectangular board at the top of the main sign
2	DD Name: IENC Code: addmrk_2 Date accepted: 2001-05-31 Name: bottom (board) Definition: a rectangular board at the bottom of the main sign
3	DD Name: IENC Code: addmrk_3 Date accepted: 2001-05-31 Name: right (triangle to the right) Definition: a triangular board at the right side of the main sign
4	DD Name: IENC Code: addmrk_4 Date accepted: 2001-05-31 Name: left (triangle to the left) Definition: a triangular board at the left side of the main sign
5	DD Name: IENC Code: addmrk_5 Date accepted: 2001-05-31 Name: bottom (triangle to the bottom) Definition: a triangular board at the bottom of the main sign

Attribute	Allowed consumption

Acronym: allcon Code: 18033

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2014-11-26

Definition: The maximum allowed power that may be used by the vessel

Attribute	Amount of amperage

Acronym: amoamp Code: 18032

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2014-11-26

Definition: The maximum electric amperage possible

Attribute	Assemblies of ship (excluding)

Acronym: lc_ase Code: 18015

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Excluding list of assemblies of ships for the applicability of a feature

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lc_ase_1 Date accepted: 2001-05-31 Name: all types Definition:
2	DD Name: IENC Code: lc_ase_2 Date accepted: 2001-05-31 Name: other Definition:
3	DD Name: IENC Code: lc_ase_3 Date accepted: 2001-05-31 Name: single vessel Definition:
5	DD Name: IENC Code: lc_ase_5 Date accepted: 2001-05-31 Name: convoy Definition: a rigid or towed convoy of craft
6	DD Name: IENC Code: lc_ase_6 Date accepted: 2001-05-31 Name: formation Definition: the manner in which a convoy is assembled
7	DD Name: IENC Code: lc_ase_7 Date accepted: 2001-05-31 Name: rigid convoy Definition: a pushed convoy or breasted up formation

Value	Data Dictionary (DD) Reference
8	DD Name: IENC Code: lc_ase_8 Date accepted: 2001-05-31 Name: pushed convoy Definition: a rigid assembly of craft of which at least one is positioned in front of the craft providing the power for propelling the convoy, known as the "pusher(s)"; a convoy composed of a pusher craft and a pushed craft coupled so as to permit guided articulation is also considered as rigid
9	DD Name: IENC Code: lc_ase_9 Date accepted: 2001-05-31 Name: breasted up formation Definition: an assembly of craft coupled rigidly side by side, none of which is positioned in front of the craft propelling the assembly
10	DD Name: IENC Code: lc_ase_10 Date accepted: 2001-05-31 Name: towed convoy Definition: an assembly of one or more craft, floating establishments or floating installations towed by one or more self-propelled craft forming part of the convoy

Attribute	Assemblies of ship (including)

Acronym: lc_asi Code: 18014

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Including list of assemblies of ships for the applicability of a feature

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lc_asi_1 Date accepted: 2001-05-31 Name: all types Definition:
2	DD Name: IENC Code: lc_asi_2 Date accepted: 2001-05-31 Name: other Definition:
3	DD Name: IENC Code: lc_asi_3 Date accepted: 2001-05-31 Name: single vessel Definition:
5	DD Name: IENC Code: lc_asi_5 Date accepted: 2001-05-31 Name: convoy Definition: a rigid or towed convoy of craft
6	DD Name: IENC Code: lc_asi_6 Date accepted: 2001-05-31 Name: formation Definition: the manner in which a convoy is assembled
7	DD Name: IENC Code: lc_asi_7 Date accepted: 2001-05-31 Name: rigid convoy Definition: a pushed convoy or breasted up formation

Value	Data Dictionary (DD) Reference
8	DD Name: IENC Code: lc_asi_8 Date accepted: 2001-05-31 Name: pushed convoy Definition: a rigid assembly of craft of which at least one is positioned in front of the craft providing the power for propelling the convoy, known as the "pusher(s)"; a convoy composed of a pusher craft and a pushed craft coupled so as to permit guided articulation is also considered as rigid
9	DD Name: IENC Code: lc_asi_9 Date accepted: 2001-05-31 Name: breasted up formation Definition: an assembly of craft coupled rigidly side by side, none of which is positioned in front of the craft propelling the assembly
10	DD Name: IENC Code: lc_asi_10 Date accepted: 2001-05-31 Name: towed convoy Definition: an assembly of one or more craft, floating establishments or floating installations towed by one or more self-propelled craft forming part of the convoy

Attribute	Average Passing Time Reference

Acronym: aptref Code: 17099

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The string encodes the file name of an external file

Attribute	Bank of the waterway

Acronym: bnkwtw Code: 17105

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2009-09-11

Definition: Bank of the river (waterway)

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: bnkwtw_1 Date accepted: 2009-09-11 Name: left Definition: left bank of the river
2	DD Name: IENC Code: bnkwtw_2 Date accepted: 2009-09-11 Name: right Definition: right bank of the river

Attribute	Bunker vessel, availability

Acronym: bunves Code: 17065

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Indication of the availability of a bunker vessel

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: bunves_1 Date accepted: 2001-05-31 Name: bunker vessel available Definition: a bunker vessel is available
2	DD Name: IENC Code: bunves_2 Date accepted: 2001-05-31 Name: no bunker vessel available Definition: a bunker vessel is not available

Attribute	Category of anchorage

Acronym: catach Code: 17000

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of anchorage

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catach_1 Date accepted: 2001-05-31 Name: unrestricted anchorage Definition: an area in which vessels anchor or may anchor. (IHO Dictionary, S-32, 5th Edition, 130)
2	DD Name: IENC Code: catach_2 Date accepted: 2001-05-31 Name: deep water anchorage Definition: an area in which vessels of deep draught anchor or may anchor.
3	DD Name: IENC Code: catach_3 Date accepted: 2001-05-31 Name: tanker anchorage Definition: an area in which tankers anchor or may anchor.
4	DD Name: IENC Code: catach_4 Date accepted: 2001-05-31 Name: explosives anchorage Definition: an area set apart for anchored ships discharging or receiving explosives. (IHO Dictionary, S-32, 5th Edition, 1732)
5	DD Name: IENC Code: catach_5 Date accepted: 2001-05-31 Name: quarantine anchorage Definition: an area where a vessel anchors when satisfying quarantine regulations. (IHO Dictionary, S-32, 5th Edition, 4117)
6	DD Name: IENC Code: catach_6 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference
	Name: sea-plane anchorage
	Definition: an area in which sea-planes anchor or may anchor.
7	DD Name: IENC Code: catach_7 Date accepted: 2001-05-31
	Name: small craft anchorage
	Definition: an area in which yachts and small boats anchor or may anchor.
9	DD Name: IENC Code: catach_9 Date accepted: 2001-05-31
	Name: anchorage for periods up to 24 hours
	Definition: an area in which vessels anchor or may anchor for periods of up to 24 hours.
10	DD Name: IENC Code: catach_10 Date accepted: 2001-05-31
	Name: anchorage for pushing-navigation vessels
	Definition: an area where pushing-navigation vessels may anchor
11	DD Name: IENC Code: catach_11 Date accepted: 2001-05-31
	Name: anchorage for other vessels than pushing-navigation vessels
	Definition: an area where other vessels than pushing-navigation vessels may anchor
12	DD Name: IENC Code: catach_12 Date accepted: 2009-12-09
	Name: anchorage for dry cargo vessels
	Definition: an area where dry cargo vessels may anchor
13	DD Name: IENC Code: catach_13 Date accepted: 2009-12-09
	Name: anchorage for rafts
	Definition: an area where rafts may anchor

Attribute	Category of berth

Acronym: catbrt Code: 17066

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of berth

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catbrt_1 Date accepted: 2001-05-31 Name: loading Definition: A place where vessels may berth for loading cargo.
2	DD Name: IENC Code: catbrt_2 Date accepted: 2001-05-31 Name: unloading Definition: A place where vessels may berth for unloading cargo.
3	DD Name: IENC Code: catbrt_3 Date accepted: 2001-05-31 Name: overnight accommodation Definition: Berths that are suitable/ meant for berthing overnight.
4	DD Name: IENC Code: catbrt_4 Date accepted: 2001-05-31 Name: berth for pushing-navigation vessels Definition: an place where pushing-navigation vessels may berth.
5	DD Name: IENC Code: catbrt_5 Date accepted: 2001-05-31 Name: berth for other vessels than pushing-navigation vessels Definition: an place where other vessels than pushing-navigation vessels may berth.
6	DD Name: IENC Code: catbrt_6 Date accepted: 2001-05-31 Name: fleeting area Definition: A legally permitted area in or near the waterway designated for temporary barge mooring.

Value	Data Dictionary (DD) Reference
7	DD Name: IENC Code: catbrt_7 Date accepted: 2001-05-31 Name: first class landing Definition: A federally designated area that provides tie-ups and at least 9 feet (2.7m) of water depth during low water level.
8	DD Name: IENC Code: catbrt_8 Date accepted: 2001-05-31 Name: second class landing Definition: A federally designated area that provides tie-ups and at least 9 feet (2.7m) of water depth normal pool level.
9	DD Name: IENC Code: catbrt_9 Date accepted: 2012-12-19 Name: berth for passenger vessels Definition:

Attribute	Category of bunker station

Acronym: catbun Code: 17067

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of bunker station

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catbun_1 Date accepted: 2001-05-31 Name: diesel oil Definition: diesel oil available
2	DD Name: IENC Code: catbun_2 Date accepted: 2001-05-31 Name: water Definition: water available
3	DD Name: IENC Code: catbun_3 Date accepted: 2001-05-31 Name: ballast Definition: ballast available
4	DD Name: IENC Code: catbun_4 Date accepted: 2001-05-31 Name: power Definition: power supply available

Attribute	Category of cable

Acronym: catcbl Code: 17101

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of cable

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catcbl_1 Date accepted: 2001-05-31 Name: power line Definition: a cable used for the supply of electricity.
3	DD Name: IENC Code: catcbl_3 Date accepted: 2001-05-31 Name: transmission line Definition: multiple un-insulated cables usually supported by steel lattice towers. Such features are generally more prominent than normal power lines.
4	DD Name: IENC Code: catcbl_4 Date accepted: 2001-05-31 Name: telephone Definition: a cable used for the transmission of telephone signals.
5	DD Name: IENC Code: catcbl_5 Date accepted: 2001-05-31 Name: telegraph Definition: a cable used for the transmission of telegraph signals.
6	DD Name: IENC Code: catcbl_6 Date accepted: 2001-05-31 Name: mooring cable/chain Definition: a cable or chain used to secure a mooring buoy or other floating structure.
7	DD Name: IENC Code: catcbl_7 Date accepted: 2001-05-31 Name: ferry cable

Value Data Dictionary (DD) Reference

Definition: a cable where a cable ferry is connected to

Attribute	Category of cargo (excluding)

Acronym: lc_cce Code: 18017

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Excluding list of categories of cargo for the applicability of a feature

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lc_cce_1 Date accepted: 2001-05-31 Name: all types Definition:
2	DD Name: IENC Code: lc_cce_2 Date accepted: 2001-05-31 Name: other Definition:
4	DD Name: IENC Code: lc_cce_4 Date accepted: 2001-05-31 Name: bulk Definition: unpacked homogenous cargo poured loose in a certain space of a vessel e.g. oil or grain
5	DD Name: IENC Code: lc_cce_5 Date accepted: 2001-05-31 Name: dry cargo Definition:
6	DD Name: IENC Code: lc_cce_6 Date accepted: 2001-05-31 Name: liquid cargo Definition:
7	DD Name: IENC Code: lc_cce_7 Date accepted: 2001-05-31 Name: liquid cargo (type N) Definition:

Value	Data Dictionary (DD) Reference					
8	DD Name:	IENC	Code:	lc_cce_8	Date accepted:	2001-05-31
	Name:	liquid cargo (type C)				
	Definition:					
9	DD Name:	IENC	Code:	lc_cce_9	Date accepted:	2001-05-31
	Name:	gas				
	Definition:					

Attribute	Category of cargo (including)

Acronym: lc_cci Code: 18016

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Including list of categories of cargo for the applicability of a feature

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lc_cci_1 Date accepted: 2001-05-31 Name: all types Definition:
2	DD Name: IENC Code: lc_cci_2 Date accepted: 2001-05-31 Name: other Definition:
4	DD Name: IENC Code: lc_cci_4 Date accepted: 2001-05-31 Name: bulk Definition: unpacked homogenous cargo poured loose in a certain space of a vessel e.g. oil or grain
5	DD Name: IENC Code: lc_cci_5 Date accepted: 2001-05-31 Name: dry cargo Definition:
6	DD Name: IENC Code: lc_cci_6 Date accepted: 2001-05-31 Name: liquid cargo Definition:
7	DD Name: IENC Code: lc_cci_7 Date accepted: 2001-05-31 Name: liquid cargo (type N) Definition:

Value	Data Dictionary (DD) Reference					
8	DD Name:	IENC	Code:	lc_cci_8	Date accepted:	2001-05-31
	Name:	liquid cargo (type C)				
	Definition:					
9	DD Name:	IENC	Code:	lc_cci_9	Date accepted:	2001-05-31
	Name:	gas				
	Definition:					

Attribute	Category of CEMT class

Acronym: catccl Code: 17068

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of CEMT class

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catccl_1 Date accepted: 2001-05-31 Name: 0 small vessels and pleasure craft Definition: designated for small vessels and pleasure crafts only
2	DD Name: IENC Code: catccl_2 Date accepted: 2001-05-31 Name: I peniche Definition: designated for barges of type "Péniche" (west of river Elbe) or of type "Gross Finow" (east of river Elbe)
3	DD Name: IENC Code: catccl_3 Date accepted: 2001-05-31 Name: II campine barge Definition: designated for barges of type "Kempenaar" (west of river Elbe) or of type "BM-500" (east of river Elbe)
4	DD Name: IENC Code: catccl_4 Date accepted: 2001-05-31 Name: III Dortmund-Ems barge Definition: designated for barges of type "Gustav Koenigs" (west of river Elbe) or of a similar type concerning the dimensions (east of river Elbe)
5	DD Name: IENC Code: catccl_5 Date accepted: 2001-05-31 Name: IV Rhine-Herne barge Definition: designated for barges of type "Johann Welker"
6	DD Name: IENC Code: catccl_6 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference			
	Name:	Va Large Rhine barge; 1-barge push-tow unit		
	Definition:	designated for barges of type "Large Rhine barge" or pushed convoys with one barge		
7	DD Name:	IENC	Code: catccl_7	Date accepted: 2001-05-31
	Name:	Vb 2-barge push-tow unit; long formation		
	Definition:	designated for pushed convoys with two barges, long formation		
8	DD Name:	IENC	Code: catccl_8	Date accepted: 2001-05-31
	Name:	VIa 2-barge push-tow unit; wide formation		
	Definition:	designated for pushed convoys with two barges, wide formation		
9	DD Name:	IENC	Code: catccl_9	Date accepted: 2001-05-31
	Name:	VIb 4-barge push-tow unit		
	Definition:	designated for pushed convoys with four barges		
10	DD Name:	IENC	Code: catccl_10	Date accepted: 2001-05-31
	Name:	VIc 6-barge push-tow unit		
	Definition:	designated for pushed convoys with six barges		
11	DD Name:	IENC	Code: catccl_11	Date accepted: 2001-05-31
	Name:	No CEMT class		
	Definition:			
12	DD Name:	IENC	Code: catccl_12	Date accepted: 2011-10-04
	Name:	VII 9-barge push-town unit		
	Definition:			

Attribute	Category of checkpoint

Acronym: catchp Code: 17010

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of checkpoint

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catchp_1 Date accepted: 2001-05-31 Name: custom Definition: an office, especially in ports, at which customs dues are collected or administrated. (adapted from The New Shorter Oxford English Dictionary, 1993)
2	DD Name: IENC Code: catchp_2 Date accepted: 2001-05-31 Name: border Definition: an office, at which immigration control takes place

Attribute	Category of communication

Acronym: catcom Code: 17069

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of communication

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catcom_1 Date accepted: 2001-05-31 Name: VTS centre Definition: The centre from which Vessel Traffic Services are operated. A VTS is a service implemented by a competent authority, designed to improve the safety and efficiency of vessel traffic and to protect the environment. The services should have the capability to interact with the traffic and to respond to traffic situations developing in the area.
2	DD Name: IENC Code: catcom_2 Date accepted: 2001-05-31 Name: VTS sector Definition: The service area of a VTS centre.
3	DD Name: IENC Code: catcom_3 Date accepted: 2001-05-31 Name: IVS point Definition: A reporting point of the "Informatie en Volgsysteem voor de Scheepvaart" in the Netherlands.
4	DD Name: IENC Code: catcom_4 Date accepted: 2001-05-31 Name: MIB Definition: A reporting point of the "Melde- und Informationssystem Binnenschifffahrt" in Germany.
5	DD Name: IENC Code: catcom_5 Date accepted: 2001-05-31 Name: lock Definition: A reporting point for vessels at a lock.
6	DD Name: IENC Code: catcom_6 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference					
	Name:	bridge				
	Definition:	A reporting point for vessels at a movable bridge.				
7	DD Name:	IENC	Code:	catcom_7	Date accepted:	2001-05-31
	Name:	custom				
	Definition:	A reporting point of the customs services for vessels.				
8	DD Name:	IENC	Code:	catcom_8	Date accepted:	2001-05-31
	Name:	harbour				
	Definition:	A reporting point of a harbour.				
9	DD Name:	IENC	Code:	catcom_9	Date accepted:	2011-12-09
	Name:	WLAN area				
	Definition:	An area where free wireless network is available				

Attribute	Category of exceptional structure

Acronym: catexs Code: 17100

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of exceptional navigational structure

Enumerations:

Value Data Dictionary (DD) Reference

1 DD Name: IENC Code: catexs_1 Date accepted: 2001-05-31

Name: Lift-Lock

Definition: A lock of which the lock chamber itself is lifted vertically to level with the next waterway section

2 DD Name: IENC Code: catexs_2 Date accepted: 2001-05-31

Name: Aqueduct

Definition: A structure (similar to the ancient aqueducts), for conveying a canal over a river or hollow; more properly called an aqueduct bridge. (From Webster's Revised Unabridged Dictionary, 1913)

3 DD Name: IENC Code: catexs_3 Date accepted: 2001-05-31

Name: Sloping plane lock

Definition: A lock of which the lock chamber itself travels over a sloping plane to level with the next waterway section

4 DD Name: IENC Code: catexs_4 Date accepted: 2001-05-31

Name: Water slope lock (Pente d'Eau)

Definition: In French "Pente d'Eau". A lock of which the lock chamber is formed by a sloping plane and moving gate, which is pushing a triangular section of water up along the slope to level with the next waterway section

5 DD Name: IENC Code: catexs_5 Date accepted: 2001-05-31

Name: Other

Definition: other categories of an exceptional structure

Attribute	Category of ferry

Acronym: catfry Code: 17007

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of ferry

Enumerations:

Value	Data Dictionary (DD) Reference
4	DD Name: IENC Code: catfry_4 Date accepted: 2001-05-31 Name: swinging wire ferry Definition: ferry connected to a fixed point (e.g., an anchor in the middle of the waterway) and swings around this point from shore to shore via a cable to an anchor. The cable runs more or less parallel to the current

Attribute	Category of frequency

Acronym: catfrq Code: 18030

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2014-11-26

Definition: The electrical frequency provided by the power supply station

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catfrq_1 Date accepted: 2014-11-26 Name: 50Hz Definition: 50 Hertz
2	DD Name: IENC Code: catfrq_2 Date accepted: 2014-11-26 Name: 60Hz Definition: 60 Hertz

Attribute	Category of harbour area

Acronym: cathbr Code: 17070

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of harbour

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: cathbr_1 Date accepted: 2001-05-31 Name: custom harbour Definition: A harbour that is administered by the customs. It may be a free harbour.
2	DD Name: IENC Code: cathbr_2 Date accepted: 2001-05-31 Name: port of refuge Definition: A harbour that can be used to find shelter for bad environmental conditions or where efforts to mitigate larger damage or threat(s) of damage to either the vessel, her crew or the environment can be rendered.
3	DD Name: IENC Code: cathbr_3 Date accepted: 2001-05-31 Name: yacht harbour/marina Definition: a harbour with facilities for small boats and yachts (IHO Dictionary, S-32, 5th Edition, 3095).
4	DD Name: IENC Code: cathbr_4 Date accepted: 2001-05-31 Name: fishing harbour Definition: a harbour with facilities for fishing boats.
5	DD Name: IENC Code: cathbr_5 Date accepted: 2001-05-31 Name: private harbour Definition: a harbour operated by a private body.

Attribute	Category of harbour facility

Acronym: cathaf Code: 17008

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of harbour facility

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: cathaf_1 Date accepted: 2001-05-31 Name: RoRo-terminal Definition: a terminal for roll-on roll-off ferries.
3	DD Name: IENC Code: cathaf_3 Date accepted: 2001-05-31 Name: ferry terminal Definition: a terminal for passenger and vehicle ferries.
4	DD Name: IENC Code: cathaf_4 Date accepted: 2001-05-31 Name: fishing harbour Definition: a harbour with facilities for fishing boats.
6	DD Name: IENC Code: cathaf_6 Date accepted: 2001-05-31 Name: naval base Definition: a centre of operations for naval vessels (adapted from The Collins Dictionary).
7	DD Name: IENC Code: cathaf_7 Date accepted: 2001-05-31 Name: tanker terminal Definition: a terminal for the bulk handling of liquid cargoes.
8	DD Name: IENC Code: cathaf_8 Date accepted: 2001-05-31 Name: passenger terminal Definition: a terminal for the loading and unloading of passengers.

Value	Data Dictionary (DD) Reference
9	DD Name: IENC Code: cathaf_9 Date accepted: 2001-05-31 Name: shipyard Definition: a place where ships are built or repaired (IHO Dictionary, S-32, 5th Edition, 4686).
10	DD Name: IENC Code: cathaf_10 Date accepted: 2001-05-31 Name: container terminal Definition: a terminal for container ships.
11	DD Name: IENC Code: cathaf_11 Date accepted: 2001-05-31 Name: bulk terminal Definition: a terminal for the handling of bulk materials such as iron ore, coal, etc.
12	DD Name: IENC Code: cathaf_12 Date accepted: 2001-05-31 Name: syncrolift Definition: a platform powered by synchronous electric motors used to lift vessels (larger than boats) in and out of the water.
13	DD Name: IENC Code: cathaf_13 Date accepted: 2001-05-31 Name: straddle carrier Definition: a wheeled vehicle designed to lift and carry containers or vessels within its own framework. It is used for moving, and sometimes stacking, shipping containers and vessels.
16	DD Name: IENC Code: cathaf_16 Date accepted: 2001-05-31 Name: service and repair Definition: a place where mechanical services or repairs can be undertaken to engines or other vessel equipment.
17	DD Name: IENC Code: cathaf_17 Date accepted: 2001-05-31 Name: quarantine station Definition: A medical control center located in an isolated spot ashore where patients with contagious diseases from vessel in quarantine are taken.

Attribute	Category of hulk

Acronym: cathlk Code: 17102

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of hulk

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: cathlk_1 Date accepted: 2001-05-31 Name: floating restaurant Definition: a permanently moored floating structure, such as an old ship, used as a restaurant.
2	DD Name: IENC Code: cathlk_2 Date accepted: 2001-05-31 Name: historic ship Definition: a ship of historical interest permanently moored as a tourist attraction.
3	DD Name: IENC Code: cathlk_3 Date accepted: 2001-05-31 Name: museum Definition: a permanently moored floating structure, such as an old ship, used as a museum.
4	DD Name: IENC Code: cathlk_4 Date accepted: 2001-05-31 Name: accommodation Definition: a permanently moored floating structure, such as an old ship, used for accommodation.
5	DD Name: IENC Code: cathlk_5 Date accepted: 2001-05-31 Name: floating breakwater Definition: a permanently moored floating structure, often constructed from old ships, used as a breakwater.
6	DD Name: IENC Code: cathlk_6 Date accepted: 2001-05-31 Name: casino boat

Value Data Dictionary (DD) Reference

Definition: a permanently moored floating structure, such as an old ship, used as a casino boat

Attribute	Category of lateral mark

Acronym: catlam Code: 17011

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of lateral mark

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catlam_1 Date accepted: 2001-05-31 Name: port-hand lateral mark Definition: indicates the port boundary of a navigational channel or suggested route when proceeding in the 'conventional direction of buoyage'.
2	DD Name: IENC Code: catlam_2 Date accepted: 2001-05-31 Name: starboard-hand lateral mark Definition: indicates the starboard boundary of a navigational channel or suggested route when proceeding in the 'conventional direction of buoyage'.
3	DD Name: IENC Code: catlam_3 Date accepted: 2001-05-31 Name: preferred channel to starboard lateral mark Definition: at a point where a channel divides, when proceeding in the 'conventional direction of buoyage', the preferred channel (or primary route) is indicated by a modified port-hand lateral mark.
4	DD Name: IENC Code: catlam_4 Date accepted: 2001-05-31 Name: preferred channel to port lateral mark Definition: at a point where a channel divides, when proceeding in the 'conventional direction of buoyage', the preferred channel (or primary route) is indicated by a modified starboard-hand lateral mark.
5	DD Name: IENC Code: catlam_5 Date accepted: 2001-05-31 Name: right-hand side of the waterway Definition: indicates the right-hand side of the inland waterway

Value	Data Dictionary (DD) Reference
6	DD Name: IENC Code: catlam_6 Date accepted: 2001-05-31 Name: left-hand side of the waterway Definition: indicates the left-hand side of the inland waterway
7	DD Name: IENC Code: catlam_7 Date accepted: 2001-05-31 Name: right-hand side of the channel Definition: indicates the right-hand side of a channel of an inland waterway
8	DD Name: IENC Code: catlam_8 Date accepted: 2001-05-31 Name: left-hand side of the channel Definition: indicates the left-hand side of a channel of an inland waterway
9	DD Name: IENC Code: catlam_9 Date accepted: 2001-05-31 Name: bifurcation of the waterway Definition: indicates a bifurcation of the inland waterway
10	DD Name: IENC Code: catlam_10 Date accepted: 2001-05-31 Name: bifurcation of the channel Definition: indicates a bifurcation of a channel of an inland waterway
11	DD Name: IENC Code: catlam_11 Date accepted: 2001-05-31 Name: channel near the right bank Definition: indicates that the channel is near the right bank
12	DD Name: IENC Code: catlam_12 Date accepted: 2001-05-31 Name: channel near the left bank Definition: indicates that the channel is near the left bank
13	DD Name: IENC Code: catlam_13 Date accepted: 2001-05-31 Name: channel cross-over to the right bank Definition: indicates that the channel crosses from the left to the right bank
14	DD Name: IENC Code: catlam_14 Date accepted: 2001-05-31 Name: channel cross-over to the left bank Definition: indicates that the channel crosses from the right to the left bank
15	DD Name: IENC Code: catlam_15 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference			
	Name:	danger point or obstacles at the right-hand side		
	Definition:	indicates a danger point or obstacles at the right-hand side		
16	DD Name:	IENC	Code: catlam_16	Date accepted: 2001-05-31
	Name:	danger point or obstacles at the left-hand side		
	Definition:	indicates a danger point or obstacles at the left-hand side		
17	DD Name:	IENC	Code: catlam_17	Date accepted: 2001-05-31
	Name:	turn off at the right-hand side		
	Definition:	indicates a turn off at the right-hand side		
18	DD Name:	IENC	Code: catlam_18	Date accepted: 2001-05-31
	Name:	turn off at the left-hand side		
	Definition:	indicates a turn off at the left-hand side		
19	DD Name:	IENC	Code: catlam_19	Date accepted: 2001-05-31
	Name:	junction at the right-hand side		
	Definition:	indicates a junction at the right-hand side		
20	DD Name:	IENC	Code: catlam_20	Date accepted: 2001-05-31
	Name:	junction at the left-hand side		
	Definition:	indicates a junction at the left-hand side		
21	DD Name:	IENC	Code: catlam_21	Date accepted: 2001-05-31
	Name:	harbour entry at the right-hand side		
	Definition:	indicates a harbour entry at the right-hand side		
22	DD Name:	IENC	Code: catlam_22	Date accepted: 2001-05-31
	Name:	harbour entry at the left-hand side		
	Definition:	indicates a harbour entry at the left-hand side		
23	DD Name:	IENC	Code: catlam_23	Date accepted: 2001-05-31
	Name:	bridge pier mark		
	Definition:	indicates a bridge pier in a inland waterway		
24	DD Name:	IENC	Code: catlam_24	Date accepted: 2013-01-01
	Name:	entry from a lake to a narrower waterway, right bank		
	Definition:	indicates the right bank of the entry from a lake or a lake-like expansion to a section of the		

Value	Data Dictionary (DD) Reference
	waterway which is narrower
25	DD Name: IENC Code: catlam_25 Date accepted: 2013-01-01
	Name: entry from a lake to a narrower waterway, left bank
	Definition: indicates the left bank of the entry from a lake or a lakelike expansion to a section of the waterway which is narrower
26	DD Name: IENC Code: catlam_26 Date accepted: 2013-12-30
	Name: change bank
	Definition:
27	DD Name: IENC Code: catlam_27 Date accepted: 2013-12-30
	Name: continue along bank
	Definition:

Attribute	Category of notice mark

Acronym: catnmk Code: 17052

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of notice mark

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catnmk_1 Date accepted: 2001-05-31 Name: (A.1) no entry (general sign) Definition: Prohibition mark A.1: no entry (general sign) (Source: CEVNI)
2	DD Name: IENC Code: catnmk_2 Date accepted: 2001-05-31 Name: (A.1.1) sections closed to use, no entry except for non-motorized small craft Definition: Prohibition mark A.1.1: sections closed to use, no entry except for non-motorized small craft (Source: CEVNI)
3	DD Name: IENC Code: catnmk_3 Date accepted: 2001-05-31 Name: (A.2) no overtaking Definition: Prohibition mark A.2: no overtaking (Source: CEVNI)
4	DD Name: IENC Code: catnmk_4 Date accepted: 2001-05-31 Name: (A.3) no overtaking of convoys by convoys Definition: Prohibition mark A.3: no overtaking of convoys by convoys (Source: CEVNI)
5	DD Name: IENC Code: catnmk_5 Date accepted: 2001-05-31 Name: (A.4) no passing or overtaking Definition: Prohibition mark A.4: no passing or overtaking (Source: CEVNI)
6	DD Name: IENC Code: catnmk_6 Date accepted: 2001-05-31 Name: (A.5) no berthing on the side of the waterway on which the sign is placed

Value Data Dictionary (DD) Reference

Definition: Prohibition mark A.5: no berthing (i.e. no anchoring or making fast to the bank) on the side of the waterway on which the sign is placed (Source: CEVNI)

7 DD Name: IENC Code: catnmk_7 Date accepted: 2001-05-31

Name: (A.5.1) no berthing on the stretch of water whose breadth, measured from the sign, is shown in metres on the sign

Definition: Prohibition mark A.5.1: no berthing on the stretch of water whose breadth, measured from the sign, is shown in metres on the sign (Source: CEVNI)

8 DD Name: IENC Code: catnmk_8 Date accepted: 2001-05-31

Name: (A.6) no anchoring or trailing of anchors, cables or chains

Definition: Prohibition mark A.6: no anchoring or trailing of anchors, cables or chains on the side of the waterway on which the sign is placed (Source: CEVNI)

9 DD Name: IENC Code: catnmk_9 Date accepted: 2001-05-31

Name: (A.7) no making fast to the bank

Definition: Prohibition mark A.7: no making fast to the bank on the side of the waterway on which the sign is placed (Source: CEVNI)

10 DD Name: IENC Code: catnmk_10 Date accepted: 2001-05-31

Name: (A.8) no turning

Definition: Prohibition mark A.8: no turning (Source: CEVNI)

11 DD Name: IENC Code: catnmk_11 Date accepted: 2001-05-31

Name: (A.9) Do not create wash

Definition: Prohibition mark A.9: do not create wash likely to cause damage (Source: CEVNI)

12 DD Name: IENC Code: catnmk_12 Date accepted: 2001-05-31

Name: (A.10) no passing on left side (in openings of bridges or weirs)

Definition: Prohibition mark A.10: no passing on left side (in openings of bridges or weirs) (Source: CEVNI)

13 DD Name: IENC Code: catnmk_13 Date accepted: 2001-05-31

Name: (A.10) no passing on right side (in openings of bridges or weirs)

Definition: Prohibition mark A.10: no passing on right side (in openings of bridges or weirs) (Source: CEVNI)

14 DD Name: IENC Code: catnmk_14 Date accepted: 2001-05-31

Name: (A.12) motorized craft prohibited

Definition: Prohibition mark A.12: motorized craft prohibited (Source: CEVNI)

Value	Data Dictionary (DD) Reference
15	DD Name: IENC Code: catnmk_15 Date accepted: 2001-05-31 Name: (A.13) sports and pleasure craft prohibited Definition: Prohibition mark A.13: sports and pleasure craft prohibited (Source: CEVNI)
16	DD Name: IENC Code: catnmk_16 Date accepted: 2001-05-31 Name: (A.14) water skiing prohibited Definition: Prohibition mark A.14: water skiing prohibited (Source: CEVNI)
17	DD Name: IENC Code: catnmk_17 Date accepted: 2001-05-31 Name: (A.15) sailing vessels prohibited Definition: Prohibition mark A.15: sailing vessels prohibited (Source: CEVNI)
18	DD Name: IENC Code: catnmk_18 Date accepted: 2001-05-31 Name: (A.16) all craft other than motorized vessels or sailing craft prohibited Definition: Prohibition mark A.16: all craft other than motorized vessels or sailing craft prohibited (Source: CEVNI)
19	DD Name: IENC Code: catnmk_19 Date accepted: 2001-05-31 Name: (A.17) use of sailboards prohibited Definition: Prohibition mark A.17: use of sailboards prohibited (Source: CEVNI)
20	DD Name: IENC Code: catnmk_20 Date accepted: 2001-05-31 Name: (A.20) water bikes prohibited Definition: Prohibition mark A.20: water bikes prohibited (Source: CEVNI)
21	DD Name: IENC Code: catnmk_21 Date accepted: 2001-05-31 Name: (A.18) end of zone authorized for high speed navigation of small sport and pleasure craft prohibited Definition: Prohibition mark A.18: end of zone authorized for high speed navigation of small sport and pleasure craft prohibited (Source: CEVNI)
22	DD Name: IENC Code: catnmk_22 Date accepted: 2001-05-31 Name: (A.19) no launching or beaching of vessels Definition: Prohibition mark A.19: no launching or beaching of vessels (Source: CEVNI)
23	DD Name: IENC Code: catnmk_23 Date accepted: 2001-05-31 Name: (B.1) proceed in left direction Definition: Regulation mark B.1: proceed in left direction (Source: CEVNI)

Value	Data Dictionary (DD) Reference
24	DD Name: IENC Code: catnmk_24 Date accepted: 2001-05-31 Name: (B.1) proceed in right direction Definition: Regulation mark B.1: proceed in right direction (Source: CEVNI)
25	DD Name: IENC Code: catnmk_25 Date accepted: 2001-05-31 Name: (B.2a) move to the side of the fairway on your port side Definition: Regulation mark B.2a: move to the side of the fairway on your port side (Source: CEVNI)
26	DD Name: IENC Code: catnmk_26 Date accepted: 2001-05-31 Name: (B.2b) move to the side of the fairway on your starboard side Definition: Regulation mark B.2b: move to the side of the fairway on your starboard side (Source: CEVNI)
27	DD Name: IENC Code: catnmk_27 Date accepted: 2001-05-31 Name: (B.3a) keep on the side of the fairway on your port side Definition: Regulation mark B.3a: keep on the side of the fairway on your port side (Source: CEVNI)
28	DD Name: IENC Code: catnmk_28 Date accepted: 2001-05-31 Name: (B.3b) keep on the side of the fairway on your starboard side Definition: Regulation mark B.3b: keep on the side of the fairway on your starboard side (Source: CEVNI)
29	DD Name: IENC Code: catnmk_29 Date accepted: 2001-05-31 Name: (B.4a) cross fairway to port Definition: Regulation mark B.4a: cross fairway to port (Source: CEVNI)
30	DD Name: IENC Code: catnmk_30 Date accepted: 2001-05-31 Name: (B.4b) cross fairway to starboard Definition: Regulation mark B.4b: cross fairway to starboard (Source: CEVNI)
31	DD Name: IENC Code: catnmk_31 Date accepted: 2001-05-31 Name: (B.5) stop as prescribed in the regulations Definition: Regulation mark B.5: stop as prescribed in the regulations (Source: CEVNI)
32	DD Name: IENC Code: catnmk_32 Date accepted: 2001-05-31 Name: (B.6) do not exceed the speed indicated (in km/h) Definition: Regulation mark B.6: do not exceed the speed indicated (in km/h) (Source: CEVNI)
33	DD Name: IENC Code: catnmk_33 Date accepted: 2001-05-31

Value Data Dictionary (DD) Reference

Name: (B.7) give a sound signal

Definition: Regulation mark B.7: give a sound signal (Source: CEVNI)

34 DD Name: IENC Code: catnmk_34 Date accepted: 2001-05-31

Name: (B.8) keep a particularly sharp lookout

Definition: Regulation mark B.8: keep a particularly sharp lookout (Source: CEVNI)

35 DD Name: IENC Code: catnmk_35 Date accepted: 2001-05-31

Name: (B.9a) do not enter the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed

Definition: Regulation mark B.9a: do not enter the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed (Source: CEVNI)

36 DD Name: IENC Code: catnmk_36 Date accepted: 2001-05-31

Name: (B.9b) do not cross the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed

Definition: Regulation mark B.9b: do not cross the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed (Source: CEVNI)

37 DD Name: IENC Code: catnmk_37 Date accepted: 2001-05-31

Name: (B.11) obligation to enter into a radiotelephone link on the channel as indicated on the board

Definition: Regulation mark B.11: obligation to enter into a radiotelephone link on the channel as indicated on the board (Source: CEVNI)

38 DD Name: IENC Code: catnmk_38 Date accepted: 2001-05-31

Name: (C.1) depth of water limited

Definition: Restriction mark C.1: depth of water limited (Source: CEVNI)

39 DD Name: IENC Code: catnmk_39 Date accepted: 2001-05-31

Name: (C.2) headroom limited

Definition: Restriction mark C.2: headroom limited (Source: CEVNI)

40 DD Name: IENC Code: catnmk_40 Date accepted: 2001-05-31

Name: (C.3) width of passage or channel limited

Definition: Restriction mark C.3: width of passage or channel limited (Source: CEVNI)

41 DD Name: IENC Code: catnmk_41 Date accepted: 2001-05-31

Name: (C.4) there are restrictions on navigation

Definition: Restriction mark C.4: there are restrictions on navigation: see the information plate below the

Value Data Dictionary (DD) Reference

sign (Source: CEVNI)

42 DD Name: IENC Code: catnmk_42 Date accepted: 2001-05-31

Name: (C.5) the channel lies at a distance from the left bank

Definition: Restriction mark C.5: the channel lies at a distance from the left bank; the figure shown on the sign indicates the distance in metres, measured from the sign, to which vessels should keep. (Source: CEVNI)

43 DD Name: IENC Code: catnmk_43 Date accepted: 2001-05-31

Name: (C.5) the channel lies at a distance from the right bank

Definition: Restriction mark C.5: the channel lies at a distance from the right bank; ; the figure shown on the sign indicates the distance in metres, measured from the sign, to which vessels should keep. (Source: CEVNI)

44 DD Name: IENC Code: catnmk_44 Date accepted: 2001-05-31

Name: (D.1a) recommended channel in both directions

Definition: Recommendation mark D.1a: recommended channel in both directions (Source: CEVNI)

45 DD Name: IENC Code: catnmk_45 Date accepted: 2001-05-31

Name: (D.1b) recommended channel only in the direction indicated, passage in the opposite direction prohibited (at bridges)

Definition: Recommendation mark D.1b: recommended channel only in the direction indicated, passage in the opposite direction prohibited (at bridges) (Source: CEVNI)

46 DD Name: IENC Code: catnmk_46 Date accepted: 2001-05-31

Name: (D.2) you are recommended to keep on right side (in openings of bridges and weirs)

Definition: Recommendation mark D.2: you are recommended to keep on right side (in openings of bridges and weirs) (Source: CEVNI)

47 DD Name: IENC Code: catnmk_47 Date accepted: 2001-05-31

Name: (D.2) you are recommended to keep on left side (in openings of bridges and weirs)

Definition: Recommendation mark D.2: you are recommended to keep on left side (in openings of bridges and weirs) (Source: CEVNI)

48 DD Name: IENC Code: catnmk_48 Date accepted: 2001-05-31

Name: (D.3) you are recommended to proceed in the left direction

Definition: Recommendation mark D.3: you are recommended to proceed in the left direction (Source: CEVNI)

49 DD Name: IENC Code: catnmk_49 Date accepted: 2001-05-31

Value Data Dictionary (DD) Reference

Name: (D.3) you are recommended to proceed in the right direction

Definition: Recommendation mark D.3: you are recommended to proceed in the right direction (Source: CEVNI)

50 DD Name: IENC Code: catnmk_50 Date accepted: 2001-05-31

Name: (E.1) entry permitted (general sign)

Definition: Information mark E.1: entry permitted (general sign) (Source: CEVNI)

51 DD Name: IENC Code: catnmk_51 Date accepted: 2001-05-31

Name: (E.2) overhead cable crossing

Definition: Information mark E.2: overhead cable crossing (Source: CEVNI)

52 DD Name: IENC Code: catnmk_52 Date accepted: 2001-05-31

Name: (E.3) weir

Definition: Information mark E.3: weir (Source: CEVNI)

53 DD Name: IENC Code: catnmk_53 Date accepted: 2001-05-31

Name: (E.4a) ferry-boat not moving independently

Definition: Information mark E.4a: ferry-boat not moving independently (Source: CEVNI)

54 DD Name: IENC Code: catnmk_54 Date accepted: 2001-05-31

Name: (E.4b) ferry-boat moving independently

Definition: Information mark E.4b: ferry-boat moving independently (Source: CEVNI)

55 DD Name: IENC Code: catnmk_55 Date accepted: 2001-05-31

Name: (E.5) berthing (i.e. no anchoring or making fast to the bank) permitted

Definition: Information mark E.5: berthing (i.e. no anchoring or making fast to the bank) permitted on the side of the waterway on which the sign is placed (Source: CEVNI)

56 DD Name: IENC Code: catnmk_56 Date accepted: 2001-05-31

Name: (E.5.1) berthing permitted on the stretch of water of the breadth measured from, and shown on the board in meters

Definition: Information mark E.5.1: berthing permitted on the stretch of water of the breadth measured from, and shown on the board in meters (Source: CEVNI)

57 DD Name: IENC Code: catnmk_57 Date accepted: 2001-05-31

Name: (E.5.2) berthing permitted on the stretch of water bounded by the distances measured from, and shown on the board in meters

Definition: Information mark E.5.2: berthing permitted on the stretch of water bounded by the distances

Value Data Dictionary (DD) Reference

measured from, and shown on the board in meters (Source: CEVNI)

58 DD Name: IENC Code: catnmk_58 Date accepted: 2001-05-31

Name: (E.5.3) maximum number of vessels permitted to berth abreast

Definition: Information mark E.5.3: maximum number of vessels permitted to berth abreast on the side of the waterway on which the sign is placed (Source: CEVNI)

59 DD Name: IENC Code: catnmk_59 Date accepted: 2001-05-31

Name: (E.5.4) berthing area reserved for pushing-navigation vessels that are not required to carry blue lights or blue cones

Definition: Information mark E.5.4: berthing area reserved for pushing-navigation vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)

60 DD Name: IENC Code: catnmk_60 Date accepted: 2001-05-31

Name: (E.5.5) berthing area reserved for pushing-navigation vessels that are required to carry one blue light or one blue cone

Definition: Information mark E.5.5: berthing area reserved for pushing-navigation vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed (Source: CEVNI)

61 DD Name: IENC Code: catnmk_61 Date accepted: 2001-05-31

Name: (E.5.6) berthing area reserved for pushing-navigation vessels that are required to carry two blue lights or two blue cones

Definition: Information mark E.5.6: berthing area reserved for pushing-navigation vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)

62 DD Name: IENC Code: catnmk_62 Date accepted: 2001-05-31

Name: (E.5.7) berthing area reserved for pushing-navigation vessels that are required to carry three blue lights or three blue cones

Definition: Information mark E.5.7: berthing area reserved for pushing-navigation vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)

63 DD Name: IENC Code: catnmk_63 Date accepted: 2001-05-31

Name: (E.5.8) berthing area reserved for vessels other than pushing-navigation vessels that are not required to carry blue lights or blue cones

Definition: Information mark E.5.8: berthing area reserved for vessels other than pushing-navigation vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)

Value	Data Dictionary (DD) Reference
64	DD Name: IENC Code: catnmk_64 Date accepted: 2001-05-31 Name: (E.5.9) berthing area reserved for vessels other than for pushing-navigation vessels that are required to carry one blue light or one blue cone Definition: Information mark E.5.9: berthing area reserved for vessels other than pushing-navigation vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed (Source: CEVNI)
65	DD Name: IENC Code: catnmk_65 Date accepted: 2001-05-31 Name: (E.5.10) berthing area reserved for vessels other than for pushing-navigation vessels that are required to carry two blue lights or two blue cones Definition: Information mark E.5.10: berthing area reserved for vessels other than pushing-navigation vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)
66	DD Name: IENC Code: catnmk_66 Date accepted: 2001-05-31 Name: (E.5.11) berthing area reserved for vessels other than for pushing-navigation vessels that are required to carry three blue lights or three blue cones Definition: Information mark E.5.11: berthing area reserved for vessels other than pushing-navigation vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)
67	DD Name: IENC Code: catnmk_67 Date accepted: 2001-05-31 Name: (E.5.12) berthing area reserved for all vessels that are not required to carry blue lights or blue cones Definition: Information mark E.5.12: berthing area reserved for all vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)
68	DD Name: IENC Code: catnmk_68 Date accepted: 2001-05-31 Name: (E.5.13) berthing area reserved for all vessels that are required to carry one blue light or one blue cone Definition: Information mark E.5.13: berthing area reserved for all vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed (Source: CEVNI)
69	DD Name: IENC Code: catnmk_69 Date accepted: 2001-05-31 Name: (E.5.14) berthing area reserved for all vessels that are required to carry two blue lights or two blue cones Definition: Information mark E.5.14: berthing area reserved for all vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)
70	DD Name: IENC Code: catnmk_70 Date accepted: 2001-05-31 Name: (E.5.15) berthing area reserved for all vessels that are required to carry three blue lights or

Value Data Dictionary (DD) Reference

three blue cones

Definition: Information mark E.5.15: berthing area reserved for all vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed (Source: CEVNI)

71 DD Name: IENC Code: catnmk_71 Date accepted: 2001-05-31

Name: (E.6) anchoring or trailing of anchors, cables or chains permitted

Definition: Information mark E.6: anchoring or trailing of anchors, cables or chains permitted on the side of the waterway on which the sign is placed (Source: CEVNI)

72 DD Name: IENC Code: catnmk_72 Date accepted: 2001-05-31

Name: (E.7) making fast to the bank permitted

Definition: Information mark E.7: making fast to the bank permitted on the side of the waterway on which the sign is placed (Source: CEVNI)

73 DD Name: IENC Code: catnmk_73 Date accepted: 2001-05-31

Name: (E.7.1) berthing area reserved for loading and unloading of vehicles

Definition: Information mark E.7.1: berthing area reserved for loading and unloading of vehicles (Source: CEVNI)

74 DD Name: IENC Code: catnmk_74 Date accepted: 2001-05-31

Name: (E.8) turning area

Definition: Information mark E.8: turning area (Source: CEVNI)

75 DD Name: IENC Code: catnmk_75 Date accepted: 2001-05-31

Name: (E.9a) crossing with secondary waterway ahead

Definition: Information mark E.9a: crossing with secondary waterway ahead (Source: CEVNI)

76 DD Name: IENC Code: catnmk_76 Date accepted: 2001-05-31

Name: (E.9b) secondary waterway ahead on the right

Definition: Information mark E.9b: secondary waterway ahead on the right (Source: CEVNI)

77 DD Name: IENC Code: catnmk_77 Date accepted: 2001-05-31

Name: (E.9c) secondary waterway ahead on the left

Definition: Information mark E.9c: secondary waterway ahead on the left (Source: CEVNI)

78 DD Name: IENC Code: catnmk_78 Date accepted: 2001-05-31

Name: (E.9d) secondary waterway ahead, main waterway on the right

Definition: Information mark E.9d: secondary waterway ahead, main waterway on the right (Source: CEVNI)

Value	Data Dictionary (DD) Reference
79	DD Name: IENC Code: catnmk_79 Date accepted: 2001-05-31 Name: (E.9e) secondary waterway ahead, main waterway on the left Definition: Information mark E.9e: secondary waterway ahead, main waterway on the left (Source: CEVNI)
80	DD Name: IENC Code: catnmk_80 Date accepted: 2001-05-31 Name: (E.9f) secondary waterway on the left, main waterway on the right Definition: Information mark E.9f: secondary waterway on the left, main waterway on the right (Source: CEVNI)
81	DD Name: IENC Code: catnmk_81 Date accepted: 2001-05-31 Name: (E.9g) secondary waterway on the right, main waterway on the left Definition: Information mark E.9g: secondary waterway on the right, main waterway on the left (Source: CEVNI)
82	DD Name: IENC Code: catnmk_82 Date accepted: 2001-05-31 Name: (E.9h) secondary waterway ahead and on the left, main waterway on the right Definition: Information mark E.9h: secondary waterway ahead and on the left, main waterway on the right (Source: CEVNI)
83	DD Name: IENC Code: catnmk_83 Date accepted: 2001-05-31 Name: (E.9i) secondary waterway ahead and on the right, main waterway on the left Definition: Information mark E.9i: secondary waterway ahead and on the right, main waterway on the left (Source: CEVNI)
84	DD Name: IENC Code: catnmk_84 Date accepted: 2001-05-31 Name: (E.10a) crossing with main waterway ahead Definition: Information mark E.10a: crossing with main waterway ahead (Source: CEVNI)
85	DD Name: IENC Code: catnmk_85 Date accepted: 2001-05-31 Name: (E.10b) main waterway ahead Definition: Information mark E.10b: main waterway ahead (Source: CEVNI)
86	DD Name: IENC Code: catnmk_86 Date accepted: 2001-05-31 Name: (E.10c) junction with main waterway ahead and right Definition: Information mark E.10c: junction with main waterway ahead and right (Source: CEVNI)
87	DD Name: IENC Code: catnmk_87 Date accepted: 2001-05-31 Name: (E.10d) junction with main waterway ahead and left

Value	Data Dictionary (DD) Reference
	Definition: Information mark E.10d: junction with main waterway ahead and left (Source: CEVNI)
88	DD Name: IENC Code: catnmk_88 Date accepted: 2001-05-31
	Name: (E.10e) junction with main waterway ahead and right, secondary waterway on the left
	Definition: Information mark E.10e: junction with main waterway ahead and right, secondary waterway on the left (Source: CEVNI)
89	DD Name: IENC Code: catnmk_89 Date accepted: 2001-05-31
	Name: (E.10f) junction with main waterway ahead and left, secondary waterway on the right
	Definition: Information mark E.10f: junction with main waterway ahead and left, secondary waterway on the right (Source: CEVNI)
90	DD Name: IENC Code: catnmk_90 Date accepted: 2001-05-31
	Name: (E.11) end of prohibition or obligation applying to traffic in one direction only, or end of a restriction
	Definition: Information mark E.11: end of prohibition or obligation applying to traffic in one direction only, or end of a restriction (Source: CEVNI)
91	DD Name: IENC Code: catnmk_91 Date accepted: 2001-05-31
	Name: (E.13) drinking water supply
	Definition: Information mark E.13: drinking water supply (Source: CEVNI)
92	DD Name: IENC Code: catnmk_92 Date accepted: 2001-05-31
	Name: (E.14) telephone
	Definition: Information mark E.14: telephone (Source: CEVNI)
93	DD Name: IENC Code: catnmk_93 Date accepted: 2001-05-31
	Name: (E.15) motorized vessels permitted
	Definition: Information mark E.15: motorized vessels permitted (Source: CEVNI)
94	DD Name: IENC Code: catnmk_94 Date accepted: 2001-05-31
	Name: (E.16) sport and pleasure craft permitted
	Definition: Information mark E.16: sport and pleasure craft permitted (Source: CEVNI)
95	DD Name: IENC Code: catnmk_95 Date accepted: 2001-05-31
	Name: (E.17) water skiing permitted
	Definition: Information mark E.17: water skiing permitted (Source: CEVNI)
96	DD Name: IENC Code: catnmk_96 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference
	Name: (E.18) sailing vessels permitted
	Definition: Information mark E.18: sailing vessels permitted (Source: CEVNI)
97	DD Name: IENC Code: catnmk_97 Date accepted: 2001-05-31
	Name: (E.19) craft other than motorized vessels or sailing craft permitted
	Definition: Information mark E.19: craft other than motorized vessels or sailing craft permitted (Source: CEVNI)
98	DD Name: IENC Code: catnmk_98 Date accepted: 2001-05-31
	Name: (E.20) use of sailboards permitted
	Definition: Information mark E.20: use of sailboards permitted (Source: CEVNI)
99	DD Name: IENC Code: catnmk_99 Date accepted: 2001-05-31
	Name: (E.23) possibility of obtaining nautical information by radiotelephone on the channel indicated
	Definition: Information mark E.23: possibility of obtaining nautical information by radiotelephone on the channel indicated (Source: CEVNI)
100	DD Name: IENC Code: catnmk_100 Date accepted: 2001-05-31
	Name: (E.24) water bikes permitted
	Definition: Information mark E.24: water bikes permitted (Source: CEVNI)
101	DD Name: IENC Code: catnmk_101 Date accepted: 2001-05-31
	Name: (E.21) zone authorized for high speed navigation of small sport and pleasure craft
	Definition: Information mark E.21: zone authorized for high speed navigation of small sport and pleasure craft (Source: CEVNI)
102	DD Name: IENC Code: catnmk_102 Date accepted: 2001-05-31
	Name: (E.22) launching or beaching of small craft permitted
	Definition: Information mark E.22: launching and beaching of small craft permitted (Source: CEVNI)
103	DD Name: IENC Code: catnmk_103 Date accepted: 2009-09-11
	Name: (BR) proceed close to the margin on your port side
	Definition: regulation mark (BR): proceed close to the margin on your port side
104	DD Name: IENC Code: catnmk_104 Date accepted: 2009-09-11
	Name: (BR) proceed close to the margin on your starboard side
	Definition: regulation mark (BR): proceed close to the margin on your starboard side
105	DD Name: IENC Code: catnmk_105 Date accepted: 2009-09-11

Value Data Dictionary (DD) Reference

Name: (BR) proceed in the middle of the river

Definition: regulation mark (BR): proceed in the middle of the river

106 DD Name: IENC Code: catnmk_106 Date accepted: 2009-09-11

Name: (BR) cross river to port

Definition: regulation mark (BR): cross river to port

107 DD Name: IENC Code: catnmk_107 Date accepted: 2009-09-11

Name: (BR) cross river to starboard

Definition: regulation mark (BR): cross river to starboard

108 DD Name: IENC Code: catnmk_108 Date accepted: 2009-09-11

Name: (BR) traffic between margins

Definition: information mark (BR): traffic between margins

109 DD Name: IENC Code: catnmk_109 Date accepted: 2009-09-11

Name: (BR) reduce speed

Definition: regulation mark (BR): reduce speed

110 DD Name: IENC Code: catnmk_110 Date accepted: 2009-09-11

Name: wreck pontoon, passage allowed on side showing red-white sign

Definition: a red-white sign shown on a wreck pontoon to indicate the side on which passage is permitted (without wash of waves) and a red sign on the side on which passage is not permitted

111 DD Name: IENC Code: catnmk_111 Date accepted: 2009-09-11

Name: wreck pontoon, passage allowed on both sides

Definition: red-white signs shown on a wreck pontoon to indicate that passage is permitted on both sides (without wash of waves)

112 DD Name: IENC Code: catnmk_112 Date accepted: 2009-12-09

Name: no passing or overtaking of convoys

Definition: Russian notice mark: 1.2, no passing or overtaking of convoys

113 DD Name: IENC Code: catnmk_113 Date accepted: 2009-12-09

Name: small crafts prohibited

Definition: Russian notice mark: 1.5, small crafts prohibited

114 DD Name: IENC Code: catnmk_114 Date accepted: 2009-12-09

Value Data Dictionary (DD) Reference

Name: Attention! (Keep caution)

Definition: Russian notice mark: 2.1, Attention! (keep caution)

115 DD Name: IENC Code: catnmk_115 Date accepted: 2009-12-09

Name: fairway crossing

Definition: Russian notice mark: 2.2, fairway crossing

116 DD Name: IENC Code: catnmk_116 Date accepted: 2009-12-09

Name: shipping inspection point

Definition: Russian notice mark: 3.3, shipping inspection point

117 DD Name: IENC Code: catnmk_117 Date accepted: 2014-10-20

Name: (E.25) electrical power supply point

Definition: Information mark E.25: electrical power supply point (Source: CEVNI)

118 DD Name: IENC Code: catnmk_118 Date accepted: 2014-10-20

Name: (E.26) winter harbour

Definition: Information mark E.26: winter harbour (Source: CEVNI)

119 DD Name: IENC Code: catnmk_119 Date accepted: 2014-10-20

Name: (E.26.1) maximum number of vessels permitted to berth in winter harbour

Definition: Information mark E.26.1: maximum number of vessels permitted to berth in winter harbour (Source: CEVNI)

120 DD Name: IENC Code: catnmk_120 Date accepted: 2014-10-20

Name: (E.27) winter shelter

Definition: Information mark E.27: winter shelter (Source: CEVNI)

121 DD Name: IENC Code: catnmk_121 Date accepted: 2014-10-20

Name: (E.27.1) maximum number of vessels permitted to berth in winter shelter; maximum number of vessels permitted to berth abreast;
maximum number of rows of vessels which are berthed abreast

Definition: Information mark E.27.1: maximum number of vessels permitted to berth in winter shelter; maximum number of vessels permitted to berth abreast; maximum number of rows of vessels which are berthed abreast (Source: CEVNI)

122 DD Name: IENC Code: catnmk_122 Date accepted: 2014-10-20

Name: (E.6.1) use of spuds permitted

Definition: Information mark E.6.1: use of spuds permitted (Source: CEVNI)

Value	Data Dictionary (DD) Reference
123	DD Name: IENC Code: catnmk_123 Date accepted: 2019-03-12 Name: (B.12) obligation to use onshore power supply point Definition: Regulation mark B.12: obligation to use onshore power supply point (all vessels are obligated to use the power supply for their electrical power needs) (Source: CEVNI)

Attribute	Category of plug

Acronym: catplg Code: 18034

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2014-11-26

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

Attribute	Category of refuse dump

Acronym: catrfd Code: 17071

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of refuse dump

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catrfd_1 Date accepted: 2001-05-31 Name: cargo residue/slop Definition: A facility where vessels can dispose of cargo residues and/or slops.
2	DD Name: IENC Code: catrfd_2 Date accepted: 2001-05-31 Name: waste oil Definition: A facility where vessels can dispose of waste oil.
3	DD Name: IENC Code: catrfd_3 Date accepted: 2001-05-31 Name: grey/black water Definition: A facility where vessels can dispose of grey and/or black waste water.
4	DD Name: IENC Code: catrfd_4 Date accepted: 2001-05-31 Name: domestic refuse Definition: A facility where vessels can dispose of domestic refuse.

Attribute	Category of rescue station

Acronym: catrsc Code: 17106

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2010-09-17

Definition: Category of rescue station

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catrsc_1 Date accepted: 2010-09-17 Name: rescue station with life boat Definition: a place where equipment for saving life at sea is maintained; the type of lifeboat may vary from fast, long distance boats to inflatable inshore boats. (IHO Chart Specifications, M-4).
2	DD Name: IENC Code: catrsc_2 Date accepted: 2010-09-17 Name: rescue station with rocket Definition: rocket - a pyrotechnic projectile used for signalling or for life-saving purposes. (IHO Dictionary, S-32, 5th Edition, 4418).
3	DD Name: IENC Code: catrsc_3 Date accepted: 2010-09-17 Name: not in use Definition:
4	DD Name: IENC Code: catrsc_4 Date accepted: 2010-09-17 Name: refuge for ship-wrecked mariners Definition: shelter or protection from danger or distress at sea.
5	DD Name: IENC Code: catrsc_5 Date accepted: 2010-09-17 Name: refuge for intertidal area walkers Definition: shelter or protection from danger in areas exposed to extreme and sudden tides or tidal streams.
6	DD Name: IENC Code: catrsc_6 Date accepted: 2010-09-17

Value	Data Dictionary (DD) Reference				
	Name:	lifeboat lying at a mooring			
	Definition:	a place where a lifeboat is moored ready for use.			
7	DD Name:	IENC	Code: catrsc_7	Date accepted:	2010-09-17
	Name:	aid radio station			
	Definition:	a radio station reserved for emergency situations, might also be a public telephone.			
8	DD Name:	IENC	Code: catrsc_8	Date accepted:	2010-09-17
	Name:	first aid equipment			
	Definition:	a place where first aid equipment is available.			
9	DD Name:	IENC	Code: catrsc_9	Date accepted:	2010-09-17
	Name:	lifebuoy, ring buoy, life ring, life saver			
	Definition:	a "kisby ring" or "perry buoy" designed to be thrown to a person in the water, to provide buoyancy and to prevent drowning.			

Attribute	Category of sensor

Acronym: catsen Code: 18019

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2011-12-19

Definition: Category of sensor

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catsen_1 Date accepted: 2011-12-19 Name: light activated Definition: A sensor which is activated by a spotlight
2	DD Name: IENC Code: catsen_2 Date accepted: 2011-12-19 Name: telephone activated Definition: A sensor which is activated by telephone

Attribute	Category of ship (excluding)

Acronym: lc_cse Code: 18013

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lc_cse_1 Date accepted: 2001-05-31 Name: all types Definition:
2	DD Name: IENC Code: lc_cse_2 Date accepted: 2001-05-31 Name: other Definition:
3	DD Name: IENC Code: lc_cse_3 Date accepted: 2001-05-31 Name: non-motorized vessel Definition:
5	DD Name: IENC Code: lc_cse_5 Date accepted: 2001-05-31 Name: craft Definition: a vessel or item of floating equipment
6	DD Name: IENC Code: lc_cse_6 Date accepted: 2001-05-31 Name: vessel Definition: an inland waterway vessel or sea going ship
7	DD Name: IENC Code: lc_cse_7 Date accepted: 2001-05-31 Name: inland waterway vessel Definition: a vessel intended solely or mainly for navigation on inland waterways

Value	Data Dictionary (DD) Reference
8	DD Name: IENC Code: lc_cse_8 Date accepted: 2001-05-31 Name: sea going ship Definition: a vessel certificated for sea-going service
9	DD Name: IENC Code: lc_cse_9 Date accepted: 2001-05-31 Name: motor vessel Definition: a motor cargo vessel or a motor tanker
10	DD Name: IENC Code: lc_cse_10 Date accepted: 2001-05-31 Name: motor tanker Definition: a vessel intended for the carriage of goods in fixed tanks and built to navigate independently under its own motive power
11	DD Name: IENC Code: lc_cse_11 Date accepted: 2001-05-31 Name: motor cargo vessel Definition: a vessel, other than a motor tanker, intended for the carriage of goods and built to navigate independently under its own motive power
12	DD Name: IENC Code: lc_cse_12 Date accepted: 2001-05-31 Name: canal barge Definition: an inland waterway vessel not exceeding 38.5 m in length and 5.05 m in breadth and usually operating on the Rhine-Rhône-Canal
13	DD Name: IENC Code: lc_cse_13 Date accepted: 2001-05-31 Name: tug Definition: a vessel specially built to perform towing operations
14	DD Name: IENC Code: lc_cse_14 Date accepted: 2001-05-31 Name: pusher Definition: a vessel specially built to propel a pushed convoy
15	DD Name: IENC Code: lc_cse_15 Date accepted: 2001-05-31 Name: barge Definition: a dumb barge or tank barge
16	DD Name: IENC Code: lc_cse_16 Date accepted: 2001-05-31 Name: tank barge Definition: a vessel intended for the carriage of goods in fixed tanks and built to be towed, either having no

Value	Data Dictionary (DD) Reference
	motive power of its own or having only sufficient motive power to perform restricted manoeuvres
17	DD Name: IENC Code: lc_cse_17 Date accepted: 2001-05-31
	Name: dumb barge
	Definition: a vessel, other than a tank barge, intended for the carriage of goods and built to be towed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres
18	DD Name: IENC Code: lc_cse_18 Date accepted: 2001-05-31
	Name: lighter
	Definition: a tank lighter, cargo lighter or ship borne lighter
19	DD Name: IENC Code: lc_cse_19 Date accepted: 2001-05-31
	Name: tank lighter
	Definition: a vessel intended for the carriage of goods in fixed tanks, built or specially modified to be pushed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a pushed convoy
20	DD Name: IENC Code: lc_cse_20 Date accepted: 2001-05-31
	Name: cargo lighter
	Definition: a vessel, other than a tank lighter, intended for the carriage of goods and built or specially modified to be pushed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a pushed convoy
21	DD Name: IENC Code: lc_cse_21 Date accepted: 2001-05-31
	Name: ship borne lighter
	Definition: a lighter built to be carried aboard sea going ships and to navigate on inland waterways
22	DD Name: IENC Code: lc_cse_22 Date accepted: 2001-05-31
	Name: passenger vessel
	Definition: a day trip or cabin vessel constructed and equipped to carry more than 12 passengers
23	DD Name: IENC Code: lc_cse_23 Date accepted: 2001-05-31
	Name: passenger sailing vessel
	Definition: a passenger vessel fitted out mainly with a view to propulsion under sail
24	DD Name: IENC Code: lc_cse_24 Date accepted: 2001-05-31
	Name: day trip vessel
	Definition: a passenger vessel without overnight passenger cabins

Value	Data Dictionary (DD) Reference
25	DD Name: IENC Code: lc_cse_25 Date accepted: 2001-05-31 Name: cabin vessel Definition: a passenger vessel with overnight passenger cabins
26	DD Name: IENC Code: lc_cse_26 Date accepted: 2001-05-31 Name: High-speed vessel Definition: a motorised vessel capable of reaching speeds over 40km/h with respect to water
27	DD Name: IENC Code: lc_cse_27 Date accepted: 2001-05-31 Name: floating equipment Definition: a floating installation carrying working gear such as cranes, dredging equipment, pile drivers or elevators
28	DD Name: IENC Code: lc_cse_28 Date accepted: 2001-05-31 Name: worksite craft Definition: a vessel, appropriately built and equipped for use at worksites, such as a reclamation barge, hopper or pontoon barge, pontoon or stone-dumping vessel
29	DD Name: IENC Code: lc_cse_29 Date accepted: 2001-05-31 Name: recreational craft Definition: a vessel other than a passenger vessel, intended for sport or pleasure
30	DD Name: IENC Code: lc_cse_30 Date accepted: 2001-05-31 Name: Dinghy Definition: a boat for use in transport, rescue, salvage and work duties
31	DD Name: IENC Code: lc_cse_31 Date accepted: 2001-05-31 Name: floating establishment Definition: any floating installation not normally intended to be moved, such as a swimming bath, dock, jetty or boathouse
32	DD Name: IENC Code: lc_cse_32 Date accepted: 2001-05-31 Name: floating object Definition: a raft or other structure, object or assembly capable of navigation, not being a vessel or floating equipment or establishment

Attribute	Category of ship (including)

Acronym: lc_csi Code: 18012

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition:

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lc_csi_1 Date accepted: 2001-05-31 Name: all types Definition:
2	DD Name: IENC Code: lc_csi_2 Date accepted: 2001-05-31 Name: other Definition:
3	DD Name: IENC Code: lc_csi_3 Date accepted: 2001-05-31 Name: non-motorized vessel Definition: non-motorized vessel
5	DD Name: IENC Code: lc_csi_5 Date accepted: 2001-05-31 Name: craft Definition: a vessel or item of floating equipment
6	DD Name: IENC Code: lc_csi_6 Date accepted: 2001-05-31 Name: vessel Definition: an inland waterway vessel or sea going ship
7	DD Name: IENC Code: lc_csi_7 Date accepted: 2001-05-31 Name: inland waterway vessel Definition: a vessel intended solely or mainly for navigation on inland waterways

Value	Data Dictionary (DD) Reference
8	DD Name: IENC Code: lc_csi_8 Date accepted: 2001-05-31 Name: sea going ship Definition: a vessel certificated for sea-going service
9	DD Name: IENC Code: lc_csi_9 Date accepted: 2001-05-31 Name: motor vessel Definition: a motor cargo vessel or a motor tanker
10	DD Name: IENC Code: lc_csi_10 Date accepted: 2001-05-31 Name: motor tanker Definition: a vessel intended for the carriage of goods in fixed tanks and built to navigate independently under its own motive power
11	DD Name: IENC Code: lc_csi_11 Date accepted: 2001-05-31 Name: motor cargo vessel Definition: a vessel, other than a motor tanker, intended for the carriage of goods and built to navigate independently under its own motive power
12	DD Name: IENC Code: lc_csi_12 Date accepted: 2001-05-31 Name: canal barge Definition: an inland waterway vessel not exceeding 38.5 m in length and 5.05 m in breadth and usually operating on the Rhine-Rhône-Canal
13	DD Name: IENC Code: lc_csi_13 Date accepted: 2001-05-31 Name: tug Definition: a vessel specially built to perform towing operations
14	DD Name: IENC Code: lc_csi_14 Date accepted: 2001-05-31 Name: pusher Definition: a vessel specially built to propel a pushed convoy
15	DD Name: IENC Code: lc_csi_15 Date accepted: 2001-05-31 Name: barge Definition: a dumb barge or tank barge
16	DD Name: IENC Code: lc_csi_16 Date accepted: 2001-05-31 Name: tank barge Definition: a vessel intended for the carriage of goods in fixed tanks and built to be towed, either having no

Value	Data Dictionary (DD) Reference
	motive power of its own or having only sufficient motive power to perform restricted manoeuvres
17	DD Name: IENC Code: lc_csi_17 Date accepted: 2001-05-31
	Name: dumb barge
	Definition: a vessel, other than a tank barge, intended for the carriage of goods and built to be towed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres
18	DD Name: IENC Code: lc_csi_18 Date accepted: 2001-05-31
	Name: lighter
	Definition: a tank lighter, cargo lighter or ship borne lighter
19	DD Name: IENC Code: lc_csi_19 Date accepted: 2001-05-31
	Name: tank lighter
	Definition: a vessel intended for the carriage of goods in fixed tanks, built or specially modified to be pushed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a pushed convoy
20	DD Name: IENC Code: lc_csi_20 Date accepted: 2001-05-31
	Name: cargo lighter
	Definition: a vessel, other than a tank lighter, intended for the carriage of goods and built or specially modified to be pushed, either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a pushed convoy
21	DD Name: IENC Code: lc_csi_21 Date accepted: 2001-05-31
	Name: ship borne lighter
	Definition: a lighter built to be carried aboard sea going ships and to navigate on inland waterways
22	DD Name: IENC Code: lc_csi_22 Date accepted: 2001-05-31
	Name: passenger vessel
	Definition: a day trip or cabin vessel constructed and equipped to carry more than 12 passengers
23	DD Name: IENC Code: lc_csi_23 Date accepted: 2001-05-31
	Name: passenger sailing vessel
	Definition: a passenger vessel fitted out mainly with a view to propulsion under sail
24	DD Name: IENC Code: lc_csi_24 Date accepted: 2001-05-31
	Name: day trip vessel
	Definition: a passenger vessel without overnight passenger cabins

Value	Data Dictionary (DD) Reference
25	DD Name: IENC Code: lc_csi_25 Date accepted: 2001-05-31 Name: cabin vessel Definition: a passenger vessel with overnight passenger cabins
26	DD Name: IENC Code: lc_csi_26 Date accepted: 2001-05-31 Name: High-speed vessel Definition: a motorised vessel capable of reaching speeds over 40km/h with respect to water
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28	DD Name: IENC Code: lc_csi_28 Date accepted: 2001-05-31 Name: worksite craft Definition: a vessel, appropriately built and equipped for use at worksites, such as a reclamation barge, hopper or pontoon barge, pontoon or stone-dumping vessel
29	DD Name: IENC Code: lc_csi_29 Date accepted: 2001-05-31 Name: recreational craft Definition: a vessel other than a passenger vessel, intended for sport or pleasure
30	DD Name: IENC Code: lc_csi_30 Date accepted: 2001-05-31 Name: Dinghy Definition: a boat for use in transport, rescue, salvage and work duties
31	DD Name: IENC Code: lc_csi_31 Date accepted: 2001-05-31 Name: floating establishment Definition: any floating installation not normally intended to be moved, such as a swimming bath, dock, jetty or boathouse
32	DD Name: IENC Code: lc_csi_32 Date accepted: 2001-05-31 Name: floating object Definition: a raft or other structure, object or assembly capable of navigation, not being a vessel or floating equipment or establishment

Attribute	Category of shoreline construction

Acronym: catslc Code: 17012

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2007-10-12

Definition: Category of shoreline construction

Enumerations:

Value	Data Dictionary (DD) Reference
7	DD Name: IENC Code: catslc_7 Date accepted: 2007-10-12 Name: training wall Definition: a wall or bank, often submerged, built to direct or confine the flow of a river or tidal current, or to promote a scour action. (Adapted from IHO Dictionary, S-32, 5th Edition, 5586 and IHO Chart Specifications, M-4).
18	DD Name: IENC Code: catslc_18 Date accepted: 2007-10-12 Name: lock/guide wall Definition: permanent structure bounding a lock and including guide walls (USACE)
19	DD Name: IENC Code: catslc_19 Date accepted: 2009-09-11 Name: ice breaker Definition: an often wedge-like structure used for protecting a bridge pier, dock, facility, etc. from floating ice or other debris.
2	DD Name: IENC Code: catslc_2 Date accepted: 2011-05-31 Name: groyne (groin) Definition: a low artificial wall-like structure of durable material extending from the land to seaward for a particular purpose, such as to prevent coast erosion (adapted from IHO Dictionary, S-32, 5th Edition, 2525 and IHO Chart Specifications, M-4)
8	DD Name: IENC Code: catslc_8 Date accepted: 2013-01-23 Name: rip rap Definition: A layer of broken rock, cobbles, boulders, or fragments of sufficient size to resist the erosive

Value	Data Dictionary (DD) Reference
	forces of flowing water and wave action. (Adapted from Marine Chart Manual, US National Oceanic and Atmospheric Administration - NOAA, 1992)
9	DD Name: IENC Code: catslc_9 Date accepted: 2013-01-23 Name: revetment Definition: facing of stone or other material, either permanent or temporary, placed along the edge of a stream, river or canal to stabilize the bank and to protect it from the erosive action of the stream. (Adapted from IHO Dictionary, S-32, 5th Edition, 4379)
20	DD Name: IENC Code: catslc_20 Date accepted: 2013-09-23 Name: water intake structure Definition: a structure designed to divert water from a river or channel for the purpose of water supply, hydroelectric power or irrigation.

Attribute	Category of signal station, traffic

Acronym: catsit Code: 17002

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of signal station, traffic

Enumerations:

Value	Data Dictionary (DD) Reference
2	DD Name: IENC Code: catsit_2 Date accepted: 2001-05-31 Name: port entry and departure Definition: a signal station for the control of vessels entering or leaving a port.
6	DD Name: IENC Code: catsit_6 Date accepted: 2001-05-31 Name: lock Definition: a signal station for the control of vessels entering or leaving a lock.
8	DD Name: IENC Code: catsit_8 Date accepted: 2001-05-31 Name: bridge passage Definition: a signal station for the control of vessels wishing to pass under a bridge.
10	DD Name: IENC Code: catsit_10 Date accepted: 2001-05-31 Name: oncoming traffic indication Definition: indicates the oncoming traffic on an inland waterway

Attribute	Category of signal station, warning

Acronym: catsiw Code: 17003

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of signal station, warning

Enumerations:

Value	Data Dictionary (DD) Reference
15	DD Name: IENC Code: catsiw_15 Date accepted: 2001-05-31 Name: high water mark Definition: An indication of the official high water level.
16	DD Name: IENC Code: catsiw_16 Date accepted: 2001-05-31 Name: vertical clearance indication Definition: An indication of the vertical clearance of a bridge, overhead cable, etc.
18	DD Name: IENC Code: catsiw_18 Date accepted: 2001-05-31 Name: depth indication Definition: An indication of the local depth.

Attribute	Category of time and behaviour

Acronym: cattab Code: 17092

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of time and behaviour

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: cattab_1 Date accepted: 2001-05-31 Name: operational period Definition: being in a position or adjustment to permit passage or to perform an operation
2	DD Name: IENC Code: cattab_2 Date accepted: 2001-05-31 Name: non-operational period Definition: being in a position or adjustment to prevent passage

Attribute	Category of vehicle transfer

Acronym: catvtr Code: 17091

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of vehicle transfer

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catvtr_1 Date accepted: 2001-05-31 Name: official Definition: Of or relating to an office or a post of authority
2	DD Name: IENC Code: catvtr_2 Date accepted: 2001-05-31 Name: private Definition: Belonging to a particular person or persons, as opposed to the public or the government
3	DD Name: IENC Code: catvtr_3 Date accepted: 2001-05-31 Name: suitable for car cranes Definition: Vehicle transfer location is suitable for car cranes
4	DD Name: IENC Code: catvtr_4 Date accepted: 2001-05-31 Name: suitable for car planks Definition: Vehicle transfer location is suitable for car planks
5	DD Name: IENC Code: catvtr_5 Date accepted: 2001-05-31 Name: permission required Definition: The transfer of a vehicle requires permission.
6	DD Name: IENC Code: catvtr_6 Date accepted: 2001-05-31 Name: locked gate Definition: The access to the public road is locked.

Attribute	Category of voltage

Acronym: catvol Code: 18031

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2014-11-26

Definition: The electrical voltage provided by the power supply station

Enumerations:

Value	Data Dictionary (DD) Reference				
1	DD Name: IENC	Code: catvol_1	Date accepted: 2014-11-26		
	Name: 230V				
	Definition: 230 Volts				
2	DD Name: IENC	Code: catvol_2	Date accepted: 2014-11-26		
	Name: 400V				
	Definition: 400 Volts				

Attribute	Category of waterway gauge

Acronym: catgag Code: 17078

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Category of waterway gauge

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: catgag_1 Date accepted: 2001-05-31 Name: water level staff / pole Definition: level indicator consisting of a calibrated staff/pole and the associated bench mark. (DIN 4049 Section 3, Oct. 1994)
2	DD Name: IENC Code: catgag_2 Date accepted: 2001-05-31 Name: recording water level gauge Definition: analog or digital water level measuring and recording device. (adopted from DIN 4049 – Section 3, Oct. 1994)
3	DD Name: IENC Code: catgag_3 Date accepted: 2001-05-31 Name: recording water level gauge with remote access Definition: recording water level gauge providing information remotely by any method (adopted from DIN 4049 – Section 3, Oct. 1994)
4	DD Name: IENC Code: catgag_4 Date accepted: 2001-05-31 Name: recording water level gauge with external indicator Definition: recording gauge providing information of the water level via a large external indicator (adopted from DIN 4049 – Section 3, Oct. 1994)
5	DD Name: IENC Code: catgag_5 Date accepted: 2001-05-31 Name: recording water level gauge with remote access and remote indicator Definition: recording gauge providing information remotely by any method and providing information of the water level via a large external indicator. (adopted from DIN 4049 – Section 3, Oct. 1994)

Attribute	Class of dangerous cargo

Acronym: clsdng Code: 17055

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Class of dangerous cargo

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: clsdng_1 Date accepted: 2001-05-31 Name: one blue light / cone Definition: Vessels carrying out transport operations involving certain flammable substances
2	DD Name: IENC Code: clsdng_2 Date accepted: 2001-05-31 Name: two blue lights / cones Definition: Vessels carrying out transport operations involving certain substances constituting health hazards
3	DD Name: IENC Code: clsdng_3 Date accepted: 2001-05-31 Name: three blue lights / cones Definition: Vessels carrying out transport operations involving certain explosives
4	DD Name: IENC Code: clsdng_4 Date accepted: 2001-05-31 Name: no blue light / cone Definition: Vessels carrying out transport operations for which no blue light or blue cone is required
5	DD Name: IENC Code: clsdng_5 Date accepted: 2009-12-09 Name: one red light / red cone top down Definition: Russian inland waterway regulations: vessels with one red light / red cone top down

Attribute	Current velocity at high water level

Acronym: curvhw Code: 17095

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The rate of travel of a current at a high water level

Attribute	Current velocity at low water level

Acronym: curvlw Code: 17096

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The rate of travel of a current at a low water level

Attribute	Current velocity at mean water level

Acronym: curvmw Code: 17097

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The rate of travel of a current at a mean water level

Attribute	Current velocity at other water level

Acronym: curvow Code: 17098

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The rate of travel of a current at an other water level

Attribute	Description of legal conditions

Acronym: lg_des Code: 18010

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Additional textual information which is related to the numerical description of the particular article/clause of the applicable law/regulation

Attribute	Direction of impact

Acronym: dirimp Code: 17056

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Direction of impact

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: dirimp_1 Date accepted: 2001-05-31 Name: upstream Definition: toward the source of a stream
2	DD Name: IENC Code: dirimp_2 Date accepted: 2001-05-31 Name: downstream Definition: in the direction of flow of a current or stream
3	DD Name: IENC Code: dirimp_3 Date accepted: 2001-05-31 Name: to the left bank Definition: toward the left side of the bank
4	DD Name: IENC Code: dirimp_4 Date accepted: 2001-05-31 Name: to the right bank Definition: toward the right side of the bank
5	DD Name: IENC Code: dirimp_5 Date accepted: 2010-08-12 Name: to harbor Definition: to an harbor

Attribute	Distance from notice mark, first

Acronym: disbk1 Code: 17057

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Minimum distance of the impact of an area, which is signed by notice marks. The distance is measured from the notice mark rectangular to the bank

Attribute	Distance from notice mark, second

Acronym: disbk2 Code: 17058

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Maximum distance of the impact of an area, which is signed by notice marks. The distance is measured from the notice mark rectangular to the bank

Attribute	Distance of impact, downstream

Acronym: disipd Code: 17060

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Downstream distance of the impact of an area, which is signed by notice marks. The distance is normally given on an additional mark left and/or right of the notice mark

Attribute	Distance of impact, upstream

Acronym: disipu Code: 17059

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Upstream distance of the impact of an area, which is signed by notice marks. The distance is normally given on an additional mark left and/or right of the notice mark

Attribute	Elevation 1 of surface (m)

Acronym: eleva1 Code: 17061

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The maximum elevation of the bottom of a river within a depth contour and referred to a gravitational reference level.

Attribute	Elevation 2 of surface (m)

Acronym: eleva2 Code: 17062

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The minimum elevation of the bottom of a river within a depth contour and referred to a gravitational reference level.

Attribute	Elevation of water level

Acronym: elevwl Code: 18050

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2020-01-24

Definition: Elevation of the water level of a specified object point measured from the reference gravitational level defined in reflev

Attribute	Function of notice mark

Acronym: fnctnm Code: 17063

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Function of a notice mark

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: fnctnm_1 Date accepted: 2001-05-31 Name: prohibition mark Definition: marks which indicate a prohibition
2	DD Name: IENC Code: fnctnm_2 Date accepted: 2001-05-31 Name: regulation mark Definition: marks which indicate a regulation
3	DD Name: IENC Code: fnctnm_3 Date accepted: 2001-05-31 Name: restriction mark Definition: marks which indicate a restriction
4	DD Name: IENC Code: fnctnm_4 Date accepted: 2001-05-31 Name: recommendation mark Definition: marks which indicate a recommendation
5	DD Name: IENC Code: fnctnm_5 Date accepted: 2001-05-31 Name: information mark Definition: marks with general information

Attribute	Function of sensor

Acronym: fnctsn Code: 18020

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2011-12-19

Definition: Function of sensor

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: fnctsn_1 Date accepted: 2011-12-19 Name: reduce bridge lighting Definition:

Attribute	Height/length units

Acronym: hunits Code: 17103

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Units of measure of waterway distances

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: hunits_1 Date accepted: 2001-05-31 Name: metres Definition: heights/lengths are specified in metres (SI units of length)
2	DD Name: IENC Code: hunits_2 Date accepted: 2001-05-31 Name: feet Definition: heights/lengths are specified in feet (imperial units of length)
3	DD Name: IENC Code: hunits_3 Date accepted: 2001-05-31 Name: kilometres Definition: heights/lengths are specified in kilometres (1000 metres)
4	DD Name: IENC Code: hunits_4 Date accepted: 2001-05-31 Name: hectometres Definition: heights/lengths are specified in hectometres (100 metres)
5	DD Name: IENC Code: hunits_5 Date accepted: 2001-05-31 Name: statute miles Definition: heights/lengths are specified in statue (land) miles
6	DD Name: IENC Code: hunits_6 Date accepted: 2001-05-31 Name: nautical miles Definition: heights/lengths are specified in nautical (sea) miles

Attribute	Horizontal clearance length

Acronym: horcll Code: 17074

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The length of an object, such as a lock or basin, which is available for safe navigation. This may, or may not, be the same as the total physical length (HORLEN) of the object

Attribute	Horizontal clearance width

Acronym: horclw Code: 17075

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The width of an object, such as a lock or basin, which is available for safe navigation. This may, or may not, be the same as the total physical width (HORWID) of the object

Attribute	Marks navigational - System of

Acronym: marsys Code: 17009

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: System of navigational marks

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: marsys_1 Date accepted: 2001-05-31 Name: IALA A Definition: navigational aids conform to the International Association of Lighthouse Authorities - IALA A system.
2	DD Name: IENC Code: marsys_2 Date accepted: 2001-05-31 Name: IALA B Definition: navigational aids conform to the International Association of Lighthouse Authorities - IALA B system.
9	DD Name: IENC Code: marsys_9 Date accepted: 2001-05-31 Name: no system Definition: navigational aids do not conform to any defined system.
10	DD Name: IENC Code: marsys_10 Date accepted: 2001-05-31 Name: other system Definition: navigational aids conform to a defined system other than International Association of Lighthouse Authorities -IALA.
11	DD Name: IENC Code: marsys_11 Date accepted: 2001-05-31 Name: CEVNI Definition: navigational aids conform to the European Code for Inland Waterways of UN/ECE.
12	DD Name: IENC Code: marsys_12 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference
	Name: Russian inland waterway regulations
	Definition: navigational aids conform to the Russian inland waterway regulations.
13	DD Name: IENC Code: marsys_13 Date accepted: 2009-09-11
	Name: Brazilian national inland waterway regulations - two sides
	Definition: navigational aids conform to the Brazilian national inland waterway regulations for two sides.
14	DD Name: IENC Code: marsys_14 Date accepted: 2009-09-11
	Name: Brazilian national inland waterway regulations - side independent
	Definition: navigational aids conform to the side independent Brazilian national inland waterway regulations.
15	DD Name: IENC Code: marsys_15 Date accepted: 2009-09-11
	Name: Paraguay-Parana waterway - Brazilian complementary aids
	Definition: Brazilian complementary navigational aids on the Paraguay-Parana waterway.

Attribute	Maximal permitted beam

Acronym: lg_bme Code: 18003

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The maximal permitted beam (width of a ship's hull) of a vessel or convoy according to the particular article/clause of the applicable law/regulation

Attribute	Maximal permitted draught

Acronym: lg_drt Code: 18005

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The maximal permitted draught of a vessel or convoy according to the particular article/clause of the applicable law/regulation

Attribute	Maximal permitted length

Acronym: lg_lgs Code: 18004

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The maximal permitted length of a vessel or convoy according to the particular article/clause of the applicable law/regulation

Attribute	Maximal permitted speed

Acronym: lg_spd Code: 18001

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The maximal permitted vessel speed according to the particular article/clause of the applicable law/regulation

Attribute	Maximal permitted water displacement

Acronym: lg_wdp Code: 18006

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The maximal permitted water displacement of a vessel or convoy according to the particular article/clause of the applicable law/regulation

Attribute	MMSI Code

Acronym: mmsico Code: 18046

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2017-05-30

Definition: Maritime Mobile Service Identity code

Attribute	Name of other locally relevant water level

Acronym: othnam Code: 17087

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Name of the water level, which is used for the attribute othwat (value at other locally relevant water level) including version identification, for example year of issue or period

Attribute	Name of relevant high water level

Acronym: hignam Code: 17081

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Name of the water level, which is used for the attribute higwat (value at relevant high water level) including version identification, for example year of issue or period

Attribute	Name of relevant low water level

Acronym: lownam Code: 17083

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Name of the water level, which is used for the attribute lowwat (value at relevant low water level) including version identification, for example year of issue or period

Attribute	Name of relevant mean water level

Acronym: meanam Code: 17085

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Name of the water level, which is used for the attribute mawat (value at relevant mean water level) including version identification, for example year of issue or period

Attribute	Name of Sounding datum reference level

Acronym: sdrlev Code: 17089

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Name of the water level depth values are referred to

Attribute	Name of vertical river datum reference level

Acronym: vcrlev Code: 17090

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Name of the water level vertical clearance values are referred to

Attribute	Number of shore connectors

Acronym: shrnum Code: 18035

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2014-11-26

Definition: The number of shore connectors available at the power supply station.

Attribute	Publication reference

Acronym: lg_pbr Code: 18011

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Waterway or waterway section for which a juridical regulation with respect to the maximum permitted vessel dimensions exists

Attribute	Reference Gauge

Acronym: refgag Code: 18018

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2013-01-11

Definition: The ISRS code of the gauge which can be used to calculate the vertical clearance

Attribute	Reference gravitational level

Acronym: reflev Code: 17088

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Gravitational reference level

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: reflev_1 Date accepted: 2001-05-31 Name: Baltic datum Definition: Baltic Datum (Baltic Heights System) - The unified State system for absolute heights reckoning from Kronshtadt Tide-gauge Datum that is accepted in Russian Federation. (Hydrographic Terminology Dictionary, HDNO, 1984)-
2	DD Name: IENC Code: reflev_2 Date accepted: 2001-05-31 Name: Adriatic level Definition: The average height of the surface of the Adriatic sea at the tide station of Trieste in Italy.
3	DD Name: IENC Code: reflev_3 Date accepted: 2001-05-31 Name: Amsterdam Ordnance Datum (NAP) Definition: Dutch gravitational reference level that is approximately the average summer height of the North Sea.
4	DD Name: IENC Code: reflev_4 Date accepted: 2001-05-31 Name: Mean Sea Level Definition: (MSL) - the average height of the surface of the sea at a tide station for all stages of the tide over a 19-year period, usually determined from hourly height readings measured from a fixed predetermined reference level. (IHO Dictionary, S-32, 5th Edition, 3156)
5	DD Name: IENC Code: reflev_5 Date accepted: 2001-05-31 Name: Other datum Definition:

Value	Data Dictionary (DD) Reference
6	DD Name: IENC Code: reflev_6 Date accepted: 2001-05-31 Name: National Geodetic Vertical Datum - NGVD29 Definition: The name, after May 10, 1973, of the Sea Level Datum of 1929.
7	DD Name: IENC Code: reflev_7 Date accepted: 2001-05-31 Name: North American Vertical Datum - NAVD88 Definition: The vertical control datum established in 1991 by the minimum-constraint adjustment of geodetic leveling observations in Canada, the United States, and Mexico.
8	DD Name: IENC Code: reflev_8 Date accepted: 2001-05-31 Name: Mean sea level 1912 Definition: A vertical control datum established for vertical control in the United States by the general adjustment of 1912.
9	DD Name: IENC Code: reflev_9 Date accepted: 2001-05-31 Name: Mean sea level 1929 Definition: A vertical control datum established for vertical control in the United States by the general adjustment of 1929.
10	DD Name: IENC Code: reflev_10 Date accepted: 2015-03-09 Name: Tweede Algemene Waterpassing (TAW) Definition: All heights in Belgium are referenced to TAW

Attribute	Related issue

Acronym: lg_rel Code: 18008

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Indication of the related legal issue

Enumerations:

Value	Data Dictionary (DD) Reference				
1	DD Name: IENC	Code: lg_rel_1	Date accepted: 2001-05-31		
	Name: other				
	Definition:				
2	DD Name: IENC	Code: lg_rel_2	Date accepted: 2001-05-31		
	Name: usage of waterway				
	Definition:				
3	DD Name: IENC	Code: lg_rel_3	Date accepted: 2001-05-31		
	Name: carriage of equipment				
	Definition:				
4	DD Name: IENC	Code: lg_rel_4	Date accepted: 2001-05-31		
	Name: task,operation				
	Definition:				

Attribute	Restriction

Acronym: restrn Code: 17004

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Restriction

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: restrn_1 Date accepted: 2001-05-31 Name: anchoring prohibited Definition: an area within which anchoring is not permitted.
2	DD Name: IENC Code: restrn_2 Date accepted: 2001-05-31 Name: anchoring restricted Definition: a specified area designated by appropriate authority, within which anchoring is restricted in accordance with certain specified conditions.
7	DD Name: IENC Code: restrn_7 Date accepted: 2001-05-31 Name: entry prohibited Definition: an area within which navigation and/or anchoring is prohibited. (adapted from IHO Dictionary, S-32, 5th Edition, 4044)
8	DD Name: IENC Code: restrn_8 Date accepted: 2001-05-31 Name: entry restricted Definition: a specified area designated by appropriate authority, within which navigation is restricted in accordance with certain specified conditions. (adapted from IHO Dictionary, S-32, 5th Edition, 4366)
13	DD Name: IENC Code: restrn_13 Date accepted: 2001-05-31 Name: no wake Definition: mariners must adjust the speed of their vessels to reduce the wave or wash which may cause erosion or disturb moored vessels.

Value	Data Dictionary (DD) Reference
14	DD Name: IENC Code: restrn_14 Date accepted: 2001-05-31 Name: area to be avoided Definition: an IMO designated area to be avoided, defined as a routeing measure. (adapted from IHO Chart Specifications, M-4, 435.7)
27	DD Name: IENC Code: restrn_27 Date accepted: 2001-05-31 Name: speed restricted Definition: an area within which speed is restricted.
28	DD Name: IENC Code: restrn_28 Date accepted: 2001-05-31 Name: overtaking prohibited Definition: a specified area designated by appropriate authority, within which overtaking is generally prohibited
29	DD Name: IENC Code: restrn_29 Date accepted: 2001-05-31 Name: overtaking of convoys by convoys prohibited Definition: a specified area designated by appropriate authority, within which overtaking between convoys prohibited
30	DD Name: IENC Code: restrn_30 Date accepted: 2001-05-31 Name: passing or overtaking prohibited Definition: a specified area designated by appropriate authority, within which passing or overtaking is generally prohibited
31	DD Name: IENC Code: restrn_31 Date accepted: 2001-05-31 Name: berthing prohibited Definition: a specified area designated by appropriate authority, within which vessels, assemblies of floating material or floating establishments may not berth.
32	DD Name: IENC Code: restrn_32 Date accepted: 2001-05-31 Name: berthing restricted Definition: a specified area designated by appropriate authority, within which berthing is restricted
33	DD Name: IENC Code: restrn_33 Date accepted: 2001-05-31 Name: making fast prohibited Definition: a specified area designated by appropriate authority, within which vessels, assemblies of floating material or floating establishments may not make fast to the bank.
34	DD Name: IENC Code: restrn_34 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference				
	Name:	making fast restricted			
	Definition:	a specified area designated by appropriate authority, within which making fast to the bank is restricted			
35	DD Name:	IENC	Code: restrn_35	Date accepted:	2001-05-31
	Name:	turning prohibited			
	Definition:	a specified area designated by appropriate authority, within which all turning is generally prohibited			
36	DD Name:	IENC	Code: restrn_36	Date accepted:	2001-05-31
	Name:	restricted fairway depth			
	Definition:	an area within which the fairway depth is restricted.			
37	DD Name:	IENC	Code: restrn_37	Date accepted:	2001-05-31
	Name:	restricted fairway width			
	Definition:	an area within which the fairway width is restricted.			
38	DD Name:	IENC	Code: restrn_38	Date accepted:	2014-11-26
	Name:	use of spuds prohibited			
	Definition:	the use of anchoring spuds (telescopic piles) is prohibited			
40	DD Name:	IENC	Code: restrn_40	Date accepted:	2017-11-06
	Name:	SOx emission restricted			
	Definition:	An area within which the emission of Sox is restricted.			
41	DD Name:	IENC	Code: restrn_41	Date accepted:	2017-11-06
	Name:	NOx emission restricted			
	Definition:	AN area within which the emission of Nox is restricted.			

Attribute	Sounding datum reference level value

Acronym: sdrval Code: 18049

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2019-11-13

Definition: Local value of the sounding datum reference level.

Attribute	Speed reference

Acronym: lg_spr Code: 18002

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Indicates the type of speed measurement

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lg_spr_1 Date accepted: 2001-05-31 Name: other Definition:
2	DD Name: IENC Code: lg_spr_2 Date accepted: 2001-05-31 Name: speed over ground Definition: The vessel's actual speed, determined by dividing the distance between successive fixes by the time between the fixes
3	DD Name: IENC Code: lg_spr_3 Date accepted: 2001-05-31 Name: speed through water Definition: The vessel's actual speed, determined by subtracting the speed over ground by the current speed

Attribute	Time Schedule Reference

Acronym: schref Code: 17093

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The string encodes the file name of an external file

Attribute	Transshipping goods

Acronym: trshgd Code: 17076

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: List of goods, which can be transshipped

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: trshgd_1 Date accepted: 2001-05-31 Name: containers Definition: boxes for cargo transport with standardized dimensions.
2	DD Name: IENC Code: trshgd_2 Date accepted: 2001-05-31 Name: bulk goods Definition: unpacked bulk cargo in the same or a similar kind of nature (homogeneous).
3	DD Name: IENC Code: trshgd_3 Date accepted: 2001-05-31 Name: oil Definition: Mineral oil or liquid petrolatum, a by-product in the distillation of petroleum to produce gasoline.
4	DD Name: IENC Code: trshgd_4 Date accepted: 2001-05-31 Name: fuel Definition: liquid fuel, e.g. gasoline, diesel.
5	DD Name: IENC Code: trshgd_5 Date accepted: 2001-05-31 Name: chemicals Definition: any material used in or obtained by a process in chemistry.
6	DD Name: IENC Code: trshgd_6 Date accepted: 2001-05-31 Name: liquid goods Definition: fluids whose shape is usually determined by the container it fills.

Value	Data Dictionary (DD) Reference
7	DD Name: IENC Code: trshgd_7 Date accepted: 2001-05-31 Name: explosive goods Definition: goods that undergoes decomposition or combustion with great rapidity, evolving much heat and producing a large volume of gas.
8	DD Name: IENC Code: trshgd_8 Date accepted: 2001-05-31 Name: fish Definition: marine animals
9	DD Name: IENC Code: trshgd_9 Date accepted: 2001-05-31 Name: cars Definition: wheeled vehicles
10	DD Name: IENC Code: trshgd_10 Date accepted: 2001-05-31 Name: general cargo Definition: general cargo

Attribute	Type of AtoN

Acronym: typatn Code: 18047

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2019-10-23

Definition: The type of AtoN being referenced

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: typatn_1 Date accepted: 2019-10-23 Name: AtoN Definition: Aid to Navigation
2	DD Name: IENC Code: typatn_2 Date accepted: 2019-10-23 Name: Real AIS AtoN Definition: An AIS station located on an existing physical aid to navigation
3	DD Name: IENC Code: typatn_3 Date accepted: 2019-10-23 Name: Virtual AIS AtoN Definition: An electronically charted, but non-existent as a physical aid to navigation

Attribute	Type of Ship

Acronym: shptyp Code: 33066

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Type of ship

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: shptyp_1 Date accepted: 2001-05-31 Name: general cargo vessel Definition: a vessel which is designed for carrying general cargo, e.g. boxes, sacks.
2	DD Name: IENC Code: shptyp_2 Date accepted: 2001-05-31 Name: container vessel Definition: a vessel which is designed for carrying containers.
3	DD Name: IENC Code: shptyp_3 Date accepted: 2001-05-31 Name: tanker Definition: a vessel which is designed for carrying liquid goods, e.g. oil or water.
4	DD Name: IENC Code: shptyp_4 Date accepted: 2001-05-31 Name: sailing vessel Definition: a vessel that is powered by the wind; often having several masts.
5	DD Name: IENC Code: shptyp_5 Date accepted: 2001-05-31 Name: fishing vessel Definition: a vessel that is used and equipped for the fishing of living aquatic resources.
6	DD Name: IENC Code: shptyp_6 Date accepted: 2001-05-31 Name: special purpose vessel. Definition: a vessel that fulfills special purposes e.g. hovercrafts, pilot boats

Value	Data Dictionary (DD) Reference
7	DD Name: IENC Code: shptyp_7 Date accepted: 2001-05-31 Name: man of War Definition: armed naval vessel.
8	DD Name: IENC Code: shptyp_8 Date accepted: 2001-05-31 Name: submarine Definition: a vessel that is capable of operating for an extended period of time underwater.
9	DD Name: IENC Code: shptyp_9 Date accepted: 2001-05-31 Name: high speed craft Definition:
10	DD Name: IENC Code: shptyp_10 Date accepted: 2001-05-31 Name: bulk carrier Definition: a vessel which is designed for carrying bulk goods, e.g. coal, ore or grain.
11	DD Name: IENC Code: shptyp_11 Date accepted: 2001-05-31 Name: seaplane Definition: airplane designed to take off from and alight on water.
12	DD Name: IENC Code: shptyp_12 Date accepted: 2001-05-31 Name: tugboat Definition: a powerful small boat designed to pull or push larger ships or powerless barges.
13	DD Name: IENC Code: shptyp_13 Date accepted: 2001-05-31 Name: passenger vessel Definition: a vessel which is designed for carrying passengers and which serves mainly as cruise vessel.
14	DD Name: IENC Code: shptyp_14 Date accepted: 2001-05-31 Name: ferry Definition: a vessel which is designed for carrying passengers, and sometimes their vehicles, on scheduled services.
15	DD Name: IENC Code: shptyp_15 Date accepted: 2001-05-31 Name: boat Definition: a small vessel.

Attribute	UN location code

Acronym: unlocd Code: 17077

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The attribute unlocd should be used to encode the UN Location Code (http://www.unece.org/cefact/locode/service/main.htm) or - in Europe - the Inland Ship Reporting Standard (ISRS) Code

Attribute	Use of Ship

Acronym: useshp Code: 17094

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Indication of the way the ship is used

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: useshp_1 Date accepted: 2001-05-31 Name: liner trade Definition: ship is used to carry goods on a scheduled service
2	DD Name: IENC Code: useshp_2 Date accepted: 2001-05-31 Name: occasional professional shipping Definition: ship is occasional used for professional shipping
3	DD Name: IENC Code: useshp_3 Date accepted: 2001-05-31 Name: leisure Definition: ship is used for leisure activities

Attribute	Value at other locally relevant water level

Acronym: othwat Code: 17086

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Value at waterway gauge in case of a specific water level, which is locally of importance or of interest for navigation

Attribute	Value at relevant high water level

Acronym: higwat Code: 17080

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Value at waterway gauge in case of exact high water level (according to official regulations at the specific section of waterway)

Attribute	Value at relevant low water level

Acronym: lowwat Code: 17082

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Value at waterway gauge in case of exact low water level (according to official regulations at the specific section of waterway)

Attribute	Value at relevant mean water level

Acronym: meawat Code: 17084

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Value at waterway gauge in case of exact mean water level (according to official regulations at the specific section of waterway)

Attribute	Vertical datum

Acronym: verdat Code: 17005

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Vertical datum

Enumerations:

Value	Data Dictionary (DD) Reference
12	DD Name: IENC Code: verdat_12 Date accepted: 2001-05-31 Name: Mean lower low water Definition: (MLLW) - the average height of the lower low waters at a place over a 19-year period. (IHO Dictionary, S-32, 5th Edition, 3145)
31	DD Name: IENC Code: verdat_31 Date accepted: 2001-05-31 Name: Local low water reference level Definition: low water reference level of the local area
32	DD Name: IENC Code: verdat_32 Date accepted: 2001-05-31 Name: Local high water reference level Definition: high water reference level of the local area
33	DD Name: IENC Code: verdat_33 Date accepted: 2001-05-31 Name: Local mean water reference level Definition: mean water reference level of the local area
34	DD Name: IENC Code: verdat_34 Date accepted: 2001-05-31 Name: Equivalent height of water (German GIW) Definition: A low water level which is the result of a defined low water discharge - called "equivalent discharge".
35	DD Name: IENC Code: verdat_35 Date accepted: 2001-05-31

Value	Data Dictionary (DD) Reference
	Name: Highest Shipping Height of Water (German HSW)
	Definition: upper limit of water levels where navigation is allowed
36	DD Name: IENC Code: verdat_36 Date accepted: 2001-05-31
	Name: Reference low water level according to Danube Commission
	Definition: The water level at a discharge, which is exceeded 94 % of the year within a period of 30 years.
37	DD Name: IENC Code: verdat_37 Date accepted: 2001-05-31
	Name: Highest shipping height of water according to Danube Commission
	Definition: The water level at a discharge, which is exceeded 1 % of the year within a period of 30 years.
38	DD Name: IENC Code: verdat_38 Date accepted: 2001-05-31
	Name: Dutch river low water reference level (OLR)
	Definition: The water level at a discharge, which is exceeded 95 % of the year within a period of 20 years.
39	DD Name: IENC Code: verdat_39 Date accepted: 2001-05-31
	Name: Russian project water level
	Definition: Conditional low water level with established probability (Hydrographic Terminology Dictionary, HDNO, 1984).
40	DD Name: IENC Code: verdat_40 Date accepted: 2001-05-31
	Name: Russian normal backwater level
	Definition: Highest water level derived from the upper backwater stream in watercourse or reservoir under the normal operational conditions. (Hydrographic Terminology Dictionary, HDNO, 1984).
41	DD Name: IENC Code: verdat_41 Date accepted: 2001-05-31
	Name: Ohio River Datum
	Definition:
42	DD Name: IENC Code: verdat_42 Date accepted: 2015-02-23
	Name: Approximate LAT
	Definition:
43	DD Name: IENC Code: verdat_43 Date accepted: 2015-02-23
	Name: Dutch High Water Reference Level (MHW)
	Definition:
24	DD Name: HYDRO Code: VERDAT_24 Date accepted: 2000-11-01

Value Data Dictionary (DD) Reference

Name: Local datum

Definition: an arbitrary datum defined by a local harbour authority, from which leves and tidal heights are measured by this authority.

23 DD Name: HYDRO Code: VERDAT_23 Date accepted: 2000-11-01

Name: Lowest astronomical tide

Definition: (LAT) - the lowest tide level which can be predicted to occur under average meterological conditions and under any combination of astronomical conditions. (IHO Dictionary, S-32, 5th Edition, 2936)

30 DD Name: HYDRO Code: VERDAT_30 Date accepted: 2000-11-01

Name: Highest astronomical tide

Definition: (HAT) - the highest tidal level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. (IHO Dictionary, S-32, 5th Edition, 2244).

45 DD Name: IENC Code: verdat_45 Date accepted: 2019-10-08

Name: Dutch estuary low water reference level (OLW)

Definition:

Attribute	Vertical river datum reference level value

Acronym: vcrval Code: 18048

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2019-11-13

Definition: Local value of the vertical clearance reference level.

Attribute	Water displacement unit

Acronym: lg_wdu Code: 18007

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Units of measure for water displacement

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: lg_wdu_1 Date accepted: 2001-05-31 Name: other Definition:
2	DD Name: IENC Code: lg_wdu_2 Date accepted: 2001-05-31 Name: cubic meters Definition:
3	DD Name: IENC Code: lg_wdu_3 Date accepted: 2001-05-31 Name: tonnes Definition:

Attribute	Water level effect

Acronym: watlev Code: 17104

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: Effect of water level

Enumerations:

Value	Data Dictionary (DD) Reference
1	DD Name: IENC Code: watlev_1 Date accepted: 2001-05-31 Name: partly submerged at high water Definition: partially covered and partially dry at high water.
2	DD Name: IENC Code: watlev_2 Date accepted: 2001-05-31 Name: always dry Definition: not covered at high water under average meteorological conditions.
3	DD Name: IENC Code: watlev_3 Date accepted: 2001-05-31 Name: always under water/submerged Definition: remains covered by water at all times under average meteorological conditions.
4	DD Name: IENC Code: watlev_4 Date accepted: 2001-05-31 Name: covers and uncovers Definition: expression intended to indicate an area of a reef or other projection from the bottom of a body of water which periodically extends above and is submerged below the surface. Also referred to as dries or uncovers. (IHO Dictionary, S-32, 5th Edition, 1111)
8	DD Name: IENC Code: watlev_8 Date accepted: 2001-05-31 Name: above mean water level Definition: above a water level called "mean water" which is the arithmetic mean value of all water levels within a certain period of time
9	DD Name: IENC Code: watlev_9 Date accepted: 2001-05-31

Value Data Dictionary (DD) Reference

Name: below mean water level

Definition: below a water level called "mean water" which is the arithmetic mean value of all water levels within a certain period of time

Attribute	Waterway distance

Acronym: wtwdis Code: 17064

Use Type: F

Value Type: F

Data Dictionary (DD) Reference:

DD Name: IENC Date accepted: 2001-05-31

Definition: The distance measured from an origin of a river or canal

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Encoding Guide for Inland ENCs

Inland ENC Harmonization Group

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A. Introduction

Background

Based on the findings of the European transport R&D project INDRIS (Inland Navigation Demonstrator for River Information Services) and the German project ARGO in 2001, both the Danube and the Rhine Commissions adopted an Inland Electronic Chart Display and Information Systems (ECDIS) standard for Electronic Navigational Chart (ENC) data and system requirements for the Rhine and the Danube Rivers. In 2001, the Economic Commission for Europe of the United Nations (UN ECE) adopted the Inland ECDIS Standard as a recommendation for the European inland waterway system (CCNR 2002).

In the USA, following a 1999 recommendation by the National Transportation Safety Board, the U.S. Army Corps of Engineers (USACE) initiated a program to facilitate the production and implementation of Inland ENCs on major river and inland waterway systems in the United States.

While there are some differences between the North American and European inland waterways, there are far more similarities. A North American - European Inland ENC Workshop was held in 2003 in conjunction with a Conference on River Information Services (RIS) organized by the European R&D-project COMPRIS (Consortium Operational Management Platform River Information Services). In addition to informing participants on the status of standards development and projects being conducted, a key objective was to discuss the benefits of harmonizing Inland ENC data standards between Europe and North America.

The North American - European Inland ENC Harmonization Group (IEHG) was formed in 2003 to facilitate the development of international standards for Inland ENC data. The IEHG is comprised of representatives from government, industry and academia. European participants take part on behalf of the European Inland ECDIS Expert Group. The North American participants are members of the North American Inland ENC Ad Hoc working group that was formed in 2002. The IEHG meets once per year. However, most of the work is accomplished via e-mail correspondence, the website http://ienc.openecdis.org/ and the Inland ENC discussion forum https://iehg.centralus.cloudapp.azure.com/login.

The goal of the IEHG is to agree upon specifications for Inland ENCs that are suitable for all known inland ENC data requirements for safe and efficient navigation for European and North American inland waterways. However, it is intended that this standard meets the basic needs for Inland ENC applications, worldwide. As such, the Inland ENC standard is flexible enough to accommodate additional inland waterway requirements in other regions of the world.

In September 2005, the Ministry of Transport of the Russian Federation became a member of the IEHG. In 2007, Brazil through its national Hydrographic Service, the Directorate of Hydrography and Navigation (DHN), joined the IEHG as the first South American country. In October 2009, the Waterborne Transportation Institute of the Ministry of Transport, Peoples Republic of China became the first member of the IEHG from the Asian region.

IEHG also works closely with the International Hydrographic Organization (IHO). At the ECDIS stakeholders' forum in 2007, IHO confirmed that compatibility with Inland ENC standards is allowed by the standards that are certified for maritime ECDIS applications. On 14 April 2009, IEHG became recognized as a Non-Governmental International Organization (NGIO) of IHO. In addition, at the 4th Extraordinary International Hydrographic Conference on 4 June 2009, IHO adopted a resolution to cooperate with the IEHG.

As an NGIO, IEHG supports, advises and provides input to IHO regarding Inland ENC matters.

Inland Electronic Navigational Chart Defined

Inland Electronic Navigational Chart (IENC) means: the database, standardized as to content, structure and format, for use with inland electronic chart display and / or information systems operated onboard of vessels transiting inland waterways. An IENC is issued by or on the authority of a competent government agency, and conforms to standards [initially] developed by the International Hydrographic Organization (IHO) and [refined by] the Inland ENC Harmonization Group. An IENC contains all the chart information necessary for safe navigation on inland waterways and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions,

machine-readable operating schedules, etc.) which may be considered necessary for safe navigation and voyage planning.

IENC Standards

The framework for Inland ENC standards includes:

1. Use of **IHO S-57** (Edition 3.1), including:
    a. 'Maritime' ENC Product Specification (Appendix B1)
    b. Object Catalogue (Appendix A)
    c. Use of Object Catalogue (Appendix B.1, Annex A)
2. A minimum **Inland ENC Product Specification** that includes mandatory requirements for safety-of-navigation on inland waterways, worldwide.
3. An **Inland ENC Encoding Guide** that provides guidance on recommended object classes, attributes, and attribute values for encoding IENC data.
4. Inland ENC **Feature Catalogue**.
5. Establishment of an **Inland ENC domain** for additional IENC features, attributes, and enumerations that are not already contained in other domains of the S-100 registry.
6. Use of the **ienc.openecdis.org** as a means of communication.
7. Align with the **IHO S-100** Universal Hydrographic Data Model. In particular, this includes the Inland ENC domain as part of the overall S-100 Geospatial Information Registry.

The current version of IENC-related standards are published at http://ienc.openecdis.org.

Two other Inland IENC-related standards that are not maintained by IEHG, but are used in Europe include:

1. Inland ECDIS Standard
2. IENC Presentation Library

Copies of all IENC-related standards are available at: http://ienc.openecdis.org/.

IENC Encoding Guide

The IENC Encoding Guide provides detailed guidance on what is required to produce a consistent, uniform Inland ENC.

For all object classes, attributes, and attribute values that are used in conjunction with an IENC, the IENC Encoding Guide:

1. Provides a basis for its creation
2. Describes its relationship to the real-world entity
3. Provides criteria for its proper use
4. Gives specific encoding examples
5. Provides real-world and graphic examples of IENC information (portrayal)

Minimum Contents of an IENC

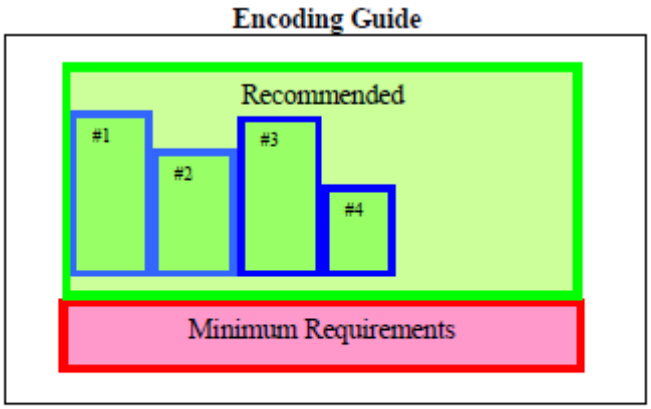
At a **Minimum**, the following objects shall be included in an IENC, if they exist:

1. Bank of waterway
2. Shoreline construction (e.g., groin, training wall)
3. Any facility that is considered a hazard to navigation
4. Contours of locks and dams (i.e., footprint area)
5. Boundaries of the navigation channel (if defined)
6. Isolated dangers in the navigation channel that are either:
    a. under water (obstructions)
    b. above water level (e.g., bridges, overhead cables)
7. Official Aids-to-Navigation (e.g. buoys, beacons, lights, notice marks)
8. Waterway axis with kilometres/hectometres

In addition to these minimum requirements, the Encoding Guide contains **recommended** objects, attributes and

attribute values that are suitable for any Inland ENC application, worldwide. Each country or region can decide which of these recommended objects, attributes and attribute values are necessary to meet their requirements. For example, in Europe and the USA, there are different requirements for River Information Services (RIS). (See diagram below for reference.)

When the competent authorities in Europe define the “navigable water” for their individual waterways they should take into account water areas which can be used at mean water level by vessels with a hull length of 20m or more that are typically used on these waterways. Water areas on which navigation is prohibited are not “navigable water”. If an object which is minimum content when it is situated in navigable water is situated outside of the navigable water, it is recommended to encode it.



#1 = additional requirements of river system for region 1
#2 = additional requirements of river system for region 2
#3, #4, etc.

Changes to the IENC Encoding Guide

The IENC Encoding Guide is a living document that can be modified, as needed, to accommodate future Inland ENC requirements and development, worldwide. The procedures are defined in the Terms of Reference of the Inland ENC Harmonization Group.

A. Features & Attributes: Mandatory, Conditional, Optional

Each feature class and attribute class in the harmonization guide has been classified for encoding purposes as mandatory, conditional or optional.

- Mandatory (M) features or attributes must be encoded. For attributes, if the value is not known, it must be coded as "unknown".
- Conditional (C) features or attributes are mandatory (must be encoded) if defined conditions are met (e.g. if a feature has multiple colours, a colour pattern must be encoded). If the defined conditions are not met, the features or attributes are Optional (O).
- Optional (O) features or attributes should be encoded if the value is known.

B. Attribute Classes Associated With All Geo Object Classes

The following attribute classes can be associated with all geo object classes in an IENC:

SORIND
US: The source indicator is a mandatory attribute and must be coded for all objects in the IENC. All objects in the Encoding Guide state that SORIND is Conditional (C); the condition that must be met is that it is a US produced chart.

The format is: 2 character country code, 2 character authority code, 5 character source code, identifier (no restriction on number of characters).

- Examples:
  - For navigation features reference an authority such as the USCG Mississippi River System Light List, Volume 5: (US,U3,MS_LL,2004_Edition_No.808)
  - For hydrographic features reference appropriate survey: (US,U3,SURVY,2001_Hydro_Survey)
  - For other features reference appropriate survey data: (US,U3,SURVY,1999_Aerial_Survey)

EU: The source indicator must only be coded for an object in an IENC when the source is different from the producer of the IENC and the producer wants to exclude liability.

The format is: 2 character country code, other codes (no restriction on number of characters). All other coding is at the decision of the local authority.

BR: SORIND is an optional attribute which may be used for an object in an IENC when the source is different from the producer of the IENC.

The format is: 2 character country code, description of the responsible authority (no restriction on number of characters).

SORDAT
The production date of the source of the data (e.g. the date of measurement). The source date should be coded for those objects in an IENC, which are changing regularly, for example depth information.

The format is yearmonthday (YYYYMMDD).

- Example:
  - SORDAT coding for a feature with of source date of September 30, 2004 is 20040930

US: SORDAT is a mandatory attribute and must be coded for all objects in the IENC. SORDAT should be set to the release date of the chart if the actual source dates of the data unavailable.

EU: SORDAT for other objects it might be set to "unknown".

BR: SORDAT is optional.

OBJNAM
Use to code feature's name (do not include information on characteristics of feature). Name must be in Title Case. Use abbreviations where possible. Use short names only to avoid clutter in the display. OBJNAM shall be entered in local language using Basic Latin Unicode characters, e.g. Baarlerbruecke, Volkeraksluis or Wien.

NOBJNM
Whenever OBJNAM is used, it is also possible to use NOBJNM. NOBJNM may be used for names in the National Language, for example, Cyrillic characters.

INFORM
Use to code navigationally significant information about the feature that cannot be coded by attributes. INFORM should always be in English.

NINFOM
Whenever INFORM is used, it is also possible to use NINFOM. INFORM should always be in English, whereas NINFOM may be used for the National Language, for example, Cyrillic characters.

TXTDSC
Use to link textual descriptions or feature information in an ASCII file. For object names within the TXTDSC file, the same rules as for the attribute OBJNAM are applicable. Free text within the TXTDSC file should be provided in English language.

Note that filename must be in UPPER CASE.
US: Format is AARRMMMXNN.EXT where:
AA = 2-character Producer Code
RR = 2-character river code
MMM = 3-digit river mile or river km, 000-999
X = tenth of river mile/km; preceding decimal point implied; use zero if river mile/km known only to the nearest mile.
NN = 01-99; unique identifier for text file at the particular river mile/km.
For example, if three TXTDSC files exist at the same river mile/km, 01, 02, and 03 would be used.
EXT = 3-character file extension for Hypertext Metafile (HTM), ASCII text (TXT), or Standardized External XML file with communication information.

EU: The ISRS Location Code can be used for the file name, e.g. DEXXX039000000005023.XML.

NTXTDS
Use to link textual descriptions or feature information in the national language (if the national language is not English) in an ASCII file. For object names within the NTXTDS file, the same rules as for the attribute NOBJNM are applicable. Free text within the NTXTDS file should be provided in the national language.

Note that filename must be in UPPER CASE.
EU: The two letter language code can be added to the file name, e.g. DEXXX039000000005023DE.XML

PICREP
Use to link imagery related to feature. Note that the filename must be in UPPER CASE. Image should be 640 x 480 pixels in resolution.
Format is AARRMMMXNN.EXT, where:
AA = 2-character Producer Code
RR = 2-character river code
MMM = 3-digit river mile or river km, 000-999
X = tenth of river mile/km; preceding decimal point implied; use zero if river mile/km known only to the nearest mile.
NN = 01-99; unique identifier for image file at the particular river mile/km.
For example, if three PICREP files exist at the same river mile/km, 01, 02, and 03 would be used.
EXT = 3-character file extension for the image file format; most commonly TIFF (TIF) or JPEG (JPG) formats.

C. Scale Minimum

The values for the scale minimum mentioned in the encoding guide are recommendations for European and N. American waterways. The chart producer might deviate from these values in order to improve the chart display in special situations, for example on very small or very large waterways. The value of SCAMIN has to be set to a scale value smaller than or equal to the compilation scale of the data for the area.

D. Numeric Precision

The maximum number of decimals of numeric attributes is defined in the Feature Catalogue (e.g. XX.dd for maximum two decimals). The encoding of numeric attributes (e.g. of depth information and heights of structures) should reflect the accuracy of the number. For example a bridge height of thirty-five meters, accurate to one meter, has to be encoded as 35, not as 35.0 or 35.00. Measured values without safety margins should be used.

E. Feature Naming and Text Display

US: Any important navigation notes that should always be shown on the IENC should be encoded as LNDRGN (P) on land or SEAARE (P) objects in the water.

EU: Use the appropriate object to display information (e.g. comare).

F. Assigning Approximate Positions

To assign an approximate position ('PA') for charted features, the attribute Quality of Position [QUAPOS = 4 (approximate)] is assigned to the appropriate spatial object (point or line). It is not assigned to the feature object (e.g. WRECKS object), but to the spatial reference for the feature object. When correctly coded, the electronic chart system will display 'PA' adjacent to the feature object.

G. Navigational Purpose

The following types of Navigational Purpose ("usage") are available:

Subfield	Navigational purpose	Definition for intended use
1	Overview:	For route planning and oceanic crossing.
2	General:	For navigating oceans, approaching coasts and route planning.
3	Coastal:	For navigating along the coastline, either inshore or offshore.
4	Approach:	Navigating the approaches to ports or mayor channels or through intricate or congested waters.
5	Harbour:	Navigating within ports, harbours, bays, rivers and canals, for anchorages.
6	Berthing:	Detailed data to aid berthing.
7	**River:**	**Navigating the inland waterways (skin cell).**
8	**River harbour:**	**Navigating within ports and harbours on inland waterways (skin cell).**
9	**River berthing:**	**Detailed data to aid berthing maneuvering in inland navigation (skin cell).**
A	**Overlay:**	**Overlay cell to be displayed in conjunction with skin cells**

The Navigational Purposes 1 to 8 may be used by authorities as well as private bodies. Navigational Purpose 9 may only be used by private bodies. Overlay cells may be used by authorities as well as private bodies.

Within overlapping cells with the same navigational purpose skin-of-the-earth objects of the same object class must not overlap.

The letter "A" at the third position of the file name indicates that the cell is displayed as overlay over other cells within a range of usages. Overlay cells may not contain skin-of-the-earth objects. The range of usages of overlay cells is indicated in the Data Set Identification Field of the header of the overlay cell (see S57, Part 3, Data Structure, ch. 7.3.1.1). The 8th bit of the intended usage subfield (INTU) has to be set, if a range is used and the other seven bits describe the range (e.g. 25 means a range from usage 2 to usage 5).

H. UN Location Code

The attribute 'unlocd' should be used to encode the UN Location Code (http://www.unece.org/cefact/locode/service/main.htm) or, in Europe, the Inland Ship Reporting Standard (ISRS) Location Code; which is used to establish a standardized relation to other River Information Services.

UN country code (2 digits),

UN Location code (3 digits, "XXX" if not available),

Fairway section number (5 alphanumerical digits, to be determined by the national authority; a side branch should have its own section number, when there are special restrictions, e.g. bridges),

Object Reference Code (5 alphanumerical digits, "00000" if not available),

Fairway section hectometre (5 numerical digits, hectometre at the center of the area or "00000" if not available).

If the ISRS Location Code is not available, the code of the Noordersoft RIS-Index may be used.

I. Legal ECDIS (refers to Section U)

Category attributes for ship types, ship formations and cargo type are available. These categories are used to describe for which type of ship, convoy, or cargo the particular regulation is valid. There are two ways of describing which categories are affected by the rule:

1. explicit selection
2. implicit selection

The attributes for explicit type selection are used to explicitly select the types from the given list. The attributes for implicit type selection are is used to select those types that are not affected.

It is up to the encoder if the explicit attribute or its implicit version is used. However, it is **not allowed** to use both attributes when defining the category of a law content object.

One would make use of implicit type selection if for example the respective regulation states which types are excluded from the regulation rather than explicitly listing those types that are affected.
Example: "recreational crafts are excluded from a speed limit."

J. Dates

When encoding dates using the attributes DATEND, DATSTA, PEREND, PERSTA, SORDAT, SUREND and SURSTA, and no specific year, month or day is required, the following values must apply in conformance to ISO 8601:1988.
• No specific year required, same day each year: --MMDD
• No specific year required, same month each year: --MM
• No specific day required: CCYYMM
• No specific month required: CCYY

Notes: CCYY = calendar year; MM = month; DD = day.
In the first two values, the dashes (--) must be included.
Where the temporal attributes DATEND, DATSTA, PEREND or PERSTA have been encoded for any object that is the master component of a master/slave relationship, all other component objects within the relationship must not extend beyond the temporal attribute values encoded.

Seasonal Objects: If it is required to show seasonality of objects, it must be done using the attribute STATUS = 5

(periodic/intermittent). If it is required to encode the start and/or end dates of the season, this must be done using the attributes PERSTA and PEREND.

K. Collection Features Extending Beyond Cell Boundaries

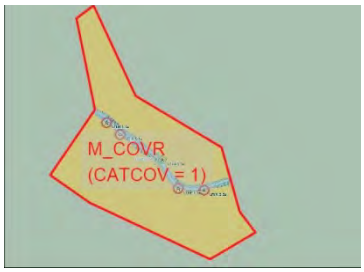
If a collection feature extends beyond a cell boundary (i.e. the features that make up the collection are spread over multiple cells), the collection feature should be repeated in each cell that contains one or more component features. However, only the features that exist in the cell that contains the instance of the collection feature can be referenced by that collection feature. If this technique is used, each instance of the original collection feature must have the same feature identifier (LNAM). It is up to the application (e.g. the Inland ECDIS or ECS) that uses the cells to rebuild the complete collection feature based on the unique feature identifier.

C - IENC Meta Information

C.1 Meta Features

C.1.1 Data Coverage (M)

A geographical area that describes the coverage and extent of the spatial objects. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) All spatial objects in an IENC must be covered by a M_COVR, CATCOV=1 (coverage available) area object. B) US & RU: The use of CATCOV=2 (no coverage available) is required C) EU: The use of CATCOV=2 is optional	**Object Encoding** **Object Class =** M_COVR(A) (M) CATCOV = [1 (coverage available), 2 (no coverage available)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

C - IENC Meta Information

C.1 Meta Features

C.1.2 Data Quality (C)

An area within which a uniform assessment of the quality of the data exists. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization (for CATZOC=6) 	A) The M_QUAL polygons should only cover those areas that contain IENC data. B) EU: M_QUAL is not used. C) US: Refer to ZOC table below for a description of categories. D) RU: Currently all IENCs are coded with CATZOC=1	**Object Encoding** **Object Class =** M_QUAL(A) (O) CATZOC = [1 (zone of confidence A1), 2 (zone of confidence A2), 3 (zone of confidence B), 4 (zone of confidence C), 5 (zone of confidence D), 6 (zone of confidence U (data not assessed))] (O) TECSOU = [1 (found by echo-sounder), 2 (found by side-scan-sonar), 3 (found by multi-beam), 4 (found by diver), 5 (found by lead-line), 6 (swept by wire-drag), 7 (found by laser), 8 (swept by vertical acoustic system), 9 (found by electromagnetic sensor), 10 (photogrammetry), 11 (satellite imagery), 12 (found by levelling), 13 (swept by side-scan-sonar), 14 (computer generated)] (O) SOUACC = [x.xx] The best estimate of the accuracy of the sounding data. Minimum value: 0; Resolution: 0.01 m (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

Zone of Confidence (ZOC) Table

1	2	3		4	5
ZOC [1]	Position Accuracy [5]	Depth Accuracy [3]		Seafloor Coverage	Typical Survey Characteristics [5]
A1	∇ 5 m	a = 0.5 b = 1		Full seafloor ensonification or sweep. All significant seafloor features detected [4] and depths measured.	Controlled, systematic high accuracy Survey on WGS 84 datum; using DGPS or a minimum three lines of position (LOP) with multibeam, channel or mechanical sweep system.
		Depth (m)	Accuracy (m)		
		10 30 100 1000	∇ 0.6 ∇ 0.8 ∇ 1.5 ∇ 10.5		
A2	∇ 20 m	a = 1.0 b = 2		Full seafloor ensonification or sweep. All significant seafloor features detected [4] and depths measured.	Controlled, systematic survey to standard accuracy; using modern survey echosounder with sonar or mechanical sweep.
		Depth (m)	Accuracy (m)		
		10 30 100 1000	∇ 1.2 ∇ 1.6 ∇ 3.0 ∇ 21.0		
B	∇ 50 m	a = 1.0 b = 2		Full seafloor coverage not achieved; uncharted features, hazardous to surface navigation are not expected but may exist.	Controlled, systematic survey to standard accuracy.
		Depth (m)	Accuracy (m)		
		10 30 100 1000	∇ 1.2 ∇ 1.6 ∇ 3.0 ∇ 21.0		
C	∇ 500 m	a = 2.0 b = 5		Full seafloor coverage not achieved, depth anomalies may be expected.	Low accuracy survey or data collected on an opportunity basis such as soundings on passage.
		Depth (m)	Accuracy (m)		
		10 30 100 1000	∇ 2.5 ∇ 3.5 ∇ 7.0 ∇ 52.0		
D	worse than ZOC C	worse than ZOC C		Full seafloor coverage not achieved, large depth anomalies may be expected.	Poor quality data or data that cannot be quality assessed due to lack of information.

Note: The CATZOC attribute definitions are currently the subject of review and the results of this review will be promulgated as soon as possible in the S-57 Corrections Document.

Remarks:

To decide on a ZOC Category, all conditions outlined in columns 2 to 4 of the tables must be met.

Footnote numbers quoted in the table have the following meanings:

[1] The allocation of a ZOC indicates that particular data meets minimum criteria for position and depth accuracy and seafloor coverage defined in this Table. Data may be further qualified by Object Class Quality of Data (M_QUAL) sub-attributes as follows:

a. Positional Accuracy (POSACC) and Sounding Accuracy (SOUACC) may be used to indicate that a higher position or depth accuracy has been achieved than defined in this Table (e.g. a survey where full seafloor coverage was not achieved could not be classified higher than ZOC B; however, if the positional accuracy was, for instance, 15 metres, the sub-attribute POSACC could be used to indicate this).

b. Swept areas where the clearance depth is accurately known but the actual seabed depth is not accurately known may be accorded a higher ZOC (i.e. A1 or A2) providing positional and depth accuracies of the swept depth meets the criteria in this Table. In this instance, Depth Range Value 1 (DRVAL1) may be used to specify the swept depth. The position accuracy criteria apply to the boundaries of swept areas.

c. SURSTA, SUREND and TECOU may be used to indicate the start and end dates of the survey and the technique of sounding measurement.

[2] Position Accuracy of depicted soundings at 95% CI (2.45 sigma) with respect to the given datum. It is the cumulative error and includes survey, transformation and digitizing errors, etc. Position accuracy need not be rigorously computed for ZOCs B, C, and D but may be estimated based on type of equipment, calibration regime, historical accuracy, etc.

[3] Depth accuracy of depicted soundings = a + (B%d) / 100 at 95% CI (2.00 sigma), where d = depth in metres at the critical depth. Depth accuracy need not be rigorously computed for ZOCs B, C and D but may be estimated based on type of equipment, calibration regime, historical accuracy, etc.

[4] Significant seafloor features are defined as those rising above depicted depths by more than:

	Depth	Significant Feature
a.	<10 metres	>0.1% depth,
b.	10 to 30 metres	>1.0 metre,
c.	>30 metres	>(0.1% depth) minus 2.0 metres

[5] Controlled, systematic (high accuracy) survey (ZOC A1, A2, and B) – a survey comprising planned survey lines on a geodetic datum that can be transformed to WGS 84.

Position fixing (ZOC A1) must be strong with at least three high quality Lines of Position (LOP) or Differential GPS.

Modern survey echosounder – a high precision surveying depth measuring equipment, generally including all survey echosounders designed post 1970.

C - IENC Meta Information

C.1 Meta Features

C.1.3 Navigation System of Marks (M)

An area within which a specific system of navigational marks applies and/or a common direction of buoyage. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization (Direction of Buoyage) 	A) The m_nsys polygons should only cover those areas that contain IENC data. B) m_nsys areas may not overlap. C) US: All inland waterways in the United States use IALA B. D) EU: In areas with mixed systems (IALA-A and CEVNI) code marsys according to majority of marks and code individual deviant marks at object level to the appropriate system. E) RU: All inland waterways in Russia use marsys = 12 (Russian inland waterway regulations). F) BR: There are two systems in Brazilian national inland waterways: marsys = 13 (Brazilian national inland waterway regulations - two sides) and marsys = 14 (Brazilian national inland waterway regulations - side independent). In areas with mixed systems (IALA B and one above) use marsys = 2 (IALA B) and code individual deviant marks to the appropriate system (marsys = 13 or 14). G) BR: Paraguai-Parana International Waterway: In Brazilian extent, use marsys= 2 (IALA B) and code Brazilian complementary aids with marsys = 15 (Paraguai-Parana waterway - Brazilian complementary aids). H) EU: To encode the local direction of buoyage for waterways without a defined direction, for example intertidal creeks, ORIENT should be encoded. I) EU: For bendy intertidal creeks it may be necessary to encode several m_nsys features with appropriate ORIENT values to ensure that the displayed arrow aligns with creek axis.	**Object Encoding** **Object Class =** m_nsys(A) (M) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

C - IENC Meta Information

C.1 Meta Features

C.1.4 Sounding Datum (O)

A geographical area of uniform sounding datum. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
	A) If the sounding datum is different than the value given in the SDAT subfield of the "Data set parameter" [DSPM] field for some part of the data set, it must be encoded as meta object 'm_sdat'. B) The areas covered by these meta objects must be mutually exclusive. C) Depth contours and depth areas going across areas which have different values of vertical datum, must be divided into several objects at the border of these areas. D) The sounding datum must be constant over large areas. It applies to the attributes VALSOU, DRVAL1, DRVAL2 and VALDCO.	**Object Encoding** **Object Class =** m_sdat(A) (M) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

C - IENC Meta Information

C.1 Meta Features

C.1.5 Vertical Datum (O)

A geographical area of uniform vertical datum. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
	A) If the vertical datum is different to the value given in the VDAT subfield of the "Data set parameter" [DSPM] field for some part of the data set, it must be encoded as meta object 'm_vdat'. B) The areas covered by these meta objects must be mutually exclusive. C) Height contours, going across areas, that have different values of vertical datum, must be divided into several objects at the border of these areas. D) The vertical datum must be constant over large areas. It applies to the attributes ELEVAT, HEIGHT, VERCCL, VERCLR and VERCOP.	**Object Encoding** **Object Class =** m_vdat(A) (M) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

C - IENC Meta Information

C.1 Meta Features

C.1.6 Quality of Data for Detailed Depth Information (O)

An area within which a uniform assessment of the quality of the data exists.
Distinction: accuracy of data; Survey reliability (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
	A) The quality of data for soundings is only given in those areas where detailed depth information is provided. The area object shares the geometry with those areas. B) TECSOU has to be used to give the technique of the sounding measurement. C) SOUACC should be used to give information about the accuracy of the sounding data. D) POSACC should be used to give information about the accuracy of a position.	**Object Encoding** **Object Class =** M_QUAL(A) (M) TECSOU = [1 (found by echo-sounder), 2 (found by side-scan-sonar), 3 (found by multi-beam), 4 (found by diver), 5 (found by lead-line), 6 (swept by wire-drag), 7 (found by laser), 8 (swept by vertical acoustic system), 9 (found by electromagnetic sensor), 10 (photogrammetry), 11 (satellite imagery), 12 (found by levelling), 13 (swept by side-scan-sonar), 14 (computer generated)] (O) SOUACC = [x.xx] The best estimate of the accuracy of the sounding data. Minimum value: 0; Resolution: 0.01 m (O) POSACC = [xxx.x] (metres), The best estimate of the accuracy of a position. Minimum value: 0; Resolution: 0.1 m (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

C - IENC Meta Information

C.1 Meta Features

C.1.7 Survey Reliability for Detailed Depth Information (O)

An area within which a uniform assessment of the reliability of source survey information exists.
Distinction: accuracy of data; quality of data (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
	A) The survey reliability for soundings is only given in those areas where detailed depth information is provided. The area object shares the geometry with those areas. B) The quality of sounding must not be encoded using QUASOU on the depth geo object, unless it is different to the value of QUASOU encoded on M_SREL. C) QUASOU = 1 (depth known) has to be used if the depth is known and shown via depth areas. D) QUASOU = 2 (depth unknown) is used as an object attribute only in combination with depth areas (not with M_SREL!) for those areas in the river, which are too shallow for being surveyed by surveying boats and hence no detailed data is available (see I.1.9 Unsurveyed Area). E) QUASOU = 8 (value reported (not surveyed)) shall be used as an object attribute only in combination with depth areas (not with M_SREL) especially in cases when parts of the navigable water area are not surveyed but may be deep enough for navigation due to reports from other organisations than the waterways administration (see I.1.9 Unsurveyed Area). F) QUASOU = 10 (maintained depth) or QUASOU = 11 (depth not regularly maintained) should be used as on object attribute only in combination with DEPARE – Fairway Depth (not with M_SREL) to indicate the maintenance (see I.1.5 Fairway Depth / Project Depth). G) QUAPOS = 10 (precisely known) has to be used if the positioning during the survey is done by differential GPS signals. H) SURATH has to be used to give	**Object Encoding** **Object Class =** M_SREL(A) (M) QUASOU = [1 (depth known), 2 (depth unknown), 8 (value reported (not surveyed)), 10 (maintained depth), 11 (not regularly maintained)] (C) QUAPOS = [10 (precisely known)] (M) SURATH = (Name of the surveying authority: e.g., “Wasser- und Schifffahrtsamt Bingen”) (M) SUREND = [CCYYMMDD (full date), CCYYMM (no specific day required)] (M) SURSTA = [CCYYMMDD (full date), CCYYMM (no specific day required)] (C) SURTYP = [2 (controlled survey)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	name of the surveying authority. I) SUREND and SURSTA have to be used to encode the period of the survey. J) Quotation: “If the attributes SOUACC and TECSOU are required, they must be encoded on either the meta object M_QUAL or on individual geo objects (e.g., SOUNDG).” (see C.1.6 Quality of Data) K) SURTYP = 2 (controlled survey) has to be used if a thorough survey has been done, usually conducted with reference to guidelines (a quality assured survey).	

C - IENC Meta Information

C.1 Meta Features

C.1.8 Nautical Publication Information (O)

Used to relate additional nautical information or publications to the data

Graphics	Encoding Instructions	Object Encoding
	A) US & RU: The M_NPUB polygons should only cover those areas that contain IENC data. B) US: TXTDSC shall be used to relate all information pertinent to the chart as printed in Section VII of the US Coast Guard's Local Notice to Mariners (LNM). Format of TXTDSC name should be U3UM819NP1.TXT where U3 = Agency, UM819 = River Cell, NP = Nautical Publication (NP), 1 = NP number.	**Object Encoding** **Object Class =** M_NPUB(A) (M) TXTDSC = (Refer to letter B) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

C - IENC Meta Information

C.1 Meta Features

C.1.9 Quality of Non-bathymetric Data (O)

QUALITY OF NON-BATHYMETRIC DATA. An area within which the best estimate of the overall uncertainty of the data is uniform. The overall uncertainty takes into account for example the source accuracy, chart scale, digitising accuracy etc.

Graphics	Encoding Instructions	Object Encoding
	A) The meta feature Quality of Non-bathymetric Data may be used to provide an indication of the overall uncertainty of position for all non-bathymetric features. It must not be used to provide the uncertainty of bathymetric information. B) The attribute positional uncertainty (POSACC) may be applied to any spatial type, in order to qualify the location of a feature. C) Positional uncertainty must not be applied to the spatial type of any geo feature if it is identical to the positional uncertainty values of the underlying meta feature. D) Positional uncertainty on the Quality of Non-bathymetric Data applies to non-bathymetric data situated within the area, while positional uncertainty on the associated spatial types qualifies the location of the Quality of Non-bathymetric Data feature itself. E) Meta features Quality of Non-bathymetric Data and Quality of Bathymetric Data should not overlap. F) The accuracy of data is only encoded in areas where accuracy of data is available and clearly defined. G) If a structured external XML-file with more detailed accuracy information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** M_ACCY(A) (M) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (M) POSACC = [xxx.xx] (metres) (O) SOUACC = [xxx.xx] (metres) (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (C) TXTDSC = (Refer to letter G) (O) NTXTDS = (Refer to Section B, General Guidance) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.1 Hydrology

D.1.1 Canal (non-navigable) (O)

These are artificial tributaries of the main waterway.

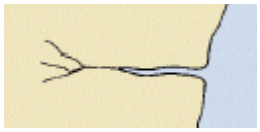
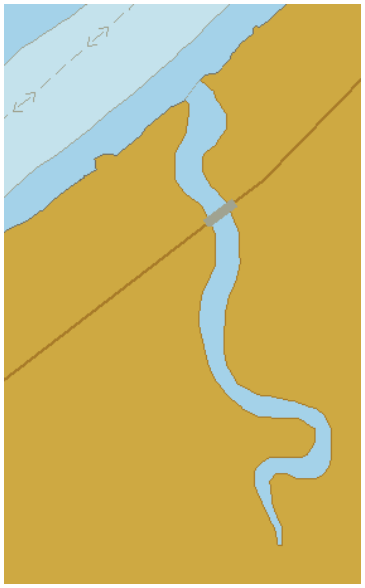
Graphics	Encoding Instructions	Object Encoding
	A) CANALS of type area should be coded on LNDARE objects. B) A CANALS object may not share the same geospatial position and geometry as a SEAARE object. C) Canals that can be used for navigation by e.g. pleasure craft should be encoded as DEPARE, depare or UNSARE.	**Object Encoding** **Object Class =** CANALS(L,A) (O) OBJNAM = [Canal name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.1 Hydrology

D.1.2 Rivers (non-navigable) (O)

Mainly free flowing water courses that are typically tributaries of the main waterway.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) RIVERS of type area should be coded on LNDARE objects. B) Area features should not extend into line features as the river narrows; end where area designation ends. C) Rivers that can be used for navigation by e.g. pleasure craft should be encoded as DEPARE, depare or UNSARE.	**Object Encoding** **Object Class =** RIVERS(L,A) (O) OBJNAM = [River Name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.1 Hydrology

D.1.3 Named Water Area (O)

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

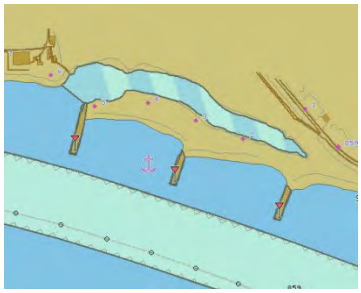
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) For river or canal names, place the point object at or near confluences where a label is needed to distinguish adjoining waterways. B) An area object may be used if its usage will aid in reducing clutter. C) SEAARE area is mandatory only at confluences of two waterways up to 2 kilometres from the confluence. D) Use SEAARE (P) to display the name only at the location where the point was placed. A point object should be used if the point is always on the display when it is relevant. Use SEAARE (A) if display of name is desired along water area's entire expanse.	**Object Encoding** **Object Class =** SEAARE(P,A) (M) OBJNAM = [Water Area Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CATSEA = [5 (bay), 12 (narrows), 13 (shoal), 51 (canal), 52 (lake), 53 (river), 54 (reach), 57 (chute), 58 (backwater/slough), 59 (bend)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.1 Hydrology

D.1.4 Dredging Lake (O)

A body of water mostly surrounded by land, from which sand or gravel is dredged.

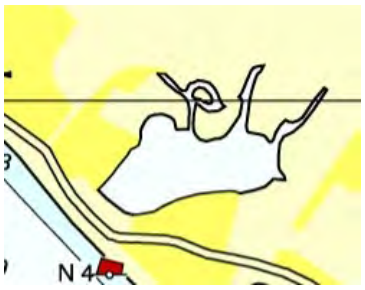
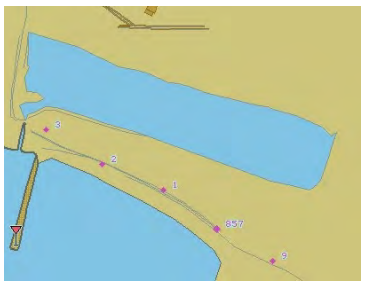
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Lakes that are navigable at compilation scale should be covered by a DEPARE (see I.1.1, Detailed Depth - ref. to one water level) or 'depare' (see I.1.2, Detailed Depth - water level model) B) Dredging lakes connected to the waterway should be covered by a DEPARE or 'depare' with an appropriate QUASOU coding. C) If water depth is not surveyed, but only known from experience by visiting vessels, QUASOU = 2 or 8 should be used (see also I.1.9, Unsurveyed Area). D) Lakes that are not navigable at compilation scale have to be encoded as LAKARE (see D.1.5)	**Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) QUASOU = [2 (depth unknown), 8 (value reported (not surveyed))] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** depare(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) eleva1 = Maximum elevation 1 of a depth area: [xx.x] (metres) or "unknown" (C) eleva2 = Minimum elevation 2 of a depth area: [xx.x] (metres) or "unknown" (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.1 Hydrology

D.1.5 Lake (O)

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

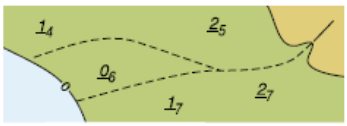
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Lakes not navigable at compilation scale are encoded by LAKARE on LNDARE object(s). B) Lakes that are navigable at compilation scale should be encoded by a DEPARE (see I.1.1 - Detailed Depth - ref. to one water level) or 'depare' (see I.1.2 - Detailed Depth - water level model) C) For dredging lakes connected to the waterway see D.1.4 - Dredging Lake	**Object Encoding** **Object Class =** LAKARE(A) (O) OBJNAM = [Lake Name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 90000; US: 300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.1 Hydrology

D.1.6 Tideway (O)

A natural water course in intertidal areas where water flows during the ebb or flood.
A channel through which a tidal current runs. (IHO Dictionary, S-32, 5th Edition, 5502)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) If it is required to encode a tideway it must be done by using the feature TIDEWY. B) This object must be on top of objects of Group 1 (DEPARE, depare, DRGARE or UNSARE).	**Object Encoding** **Object Class =** TIDEWY(L,A) (O) OBJNAM = [Tideway Name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.2 Topography

D.2.1 Land Area (M)

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

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) A Group I (SOTE) object. B) US: Encode the land area up to the defined 1000 meter buffer zone or the distance within the radar zone for IENC charts. C) Line and Point objects may only be used in small-scale charts.	**Object Encoding** **Object Class =** LNDARE(P,L,A) (O) OBJNAM = "Land Area Name" (O) NOBJNM = (Refer to Section B, General Guidance) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.2 Topography

D.2.2 Land Region (O)

Land Areas adjacent to the waterway that are significant for navigation reference.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) Landings, islands, points, bends, and any land location that should have a label readily displayed for users of the IENC. B) US: Use state and county abbreviations in OBJNAM, where applicable. C) US: Preferred naming will include State abbreviation on towns and cities. D) LNDARE has to be coded underneath Land Region E) Use LNDRGN (P) to display the name only at the location where the point was placed. Use LNDRGN (A) if display of name is desired along water area's entire expanse.	**Object Encoding** **Object Class =** LNDRGN(P,A) (M) OBJNAM = [location name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CATLND = [2 (marsh), 9 (agricultural land), 11 (parkland), 12 (swamp)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.2 Topography

D.2.3 Natural Dunes or Ridges (O)

Natural dunes or ridges, roughly paralleling the waterway, to keep flood waters within the river course.

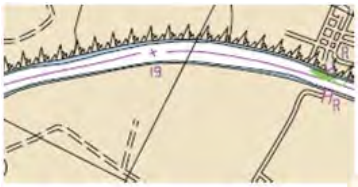
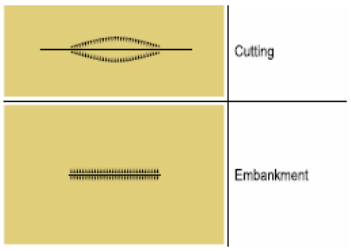
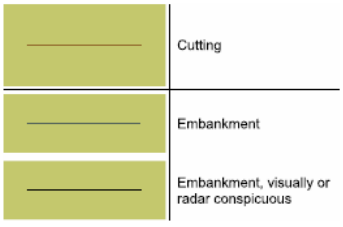
Graphics	Encoding Instructions	Object Encoding
Real World Image to be included at a later date *Chart Symbol* Image to be included at a later date *IENC Symbolization* 	A) Natural dunes must be encoded as a SLOGRD B) When the SLOGRD is of type area, it must have a LNDARE underneath. C) At large scale, the crown (the topline of the dune) may be encoded as a SLOTOP with CATSLO = 2 (embankment).	**Object Encoding** **Object Class =** SLOGRD(L,A) (M) CATSLO = [3 (dune)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** SLOTOP(L) (M) CATSLO = [2 (embankment)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.2 Topography

D.2.4 Cliff / Natural Rock Wall (O)

Land rising abrupty for a considerable distance above the water or surrounding land. (IHO Dictionary, S-32, 5th Edition, 829)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *Chart Symbol*  *IENC Symbolization*  	A) Cliffs / Rock Walls shall be encoded using the feature SLOGRD and/or SLOTOP. B) SLOGRD may be used at large scale to indicate the horizontal extent of the cliff. C) When the SLOGRD is of type Area, it must have a LNDARE underneath. D) SLOTOP should be used on its own to encode cliffs at small scale, or in conjunction with SLOGRD to indicate the crest of the cliff when it is considered useful to know its elevation, and/or to encode a cliff on land distant from the coastline. E) Whne the cliff is coincident with the coastline, a COALNE feature with the attribute CATCOA = 1 (steep coast) should be encoded and there should be no SLOGRD or SLOTOP encoded. F) US: Use CTNARE to buffer between waterline into depth area. CTNARE should be a minimum of 12m wide. G) US: Encode CTNARE INFORM = Natural Rock Wall H) EU: If a rock wall is in navigable water and is a hazard to navigation, a caution area (CTNARE) shall be added.	**Object Encoding** **Object Class =** SLOGRD(A) (M) CATSLO = [6 (cliff)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (M) SCAMIN = [EU: 300000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** SLOTOP(L) (M) CATSLO = [6 (cliff)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (M) SCAMIN = [EU: 300000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** COALNE(L) (M) CATCOA = [1 (steep coast)] (M) SCAMIN = [300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** CTNARE(A) (C) INFORM = (Refer to letter G) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General

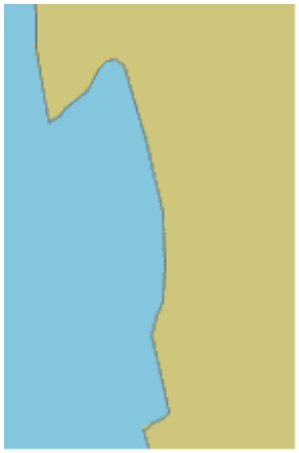
		Guidance)

D - Natural Features

D.2 Topography

D.2.5 Shoreline (M)

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)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) EU: Shoreline should be extracted from data collected at mean water conditions, if possible. B) US: Shoreline is project specific: in pool areas, project pool is used; in open water areas, shoreline should be extracted at low water conditions.	**Object Encoding** **Object Class =** COALNE(L) (O) CATCOA = [1 (steep coast), 2 (flat coast), 3 (sandy shore), 4 (stony shore), 5 (shingly shore), 6 (glacier (seaward end)), 7 (mangrove), 8 (marshy shore), 9 (coral reef), 10 (ice coast), 11 (shelly shore)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 45000; US: 300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

D - Natural Features

D.3 Vegetation

D.3.1 Vegetation (C)

Collections of, or individual plants. (S-57 standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Vegetation areas and trees shall only be used on a limited level, mostly in case they are visual conspicuous to the skippers. B) In case trees or woods block visibility of objects, which are of relevance for navigation, they shall be encoded. C) In case large areas of reed exist and significantly mask a coastline or canal entrance, CATVEG = 11 (reed) shall be encoded.	**Object Encoding** **Object Class =** VEGATN(P,A) (M) CATVEG = [6 (wood in general (inc mixed wood)), 11 (reed), 13 (tree in general)] (O) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

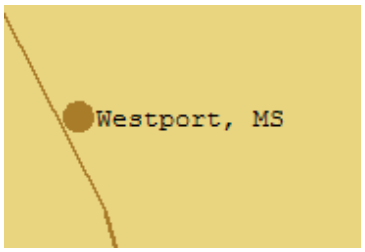
E - Cultural Features

E.1 Settlements, Buildings, Political Boundaries

E.1.1 Built-up Areas (O)

An area containing a concentration of buildings and the supporting road or rail infrastructure (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization (area)* 	A) EU: Outline of BUAARE using area feature should be real built-up areas; only in case no detailed data is available (e.g., from flight surveys or satellite pictures) the political bounds can be used. B) US: Outline of BUAARE should be the political bounds. C) CATBUA may be encoded according to the following definitions based on inhabitants: Urban area (more than 100.000) City (20.000 – 100.000) Town (5.000 – 20.000) Village (100 - 5000) Settlement (few houses/farms) D) BUAARE should be represented as point object for towns and small communities where the limits are not known. Points should be oriented on the highest buildings (e.g., church towers) or the town centres. E) Built-up areas that use the riverbank as a limit must share the same geometry. F) US: Use name and state abbreviation, e.g., Westport, MS for OBJNAM. G) EU: If the ISRS Location Code is available, it has to be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** BUAARE(P,A) (O) OBJNAM = [urban or settlement name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CATBUA = [1 (urban area), 2 (settlement), 3 (village), 4 (town), 5 (city)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) unlocd = [ISRS Location Code] (M) SCAMIN = [EU: 90000 (except: 700000 for CATBUA1 and 180000 for CATBUA5); US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

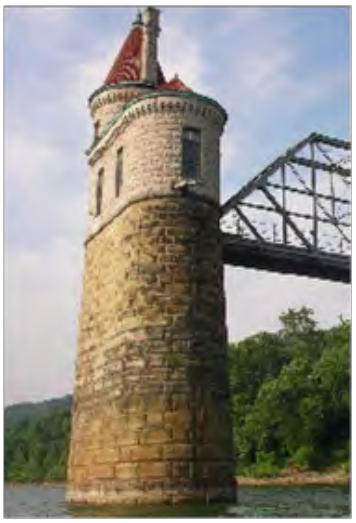
IENC Symbolization (point) 		

E - Cultural Features

E.1 Settlements, Buildings, Political Boundaries

E.1.2 Buildings of Navigational Significance (O)

Buildings with a special function, which may be of interest for the skipper.

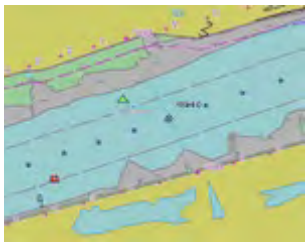
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Fortified structures shall be encoded as fortified structures (FORSTC), E.3.3, if they can be seen from the water. B) Collect areas of buildings that are not individually navigationally significant as Built-up Areas (BUAARE) by collecting an area around the outer edges of the outermost buildings or street patterns. C) Buildings that are visible from the water and that may be used as landmarks shall be collected as LNDMRK if possible. D) Buildings or structures with specialized functions must be attributed with the appropriate FUNCTN value. E) Buildings that can be encoded as 'hrbfac' (see S.1.1) should not be encoded as BUISGL. F) Buildings that extend into water should be encoded as Dock/Wharf (SLCONS) with appropriate CATSLC attribute. Then the building should be placed on that dock.	**Object Encoding** **Object Class =** BUISGL(P,A) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) FUNCTN = [2 (harbour-master's office), 3 (custom office), 4 (health office), 5 (hospital), 6 (post office), 7 (hotel), 8 (railway station), 9 (police station), 10 (water-police station), 11 (pilot office), 12 (pilot lookout), 13 (bank office), 14 (headquarters for district control), 15 (transit shed/warehouse), 16 (factory), 17 (power station), 18 (administrative), 19 (educational facility), 20 (church), 21 (chapel), 22 (temple), 23 (pagoda), 24 (shinto shrine), 25 (buddhist temple), 26 (mosque), 27 (marabout), 28 (lookout), 29 (communication), 30 (television), 31 (radio), 32 (radar), 33 (light support), 34 (microwave), 35 (cooling), 36 (observation), 37 (time ball), 38 (clock), 39 (control), 40 (airship mooring), 41 (stadium), 42 (bus station)] (C) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 4 (wingless), 5 (planned construction)] (M) SCAMIN = [US: 18750; EU: 22000 (except: 45000 for FUNCT20-CONVIS2, 45000 for FUNCT33-CONVIS2, 90000 for FUNCTN20-CONVIS1, 90000 for FUNCTN33-CONVIS1)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.1 Settlements, Buildings, Political Boundaries

E.1.3 International Boundaries & National Limits (Administration Area) (O)

A defined and named administrative area (e.g. country, state, district)

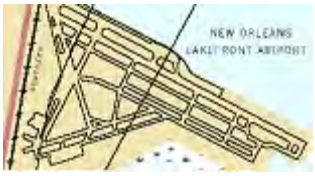
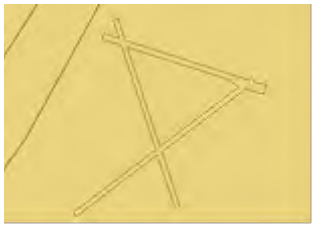
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization (only visible in display mode "other") 	A) Use ADMARE object class, if the information about the applicable jurisdiction is important for navigation. B) The nationality is encoded by a 2 character-code following ISO 3166 (Refer to Annex A to S-57 Appendix A)	**Object Encoding** **Object Class =** ADMARE(A) (M) JRSDTN = [1 (international), 2 (national), 3 (national sub-division)] (M) NATION = [xx] (Refer to letter B) (M) OBJNAM = [name of the administrative area] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [3 (under reclamation)] (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.2 Airfields, Railways, Roads

E.2.1 Airport (C)

An area containing at least one runway, used for landing, take-off, and movement of aircraft. (S-57 Standard)

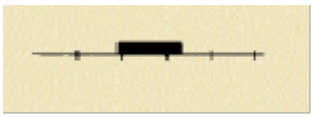
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Code outline of runways. Include taxiways and tarmacs, if the information is available. B) Coding as a point is subject to data availability or subject to the scale of the chart. C) Runways where lights can be seen from passing vessels shall be encoded. D) If an airfield consists of several component objects (AIRARE), C_ASSO could be used to associate them.	**Object Encoding** **Object Class =** AIRARE(P,A) (O) CATAIR = [1 (military aeroplane airport), 2 (civil aeroplane airport), 4 (civil heliport), 6 (small planes airfield)] (O) OBJNAM = [(Name) + "Airport" or (Name) + "Airfield"] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.2 Airfields, Railways, Roads

E.2.2 Railway (C)

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

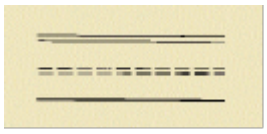
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Switching yards and groups of spur lines should be coded as LNDRGN (A) objects. If appropriate, code INFORM = Switching yard. B) It is recommended that minimal RAILWY objects be collected in a BUAARE. C) Switching yards may be defined by the external rail lines defining the yard with the LNDRGN placed within. D) Include railroads where vessels can see the train lights and traffic control lights from the water.	**Object Encoding** **Object Class =** RAILWY(L) (O) OBJNAM = [Railroad Name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) INFORM = (Refer to letter A) (C) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 45000; US: 15000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.2 Airfields, Railways, Roads

E.2.3 Road (C)

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

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Only interstates, highways, major roads and roads providing access to the river should be collected. B) In BUAAREs, with exception to roads providing access to the waterfront, ROADWYs should be restricted to a set of routes representative of the urban layout. C) Roads should be collected to the limits of the IENC buffer. D) Unless the feature represents an access route useful to vessels, ROADWY features need not have complete or accurate topology. E) Road fragments clipped by the IENC Buffer Zone should be removed. F) Roads should be encoded as linear objects but may also be encoded as areas. G) Include roads where vessels can see the vehicle lights and traffic control lights from the water.	**Object Encoding** **Object Class =** ROADWY(L,A) (M) CATROD = [1 (motorway), 2 (major road), 3 (minor road), 4 (track/path)] (O) OBJNAM = [highway, interstate, road name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) NATCON = [4 (hard surfaced), 5 (unsurfaced)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 45000; US: 15000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.2 Airfields, Railways, Roads

E.2.4 Runway (O)

A defined rectangular area, on a land aerodrome, prepared for the landing and take-off run of aircraft along its length. A site on which helicopters may land and take off. (S-57 Standard)

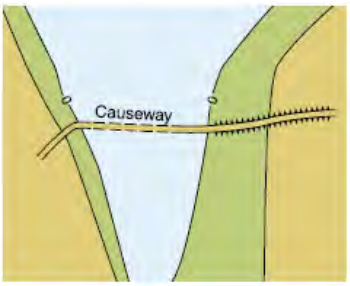
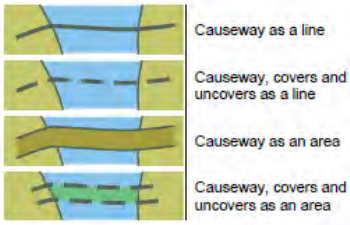
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Coding as point or line is subject to data availability or subject to the scale of the chart. B) Runways where lights can be seen from passing vessels should be encoded.	**Object Encoding** **Object Class =** RUNWAY(P,L,A) (O) CATRUN = [1 (aeroplane runway), 2 (helicopter landing pad)] (O) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (O) NATCON = [4 (hard surface), 5 (unsurfaced)] (O) OBJNAM = [Runway name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = 45000 (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.2 Airfields, Railways, Roads

E.2.5 Causeway (O)

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

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Include causeways where vessels can see the car lights and traffic control lights from the water.	**Object Encoding** **Object Class =** CAUSWY(L,A) (O) OBJNAM = [Causeway Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) WATLEV = [2 (always dry), 4 (covers and uncovers)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

E - Cultural Features

E.3 Other Cultural Features

E.3.1 Silo / Storage Tank (O)

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

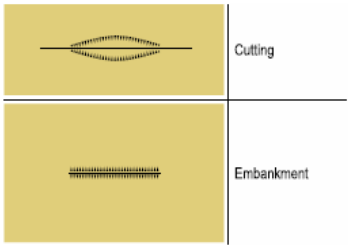
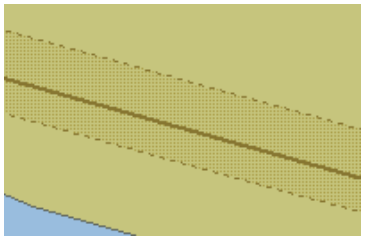
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Outline silo or tank with circle, square, or rectangle. B) Groups of silos or tanks should be aggregated into a single polygon of built-up area, with an INFORM to identify the feature as a group. C) Water Towers should be encoded as SILTNK, CATSIL = 4 (water tower), PRODCT = 3 (water).	**Object Encoding** **Object Class =** SILTNK(P,A) (O) PRODCT = [1 (oil), 2 (gas), 3 (water), 7 (chemicals), 22 (grain)] (O) CATSIL = [1 (silo in general), 2 (tank in general), 3 (grain elevator), 4 (water tower)] (O) OBJNAM = [Facility Owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) INFORM = [“Tank Farm/Multiple Structures”] (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

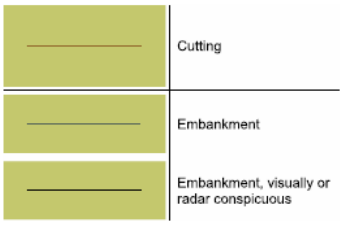
E - Cultural Features

E.3 Other Cultural Features

E.3.2 Cutting or Embankment (O)

Cutting: an excavation through high ground for a road, canal, etc.
Embankment: an artificial elevation constructed from earth, stone, etc. carrying a road, railway or similar or serving to dam water.

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *Chart Symbol*  *IENC Symbolization (SLOGRD (A))* 	A) SLOGRD of type area should be delineated at the toe of the embankment B) When the SLOGRD is of type area, it must have a LNDARE underneath. C) Cuttings shall be encoded using the feature SLOGRD and/or SLOTOP, with the attribute CATSLO = 1 (cutting). D) Embankments shall be encoded using the feature SLOGRD and/or using the feature SLOTOP, with the CATSLO = 2 (embankment). E) SLOGRD may use used at a large scale to indicate the horizontal extent of the cutting or embankment. F) SLOTP should be used on its own to encode embankments at small scale and/or to encode an embankment on land distant from the shoreline.	**Object Encoding** **Object Class =** SLOGRD(L,A) (M) CATSLO = [1 (cutting), 2 (embankment)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** SLOTOP(L) (M) CATSLO = [1 (cutting), 2 (embankment)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 4 (wingless)] (M) SCAMIN = [20000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

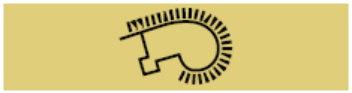
IENC Symbolization (SLOGRD (L), SLOTOP (L)) 		

E - Cultural Features

E.3 Other Cultural Features

E.3.3 Fortified Structure (O)

A structure for the military defence of a site.

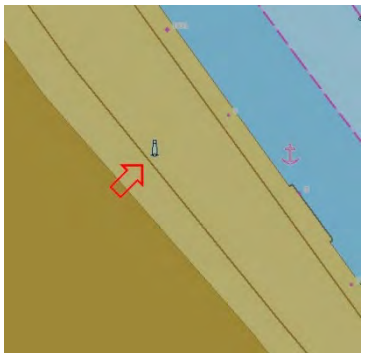
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) If it is required to encode a fortified structure, it must be done using the feature Fortified Structure (FORSTC).	**Object Encoding** **Object Class =** FORSTC(P,L,A) (M) CATFOR = [1 (castle), 2 (fort), 3 (battery), 4 (blockhouse), 5 (martello tower), 6 (redoubt)] (O) CONDTN = [2 (ruined)] (O) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (O) NATCON = [1 (masonry), 2 (concreted), 6 (wooden), 7 (metal)] (O) OBJNAM = [Fortified Structure Name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

F - Landmarks

F.1 Landmarks

F.1.1 Conspicuous Landmark (O)

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).

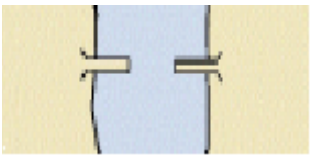
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization (point)*  *IENC Symbolization (area)* 	A) Only visually conspicuous landmarks shall be encoded as landmarks. As a result the mandatory attribute CONVIS shall always be 1 (visually conspicuous). B) Castles, churches, chapels and transmitters can be encoded as CATLMK = 17 (tower), but then the type must be further made clear within the object name. C) If the landmark serves as a navigational light support, FUNCTN = 33 (light support), it must be encoded with a LIGHTS object (see N). D) If the landmark has a navigational function it has to be encoded as a building of navigational significance (see E.1.2).	**Object Encoding** **Object Class =** LNDMRK(P,A) (M) CONVIS = [1 (visually conspicuous)] (M) CATLMK = [1 (cairn), 2 (cemetery), 3 (chimney), 4 (dish aerial), 5 (flagstaff (flagpole)), 6 (flare stack), 7 (mast), 8 (wind sock), 9 (monument), 10 (column (pillar)), 11 (memorial plaque), 12 (obelisk), 13 (statue), 14 (cross), 15 (dome), 16 (radar scanner), 17 (tower), 18 (windmill), 19 (windmotor), 20 (spire/minaret), 21 (large rock or boulder on land)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) FUNCTN = [33 (light support)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 4 (wingless), 5 (planned construction)] (O) VERLEN = [xxx.x] (units defined in hunits), e.g. 21.7 (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (M) SCAMIN = [EU: use 22000 for a point object (except 45000 for CONVIS1) and 45000 for line objects; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.1 Bascule Bridge (M)

A counterpoise bridge rotated in a vertical plane about an axis at one or both ends. Also called a balance. (IHO Dictionary, S-32, 5th Edition, 545)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) The portions of the bridge that approach the movable span from either shore are to be collected as fixed bridges (separate objects). Only that portion of the bridge that is actually movable is to be collected as a movable bridge. C) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). D) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span", or "Not to be used for Navigation" E) Bridge approaches (over the bankline) should be encoded. F) Include PICREP, with pictures of bridge when open, and closed, if available. US: PICREP is mandatory EU: PICREP is optional G) Roads and railways on bridges shall not be encoded. H) Place LIGHTS at appropriate position on bridge object and piers bounding navigable channel. I) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [5 (bascule bridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCOP = [xx.x] (metres), e.g., 23.4 (C) VERCCL = [xx.x] (metres), e.g., 13.2 - over navigable waters (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) OBJNAM = (Refer to letter J) (C) NOBJNM = (Refer to Section B, General Guidance) (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (C) PICREP = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter R)

	- two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations - radio call-in points	(O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15
	J) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. K) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H) L) Use 'verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute M) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. N) For Notice marks on bridges see O.3.2 O) For time schedule (general) see T.1.1 P) HORCLR and VERCLR must be encoded for all navigable spans of bridges. Q) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. R) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS Location Code of the gauge shall be encoded in the attribute 'refgag'. S) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. T) If the geodetic height of the lower edge of the bridge should be	(O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [EU: 90000; US: 300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter M) (C) unlocd = [ISRS Location Code] (C) SORIND = (Refer to Section B, General Guidance) (C) SORDAT = [YYYYMMDD]

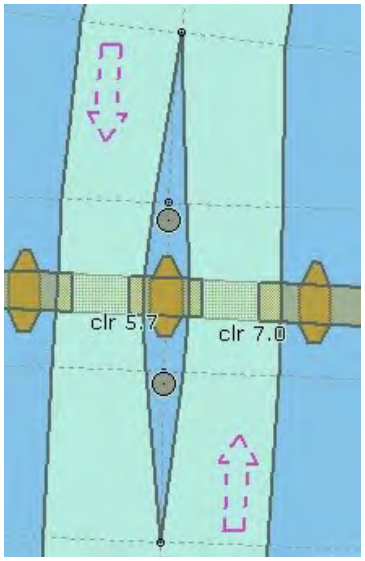
	available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the calculation of the geodetic height.	

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.2 Bridges with Bridge Arches (M)

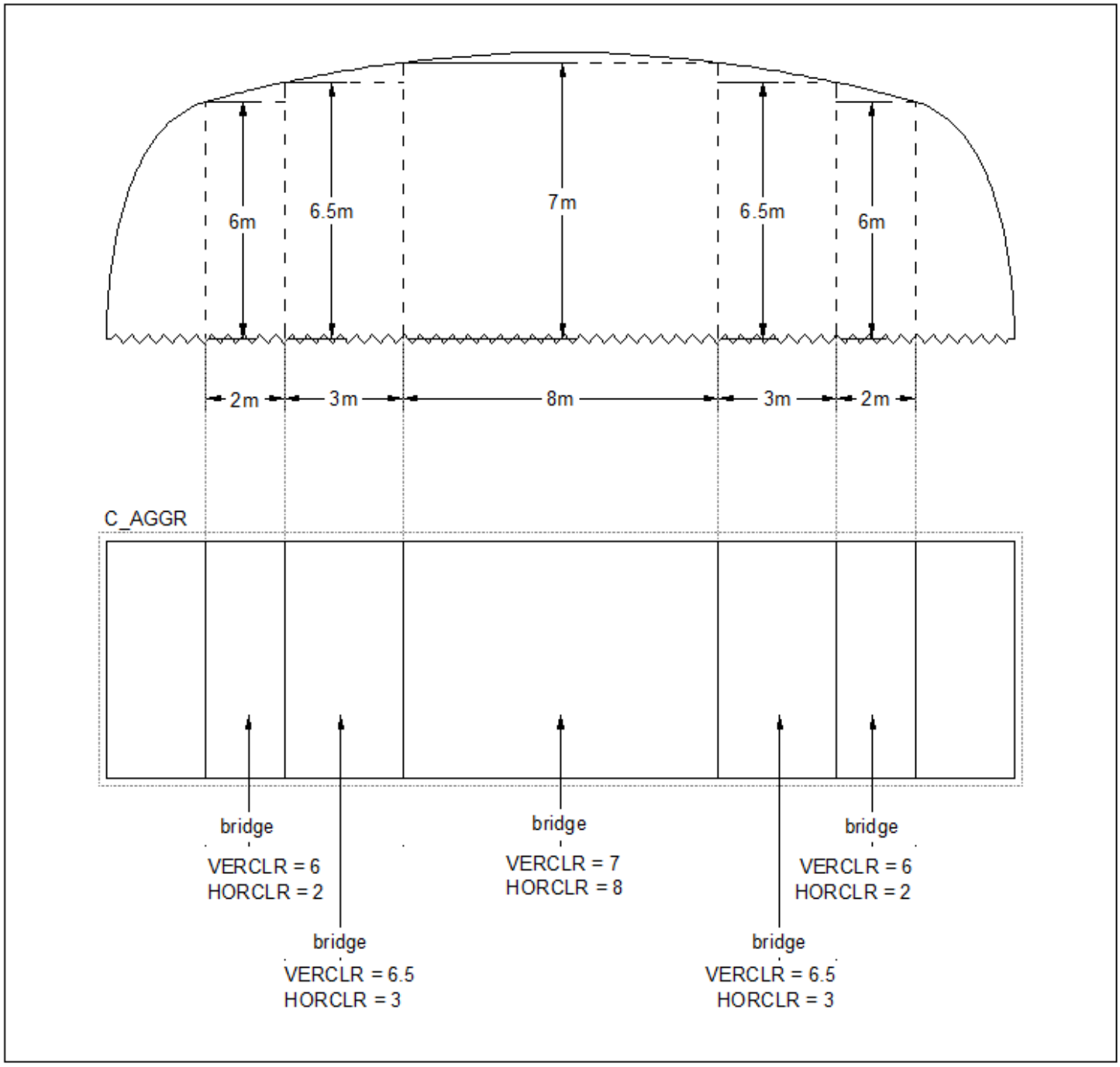
A Bridge which has bridge arches rather than straight construction.

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) The following instructions are only necessary if the available space according to the beam and air-draft of the vessel shall be indicated. This is only possible if the arch of the bridge can be separated into different single pieces with known vertical clearances or if the arc is mathematically known. -Create several bridge objects with CATBRG = 13 (bridge arch) for one bridge arch. -The number of the bridge objects depends on the resolution of the different vertical clearances which shall be provided. The width of the element with the biggest vertical clearance should not be less than the typical width of vessels (12m for European waterways of CEMT class Iva and above). -The areas must not overlap. -All of the bridge object of one arch which are situated within the allowed passage must be aggregated by a c_brga object. C) Create separate bridge respectively c_brga objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). D) Bridge approaches (over the bankline) should be encoded. E) Use PICREP if available. F) Roads and railways on bridges shall not be encoded. G) Place LIGHTS on navigable span and piers bounding navigable span. H) All objects of a bridge which belong	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [1 (fixed bridge), 13 (bridge arch)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) PICREP = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) OBJNAM = (Refer to letter I) (C) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter P) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)]

	to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar - two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations - radio call-in points 'c_brga' objects must NOT be included in the C_AGGR.	(O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [EU: 90000; US: 300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter L) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** c_brga() (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) PICREP = (Refer to Section B, General Guidance)
	I) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. J) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H) K) Use 'verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute L) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. M) For Notice marks on bridges see O.3.2 N) HORCLR and VERCLR must be encoded for all navigable spans of bridges. O) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. P) EU: If there is a gauge which can be used to calculate the vertical	

	clearance of the bridge, the ISRS Location Code of the gauge shall be encoded in the attribute 'refgag'. Q) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. R) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the calculation of the geodetic height.	

Bridge Encoding Diagram

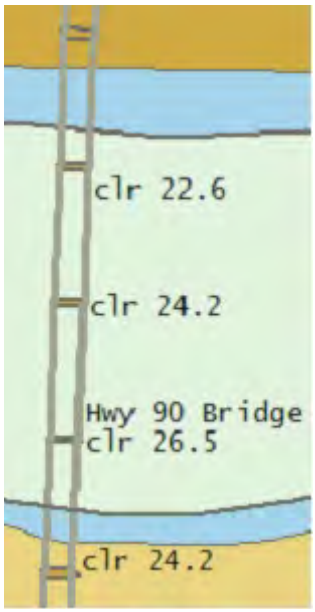


G - Ports, Waterways

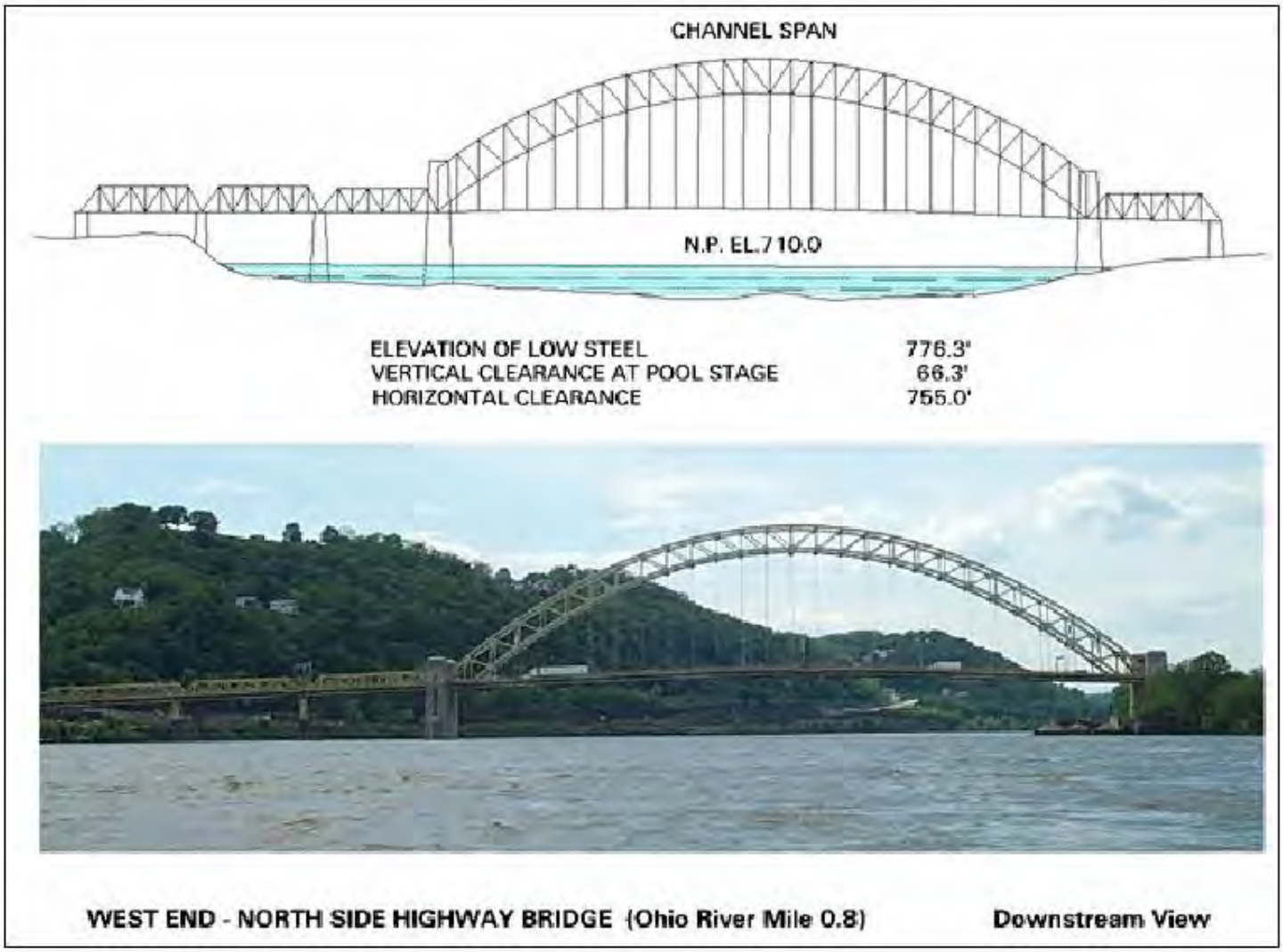
G.1 Bridges, Tunnels, Overhead Obstructions

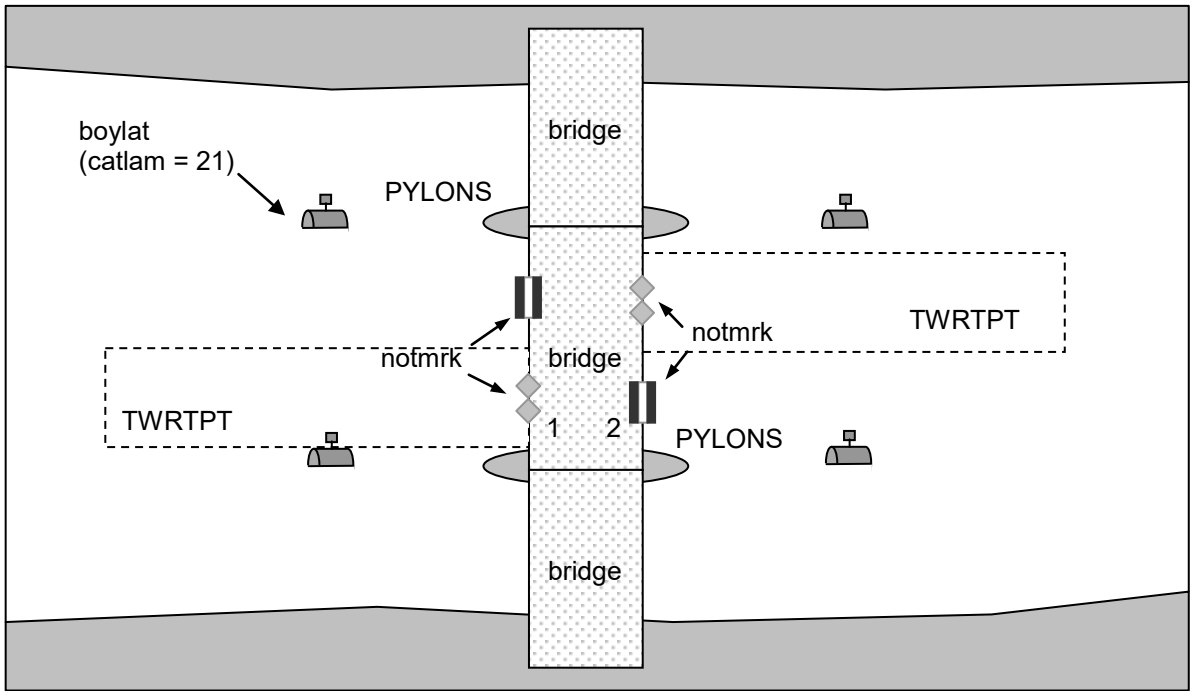
G.1.3 Fixed Bridge (M)

A bridge having permanent horizontal and vertical alignment. (McGraw-Hill Dictionary of Scientific and Technical Terms, 3rd Edition, 1984)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). C) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span", or "Not to be used for Navigation." D) Bridge approaches (over the bankline) should be encoded. E) Use PICREP (sample shown below) representation of profile view with vertical clearance shown. US: PICREP is mandatory EU: PICREP is optional F) Roads and railways on bridges shall not be encoded. G) Place LIGHTS on navigable span and piers bounding navigable span. H) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar - two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [1 (fixed bridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) PICREP = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) INFORM = (Refer to letter C) (O) NINFOM = (Refer to Section B, General Guidance) (C) OBJNAM = (Refer to letter I) (C) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter P) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54

	- radio call-in points I) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. J) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H) K) Use 'verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute L) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. M) For Notice marks on bridges see O.3.2 N) HORCLR and VERCLR must be encoded for all navigable spans of bridges. O) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. P) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS Location Code of the gauge shall be encoded in the attribute 'refgag'. Q) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. R) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the calculation of the geodetic height.	(O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [EU: 90000; US: 300000] (C) SORIND = (Refer to Section B, General Guidance) (C) SORDAT = [YYYYMMDD] **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (C) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter L) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)


CHANNEL SPAN
N.P. EL. 710.0
ELEVATION OF LOW STEEL 776.3'
VERTICAL CLEARANCE AT POOL STAGE 66.3'
HORIZONTAL CLEARANCE 755.0'
WEST END - NORTH SIDE HIGHWAY BRIDGE (Ohio River Mile 0.8)
Downstream View

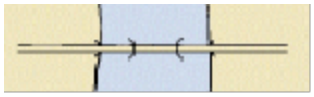

boylat
(catlam = 21)
PYLONS
bridge
TWRTPT
notmrk
notmrk
bridge
TWRTPT
1
2
PYLONS
bridge

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.4 Lift Bridge (M)

A movable bridge (or span thereof) which is capable of being lifted vertically to allow vessels to pass beneath. (adapted from IHO Dictionary, S-32, 5th Edition, 547)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) The portions of the bridge that approach the movable span from either shore are to be collected as fixed bridges (separate objects). Only that portion of the bridge that is actually movable is to be collected as a movable bridge. C) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). D) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span", or "Not to be used for Navigation." E) Bridge approaches (over the bankline) should be encoded. F) Include PICREP, with pictures of bridge when open and closed, if available. US: PICREP is mandatory. EU: PICREP is optional. G) Roads and railways on bridges shall not be encoded. H) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar - two way route parts - communication area - fenders	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [4 (lifting bridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCOP = [xx.x] (metres), e.g., 23.4 (C) VERCCL = [xx.x] (metres), e.g., 13.2 - over navigable waters (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (C) PICREP = (Refer to Section B, General Guidance) (C) OBJNAM = (Refer to letter I) (C) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter Q)

- ice breakers
- vertical clearance indicators
- signal stations
- radio call-in points

I) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object.

J) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H)

K) Use 'verdat' only if vertical datum differs:

- from DSPM VDAT subfield and
- from Meta object 'm_vdat' attribute

L) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.

M) For Notice marks on bridges see O.3.2

N) For time schedule (general) see T.1.1

O) HORCLR and VERCLR must be encoded for all navigable spans of bridges.

P) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4.

Q) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS Location Code of the gauge shall be encoded in the attribute 'refgag'.

R) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.

S) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference

(O) HORACC = [xx.xx] (metres), e.g., 1.54

(O) VERACC = [xx.xx] (metres), e.g., 1.54

(O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)]

(O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002

(O) vcrval = [xx.xx] (metres), e.g., 1.15

(O) elevwl = [xx.xx] (metres), e.g., 12.46

(O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))]

(M) SCAMIN = [EU: 90000; US: 300000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

Object Encoding

Object Class = C_AGGR()

(M) OBJNAM = [name and/or operator/owner]

(C) NOBJNM = (Refer to Section B, General Guidance)

(O) TXTDSC = (Refer to letter L)

(C) unlocd = [ISRS Location Code]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

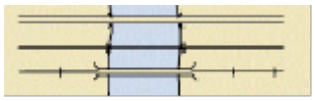
	gravitational level 'reflev' allows the calculation of the geodetic height.	

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.5 Suspension Bridge (M)

A fixed bridge consisting of either a roadway or a truss suspended from two or more cables which pass over towers and are anchored by backstays to a firm foundation. (McGraw-Hill Encyclopaedia of Science and Technology, 7th Edition, 1992)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). C) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span", or "Not to be used for Navigation." D) Bridge approaches (over the bankline) should be encoded. E) Use PICREP (sample shown below) representation of profile view with vertical clearance shown. US: PICREP is mandatory EU: PICREP is optional F) Roads and railways on bridges shall not be encoded. G) Place LIGHTS on navigable span and piers bounding navigable span. H) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar - two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [12 (suspension bridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) INFORM = (Refer to letter C) (O) NINFOM = (Refer to Section B, General Guidance) (C) PICREP = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter P) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which

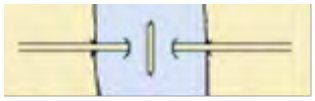
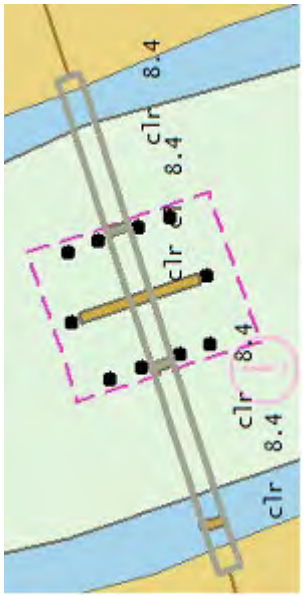
	- radio call-in points I) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. J) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H) K) Use 'verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute L) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. M) For Notice marks on bridges see O.3.2 N) HORCLR and VERCLR must be encoded for all navigable spans of bridges. O) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. P) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS location code of the gauge shall be encoded in the attribute 'refgag'. Q) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. R) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the calculation of the geodetic height.	vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [EU: 90000; US: 300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (C) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter L) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.6 Swing Bridge (M)

A movable bridge (or span thereof) that rotates in a horizontal plane about a vertical pivot to allow the passage of vessels. (adapted from McGraw-Hill Encyclopedia of Science and Technology, 7th Edition, 1992)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) The portions of the bridge that approach the movable span from either shore are to be collected as fixed bridges (separate objects). Only that portion of the bridge that is actually movable is to be collected as a movable bridge. C) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g., vertical clearance, horizontal clearance). D) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span", or "Not to be used for Navigation." E) Bridge approaches (over the bankline) should be encoded. F) Include PICREP, with pictures of bridge when open and closed, if available. US: PICREP is mandatory. EU: PICREP is optional. G) Roads and railways on bridges shall not be encoded. H) US & EU: Add a CTNARE object (INFORM = Swing Area) around the swing area that is showing the actual swing area of the swinging bridge span. I) Place LIGHTS at appropriate position on bridge object and piers bounding the navigable channel. J) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [3 (swing bridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (C) PICREP = (Refer to Section B, General Guidance) (C) OBJNAM = (Refer to letter I) (C) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter S) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54

	- notice marks - bridge lights - buoys at bridge pillar - two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations - radio call-in points K) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. L) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H) M) Use' verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute N) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. O) For Notice marks on bridges see O.3.2 P) For time schedule (general) see T.1.1 Q) HORCLR and VERCLR must be encoded for all navigable spans of bridges. R) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. S) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS location code of the gauge shall be encoded in the attribute 'refgag'. T) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river	(O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [EU: 90000; US: 300000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (C) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter N) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** CTNARE(A) (M) INFORM = ["Swing Area"] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

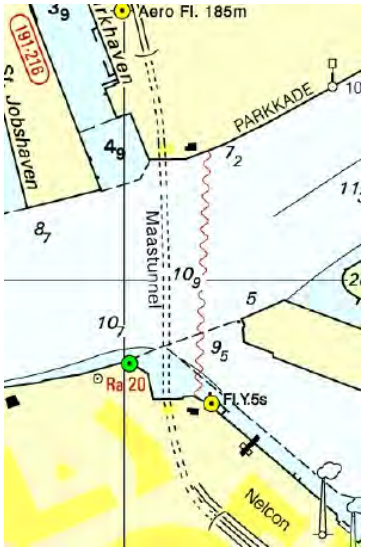
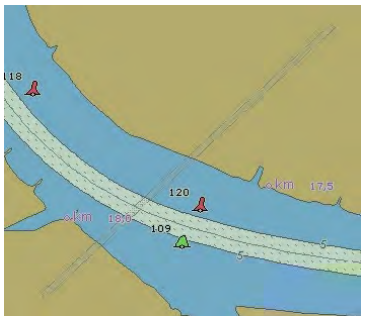
	datum reference level (design waterlevel) is known. U) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the calculation of the geodetic height.	

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.7 Tunnel (C)

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. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) If there is a waterway navigable at compilation scale, inside the tunnel, this waterway is encoded as a navigable canal with DEPARE or DRGARE. There is no LNDARE in the area covering the tunnel. B) If there is a waterway which is not navigable at compilation scale, inside the tunnel, this waterway is encoded as a CANALS. The LNDARE covers the tunnel. The attributes HORCLR and VERCLR are not encoded. C) If there is no waterway in the tunnel (but a railway, a road...) only the TUNNEL should be encoded (not the railway or the road), covered by a LNDARE, DEPARE or DRGARE as appropriate. The attributes HORCLR and VERCLR are not encoded. D) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. E) If the navigable tunnel has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' see T.1.1 F) TUNNEL shall be encoded if: - anchoring is prohibited over the tunnel or - the tunnel is navigable i.,e. has a DEPARE or DRGARE G) All objects of a tunnel which belong to one tunnel must be combined to one aggregation area (C_AGGR), if a navigable waterway passes through the tunnel, e.g. - notice marks - communication area	**Object Encoding** **Object Class =** TUNNEL(L,A) (O) BURDEP = [xx.x] (metres), e.g., 2.5 (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter D) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	- restricted area - fenders - vertical clearance indicators - depth indicators - signal stations - radio call-in points - overhead cables and plpelines H) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.8 Overhead Cable (M)

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).

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) The value given as the vertical clearance (VERCLR) shall be provided in metres and indicate the vertical distance between the lowest point of the cable (over the navigable part of the waterway) and a defined high water level (e.g. highest shipping height of water) if available. B) If there are multiple cables in the same area, represent only the lowest hanging cable. C) Only if the vertical clearance refers to a vertical datum, which differs from the one given in the DSPM VDAT subfield or in the meta object 'm_vdat', 'cblohd' in combination with verdat shall be used. D) Cable supports (PYLONS, CATPYL = 1 or 2) closest to the landside of the bank line and those within the water must be coded. E) OBJNAM should only be used if the name is relevant for navigation; otherwise use INFORM F) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. G) If an overhead cable is connected to a bridge this feature could be aggregated to a bridge by a C_AGGR object. H) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS location code of the gauge shall be encoded in the attribute 'refgag'. I) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** cblohd(L) (M) VERCLR = [xx.x] (metres), e.g., 13.2 (M) catcbl = [1 (power line), 3 (transmission line), 4 (telephone), 5 (telegraph), 6 (mooring cable/chain), 7 (ferry cable)] (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (O) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (O) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (O) OBJNAM = [name and/or operator/owner] (if relevant for navigation) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = [name and/or operator/owner] (if relevant in case of accidents) (O) NINFOM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter H) (O) HORACC = [xx.xx] (metres), e.g., 1.54

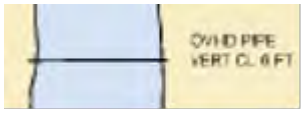
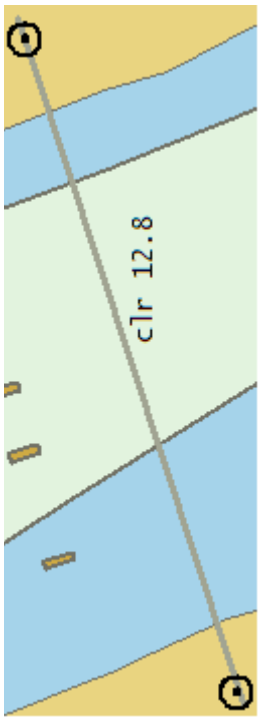
		(O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 45000; US: 90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.9 Overhead Pipe (C)

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. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pipeline supports (PYLONS) closest to the land side of the bankline and those within the water must be coded. B) Pipelines should extend over COALNE onto land a short distance. C) An overhead pipeline over navigable water has to be encoded unless it is on a bridge, does not affect VERCLR and PRODCT is not 1 (oil), 2 (gas) or 7 (chemicals). D) Overhead pipelines and cables may have significant towers that should be captured as "tower" [LNDMRK/CATLMK=17(tower)]. E) Lights on the towers should be encoded. F) The value given as the vertical clearance (VERCLR) shall be provided in metres and indicate the vertical distance between the lowest point of the cable (over the navigable part of the waterway) and a defined high water level (e.g. highest shipping height of water) if available. G) The vertical clearances must refer to either the vertical datum given in the DSPM VDAT subfield or to the vertical datum given in the meta object 'm_vdat' if it is not the same as in the DSPM VDAT subfield. H) OBJNAM should only be used if the name is relevant for navigation; otherwise use INFORM. I) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. J) This feature could be aggregated to a bridge by a C_AGGR object.	**Object Encoding** **Object Class =** pipohd(L) (M) CATPIP = [2 (outfall pipe), 3 (intake pipe), 4 (sewer), 6 (supply pipe)] (M) PRODCT = [1 (oil), 2 (gas), 3 (water), 7 (chemicals), 8 (drinking water)] (M) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (O) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (O) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (O) OBJNAM = [name and/or operator/owner] (if relevant for navigation) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = [name and/or operator/owner] (if relevant in case of accidents) (O) NINFOM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter K)

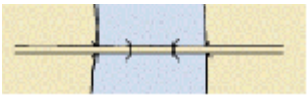
	K) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS location code of the gauge shall be encoded in the attribute 'refgag'. L) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	(O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 22000; US: 90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.10 Pylons, Piers, and Bridge, Cable, Pipeline Support (C)

A vertical construction consisting, for example, of a steel framework or pre-stressed concrete to carry cables, pipelines or bridges. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol (bridge with piers)*  *IENC Symbolization (point)* 	A) Use PYLONS (P) objects to code supports for overhead cables and pipelines (CATPYL=1,2,3). B) PYLON (A) must have a LNDARE underneath C) Pylons and bridge piers in the water and the bridge piers on land closest to the water must be encoded. D) For suspension bridges use CATPYL = 4 (bridge pylon) For all other bridges use CATPYL = 5 (bridge pier) E) This feature could be aggregated to a bridge or an overhead cable or pipeline by a C_AGGR object.	**Object Encoding** **Object Class =** PYLONS(P,A) (M) CATPYL = [1 (power transmission pylon/pole), 2 (telephone/telegraph pylon/pole), 3 (aerial cableway/sky pylon), 4 (bridge pylon/tower), 5 (bridge pier)] (M) WATLEV = [2 (always dry)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

IENC Symbolization (area) 		

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.11 Foot Bridge / Catwalk (M)

A bridge structure used only for pedestrian traffic, commonly found crossing navigable waterways, but also found along waterways over non-navigable water.

Graphics	Encoding Instructions	Object Encoding
Real World (Foot Bridge over navigable water)  *Real World (Catwalk over non-navigable water)* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). C) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span" or "Not to be used for Navigation". D) Bridge approaches (over the bankline) should be encoded. E) Place LIGHTS, if applicable, on navigable span and piers bounding the navigable span. F) VERCLR, HORCLR, VERCCL and/or VERCOP, 'wtwdis' and 'hunits' must be encoded for foot bridges and catwalks over navigable water. G) VERCLR should not be encoded for foot-bridges and catwalks over non-navigable water. H) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar - two way route parts - communication area - fenders - ice breakers - vertical clearance indicators	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [9 (footbridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (C) VERCCL = [xx.x] (metres), e.g., 13.2 (C) VERCOP = [xx.x] (metres), e.g., 23.4 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (C) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (C) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) PICREP = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) refgag = (Refer to letter N) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat

	- signal stations - radio call-in points I) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. J) Use 'verdat' only if vertical datum differs: - From DSPM VDAT subfield and - From Meta object 'm_vdat' attribute K) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. L) For Notice marks on bridges see O.3.2 M) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. N) EU: If there is a gauge which can be used to calculate the vertical clearance of the bridge, the ISRS location code of the gauge shall be encoded in the attribute 'refgag'. O) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. P) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the calculation of the geodetic height.	list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter K) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.12 Retractable (Draw) Bridge (O)

A retractable bridge is a type of movable bridge in which the deck can be rolled or slid backwards to open a gap for crossing traffic, usually a ship on a waterway. This type is sometimes referred to as a thrust bridge. The bridge deck of a thrust bridge is retracted to one side and is related to the type S57 CATBRG 7 : Drawbridge

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *Chart Symbol* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10 – Pylons, Piers and Bridge, Cable, Pipeline Support) B) The portions of the bridge that approach the movable span from either shore are to be collected as fixed bridges (separate objects). Only that portion of the bridge that is actually movable is to be collected as a movable bridge. C) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). D) US: If separate spans are required, each span's INFORM should indicate whether it is the "Primary Navigation Span", "Secondary Navigation Span", or "Not to be used for Navigation" E) Bridge approaches (over the bankline) should be encoded. F) Include PICREP, with pictures of bridge when open, and closed, if available. US: PICREP is mandatory EU: PICREP is optional G) Roads and railways on bridges shall not be encoded. H) Place LIGHTS at appropriate position on bridge object and piers bounding navigable channel. I) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR), e.g. - pylons - notice marks - bridge lights - buoys at bridge pillar	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [7 (draw bridge)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCOP = [xx.x] (metres), e.g., 23.4 (C) VERCCL = [xx.x] (metres), e.g., 13.2 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) OBJNAM = (Refer to letter J) (O) NOBJNM = (Refer to Section B, General Guidance) (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) PICREP = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54

	- two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations - radio call-in points J) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. K) The ISRS Location Code of a bridge is assigned to each single bridge object of the entire bridge (refer to General Guidance section H) L) Use 'verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute M) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. N) For Notice marks on bridges see O.3.2 O) For time schedule (general) see T.1.1. P) HORCLR and VERCLR must be encoded for all navigable spans of bridges. Q) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in accordance with I.3.4. R) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. S) If the geodetic height of the lower edge of the bridge should be available, e.g., for bridge collision warning systems, and no gauge is available, the encoding of the elevation of the reference water level 'elevwl' and the reference gravitational level 'reflev' allows the	(O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) elevwl = [xx.xx] (metres), e.g., 12.46 (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (M) SCAMIN = [EU: 90000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) TXTDSC = (Refer to letter M) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

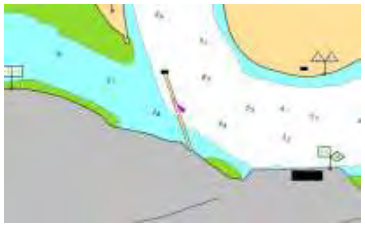
	calculation of the geodetic height.	

G - Ports, Waterways

G.1 Bridges, Tunnels, Overhead Obstructions

G.1.13 Non-navigable Aqueduct (O)

A bridge supporting an artificially elevated channel, for the conveyance of water. (adapted from The New Shorter Oxford English Dictionary, 1993)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pylons shall be encoded as PYLONS (refer to G.1.10) - Pylons, Piers and Bridge, Cable, Pipeline Support B) Create separate bridge objects for spans over navigable channel when attributes of navigable spans are different (e.g. vertical clearance, horizontal clearance). C) Place LIGHTS, if applicable, on navigable span and piers bounding the navigable span. D) VERCLR, HORCLR, VERCCL and/or VERCOP, 'wtwdis' and 'hunits' must be encoded for acqueducts over navigable water. E) VERCLR should not be encoded for acqueducts over nonnavigable water. F) All objects of a bridge which belong to one bridge must be combined to one aggregation area (C_AGGR) (e.g. pylons, lights, notice marks). G) For bridges that consist of only one feature the object name of the bridge is assigned to the bridge object. For bridges with a C_AGGR object the object name has to be assigned to the respective C_AGGR object the object name has to be assigned to the respective C_AGGR object and not to the bridge object. H) Use 'verdat' only if vertical datum differs from DSPM VDAT subfield and from Meta object 'm_vdat' atribute. I) For Notice marks on bridges see O.3.2. J) If there is no vertical clearance indicator at a bridge, but there is a gauge which can be used to calculate the vertical clearance of the bridge depending on the water level, it should be encoded in	**Object Encoding** **Object Class =** bridge(A) (M) CATBRG = [11 (aqueduct)] (C) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (C) VERCCL = [xx.x] (metres), e.g., 13.2 (C) VERCOP = [xx.x] (metres), e.g., 23.4 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (C) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (C) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) refgag = (Refer to letter K) (C) PICREP = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat

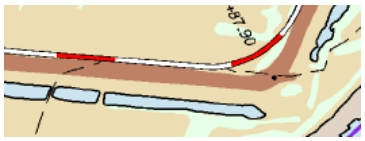
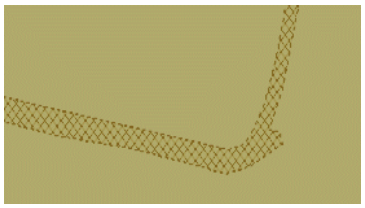
	accordance with I.3.4. K) EU: If there is a gauge which can be used to calculate the vertical clearance of the aqueduct, the ISRS Location Code of the gauge shall be encoded in the attribute refgag. L) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name of the aqueduct] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.1 Dyke / Levee (O)

Artificial earthen embankment, roughly paralleling the waterway, to keep flood waters within the river course.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) When a dyke is coincident with the coastline, it must be encoded as a DYKCON and in addition a SLCONS of type line, with CATSLC equal "unknown", along its seaward border. B) When the DYKCON is of type area, it must have a LNDARE underneath. C) At large scale, the dyke crown (the topline of the dyke) may be encoded as a SLOTOP with CATSLO = 2 (embankment). D) The altitude / elevation of the highest point of a dyke above the vertical reference level may be encoded by the attribute HEIGHT E) US: For OBJNAM use name of levee or levee district.	**Object Encoding** **Object Class =** DYKCON(L,A) (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (C) OBJNAM = (Refer to letter E) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = ["Levee or European dyke"] (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** SLOTOP(L) (M) CATSLO = [2 (embankment)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General

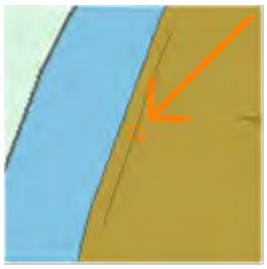
		Guidance)

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.2 Fence / Floodwall (O)

A natural or man-made barrier used as an enclosure or boundary or for protection, including floodwalls.

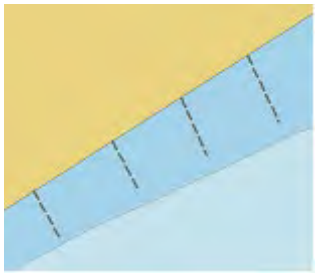
Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *Chart Symbol*  *IENC Symbolization* 	A) Fences, which are highly relevant for calamity abatement or for the access to navigation facilities, might be encoded. B) Floodwalls can be encoded as FNCLNE, CATFNC = 4 (wall), INFORM = floodwall C) If a structured external XML-file with more detailed communication information regarding access to the fenced area is available, the reference to the file has to be entered in the TXTDSC attribute. D) If the fence or flood gate has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule object 'tisdge' see T.1.1 E) US: For OBJNAM use name of floodwall (e.g., Southwest Jefferson County floodwall)	**Object Encoding** **Object Class =** FNCLNE(L) (M) CATFNC = [1 (fence), 4 (wall)] (O) TXTDSC = (Refer to letter C) (O) OBJNAM = (Refer to letter E) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.3 Groin (C)

A low artificial wall-like structure of durable material extending from the land to seaward for a particular purpose, such as to prevent coast erosion (adapted from IHO Dictionary, S-32, 5th Edition, 2525 and IHO Chart Specifications, M-4)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) If a line feature is used it should denote the centerline of the structure. B) If large-scale information is available dykes/groines may be encoded as area objects. In that case 'slcons' above the high water (US) / mean water (Europe) line must also be encoded with LNDARE (as an area) and the intertidal 'slcons' must also be encoded with DEPARE (as an area). C) Multiple NATCONs can be used, if appropriate. D) If 'slcons' is encoded as an area, the border with the shore may optionally be masked. E) US: Groins (groynes) and dykes are considered synonymous. Use OBJNAM (M) = "Groin" or "Dyke" F) Groins shall be encoded when in or bordering to navigable water.	**Object Encoding** **Object Class =** slcons(L,A) (M) catslc = [2 (groyne (groin))] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (C) watlev = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 8 (above mean water level), 9 (below mean water level)] (C) OBJNAM = [EU: name and/or operator/owner; US refer to letter E] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 45000 for line objects or 22000 for area objects; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.4 Ground Sill (C)

A natural or artificial small elevation in the river bed, which is due to sedimentation of till. DIN 4054: regulation structure built on the ground of a waterway that is higher than the ground itself.

Graphics	Encoding Instructions	Object Encoding
	A) If a line feature is used it should denote the centerline of the structure. B) If large-scale information is available ground sills may be encoded as area objects. SLCONS must also be encoded with DEPARE (as an area). C) Multiple NATCONs can be used, if appropriate. D) If SLCONS is encoded as an area, the border with the shore may optionally be masked. E) Ground sills shall be encoded if in navigable water and relevant when using an anchor, e.g. for maneuvering or emergencies.	**Object Encoding** **Object Class =** SLCONS(L,A) (M) CATSLC = [2 (groyne (groin))] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (M) WATLEV = [3 (always under water/submerged)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = "ground sill" (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [45000 for line objects or 22000 for area objects] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.5 Revetment (O)

Facing of concrete blocks linked together, stone, masonry or broken rock placed along the edge of a stream, river or canal to stabilize the bank and to protect it from the erosive action of the stream.

Graphics	Encoding Instructions	Object Encoding
Real World (Revetment)  *Real World (Rip rap)*  *Chart Symbol*  *IENC Symbolization* 	A) Delineate outline of known structure. If area limits are unknown, delineate line feature along the shoreline for the length of the structure. B) Revetment areas are generally available in very large scale and detailed vector data. For IENC purposes, revetment areas should be slightly generalized to reduce detail, but generalized larger into the channel in the context of safety. C) For loose stone / rip rap, use catslc = 8 (rip rap) with NATCON = 3 (loose boulders). D) For concrete mattresses, use catslc= 9 (revetment) with NATCON = 2 (concreted). E) Where anchoring or using spuds is prohibited, encode RESARE for sections of the revetment within the waterway.	**Object Encoding** **Object Class =** slcons(L,A) (M) catslc = [8 (rip rap), 9 (revetment)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders)] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) watlev = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 8 (above mean water level), 9 (below mean water level)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 45000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** RESARE(A) (M) RESTRN = [1 (anchoring prohibited), 38 (use of spuds prohibited)] (M) SCAMIN = [EU: 45000; US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.6 Revetment (Concrete Mattress) (Refer to G.2.5 Revetment) (O)

See G.2.5 Revetment

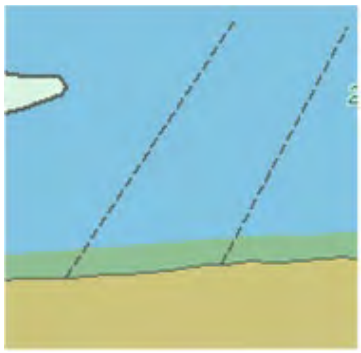
Graphics	Encoding Instructions	Object Encoding

G - Ports, Waterways

G.2 Hydraulic Structures in General

G.2.7 Training Wall (C)

A wall or bank, often submerged, built to direct or confine the flow of a river or tidal current, or to promote a scour action. (Adapted from IHO Dictionary, S-32, 5th Edition, 5586 and IHO Chart Specifications, M-4).

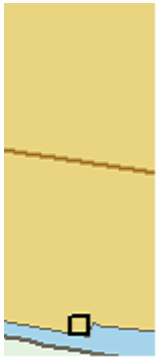
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) If a line feature is used it should denote the centerline of the structure. B) If large-scale information is available training wall may be encoded as area objects. In that case 'slcons' above the high water (US) / mean water (Europe) line must also be encoded with LNDARE (as an area) and the inter-tidal 'slcons' must also be encoded with DEPARE (as an area). C) Multiple NATCONs can be used, if appropriate. D) If 'slcons' is encoded as an area, the border with the shore may optionally be masked. E) Inter-tidal or submerged artificial rock walls such as training walls, that are not attached to the shoreline are to be encoded in the following manner: catslc = 7 (training wall) with watlev = 3 (always under water/submerged) or watlev = 4 (covers and uncovers). F) US: Bendway weir: An upstream-angled low-elevation stone sill, built at an elevation low enough to allow normal river traffic to pass over unimpeded, designed to control and redirect currents and velocities throughout a bend of a river. OBJNAM (M) = "Bendway Weir" G) US: For Navigation Weirs see G.4.2 (Dam/Barrier) H) Training walls shall be encoded if in or bordering to navigable water.	**Object Encoding** **Object Class =** slcons(L,A) (M) catslc = [7 (training wall)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (C) watlev = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 8 (above mean water level), 9 (below mean water level)] (C) OBJNAM = [EU: name and/or operator/owner; US: refer to letter F] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 45000 for line objects or 22000 for area objects; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.1 Boat Ramp (C)

A sloping structure that can either be used, as a landing place, at variable water levels, for small vessels, landing ships, or a ferry boats. (Adapted from IHO Dictionary, S-32, 5th Edition, 4209)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) The boat ramp should be positioned just above the waterline to be clearly seen by the mariner. B) US: Use STATUS 8 (private) or 14 (public) to indicate ownership, if known. C) Refer to LNDRGN for boat ramps that are not functional but are common landmarks or locations for reference. D) Boat ramps shall be encoded when they extend into navigable water.	**Object Encoding** **Object Class =** SLCONS(P,A) (M) CATSLC = [12 (ramp)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal)] (M) WATLEV = [2 (always dry), 4 (covers and uncovers)] (O) OBJNAM = [Name + "Boat Ramp"] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 8000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) (C) STATUS = (Refer to letter B)

G - Ports, Waterways

G.3 Installations

G.3.2 Bunker / Fueling Station (O)

A station, at which a vessel is able to bunker fuel, water or ballast (Inland ECDIS Standard)

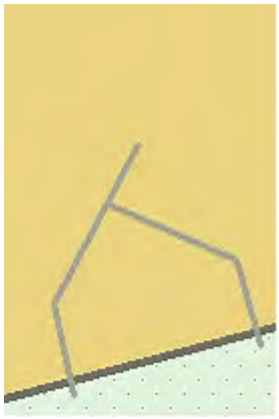
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Use INFORM attribute just in case important information, which is not already encoded, has to be provided to skippers. B) The attribute "Category of bunker vessel" (catbun) is of LIST type and hence more than one value may be chosen. C) If the bunker/fuelling station has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' (T.1.1) D) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. E) The object can be used as area object, for example when the station is on a pontoon. In that case the pontoon has only to be coded separately, if no depth data is available underneath. F) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** bunsta(P,A) (O) catbun = [1 (diesel oil), 2 (water), 3 (ballast)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (M) bunves = [1 (bunker vessel available), 2 (no bunker vessel available)] (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.3 Conveyor (C)

A mechanical apparatus for moving bulk material or people from place to place (as by a moving belt or chain of receptacles); usually extends from a land-based facility over the shoreline to a dock, wharf, or mooring facility. (Adapted from S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Place line feature from land-based facility to fixed structure in water at which product loads or offloads. B) Supporting structures (e.g., pylons, piers) should be coded when in the water. C) If the vertical clearance is referred to an inland waterway specific reference level, the object 'convyr' shall be used. D) If a conveyor extends over navigable water it has to be encoded. E) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** CONVYR(L,A) (M) CATCON = [2 (belt conveyor)] (O) PRODCT = [4 (stone), 5 (coal), 6 (ore), 7 (chemicals), 14 (sand), 15 (timber), 17 (scrap metal), 21 (cement), 22 (grain)] (O) OBJNAM = [Facility Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** convyr(L,A) (M) CATCON = [2 (belt conveyor)] (O) PRODCT = [4 (stone), 5 (coal), 6 (ore), 7 (chemicals), 14 (sand), 15 (timber), 17 (scrap metal), 21 (cement), 22 (grain)] (O) OBJNAM = [Facility Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low

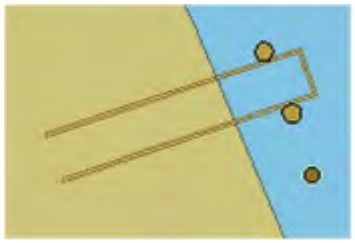
		water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.4 Crane (C)

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)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) For Area features, delineate the perimeter of the crane. B) If the vertical clearance is referred to an inland waterway specific reference level, the object 'cranes' shall be used. C) If a crane extends over navigable water it has to be encoded. D) EU: If the ISRS Location Code is available, it must be encoded (refer to General Guidance section H). E) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** CRANES(P,A) (M) CATCRN = [2 (container crane/gantry), 3 (sheerlegs), 4 (travelling crane), 5 (A-frame)] (O) OBJNAM = [name of owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** cranes(P,A) (M) CATCRN = [2 (container crane/gantry), 3 (sheerlegs), 4 (travelling crane), 5 (A-frame)] (O) OBJNAM = [name of owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36

		(Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) unlocd = [ISRS Location Code] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.5 Dock / Wharf (C)

Platform or structure in the water where materials are loaded, unloaded and/or services are provided.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization ((Line))*  *IENC Symbolization ((Point))* 	A) Land facilities should be represented with buildings (BUISGL) and storage tank (SILTNK) feature objects. B) Multiple NATCON values can be used, if applicable. C) Docks and wharfs that are bordering to or located in navigable water must be encoded.	**Object Encoding** **Object Class =** SLCONS(P,L,A) (M) CATSLC = [4 (pier (jetty)), 5 (promenade pier), 6 (wharf (quay)), 15 (solid face wharf), 16 (open face wharf)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP)), 9 (painted)] (M) WATLEV = [1 (partly submerged at high water), 2 (always dry), 4 (covers and uncovers)] (O) OBJNAM = [name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [45000 for line, 22000 for area or 8000 for point objects] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

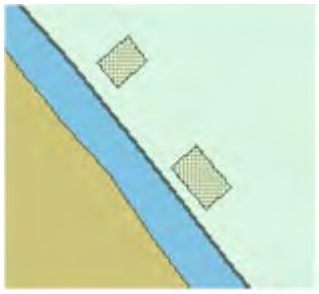
IENC Symbolization ((Area)) 		

G - Ports, Waterways

G.3 Installations

G.3.6 Dry Dock (O)

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)

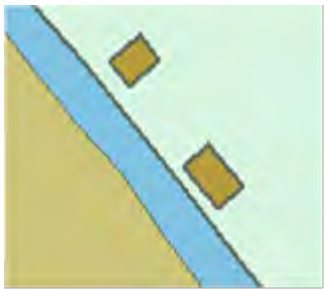
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Encode outline of entire structure. B) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** DRYDOC(A) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) HORLEN = [xxx.xx] (metres), e.g., 133.22 (O) HORWID = [xxx.xx] (metres), e.g., 133.22 (O) HORCLR = [xx.x] (metres), e.g., 34.2 (O) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (O) TXTDSC = (Refer to letter B) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.7 Floating Dock (C)

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)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) The lower case letter object 'flodoc' shall be used if depth data is available underneath the floating dock (e.g. by multi beam sounding). If the water depth in the floating dock is referred to an inland waterway reference level, or if the available length and/or width of the dock is different from the physical length/width of the chamber, a depth area has to be coded underneath. In other cases FLODOC shall be used for encoding. B) While FLODOC is a Group I object, 'flodoc' is a Group II object. C) If the floating dock has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' T.1.1. D) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. E) Floating docks that are permanently moored at a fixed location must be encoded. F) Use 'sdrlev' and 'sdrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. G) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** flodoc(A) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) HORLEN = [xxx.xx] (metres), e.g., 133.22 (O) HORWID = [xxx.xx] (metres), e.g., 133.22 (O) HORCLR = [xx.x] (metres), e.g., 34.2 (C) horcll = [xxx.x] (metres), e.g., 136.12 (C) horclw = [xxx.xx] (metres), e.g., 25.17 (O) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (O) TXTDSC = (Refer to letter D) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) sdrlev = (Name of reference level to which depth are referred (from verdat list) plus version indication), e.g. GlW 2002

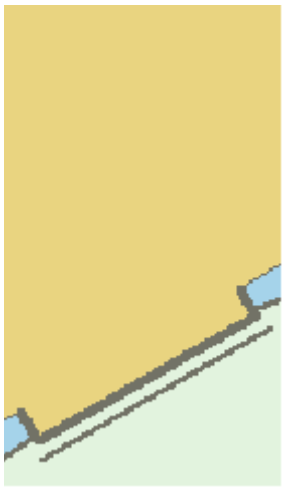
		(O) sdrval = [xx.xx] (metres), e.g., 2.05 (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [22000] (M) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** FLODOC(A) (O) OBJNAM = [name and/or operato/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) HORLEN = [xxx.xx] (metres), e.g., 133.22 (O) HORWID = [xxx.xx] (metres), e.g., 133.22 (O) HORCLR = [xx.x] (metres), e.g., 34.2 (O) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (O) TXTDSC = (Refer to letter D) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) sdrlev = (Name of reference level to which depth are referred (from verdat list) plus version indication), e.g. GIW 2002 (O) sdrval = [xx.xx] (metres), e.g., 2.05 (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.8 Fender (C)

A protective structure designed to cushion the impact of a vessel and prevent damage. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Place line feature to accurately reflect the edge facing vessel traffic. B) Fenders need not have depictions of structural pylons behind the fender. C) More than one value may be selected for NATCON. D) For fending constructions like cells in waterway used to protect bridge piers, use CATSLC = 14 (fender); if the structure is greater than 3m in diameter, use an area feature. A LNDARE object must be encoded underneath, if fender is not floating and WATLEV=2. Use point feature for smaller objects. E) Fenders of type point or line must be encoded if the whole object would not be depicted on the chart display otherwise. F) This feature could be aggregated to a lock or a bridge by a C_AGGR object.	**Object Encoding** **Object Class =** SLCONS(P,L,A) (M) CATSLC = [14 (fender)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (M) WATLEV = [2 (always dry)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.9 Harbor Area (C)

The area of water and land with the works necessary for its formation, protection and maintenance.

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) A harbor area covers the harbor but also the area of land which supplies the harbor installations. B) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. C) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). D) For yacht harbor / marina, see S.1.2 E) EU: Harbour Areas must be encoded.	**Object Encoding** **Object Class =** hrbare(A) (O) cathbr = [1 (custom harbour), 2 (port of refuge), 4 (fishing harbour), 5 (private harbour)] (M) OBJNAM = [Name of harbor] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter B) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.10 Harbor Basin (C)

An enclosed area of water surrounded by quay walls constructed to provide means for the transfer of cargo from and to ships.

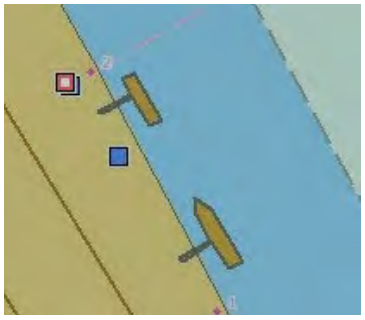
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization (with dredged area in the harbour basin)* 	A) A harbor basin is bordered by shoreline constructions and the entrance to the basin. B) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). C) EU: Harbour Basins must be encoded.	**Object Encoding** **Object Class =** hrbbsn(A) (O) HORLEN = [xxx.xx] (metres), e.g., 133.22 (O) HORWID = [xxx.xx] (metres), e.g., 133.22 (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [12000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.11 Landing Stage, Pontoon (C)

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

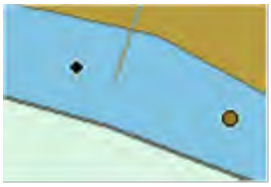
Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *IENC Symbolization* 	A) Place shape in location, orientation, and dimensions of the Real world object. B) The lower case letter object 'ponton' shall only be used in case depth data is available underneath the pontoon (e.g., by multi beam sounding) or the ISRS Location Code (unlocd) can be provided. In this case a depth area has to be encoded underneath. In other cases PONTON shall be used for encoding. C) While PONTON is a Group I object, 'ponton' is a Group II object. D) Pontoons whose size is not sufficient to create an area object must be encoded as point SLCONS – CATSLC=4 (pier/jetty). This also applies in case the real dimensions are not known and only a point object can be encoded. E) If the landing stage or pontoon has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' (T.1.1). F) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. G) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). H) A landing stage and pontoon shall be encoded if a hazard to navigation or when passing vessels are required to reduce speed. I) US & EU: 'ponton' shall be used for docks made of barges or docks which are floating.	**Object Encoding** **Object Class =** PONTON(A) (O) OBJNAM = [name and/or name of operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter F) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** ponton(A) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter F) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 12000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.12 Mooring Facility (C)

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

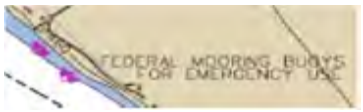
Graphics	Encoding Instructions	Object Encoding
Real World (Mooring Cell)  *Real World (US: Dolphin)*  *IENC Symbolization (Point cell (left); dolphin (right))* 	A) Area feature should be used for structures greater than 3 metres in diameter. B) Use LNDARE beneath feature if not floating and code WATLEV=2 for MORFAC object. C) US: Use CATMOR=5 (post/pile) for mooring cells. D) Place OBJNAM, if known, on each buoy/pile. E) In an instance when a barge has been sunk near the shoreline and dolphins permanently attached to it, code each dolphin as a MORFAC (P), CATMOR=1. F) If individual bollards are encoded, CATMOR = 3 (bollard) shall be used. G) In the event that a MORFAC (A) is used, it is also allowed to encode an additional MORFAC (P) to help aid in the display for planning purposes. The MORFAC (P) should be placed inside the MORFAC (A) on the side closest to the navigation channel. H) Mooring buoys (CATMOR = 7) may be placed on land if they are normally on land (LNDARE) and are only found in the water during high water conditions. I) Mooring facilities that are located in navigable water must be encoded. J) Encoding of BOYSHP is only allowed if CATMOR = 7	**Object Encoding** **Object Class =** MORFAC(P,L,A) (M) CATMOR = [1 (dolphin), 2 (deviation dolphin), 3 (bollard), 4 (tie-up wall), 5 (post or pile), 7 (mooring buoy)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (O) OBJNAM = [“Facility Name”] (O) NOBJNM = (Refer to Section B, General Guidance) (O) WATLEV = [2 (always dry)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (C) BOYSHP = [2 (can (cylindrical)), 3 (spherical), 7 (super-buoy)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 30000; for individual bollards: 4000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.13 Federal Mooring Facility (O)

A device designated and maintained by a federal authority for tie-ups and a guaranteed depth year round.

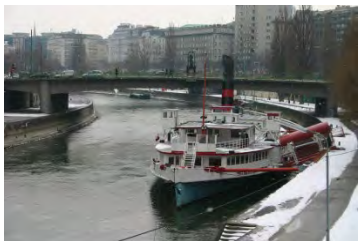
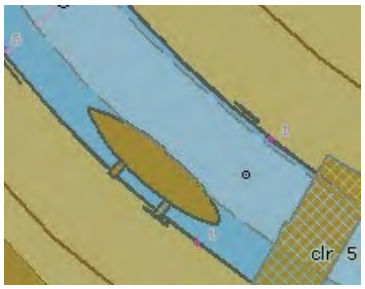
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) Code MORFAC as stated in G.3.12 Mooring Facility B) Create SEAARE (P) with OBJNAM = "Federal Mooring Cell(s) / Buoy(s) / Block(s)" C) Only one SEAARE should be located at each MORFAC or set of MORFACs	**Object Encoding** **Object Class =** SEAARE(P) (M) OBJNAM = ["Name" + (River Mile)], e.g. Federal Mooring Buoys (172.4)] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.14 Permanently Moored Vessel or Facility (C)

A permanently moored ship (S-57 standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Place shape in location, orientation, and dimensions of the Real world object. B) The lower case letter object 'hulkes' shall only be used in case depth data is available underneath the hulk (e.g., by multi-beam sounding), it is a casino boat, or the ISRS Location Code (unlocd) can be provided. In this case a depth area has to be encoded underneath. In other cases HULKES shall be used for encoding. C) While HULKES is a Group I object, 'hulkes' is a Group II object. D) If the vessel or facility has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose refer to the time schedule (general) object 'tisdge' T.1.1. E) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. F) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). G) Permanently moored vessels or facilities that are located in navigable water must be encoded.	**Object Encoding** **Object Class =** HULKES(A) (M) CATHLK = [1 (floating restaurant), 2 (historic ship), 3 (museum), 4 (accommodation), 5 (floating breakwater)] (O) OBJNAM = [facility name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter E) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** hulkes(A) (O) cathlk = [1 (floating restaurant), 2 (historic ship), 3 (museum), 4 (accommodation), 5 (floating breakwater), 6 (casino boat)] (O) OBJNAM = [facility name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter E) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 30000]

		(C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.15 Port Area (C)

Apart from harbors, a port includes a city or borough with accommodations and facilities for landing passengers and goods and some amount of overseas trade. A port may possess a harbor but a harbor is not necessarily a port.

Graphics	Encoding Instructions	Object Encoding
Real World 	A) The port area covers the entire area of a city's harbor areas, harbor basins, terminals and harbor facilities. B) Normally it applies only to big international ports. C) A port may possess a harbor but a harbor is not necessarily a port. D) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. E) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). F) EU: Port Areas must be encoded.	**Object Encoding** **Object Class =** prtare(A) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter D) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.16 Free Port Area (O)

A port where certain import and export duties are waived (unless goods pass into the country) to facilitate reshipment to other countries. The area covers the water and the land area.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** FRPARE(A) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) TXTDSC = (Refer to letter A) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.17 Refuse Dump (O)

At a refuse dump the vessels are able to unload their refuse like waste oil or black water (Inland ECDIS standard)

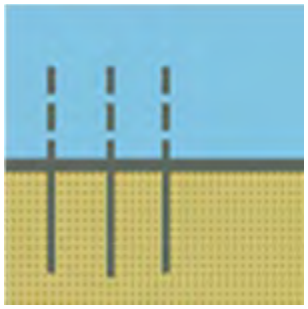
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Use INFORM attribute just in case important information, which is not already encoded, has to be provided to skippers. B) The attribute "Category of refuse dump" (refdmp) is of LIST type and hence more than one value may be chosen. C) If the refuse dump has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' (T.1.1). D) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. E) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** refdmp(P) (O) catrfd = [1 (cargo residue/slop), 2 (waste oil), 3 (grey/black water), 4 (domestic refuse)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter D) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.18 Slipway (C)

The prepared and usually reinforced inclined surface with installations to launch or lift vessels out of the water in relation to ship construction, repair or maintenance.

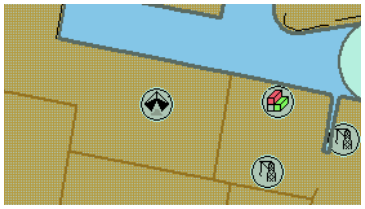
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) The outside edge of the slipway, both on land and in water, should be depicted as closely to its exact location as possible B) Slipways that extend into navigable water must be encoded.	**Object Encoding** **Object Class =** SLCONS(A) (M) CATSLC = [13 (slipway)] (O) OBJNAM = [name of facility or owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 8000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.19 Terminal (C)

A terminal covers that area on shore that provides buildings and constructions for the transfer of cargo or passengers from and to ships.

Graphics	Encoding Instructions	Object Encoding
Real World (container)  *Real World (bulk)*  *IENC Symbolization* 	A) Terminals are not encoded as 'hrbfac' but as 'termnl'. B) A terminal covers the landside area in which all the transshipping facilities and warehouses are located. C) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. D) If the terminal has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' see T.1.1 E) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). F) EU: Terminals must be encoded. If the borderline of the area is not known, the terminal has to be encoded at least as a point object.	**Object Encoding** **Object Class =** termnl(P,A) (M) cathaf = [1 (RoRo-terminal), 3 (ferry terminal), 7 (tanker terminal), 8 (passenger terminal), 10 (container terminal), 11 (bulk terminal)] (O) TXTDSC = (Refer to letter C) (O) trshgd = [1 (containers), 2 (bulk goods), 3 (oil), 4 (fuel), 5 (chemicals), 6 (liquid goods), 7 (explosive goods), 8 (fish), 9 (cars), 10 (general cargo)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.20 Vehicle Transfer Location (O)

A place where vehicles can be loaded or unloaded from the inland vessel with onboard or onshore facilities.

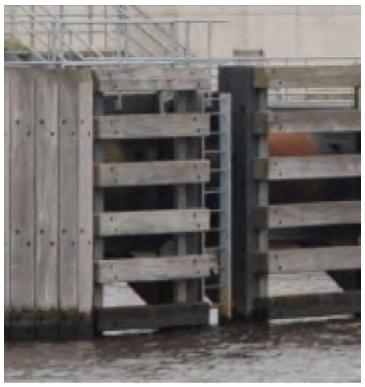
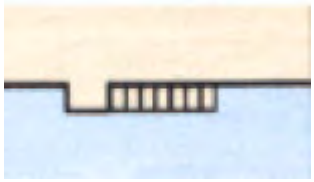
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. B) If the vehicle transport location has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' (T.1.1) C) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). D) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** vehtrf(P,A) (M) catvtr = [1 (official), 2 (private), 3 (suitable for car cranes), 4 (suitable for car planks), 5 (permission required), 6 (locked gate)] (O) TXTDSC = (Refer to letter A) (M) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.21 Landing Steps, Ladders (O)

Steps at the shoreline as the connection between land and water on different levels. Ladders in quays, jetties, dolphins, etc. to facilitate embarking and disembarking or reaching bollards.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Supporting structures (e.g., pylons, piers) should be coded when in the water.	**Object Encoding** **Object Class =** SLCONS(P,A) (M) CATSLC = [11 (landing steps)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [4000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.22 Production / Storage Area (O)

An area on land for the exploitation or storage of natural resources. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Only production and storage areas that are connected to transhipment installations and areas that are visually conspicuous should be encoded. B) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** PRDARE(A) (O) CATPRA = [1 (quarry), 2 (mine), 3 (stockpile), 4 (power station area), 5 (refinery area), 6 (timber yard), 7 (factory area), 8 (tank farm), 9 (wind farm), 10 (slag heap/spoil heap)] (O) PRODCT = [1 (oil), 2 (gas), 4 (stone), 5 (coal), 6 (ore), 7 (chemicals), 14 (sand), 15 (timber), 17 (scrap metal), 21 (cement), 22 (grain)] (O) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) STATUS = [2 (occasional), 12 (illuminated), 16 (watched), 17 (un-watched)] (O) TXTDSC = (Refer to letter B) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [12000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.23 Ice Breaker (M)

An often wedge-like structure used for protecting a bridge pier, dock, facility, etc. from floating ice or other debris.

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World (Aerial View)* 	A) A LNDARE must be encoded beneath an ice breaker. B) Place OBJNAM, if known, on each ice breaker. C) Ice Breakers in navigable water shall be encoded. At least the first Ice Breakers on shore in the high water river bed should also be encoded if they are relevant for navigation. D) This feature could be aggregated to a bridge or cable or pipeline support by a C_AGGR object.	**Object Encoding** **Object Class =** slcons(A) (M) catslc = [19 (ice breaker)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (O) OBJNAM = ["Facility Name"] (O) NOBJNM = (Refer to Section B, General Guidance) (O) watlev = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 8 (above mean water level), 9 (below mean water level)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.24 Pile or Post (C)

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).

Graphics	Encoding Instructions	Object Encoding
Real World 	A) A pile is encoded as MORFAC with CATMOR = 5 when it has been identified as a mooring post (see G.3.12), otherwise it is encoded as PILPNT. B) Stumps of piles that are dangerous to navigation are encoded as OBSTRN with CATOBS = 1 (see J.3.1). C) Piles or posts that are situated in the fairway or have a navigational function (e.g. leading post, post as a marker) have to be encoded. D) If the pile or post has a big diameter it should be encoded as a SLCONS area in accordance with G.3.8. E) The OBJNAM attribute is mandatory for objects of the PILPNT class if the object is a Master Object for a Leading Light, Directional Light, or Sector Light. In other situations, the attribute is optional for the PILPNT object class. F) Encoding of COLPAT is mandatory for any pile or post (except LIGHTS) that has more than one colour and COLOUR is encoded.	**Object Encoding** **Object Class =** PILPNT(P) (C) OBJNAM = (Refer to letter E) (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) VERLEN = [xxx.x] (units defined in hunits), e.g. 21.7 (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

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G.3 Installations

G.3.25 Water Intake Structure (O)

Water intake structures divert water from a river or channel for the purposes of water supply, hydroelectric power and irrigation.

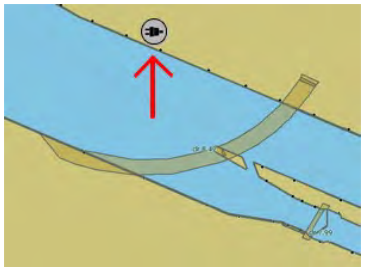
Graphics	Encoding Instructions	Object Encoding
Real World  *Real World* 	A) Multiple NATCON values can be used, if applicable. B) Place OBJNAM, if known, on each water intake structure.	**Object Encoding** **Object Class =** slcons(A) (M) catslc = [20 (water intake structure)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulder), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal)] (O) OBJNAM = [Facility Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) WATLEV = [1 (partly submerged at high water), 2 (always dry)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000, US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.26 Power Supply Station (O)

A station, at which a vessel is able to obtain electric power supply (Inland ECDIS Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *Real World*  *IENC Symbolization* 	A) Use INFORM attribute just in case important information, which is not already encoded, has to be provided to skippers. B) The attribute "Category of bunker vessel" (catbun) is of LIST type and hence more than one value may be chosen, if a bunker station (G.3.2) is at the same location. C) If the power supply station has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' (T.1.1) D) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. E) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** bunsta(P) (M) catbun = [4 (power)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (M) catvol = [1 (230V), 2 (400V)] (M) catfrq = [1 (50Hz), 2 (60Hz)] (M) amoamp = [xxx] (amps), e.g. 300 (O) allcon = [allowed consumption], e.g. 2 hours or 1000 kWh (O) catplg = [type of plug], e.g. CEE, Powerlock, etc. (O) shrnum = [xx] (number of connections), e.g. 4 (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.27 Cargo Transshipment Area (O)

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

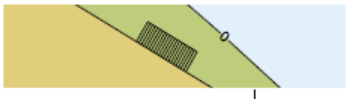
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) The feauture CTSARE should only be used to distinguish transshipment anchorage areas and anchorage berths from anchorage areas and anchorage berths without transhipment. For transshipment berths see M.1.4. B) When encoding a transshipment anchorage area or anchorage berth also the anchorage area (see M.1.1) or anchorage berth (see M.1.2) must be encoded. C) The feature can be used for all types of cargo transshipment areas used for transshipments between maritime vessels or inland vessels (barges) with or without propulsion.	**Object Encoding** **Object Class =** CTSARE(P,A) (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [2 (occasional), 4 (not in use)] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.3 Installations

G.3.28 Gridiron (O)

A structure in the intertidal zone serving as a support for vessels at low stages of the tide to permit work on the exposed portion of the vessel's hull. Also called careening grid. (IHO Dictionary, S-32, 5th Edition, 649).

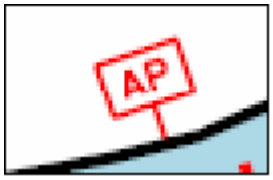
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) The vertical distance from seabed to the highest point of the gridiron should be encoded in VERLEN. Vertical length measurements (VERLEN) do not require a datum.	**Object Encoding** **Object Class =** GRIDRN(P,A) (O) HORLEN = [xxx.xx] (metres), e.g., 133.22 (O) HORWID = [xxx.xx] (metres), e.g., 133.22 (O) NATCON = [2 (concreted), 6 (wooden)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) INFORM = (Additional Information) (C) NINFOM = (Refer to Section B, General Guidance) (O) STATUS = [4 (not in use), 8 (private), 14 (public)] (O) CONDTN = [1 (under construction), 2 (ruined), 5 (planned construction)] (O) VERLEN = [xxx.x] (metres), e.g., 0.5 (O) WATLEV = [3 (always under water/submerged), 4 (covers and uncovers)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.1 Arrival Point (O)

Arrival point location commonly associated with vessel queues at locks.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  	A) If a physical marker exists on land or on a MORFAC (A), designating the location the Arrival Point, a LNDRGN shall be used. B) If no structure exists or if physical marker designating the location of the Arrival Point is on a PILPNT or MORFAC (P), a SEAARE shall be used.	**For Arrival Points on Land** **Object Class =** LNDRGN(P,A) (M) OBJNAM = [Facility/Lock Name + "Arrival Point"] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = Check-in information, such as: Call-in Frequency, Phone Number, and Lock Name (O) NINFOM = (Refer to Section B, General Guidance) (M) TXTDSC = Check-in procedures and current lock conditions, planned closures, and operating schedules. (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **For Arrival Points on Water** **Object Class =** SEAARE(P) (M) OBJNAM = [Facility/Lock Name + "Arrival Point"] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = Check-in information, such as: Call-in Frequency, Phone Number, and Lock Name (O) NINFOM = (Refer to Section B, General Guidance) (M) TXTDSC = Check-in procedures and current lock conditions, planned closures, and operating schedules. (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [45000]

		(C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.2 Dam / Barrier (O)

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)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Overlay the feature on LNDARE object. B) If appropriate, place RESARE around dam, extending on both sides of the dam the length of the lock guidewall or the area that is marked by buoys. C) Use OBJNAM option according to most commonly accepted name. D) US: Navigation Weir - a low dam built across a river to raise its level or divert its flow; constructed at an elevation low enough to allow river traffic to pass over it unimpeded during certain times of year. CATDAM = 1 (weir) with appropriate NATCON. E) US: INFORM = "All waters immediately above and below the dam are designated as restricted areas." F) EU & RU: If there are buoys or notice marks to mark the extent of the area, they have to be encoded. G) For openings in a barrier that are navigable at certain water levels see G.4.9 Opening Barrage. H) All objects which belong to a dam / barrier must be combined into one aggregation area (C_AGGR). I) The object name of a barrage is assigned to the respective C_AGGR object using OBJNAM. J) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** DAMCON(L,A) (M) CATDAM = [1 (weir), 2 (dam)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 6 (wooden), 7 (metal)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter J) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Please refer to letter B** **Object Class =** RESARE(A) (M) CATREA = [12 (navigational aid safety zone)] (M) RESTRN = [7 (entry prohibited), 8 (entry restricted)] (C) INFORM = (Refer to letter E) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely

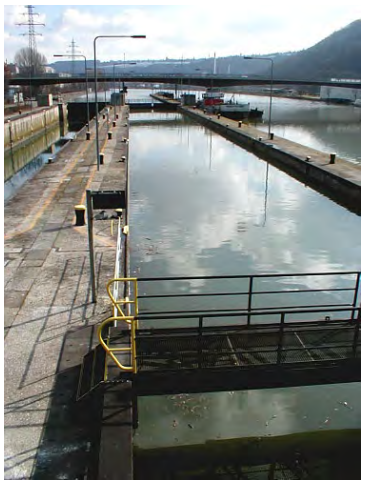
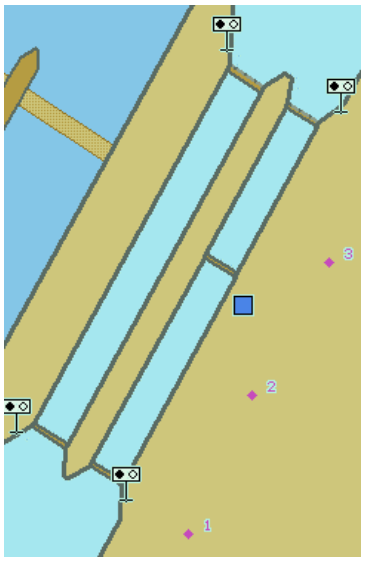
		to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.3 Lock Basin (M)

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)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) The object class 'lokbsn' must be covered by a DEPARE. B) If the usable horizontal clearance of length and width are distances which are provided by the competent authority for safe navigation, they must be encoded with 'horccl' and 'horclw'. C) The minimum physical length and width given by the building itself must be encoded with HORLEN and HORWID D) All objects of one lock must be combined to one aggregation area (C_AGGR), e.g. - lock walls - notice marks - two way route parts - communication area - lock basin - lock basin parts - lock gates - bridges - lock name - fenders - ice breakers - vertical clearance indicators - signal stations - radio call-in points - overhead cables and plpelines E) The ISRS Location Code of a lock is assigned to each single lokbsn object (refer to General Guidance section H) F) If the lock basin has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge'	**Object Encoding** **Object Class =** lokbsn(A) (M) horcll = [xxx.xx] (metres), e.g., 136.12 (M) horclw = [xxx.xx] (metres), e.g. 25.17 (O) HORLEN = [xxx.xx] (metres), e.g. 133.22 (O) HORWID = [xxx.xx] (metres), e.g. 133.22 (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter G) (O) OBJNAM = [Lock chamber name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 12000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter G) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

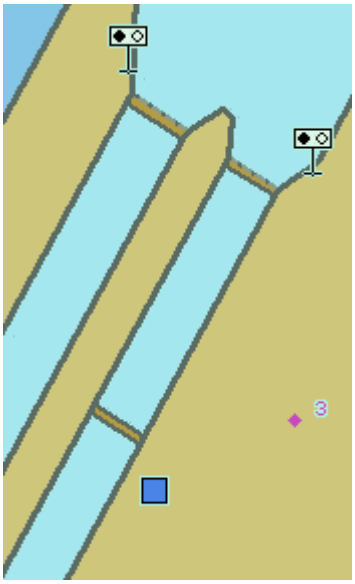
	(T.1.1) G) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	

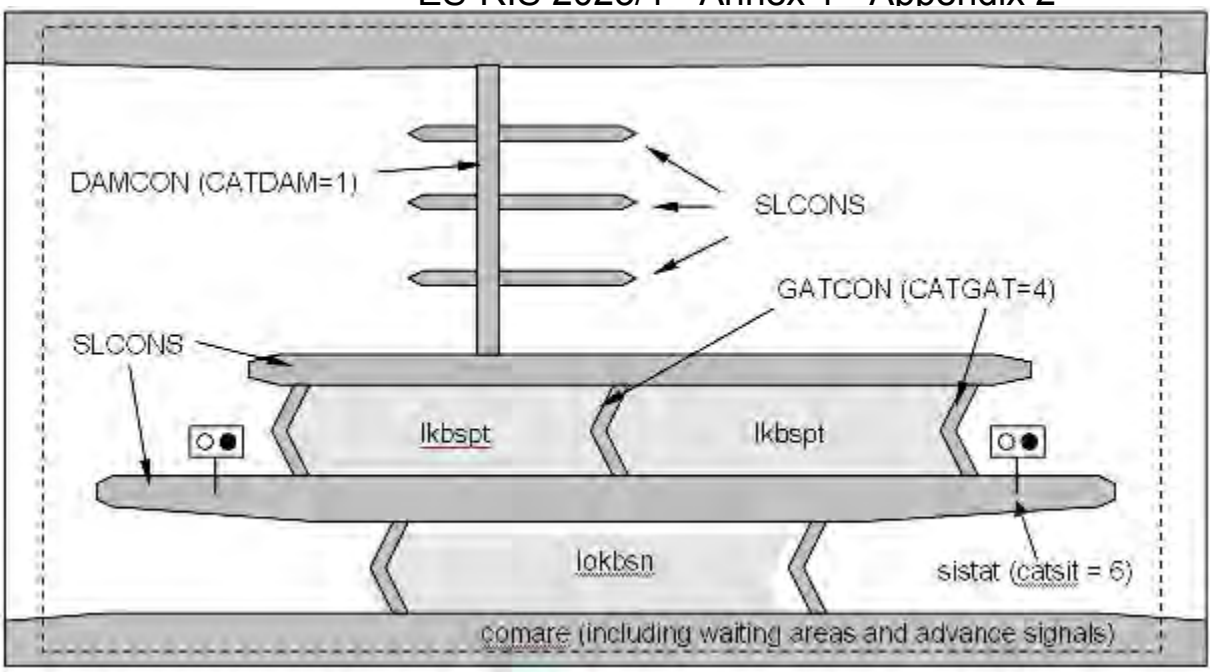
G - Ports, Waterways

G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.4 Lock Basin Part (O)

A lock basin is divided into several lock basin parts, if this lock basin has one ground level but several gates.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) If a lock basin has more than two gates and the ground level is the same, different lock basin parts must be created. B) The object class 'lkbspt' must be covered by a DEPARE. C) The usable horizontal clearance of length and width are distances which are provided by the competent authority for safe navigation and must be encoded with 'horccl' and 'horclw'. D) The physical length and width given by the building itself must be encoded with HORLEN and HORWID E) All objects which belong to one lock must be combined to one aggregation object (C_AGGR). F) The ISRS Location Code of a lock is assigned to each single 'lkbspt' and 'lokbsn' object of the entire lock (refer to General Guidance section H). G) If the lock basin part has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' (T.1.1) H) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** lkbspt(A) (M) horcll = [xxx.xx] (metres), e.g., 136.12 (M) horclw = [xxx.xx] (metres), e.g. 25.17 (O) HORLEN = [xxx.xx] (metres), e.g. 133.22 (O) HORWID = [xxx.xx] (metres), e.g. 133.22 (C) unlocd = [ISRS Location Code] (O) OBJNAM = [Lock Chamber Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter H) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 12000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter H) (C) unlocd = [ISRS Location Code] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)


DAMCON (CATDAM=1)
SLCONS
GATCON (CATGAT=4)
SLCONS
lkbspt
lkbspt
lokbsn
sistat (catsit = 6)
comare (including waiting areas and advance signals)

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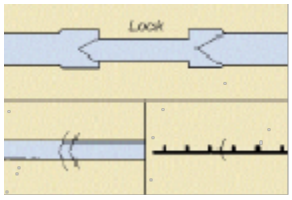
G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.5 Lock Gate (M)

Structure swung, drawn, or raised/lowered to hold or release water in a lock.

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World (EU: lift door limiting air draught of vessel)*  *Chart Symbol*  *IENC Symbolization* 	A) All lock gates must be encoded. B) Linear GATCON features should follow the edge of DEPARE that defines the lock chamber. Area GATCON features have to be placed on a depth area. C) EU: Use gatcon with attribute 'verdat' only if vertical datum differs: -from DSPM VDAT subfield and -from Meta object 'm_vdat' attribute and specific for inland navigation or in case of a lifting lock door that restricts the air draught D) VERCLR has to be encoded in case of a lifting lock door that restricts the air draught of passing vessels. E) A bridge over a lock door needs to be encoded separately with a bridge object (see G.1) F) 'wtwdis' and 'hunits' shall be encoded if the attribute VERCLR is used. G) This feature could be aggregated to a lock basin by a C_AGGR object. H) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** GATCON(L,A) (M) CATGAT = [4 (lock gate)] (M) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** gatcon(L,A) (M) CATGAT = [4 (lock gate)] (M) HORCLR = [xx.x] (metres), e.g., 34.2 (O) VERCLR = [xx.xx] (metres), e.g., 13.27 (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water

		Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) wtwdis = (Refer to letter F) (C) hunits = (Refer to letter F) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.6 Lock Name (O)

The commonly known name of the lock facility.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization  	A) US & RU: The SEAARE object must overlay the DEPARE object representing lock chamber. OBJNAM shall be the commonly known name of the Lock or Lock & Dam. B) EU: The name should be encoded in the 'comare' object (M.4.1) C) This feature must be aggregated to a lock by a C_AGGR object.	**Object Encoding** **Object Class =** SEAARE(A) (M) OBJNAM = (Refer to letter A) (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [RU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

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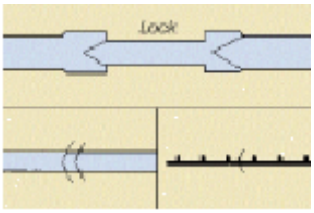
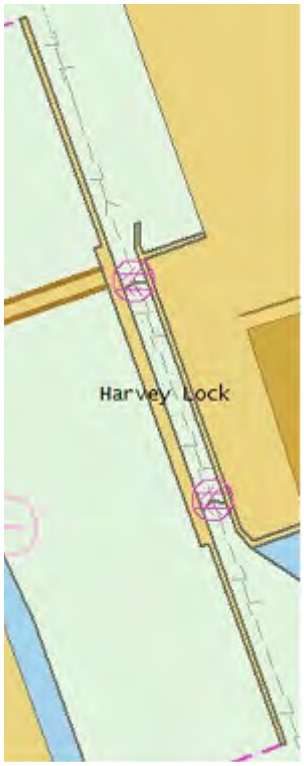
G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.7 Lock Wall (M)

Permanent structure bounding a lock and including guide walls.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  	A) The slcons object must be coincident with a LNDARE object. B) Multiple NATCON can be used, as in different materials for the lock wall and guide wall. C) This feature must be aggregated to a lock by a C_AGGR object.	**Object Encoding** **Object Class =** slcons(L,A) (M) catslc = [18 (lock/guide wall)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 6 (wooden), 7 (metal)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

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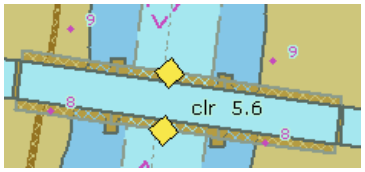
G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.8 Exceptional Navigational Structure (M)

An exceptional navigational construction such as an aqueduct, lift-lock, etc.

Graphics	Encoding Instructions	Object Encoding
Real World (Lift Lock)  *Real World (Aqueduct)*  *Real World (RWS Beeldbank Aqueduct)*  *IENC Symbolization* 	A) DRVAL1 represents the minimum operating depth of the structure. B) The exceptional structure does not carry information about the vertical clearance underneath. If the exceptional structure crosses navigable water (e.g., aqueduct) a bridge object must be encoded to provide the vertical clearance underneath. C) Use 'verdat' only if vertical datum differs: - from DSPM SDAT subfield and - from Meta object 'm_sdat' attribute D) Note: The vertical datum is the reference of the minimum operation depth of the exceptional structure. E) If the exeptional navigational structure has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' T.1.1. F) Restricted vertical clearance within the lock chamber should be encoded by the respective objects (e.g., GATCON, bridge, cblohd) G) If the ISRS Location Code is available it shall be encoded (refer to General Guidance section H). H) For Notice marks on aqueducts see O.3.2 I) All objects which belong to an Exceptional Navigational Structure must be combned into one aggregation area (C_AGGR). J) The object name of an Exceptional Navigational Structure is assigned to the respective C_AGGR object using OBJNAM.	**Object Encoding** **Object Class =** excnst(P,A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) catexs = [1 (Lift-Lock), 2 (Aqueduct), 3 (Sloping plane lock), 4 (Water slope lock (Pente d'Eau))] (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) unlocd = (Refer to letter G) (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (C) horclw = [xxx.xx] (metres), e.g., 25.17 (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) sdrlev = (Name of reference level to which depth are referred (from verdat list) plus version indication), e.g. GlW 2002 (O) sdrval = [xx.xx] (metres), e.g., 2.05 (M) SCAMIN = [EU: 90000; US: 300000]

	K) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. L) For encoding an Aqueduct: If the usable horizontal clearance of width is a distance which is provided by the competent authority for safe navigation, it must be encoded with 'horclw'. M) Use 'sdrlev' and 'sdrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	(C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter L) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

G - Ports, Waterways

G.4 Locks, Barrages, Exceptional Navigational Structures

G.4.9 Opening Barrage (C)

An opening gate used to control and protect against flood water or to regulate the water level.

Graphics	Encoding Instructions	Object Encoding
Real World (Aerial View)  *Real World (Skipper's View)*  *Chart Symbol* 	A) For non-navigable parts of a flood barrage use DAMCON, for parts of a barrier/ flood barrage that are navigable at certain water levels use GATCON or gatcon (see instruction D) B) DAMCON area objects have to be placed on a LNDARE object. C) Linear GATCON features should follow the edge of a DEPARE object. Area GATCON features have to be placed on a depth area. D) Encode attribute 'verdat' only if vertical datum differs: - from DSPM VDAT subfield and - from Meta object 'm_vdat' attribute and specific for inland navigation or in case of a lifting barrage gate that restricts the air draught. E) VERCLR has to be encoded in case of a lifting barrage gate or gate-frame that restricts the air draught of passing vessels. F) A bridge over a barrier/ flood barrage needs to be encoded separately with a bridge object (see G.1) G) 'wtwdis' and 'hunits' shall be encoded if the attribute VERCLR is used. H) All objects of one Opening Barrage must be combined to one aggregation area (C_AGGR), e.g. - notice marks - two way route parts - communication area - fenders - ice breakers - vertical clearance indicators - signal stations - radio call-in points	**Object Encoding** **Object Class =** DAMCON(L,A) (M) CATDAM = [3 (flood barrage)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 90000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** GATCON(L,A) (M) CATGAT = [2 (flood barrage gate)] (M) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres) (Refer to letter E) (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	- overhead cables and plpelines I) The object name of a barrage is assigned to the respective C_AGGR object using OBJNAM. J) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. K) Opening barrages shall be encoded if they are located in navigable water. L) EU: Use 'gatcon' to encode opening barrages that are in navigable water. M) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** gatcon(L,A) (M) CATGAT = [2 (flood barrage gate)] (M) HORCLR = [xx.x] (metres), e.g., 34.2 (C) VERCLR = [xx.xx] (metres) (Refer to letter E) (O) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GlW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) wtwdis = (Refer to letter G) (C) hunits = (Refer to letter G) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** C_AGGR() (M) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter K) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

H - Currents and Tides

H.1 Currents

H.1.1 Current (O)

Current is preferably indicated at high and low water conditions to aid with planning, navigation and maneuvering.

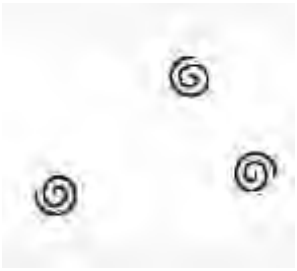
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Code current as an area when information applies to a larger portion of water and provide average current values (xx.x km/h) for and name of the water level(s) for which information is available. B) Code 'curent' as a point object if information is based on local measurements. C) Provide direction of impact if 'curent' is coded as area object. Provide ORIENT value (360°) if 'curent' is coded as point object. D) Provide values for current velocity in km/h: • 'curvhw': current velocity at high water level • 'curvlw': current velocity at low water level • 'curvmw': current velocity at mean water level • 'curvow': current velocity at other water level E) State names of water levels for which current value is provided including version identification, for example year of issue or period: • 'hignam': name of relevant high water level • 'lownam': name of relevant low water level • 'meanam': name of relevant mean water level • 'othnam': name of other locally relevant water level	**Object Encoding** **Object Class =** curent(P,A) (C) curvhw = [xx.x] (C) curvlw = [xx.x] (C) curvmw = [xx.x] (C) curvow = [xx.x] (C) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (C) hignam = Name of water level, which is used for the attribute higwat (value at relevant high water level) including version identification, for example year of issue or period, e.g., HSW 96 (C) lownam = Name of water level, which is used for the attribute lowwat (value at relevant low water level) including version identification, for example year of issue or period, e.g., RNW 96 (C) meanam = Name of water level, which is used for the attribute meawat (value at relevant mean water level) including version identification, for example year of issue or period, e.g., HSW 96 (C) othnam = (name of water level, which is used for the attribute othwat (value at other locally relevant water level) including version identification, for example year of issue or period) (e.g., HQ100-96) (C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) SCAMIN = [18000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

H - Currents and Tides

H.1 Currents

H.1.2 Water Turbulence (O)

The disturbance of water caused by the interaction of any combination of waves, currents, tidal streams, wind, shoal patches and obstructions.

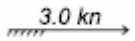
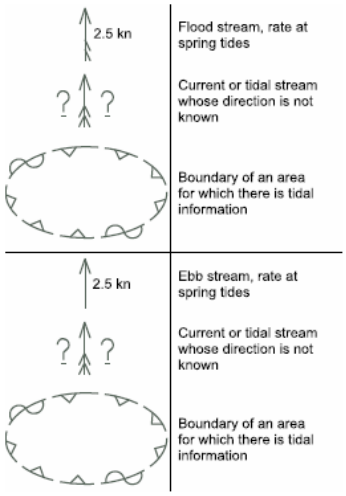
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Water power supplies are producing water turbulences under water at a place where the vessels enter the locks.	**Object Encoding** **Object Class =** WATTUR(P,A) (M) CATWAT = [6 (under water turbulence)] (O) OBJNAM = [Name of object] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

H - Currents and Tides

H.2 Tides

H.2.1 Tide stream - flood/ebb (O)

The alternating horizontal movement of water associated with the rise and fall of the tide caused by tide-producing forces. Also called tidal current.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) The term “tidal streams” (French: “courants de mare”, US usage: “tidal currents”), is used to designate the periodical horizontal movements of the water, which are astronomical in origin. These are distinguished from “currents” (French: “courants généraux”), which are not dependent on astronomical conditions. In practice the navigator experiences a combination of tidal stream and current. Tidal streams are defined by the direction towards which they flow. The terms “flood stream” and “ebb stream” are used for designating the horizontal movement of the water when the tide is respectively rising or falling. To avoid any ambiguity, in the case of streams which do not turn at about the time of local high or low water, an indication must be given of the direction towards which the stream flows. B) Where data are inadequate for tabulated information (Tide Stream Panel Data), or where otherwise required, single observations comprising flood and ebb directions and/or rates, preferably corresponding to maximum rates at the spring tide, should be encoded. If it is required to encode tidal stream information that is limited to flood and ebb directions and/or values, it must be done using the feature Tide Stream – Flood/Ebb. C) Maximum rates (velocities) of tidal streams during springs, where known, must be encoded in knots using the attribute current velocity, and should be quoted to one decimal place. In rivers and estuaries where there are permanent currents caused by the flow of river water, such currents must be included in the calculation of the rate. Where the velocity of the	**Object Encoding** **Object Class =** TS_FEB(P,A) (M) CAT_TS = [1 (flood stream), 2 (ebb stream), 3 (other tidal flow)] (O) CURVEL = [xx.x] (O) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	current in a river or estuary is so variable as to make it impractical to indicate a value, current velocity should be populated with an empty (null) value.	

I - Depths

I.1 Depths in Fairways and Areas

I.1.1 Detailed Depth - referenced to one water level (C)

Detailed depth information (area) – referred to one reference water level only : Water area within the waterway whose detailed depth information is within a defined range of values that refer to only one vertical datum, the reference water level.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) The reference water level is only provided in the cell header (field: DSPM, subfield SDAT) or in 'm_sdat' plus 'verdat', if applicable (e.g., within a cell where two rivers with different reference water levels meet). verdat on incividual objects related to depth is prohibited. B) If the area is bounded by two or more depth contours: DRVAL2 takes the value of the deepest depth contour bounding the area. DRVAL1 takes the value of the shallowest depth contour bounding the area. C) If the shallowest depth of an unsurveyed area near the shore is defined by the river bank and the position of the riverbank is not exactly known, DRVAL1 = height of the riverbank above sounding/vertical datum, normally it is “unknown”. DRVAL2 takes the value of the deepest depth contour bounding the area. QUASOU has to be encoded (see C.1.7 and I.1.9). D) If the shallowest depth of an unsurveyed area near the shore is defined by the river bank and the position of the river bank is exactly known, DRVAL1 = “0”. DRVAL2 takes the value of the deepest depth contour bounding the area. Drying areas have to be encoded according to I.1.6 (low/high water range) QUASOU has to be encoded (see C.1.7 and I.1.9). E) If the area is bounded by only one depth contour and it is a hole: DRVAL1 takes the value of the depth contour shown. DRVAL2 takes the value of the deepest sounding within the depth contour if this is known. If one doesn’t know how deep the hole reaches (which is normal) DRVAL2 is “unknown”. F) If the area is bounded by only one depth contour and it is a peak:	**Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) QUASOU = [2 (depth unknown), 8 (value reported (not surveyed))] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	DRVAL2 takes the value of the depth contour shown. DRVAL1 takes the value of the shoalest sounding within the depth contour if this is known. If one doesn't know how high the peak reaches DRVAL1 is "unknown". G) Shallow depth areas with a diameter less than 10 m have to be encoded additionally as underwater rock, wreck or obstruction (see J.1.1 Rocks, J.2.1 Wrecks or J.3.1 Obstructions). H) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	

I - Depths

I.1 Depths in Fairways and Areas

I.1.2 Detailed Depth - water level model (C)

Detailed depth information (area) – a water level model that is applied to depth areas
A water area within the waterway in which detailed depth information is known within a defined range of values referenced to a vertical datum (the reference water leve). The actual water level is provided by a water level model.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) The following encoding instructions must only be followed if a water level model shall be applied to the depth areas. B) The reference water level is only provided in the cell header (field: DSPM, subfield SDAT) or in 'm_sdat' plus 'verdat', if applicable (e.g. within a cell where two rivers with different reference water levels meet). 'verdat' on individual objects related to depth is prohibited. C) Cut the depth areas at defined waterway profiles in order to be able to assign a waterway distance to the depth area. D) If the area is bounded by two or more depth contours: DRVAL2 takes the value of the deepest depth contour bounding the area. DRVAL1 takes the value of the shallowest depth contour bounding the area. E) If the shallowest depth of an unsurveyed area near the shore is defined by the river bank and the position of the riverbank is not exactly known, DRVAL1 = height of the riverbank above sounding/vertical datum, normally it is “unknown”. DRVAL2 takes the value of the deepest depth contour bounding the area. QUASOU has to be encoded (see C.1.7 and I.1.9). F) If the shallowest depth of an unsurveyed area near the shore is defined by the river bank and the position of the river bank is exactly known, DRVAL1 = “0”. DRVAL2 takes the value of the deepest depth contour bounding the area. Drying areas have to be encoded according to I.1.6 (low/high water range). QUASOU has to be encoded (see C.1.7 and I.1.9).	**Object Encoding** **Object Class =** depare(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) eleva1 = Maximum elevation 1 of a depth area: [xx.x] (metres) or "unknown" (C) eleva2 = Minimum elevation 2 of a depth area: [xx.x] (metres) or "unknown" (M) wtwdis = [xxxx.x] (units defined in hunits), e.g., 2451.7 (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (C) QUASOU = [2 (depth unknown), 8 (value reported (not surveyed))] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	G) If the area is bounded by only one depth contour and it is a hole: DRVAL1 takes the value of the depth contour shown. DRVAL2 takes the value of the deepest sounding within the depth contour if this is known. If one doesn't know how deep the hole reaches (which is normal) DRVAL2 is "unknown". H) If the area is bounded by only one depth contour and it is a peak: DRVAL2 takes the value of the depth contour shown. DRVAL1 takes the value of the shoalest sounding within the depth contour if this is known. If one doesn't know how high the peak reaches DRVAL1 is "unknown". I) Add the object attribute 'eleva1' which is corresponding to DRVAL1, if it is needed for the water level model. 'eleva1' is used to define the maximum elevation of the bottom of a river referred to a gravitational reference level (reflev). J) Add the object attribute 'eleva2' which is corresponding to DRVAL2, if it is needed for the water level model. 'eleva2' is used to define the minimum elevation of the bottom of a river referred to a gravitational reference level (reflev). K) Add the object attribute 'wtwdis' with the value of the waterway distance of the downstream situated waterway profile. Do this in order to calculate the values for 'eleva1' and 'eleva2' automatically out of DRVAL1 and DRVAL2 (which are referred to the reference water level whose height above the gravitational reference level (reflev) is stored in the object attribute HEIGHT of the downstream situated object 'wtwprf'). (See waterway profile I.3.5) L) If the actual water level, that is provided by a water level model, is also referred to the same gravitational reference level, one can link the depth areas with the actual water level using 'eleva1' and 'eleva2'. M) Shallow depth areas with a diameter less than 10 m have to be encoded additionally as underwater rock, wreck or obstruction (see J.1.1 Rocks, J.2.1 Wrecks or J.3.1 Obstructions).	

	N) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	

I - Depths

I.1 Depths in Fairways and Areas

I.1.3 Dredged Area (C)

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

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	**Object Encoding** **Object Class =** DRGARE(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.1 Depths in Fairways and Areas

I.1.4 Fairway (C)

Part of the navigable waterway area where a certain water depth within a certain width is available for the continuous navigation.
That part of a river, harbor 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 harbors, called „ship channel".
(International Maritime Dictionary, 2nd Ed.)

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization  *IENC Symbolization* 	A) The fairway has to be encoded if there is one. B) A publication is only allowed if the competent authority has verified its location. C) The fairway must be covered by depth areas. D) DRVAL1 of the FAIRWY object class should not be used, because 'verdat' is not available, instead depth areas shall be used in addition to FAIRWY (refer to I.1.5 Fairway Depth / Project Depth) E) If no detailed bathymetry is available, the fairway shares the geometry of a depth area with DRVAL1 = official water depth in metres issued by the competent authority (DRVAL2 = "unknown"); please refer to I.1.5 Fairway Depth/Project Depth F) If no detailed bathymetry is available, on each side of the fairway there must be a depth area between the shoreline and the boundary of the fairway with DRVAL1 = 0 or "unknown" and DRVAL2 = official water depth in metres issued by the competent authority; please refer to I.1.5 Fairway Depth/Project Depth) G) If there is a fairway separation with a one-way regulation a two-way route part (refer to L.1.3 - Two-way Route Part) has to be encoded.	**Object Encoding** **Object Class =** FAIRWY(A) (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.1 Depths in Fairways and Areas

I.1.5 Fairway Depth / Project Depth (C)

Area within the waterway that is delimited by the boundaries of the navigable channel and denotes the designated area with an official water depth for the continuous navigation. It depends on the legal status of the navigable channel if this depth is maintained regularly or not.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) This coding method for depth is only a minimum requirement for displaying the official water depth of the fairway that is available for the continuous navigation. If more detailed depth information is available use I.1.1 "Detailed Depth – ref. to one reference water level " or I.1.2 "Det. Depth - water level model". B) The depth area shares the geometry of the fairway with value 1 of the depth range (DRVAL1) = official water depth in metres issued by the competent authority. The value 2 of the depth range (DRVAL2) has to be set to "unknown". C) US: DRVAL1 = 2.7 (equivalent to typical project depths for vast majority of shallow draft projects) and DRVAL2 = "unknown" if value is not known. D) US: A Shallow Depth area or unsurveyed area must form the boundary between the Project Depth and the land, unless DEPARE is within the lock chamber. E) EU: On each side of the fairway there must be a depth area between the shoreline and the boundary of the fairway with DRVAL1 = "unknown" and DRVAL2 = official water depth in metres issued by the competent authority. F) The reference water level is only provided in the cell header (field: DSPM, subfield SDAT) or in m_sdat plus verdat, if applicable (e.g., within a cell where two rivers with different reference water levels meet). verdat on individual objects related to depth is prohibited. G) EU: QUASOU = 10 (maintained depth) or QUASOU = 11 (depth not regularly maintained) should be	**Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) QUASOU = (Refer to letter G) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

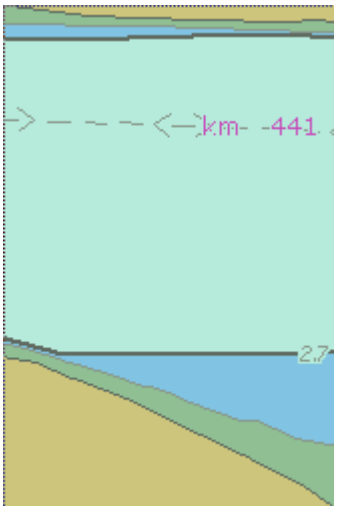
	used to indicate the reliability of the depth information due to the legal status of the fairway. H) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	

I - Depths

I.1 Depths in Fairways and Areas

I.1.6 Low / High Water Range (Drying Height) (C)

Area denoting the range between low and high water conditions (often referred to as 'drying height'). The feature applies only to open rivers.

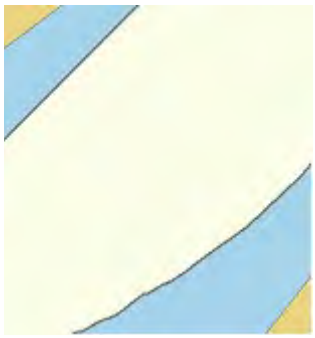
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization (shown in green) 	A) Area should border the shoreline and top bank. B) In case of tidal influence, use -H, where -H is height of tide C) US: INFORM is mandatory D) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	**Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [-x.xx] (metres), e.g. -0.43 or "unknown" (M) DRVAL2 = [0.00] (metres) (C) INFORM = ["Range between low and high water conditions"] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.1 Depths in Fairways and Areas

I.1.7 Shallow Depth (C)

Area within the waterway bounded by zero depth and the project depth.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) US: Encode the depth area between the shoreline (COALNE) and the project depth area (see Fairway Depth / Project Depth - I.1.5); DRVAL1 = 0 and DRVAL2 = 2.7 B) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	**Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.1 Depths in Fairways and Areas

I.1.8 Soundings (O)

A measured water depth or spot that has been reduced to a vertical datum. (S-57standard)

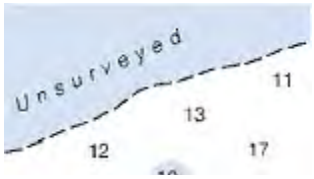
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization  	A) Spot soundings should be used sparingly in IENC, especially on rivers and canals. On rivers and canals only in rare cases where such information is of vital interest to skippers and no other encoding seems to be possible (like e.g. wrecks or obstructions to navigation) soundings may be used. This might be in case of isolated rocks below low water level. B) Spot soundings shall always be referred to the same water level as the surrounding depth information. C) The value of the sounding is encoded in the 3-D Coordinate field of the Spatial Record Structure (see S-57 Part 3).	**Object Encoding** **Object Class =** SOUNDG(P) (M) SCAMIN = [compilation scale multiplied by 2] (O) TECSOU = [1 (found by echo-sounder), 2 (found by side-scan-sonar), 3 (found by multi-beam), 4 (found by diver), 5 (found by lead-line), 6 (swept by wire-drag), 7 (found by laser), 8 (swept by vertical acoustic system), 9 (found by electromagnetic sensor), 10 (photogrammetry), 11 (satellite imagery), 12 (found by levelling), 13 (swept by side-scan-sonar), 14 (computer generated)] (O) SOUACC = [x.xx] The best estimate of the accuracy of the sounding data. Minimum value: 0; Resolution: 0.01 m (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.1 Depths in Fairways and Areas

I.1.9 Unsurveyed Area (C)

An area for which no bathymetric survey information is available. (S-57standard)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Those areas in the river which cannot be surveyed, for example, due to depths too shallow for surveying boats and hence no depth data is available, shall be coded by UNSARE. This shall only be done for areas below the specific water level to which the depth of the river is referred. For areas above this specific water level, DEPARE - DRVAL2 = 0 shall be used (refer to I.1.6). B) Especially in case parts of the navigable water area are not surveyed but may be deep enough for navigation, DEPARE with QUASOU = 2 (depth unknown) or 8 (value reported (not surveyed)) shall be used in order to show that ships may navigate in these areas as well. This may imply especially for sidearms or private marinas. C) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.	**Object Encoding** **Object Class =** UNSARE(A) (C) QUASOU = (Refer to letter B) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** DEPARE(A) (M) DRVAL1 = [0.00] (metres) (M) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (C) QUASOU = (Refer to letter B) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.2 Depth Contours

I.2.1 Depth Contour (O)

Line of constant depth denoting the depth between Shallow Depth and Fairway / Project Depth.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) US: USACE shall show a single depth contour for project depth (typically 2.74 (9')). A zero (0) depth contour shall also be used if a Low / High Water Range (Drying Height) exists (refer to I.1.6). B) EU: Depth contours shall be encoded between different depth areas to allow the Inland ECDIS to highlight the safety depth selected by the skipper.	**Object Encoding** **Object Class =** DEPCNT(L) (M) VALDCO = [xx.xx] (metres), e.g., 2.74 (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.3 Depth References

I.3.1 Depth Indicator (C)

Device that shows the real water depth between the actual water level and the bottom of the waterway or isolated dangers under water (e.g., ground sill).
The manner in which the device indicates this can either be analog (e.g., by a water level staff / pole - one can read the real water depth directly at the water level) or digital (e.g. by a display).
Distinction: external indicator of a gauge, also if the indicator is not directly located at the gauge – this is not the same as a depth indicator (values at gauges are always referred to the zero point of the gauge).

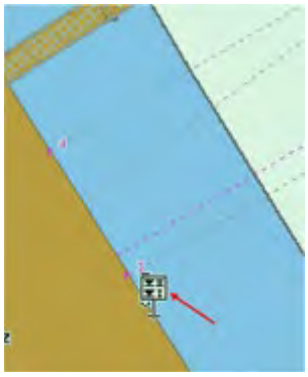
Graphics	Encoding Instructions	Object Encoding
Real World 	A) INFORM can be used to give unformatted text as additional information. For formatted text in an external file, TXTDSC has to be used. B) EU: Depth indicators must be encoded. C) This feature could be aggregated to a lock, for example, by a C_AGGR object. D) A remote display of a depth indicator has to be encoded in the same way. The name of the related depth indicator has to be encoded as OBJNAM. The value of waterway distance of the related depth indicator can be provided in INFORM. The remote display has to be connected to the related sistaw with C_AGGR.	**Object Encoding** **Object Class =** sistaw(P) (M) catsiw = [18 (depth indication)] (C) OBJNAM = [name of depth indicator or related depth indicator] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = [additional information, e.g. "referenced to ground still"] (O) NINFOM = (Refer to Section B, General Guidance) (C) TXTDSC = (Refer to letter A) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.3 Depth References

I.3.2 High Water Mark (C)

Device that shows if official high water levels are reached. This can be indicated either by analog (e.g., by signs like a staff gauge) or digital (e.g., by a display).

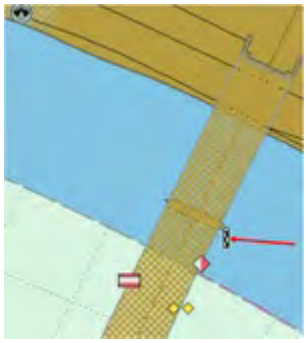
Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) INFORM can be used to give unformatted text as additional information. For formatted text in an external file, TXTDSC has to be used. B) EU: High Water Marks must be encoded.	**Object Encoding** **Object Class =** sistaw(P) (M) catsiw = [15 (high water mark)] (O) INFORM = [additional information, e.g., "l=460cm at gauge Kaub"] (O) NINFOM = (Refer to Section B, General Guidance) (C) TXTDSC = (Refer to letter A) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.3 Depth References

I.3.3 Vertical Clearance Indicator (C)

Device that shows the vertical clearance between the actual water level and isolated dangers above water level, such as bridges, overhead cables etc.
This can be indicated either by analog (e.g., by fixed upside down scales on pylons of bridges - one can read the clearance directly at the water level) or digital (e.g., by a display).

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) INFORM can be used to give unformatted text as additional information. For formatted text in an external file, TXTDSC has to be used. B) EU: Vertical Clearance Indicators must be encoded. C) This feature must be aggregated to a bridge, an overhead cable or overhead pipeline, etc. by a C_AGGR object.	**Object Encoding** **Object Class =** sistaw(P) (M) catsiw = [16 (vertical clearance indication)] (C) TXTDSC = (Refer to letter A) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

I - Depths

I.3 Depth References

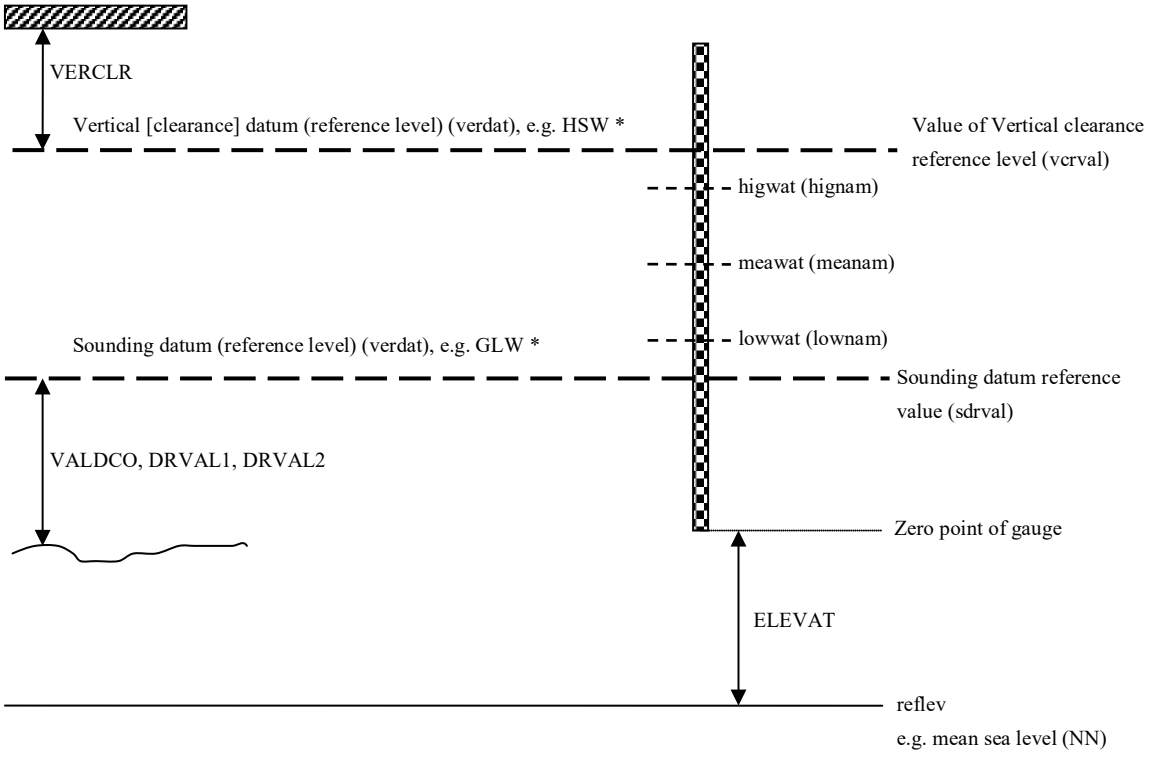
I.3.4 Waterway Gauge (C)

A waterway gauge is an instrument for measuring water levels. Waterway gauges provide the actual water level information to calculate actual depths and vertical clearances, taking into account the sloped nature of river water surfaces.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol (USACE Gauge) 	A) The waterway gauge may be encoded as a point object at the location of the real world entity. Preferably the gauge should be encoded as an area object covering its complete area of applicability (to be decided by the chart producer if this area covers only the fairway or the complete riverbed). B) The name of the gauge shall be encoded by OBJNAM. As the name the term known by the skippers shall be chosen. In case an additional name in e.g., Cyrillic letters is well known this name may be encoded in the NINFOM attribute. C) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). D) Category of the gauge may be encoded by using the 'catgag' attribute. E) The river km or mile of the location of the gauge shall be encoded by using the 'wtwdis' attribute. F) The zero point of the gauge is defined by the attributes ELEVAT (indicating the units above the locally used gravitational level) and 'reflev', indicating the used gravitational level itself (also refer to the picture below). G) When a gauge is encoded as a point object (mainly in case a water level model is available), the area of applicability may be provided by a specific distance of impact down and up stream using the attributes 'disipd' (downstream) and 'disipu' (upstream). 'disipd' and 'disipu' should be used for both point and area objects. H) Reference to specific defined water levels shall be enabled.	**Object Encoding** **Object Class =** wtwgag(P,A) (C) OBJNAM = [name of gauge] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) catgag = [1 (water level staff / pole), 2 (recording water level gauge), 3 (recording water level gauge with remote access), 4 (recording water level gauge with external indicator), 5 (recording water level gauge with remote access and remote indicator)] (O) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (O) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (O) ELEVAT = [xxx.xx] (metres), e.g., 159.87 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (O) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (O) disipd = [distance of impact, downstream: unit defined in the cell header, e.g., metre (m),

	1. For high water levels: - 'higwat' to indicate the defined high water level (e.g. 567 cm) - 'hignam' to indicate the specific high water level including the year of publication or a period indication (e.g., HSW96) 2. For mean water levels: - 'meawat' to indicate the mean water level (value and units) - 'meanam' to indicate the specific mean water level including the year of publication or a period indication (name and year) 3. For low water levels: - 'lowwat' to indicate the low water level (value and units) - 'lownam' to indicate the specific low water level including the year of publication or a period indication (name and year) In the event that there is another specific and important water level, this may be encoded by using the attributes 'othwat' and 'othnam'. I) In order to enable IENC based applications to calculate clearances and depths automatically the following information is used: Vertical clearances at bridges shall always be referred to a specific water level. This level shall be indicated within the 'vcrlev' attribute (preferably according to the list of 'verdat' values. This water level should be the same as indicated in 'hignam'. J) The same way as in the last point shall be followed for providing information on the reference water level for depth information. In this case the attribute 'sdrlev' may be used and should be equal to 'lownam' in most cases. K) EU: Waterway gauges that are relevant and useable for navigation must be encoded. L) This feature could be aggregated to a bridge or a lock, etc. by a C_AGGR object. M) A remote display of gauge has to be encoded in the same way. The name of the related gauge has to be encoded as OBJNAM. The wtwdis has to be encoded with the location of the related gauge. The remote	resolution: 1m] (O) disipu = [distance of impact, upstream: unit defined in the cell headers, e.g., metre (m), resolution: 1m] (O) higwat = [xxx.xxx] (metres), e.g., 4.78 (O) hignam = Name of water level, which is used for the attribute higwat (value at relevant high water level) including version identification, for example year of issue or period, e.g., HSW 96 (O) lowwat = [xxx.xxx] (metres), e.g., 4.78 (O) lownam = Name of water level, which is used for the attribute lowwat (value at relevant low water level) including version identification, for example year of issue or period, e.g., RNW 96 (O) meawat = [xxx.xxx] (metres), e.g., 2.46 (O) meanam = Name of water level, which is used for the attribute meawat (value at relevant mean water level) including version identification, for example year of issue or period, e.g., HSW 96 (O) othwat = [xxx.xxx] (metres), e.g., 0.567 (O) othnam = (name of water level, which is used for the attribute othwat (value at other locally relevant water level) including version identification, for example year of issue or period) (e.g., HQ100-96) (O) sdrlev = (Name of reference level to which depth are referred (from verdat list) plus version indication), e.g. GIW 2002 (O) sdrval = [xx.xx] (metres), e.g., 2.05 (O) vcrlev = (Name of reference level to which vertical clearances are referred (from verdat list) plus version indication), e.g., HSW 2002 (O) vcrval = [xx.xx] (metres), e.g., 1.15 (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	display has to be connected to the related wtwgag with C_AGGR. N) Use 'vcrlev' and 'vcrval' if the local value and name of vertical river datum reference level (design waterlevel) is known. O) Use 'sdrlev' and 'sdrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	



* The sounding or vertical datum (reference level) are defined either in

- in the cell header (valid for all objects in the cell)
- at the meta objects m_sdat or m_vdat, if another value than in cell header
- at the object itself (attribute verdat), if another value than in cell header or meta object.

I - Depths

I.3 Depth References

I.3.5 Waterway Profile (C)

A waterway profile is an imaginary (i.e., physically non-existent) line across the waterway.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) If waterway profiles are used on a waterway, the spacing of the waterway profiles depends on the local slope of the water level. The most common spacing is every one hundred metres. Preferably the location of waterway profiles coincides with distance marks ashore. B) HEIGHT refers to the reference level within the attribute 'reflev'. C) If detailed depths for water level model are provided waterway profiles must be encoded in order to be able to assign a waterway distance to the depth area (See I.1.2 Detailed Depth - water level model). D) Use 'sdrlev' and 'sdrval' if the local value and name of vertical river datum reference level (design waterlevel) is known.	**Object Encoding** **Object Class =** wtwprf(L) (M) wtwdis = [xxxx.xxx] (units defined in hunits), e.g., 2451.732 (M) hunits = [3 (kilometres), 5 (statute miles), 6 (nautical miles)] (C) HEIGHT = [xxx.x] metres, e.g., 27.4 (C) verdat = [12 (Mean lower low water), 23 (Lowest astronomical tide), 24 (Local datum), 30 (Highest astronomical tide), 31 (Local low water reference level), 32 (Local high water reference level), 33 (Local mean water reference level), 34 (Equivalent height of water (German GIW)), 35 (Highest Shipping Height of Water (German HSW)), 36 (Reference low water level according to Danube Commission), 37 (Highest shipping height of water according to Danube Commission), 38 (Dutch river low water reference level (OLR)), 39 (Russian project water level), 40 (Russian normal backwater level), 41 (Ohio River Datum), 42 (Approximate LAT), 43 (Dutch High Water Reference Level (MHW)), 45 (Dutch estuary low water reference level (OLW))] (C) reflev = [1 (Baltic datum), 2 (Adriatic level), 3 (Amsterdam Ordnance Datum (NAP)), 4 (Mean Sea Level), 5 (Other datum), 6 (National Geodetic Vertical Datum - NGVD29), 7 (North American Vertical Datum - NAVD88), 8 (Mean sea level 1912), 9 (Mean sea level 1929), 10 (Tweede Algemene Waterpassing (TAW))] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (O) sdrlev = (Name of reference level to which depth are referred (from verdat list) plus version indication), e.g. GIW 2002 (O) sdrval = [xx.xx] (metres), e.g., 2.05 (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD]

		(C) SORIND = (Refer to Section B, General Guidance)

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.1 Rocks

J.1.1 Rocks (C)

A concreted mass of stony material or coral that dries, is awash or is below the water surface.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization  	A) In case the top end of the rock is vertically referred only to the mean water level of the waterway, 'uwtroc' with 'watlev' has to be used. B) A drying height is indicated by a negative value within the attribute VALSOU. If this value is not known VALSOU="unknown" shall be encoded. C) Groups of rocks can be encoded as obstruction area (see J.3.1) D) An UWTROC or uwtroc object may not share the same geospatial position with a SOUNDG object. E) Rocks and groups of rocks which are a hazard to navigation shall be encoded if the depth of the underwater rock is otherwise not displayed. F) If the depth of the underwater rock is less than the minimum depth of the surrounding depth area EXPSOU has to be encoded.	**Object Encoding** **Object Class =** UWTROC(P,A) (M) WATLEV = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 5 (awash)] (M) VALSOU = [+/- xx.x] (metres), e.g., -00.3 or "unknown" (O) NATSUR = [5 (stone), 9 (rock), 11 (lava), 14 (coral), 18 (boulder)] (C) EXPSOU = (Refer to letter F) (O) QUASOU = [2 (depth unknown), 8 (value reported (not surveyed))] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [22000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** uwtroc(P,A) (M) watlev = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 8 (above mean water level), 9 (below mean water level)] (M) VALSOU = [+/- xx.x] (metres), e.g., -00.3 or "unknown" (C) EXPSOU = (Refer to letter F) (O) NATSUR = [5 (stone), 9 (rock), 11 (lava), 14 (coral), 18 (boulder)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 18750]

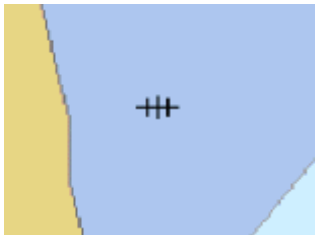
		(C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.2 Wrecks

J.2.1 Wrecks (C)

The ruined remains of a stranded or sunken vessel that has been rendered useless. (IHO Dictionary, S-32, 5th Edition, 6027)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Any wreck in navigable water in- or outside the channel known to exist and confirmed through reliable means, shall be encoded. B) Wrecks are removed only upon confirmation from reliable means that the wreck does not exist at or near the charted position. C) The true or actual location is not needed for removal of the erroneous location. D) Use VALSOU only in case WATLEV = 3 and indicate the depth of the top end of the wreck referred to the same water level the surrounding depth information is also referred to. E) Where a WRECKS area includes other WRECKS point objects, the encoded values of the attributes QUASOU, TECSOU, VALSOU and WATLEV for the area object have to be identical to the values for the shallowest point object. F) If the depth of the wreck is less than the minimum depth of the surrounding depth area EXPSOU has to be encoded.	**Object Encoding** **Object Class =** WRECKS(P,A) (M) CATWRK = [1 (non-dangerous wreck), 2 (dangerous wreck), 3 (distributed remains of wreck), 4 (wreck showing mast/masts), 5 (wreck showing any portion of hull or superstructure)] (O) WATLEV = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 5 (awash)] (C) VALSOU = [xx.x or "unknown"] (metres), e.g., 00.3 (O) QUASOU = [2 (depth unknown), 8 (value reported (not surveyed))] (O) TECSOU = [1 (found by echo-sounder), 2 (found by side-scan-sonar), 3 (found by multi-beam), 4 (found by diver), 5 (found by lead-line), 6 (swept by wire-drag), 7 (found by laser), 8 (swept by vertical acoustic system), 9 (found by electromagnetic sensor), 10 (photogrammetry), 11 (satellite imagery), 12 (found by levelling), 13 (swept by side-scan-sonar), 14 (computer generated)] (C) EXPSOU = (Refer to letter F) (O) STATUS = [12 (illuminated), 16 (watched), 17 (un-watched), 18 (existence doubtful)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.3 Obstructions

J.3.1 Obstruction (M)

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)
Examples of obstructions include: snags, stumps, wellheads, diffusers, cribs, fish havens, foul areas, foul grounds, booms, ice booms and ground tackle.

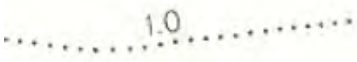
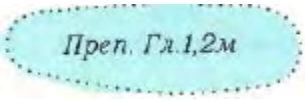
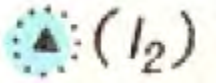
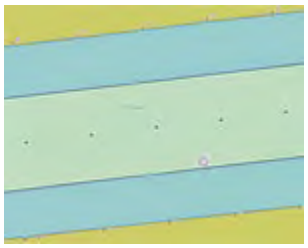
Graphics	Encoding Instructions	Object Encoding
Chart Symbol (ad A)  *Chart Symbol (ad B)*  *Chart Symbol (ad C)*  *Chart Symbol (ad D)*  *Chart Symbol (ad E)*  *Chart Symbol (ad F)*  *Chart Symbol (ad G)*  *Chart Symbol (ad H)* 	A) Bank and shoal at a small scale are encoded as a point object class OBSTRN. Depth above the bank relative to the project water level is encoded by attribute VALSOU (Value of sounding). B) Limits of obstruction are encoded as a spatial object (edge). The obstruction itself is encoded as a point object class OBSTRN with attribute CATOBS (Category of obstruction) set to corresponding value. C) Group of rocks is encoded as an area object class OBSTRN with attribute NATSUR = 9 (rocky). D) Underwater obstruction at a large scale is encoded as an area object class OBSTRN with attribute CATOBS set to corresponding value. Depth above the obstruction relative to the project water level is encoded by attribute VALSOU. E) Underwater obstruction at a small scale is encoded as a point object class OBSTRN with attribute CATOBS set to corresponding value. Depth above the obstruction relative to the project water level is encoded by attribute VALSOU. F) Pile under-water is encoded as a point object class OBSTRN with attribute CATOBS set to 1 (snag) and attribute WATLEV (Water level effect) set to 3 (always under water). G) Crib obstruction above-water is encoded as a point object class OBSTRN with attribute CATOBS set to 4 (crib) and attribute WATLEV (Water level effect) set to 2 (always dry). H) Pile obstruction above-water is encoded as a point object class	**Object Encoding** **Object Class =** OBSTRN(P,L,A) (O) CATOBS = [1 (snag/stump), 2 (wellhead), 3 (diffuser), 4 (crib), 5 (fish haven), 6 (foul area), 7 (foul ground), 8 (ice boom), 9 (ground tackle), 10 (boom), 11 (fishing net)] (C) NATSUR = (Refer to letter C) (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 6 (wooden), 7 (metal), 8 (GRP)] (C) VALSOU = [x.xx m] (metres) (C) EXPSOU = (Refer to letter P) (O) QUASOU = [2 (depth unknown), 6 (least depth known), 7 (least depth unknown, safe clearance at depth shown), 8 (value reported (not surveyed))] (C) WATLEV = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 5 (awash)] (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 30000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

Chart Symbol (ad I)

Chart Symbol (ad J)

IENC Symbolization



OBSTRN with attribute CATOBS set to 1 (snag) and attribute WATLEV (Water level effect) set to 2 (always dry).

I) Crib obstruction under-water is encoded as a point object class OBSTRN with attribute CATOBS set to 4 (crib) and attribute WATLEV (Water level effect) set to 3 (always under water).

J) Pile obstruction under-water is encoded as a point object class OBSTRN with attribute CATOBS set to 1 (snag) and attribute WATLEV (Water level effect) set to 3 (always under water).

K) Snags, stumps, wellheads, diffusers, fish havens, foul areas, foul grounds, booms, ice booms and ground tackle should be encoded as obstruction (OBSTRN), if they endanger or prevent the passage of vessels.

L) Diffusers are encoded as OBSTRN with CATOBS = 3 (diffuser).

M) If the nature of a dangerous underwater object, dangerous underwater area, or floating object is not explicitly known, it must be encoded as an OBSTRN.

N) Where an OBSTRN area includes other OBSTRN point objects, the encoded values of the attributes VALSOU and WATLEV for the area object have to be identical to the values for the shallowest point object.

O) Fishing net obstruction above-water is encoded as a line or area object class OBSTRN with attribute CATOBS set to 11 (fishing net) and attribute WATLEV (Water level effect) set to 2 (always dry).

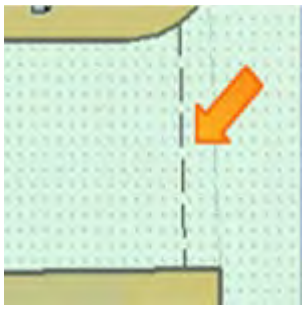
P) If the depth of the obstruction is less than the minimum depth of the surrounding depth area EXPSOU has to be encoded.

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.3 Obstructions

J.3.2 Oil Barrier (M)

A construction to dam oil flow on water. (S-57standard)

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 		**Object Encoding** **Object Class =** OILBAR(L) (O) CATOLB = [1 (oil retention (high pressure pipe)), 2 (floating oil barrier)] (M) SCAMIN = [EU: 8000; US: 12000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.4 Nature of Riverbed

J.4.1 Nature of Bottom (O)

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. (S-57 Standard)

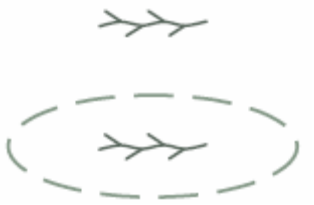
Graphics	Encoding Instructions	Object Encoding
Chart Symbol 	A) Coding as point, line or area is subject to data availability or subject to the scale of the chart.	**Object Encoding** **Object Class =** SBDARE(P,L,A) (M) NATQUA = [1 (Fine), 2 (Medium), 3 (Coarse), 4 (Broken)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 18 (boulder)] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.4 Nature of Riverbed

J.4.2 Weed/Kelp (O)

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)

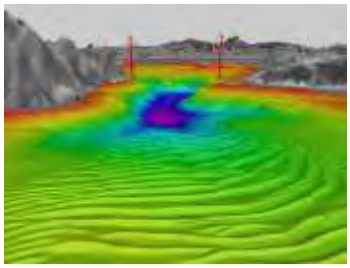
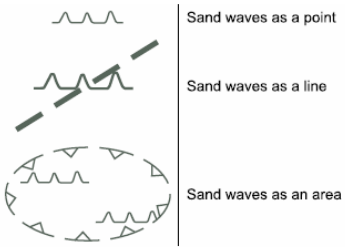
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) If it is required to encode the presence of weed or kelp, it must be done using the feature WEDKLP	**Object Encoding** **Object Class =** WEDKLP(P,A) (M) CATWED = [1 (kelp), 2 (sea weed), 3 (sea grass), 4 (sargasso)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

J - Rocks, Wrecks, Obstructions and Nature of Riverbed

J.4 Nature of Riverbed

J.4.3 Sandwaves (O)

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.

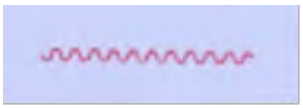
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  	A) If it is required to encode the (possible) presence of sandwaves, it must be done using the feature SNDWAV. B) The highest possible height of the sandwaves above the river/seabed should be encoded in VERLEN. Vertical length measurements (VERLEN) do not require a datum.	**Object Encoding** **Object Class =** SNDWAV(P,L,A) (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (O) VERLEN = [xxx.x] (metres), e.g., 0.5 (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

K - Offshore Installations

K.1 Submarine Cables

K.1.1 Submarine Cable (C)

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)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Only cables or cable areas where anchoring is prohibited need to be encoded. B) Cable features should be encoded just inside the bankline to minimize clutter. C) If there are multiple cables in the same area, do not code as cable, submarine (CBLSUB), but as a CBLARE (see K.1.2 Submarine Cable Area) D) EU: If there is an anchoring prohibited notice mark this should be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). E) EU: If there is a notice mark indicating the presence of a submarine cable this may be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). If such a notice mark is positioned in the waterway, it must be encoded. F) US: Create CTNARE object buffering the cable 20 metres upstream and downstream of the cable. G) Use STATUS = 18 (existence doubtful) in the case where the existence of the feature cannot be confirmed.	**Object Encoding** **Object Class =** CBLSUB(L) (O) CATCBL = [1 (power line), 3 (transmission line), 4 (telephone), 5 (telegraph), 6 (mooring cable/chain)] (O) OBJNAM = [owner name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) STATUS = (Refer to letter G) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding notice mark** **Object Class =** notmrk(P) (M) catnmk = [8 (no anchoring or trailing of anchors, cables or chains)] (M) fnctnm = [1 (prohibition mark)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (O) disipd = [xxxx] (metres), e.g., 2120 (O) disipu = [xxxx] (metres), e.g., 1730 (O) addmrk = [1 (top (board)), 2 (bottom (board)), 3 (right (triangle to the right)), 4 (left (triangle to the left)), 5 (bottom (triangle to the bottom))] (O) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) STATUS = [8 (private), 12 (illuminated), 14 (public)] (O) INFORM = [text of additional marks in

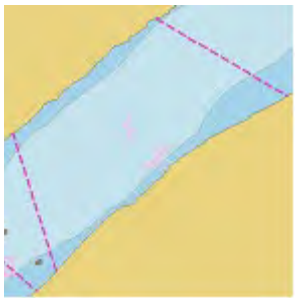
		English] (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** CTNARE(A) (M) INFORM = ["Cable buffer zone"] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

K - Offshore Installations

K.1 Submarine Cables

K.1.2 Submarine Cable Area (C)

An area which contains one or more submarine cables. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Only cables or cable areas where anchoring is prohibited need to be encoded. B) CBLARE should generally be used if; dFCLC/NC < 50, where dFCLC is distance between first cable and last cable in designated area, and NC is the number of cables; cartographic judgment should still be applied for final analysis. Cable areas should be used, unless very precise single cable data is available. Symbology should never be used due to the unreliability of the cable location. C) Do not use both Cable and Cable Area to represent the same feature. D) If various types of cables exist in the area, include description in TXTDSC. If at least one of the cables is a powerline, CATCBL = 1 has to be used. E) US: Extend CBLARE 20 metres beyond first and last cable; farther if uncertainty is greater. F) EU: In case there is an anchoring prohibited notice mark this should be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). G) EU: In case there is a notice mark indicating the presence of a submarine cable, this may be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). If such a notice mark is positioned in the waterway it must be encoded. H) Use STATUS = 18 (existence doubtful) in the case where the existence of the feature cannot be confirmed. I) EU: If the authority has extended the application of the prohibition of anchoring to the use of telescopic piles (spuds) in accordance with Article 7.03 of CEVNI rev. 5, restrn	**Object Encoding** **Object Class =** CBLARE(A) (O) CATCBL = [1 (power line), 3 (transmission line), 4 (telephone), 5 (telegraph), 6 (mooring cable/chain)] (M) RESTRN = [1 (anchoring prohibited), 38 (use of spuds prohibited)] (O) OBJNAM = [owner name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) STATUS = (Refer to letter H) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** notmrk(P) (M) catnmk = [8 (no anchoring or trailing of anchors, cables or chains)] (M) fnctnm = [1 (prohibition mark)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (O) disipd = [xxxx] (metres), e.g., 2120 (O) disipu = [xxxx] (metres), e.g., 1730 (O) addmrk = [1 (top (board)), 2 (bottom (board)), 3 (right (triangle to the right)), 4 (left (triangle to the left)), 5 (bottom (triangle to the bottom))] (O) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) STATUS = [8 (private), 12 (illuminated),

	=38 (use of spuds prohibitied) must be encoded.	14 (public)] (O) INFORM = [text of additional marks in English] (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

K - Offshore Installations

K.2 Submarine Pipelines

K.2.1 Submarine Pipeline (C)

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. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) Pipeline features should be collected just inside the bankline to minimize clutter. B) Only pipelines or pipeline areas where anchoring is prohibited need to be encoded. C) See PIPARE for multiple pipelines. D) EU: In case there is an anchoring prohibited notice mark this should be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). E) EU: In case there is a notice mark indicating the presence of a submarine pipeline this may be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). If such a notice mark is positioned in the waterway it must be encoded. F) US: Create CTNARE object buffering the pipeline 20 metres upstream and downstream of the pipeline G) US: For water intakes, place point PIPSOL object near intake location if actual pipe (line) location is unknown. Place 20 metre diameter CTNARE around PIPSOL (P). H) Use STATUS = 18 (existence doubtful) in the case where the existence of the feature cannot be confirmed.	**Object Encoding** **Object Class =** PIPSOL(P,L) (O) CATPIP = [2 (outfall pipe), 3 (intake pipe), 4 (sewer), 6 (supply pipe)] (O) PRODCT = [1 (oil), 2 (gas), 3 (water), 7 (chemicals), 8 (drinking water)] (O) OBJNAM = [owner name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) STATUS = (Refer to letter H) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** notmrk(P) (M) catnmk = [8 (no anchoring or trailing of anchors, cables or chains)] (M) fnctnm = [1 (prohibition mark)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (O) disipd = [xxxx] (metres), e.g., 2120 (O) disipu = [xxxx] (metres), e.g., 1730 (O) addmrk = [1 (top (board)), 2 (bottom (board)), 3 (right (triangle to the right)), 4 (left (triangle to the left)), 5 (bottom (triangle to the bottom))] (O) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) STATUS = [8 (private), 12 (illuminated),

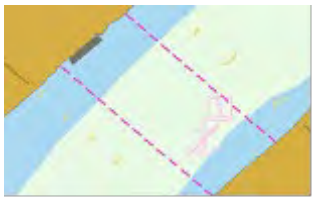
		14 (public)] (O) INFORM = [text of additional marks in English] (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** CTNARE(A) (M) INFORM = ["Pipeline buffer zone"] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

K - Offshore Installations

K.2 Submarine Pipelines

K.2.2 Submarine Pipeline Area (C)

An area containing one or more pipelines. (S-57 Standard)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Only pipelines or pipeline areas where anchoring is prohibited need to be encoded. B) PIPARE generally should be used if; dFPLP/NP < 50, where dFPLP is distance between first pipe and last pipe in designated area, and NP is the number of pipes; cartographic judgment still should be applied for final analysis. C) Extend PIPARE 20 metres beyond first and last pipe; farther if uncertainty is greater. D) Use multiple values for CATPIP if various types are in the PIPARE. E) EU: In case there is an anchoring prohibited notice mark this should be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). F) EU: In case there is a notice mark indicating the presence of a submarine pipeline this may be encoded by an anchoring prohibited 'notmrk' object (see O.3.1). If such a notice mark is positioned in the waterway it must be encoded. G) Use STATUS = 18 (existence doubtful) in the case where the existence of the feature cannot be confirmed. H) EU: If the authority has extended the application of the prohibition of anchoring to the use of telescopic piles (spuds) in accordance with Article 7.03 of CEVNI rev. 5, restrn =38 (use of spuds prohibitied) must be encoded.	**Object Encoding** **Object Class =** PIPARE(A) (O) CATPIP = [2 (outfall pipe), 3 (intake pipe), 4 (sewer), 6 (supply pipe)] (O) PRODCT = [1 (oil), 2 (gas), 3 (water), 7 (chemicals), 8 (drinking water)] (M) RESTRN = [1 (anchoring prohibited), 38 (use of spuds prohibited)] (O) OBJNAM = [owner name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) STATUS = (Refer to letter G) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding notice mark** **Object Class =** notmrk(P) (M) catnmk = [8 (no anchoring or trailing of anchors, cables or chains)] (M) fnctnm = [1 (prohibition mark)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (O) disipd = [xxxx] (metres), e.g., 2120 (O) disipu = [xxxx] (metres), e.g., 1730 (O) addmrk = [1 (top (board)), 2 (bottom (board)), 3 (right (triangle to the right)), 4 (left (triangle to the left)), 5 (bottom (triangle to the bottom))] (O) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway

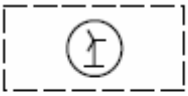
		- Brazilian complementary aids)] (O) STATUS = [8 (private), 12 (illuminated), 14 (public)] (O) INFORM = [text of additional marks in English] (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

K - Offshore Installations

K.3 Offshore Production Areas/Offshore Platforms

K.3.1 Offshore Production Area (C)

An area off or away from the shore within which there are production facilities.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*   *IENC Symbolization* 	A) An offshore production area must be encoded using the feature OSPARE. B) The vertical distance from seabed to the highest point of the offshore platform should be encoded in VERLEN. Vertical length measurements (VERLEN) do not require a datum. C) EU: The encoding of offshore production areas is mandatory.	**Object Encoding** **Object Class =** OSPARE(A) (M) CATPRA = [4 (power station area), 9 (wind farm)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 4 (wingless), 5 (planned construction)] (O) CONRAD = [1 (radar conspicuous), 2 (not radar conspicuous), 3 (radar conspicuous (has radar reflector))] (O) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) NATCON = [2 (concreted), 7 (metal), 8 (glass reinforced plastic (GRP))] (M) RESTRN = [1 (anchoring prohibited), 2 (anchoring restricted), 7 (entry prohibited), 8 (entry restricted), 14 (area to be avoided)] (O) STATUS = [2 (occasional), 4 (not in use), 7 (temporary), 12 (illuminated), 16 (watched), 17 (un-watched)] (O) VERLEN = [xxx.x] (metres), e.g., 0.5 (M) SCAMIN = [EU: 450000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

K - Offshore Installations

K.3 Offshore Production Areas/Offshore Platforms

K.3.2 Offshore Platform (C)

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

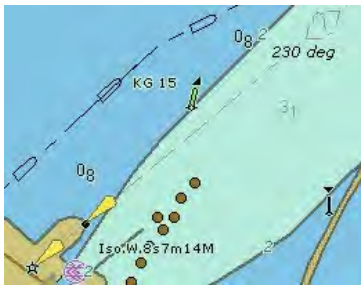
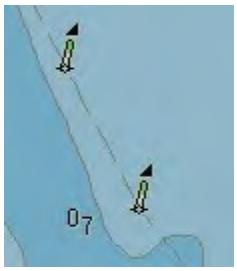
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) An offshore platform must be encoded using the feature OFSPLF B) The vertical distance from seabed to the highest point of the offshore platform should be encoded in VERLEN. Vertical length measurements (VERLEN) do not require a datum. C) EU: Offshore platforms shall be encoded.	**Object Encoding** **Object Class =** OFSPLF(P,A) (M) CATOFP = [1 (oil derrick/rig), 2 (production platform), 3 (observation/research platform), 4 (articulated loading platform (ALP)), 5 (single anchor leg mooring), 6 (mooring tower), 7 (artificial island), 9 (accommodation platform)] (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (O) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (O) CONDTN = [1 (under construction), 2 (ruined), 5 (planned construction)] (O) CONRAD = [1 (radar conspicuous), 2 (not radar conspicuous), 3 (radar conspicuous (has radar reflector))] (O) CONVIS = [1 (visually conspicuous), 2 (not visually conspicuous)] (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) NATCON = [2 (concreted), 7 (metal), 8 (glass reinforced plastic (GRP))] (O) OBJNAM = (O) NOBJNM = (Refer to Section B, General Guidance) (O) PRODCT = [1 (oil), 2 (gas), 18 (liquified natural gas (LNG)), 19 (liquified petroleum gas (LPG))] (O) STATUS = [2 (occasional), 4 (not in use), 7 (temporary), 12 (illuminated), 16 (watched), 17 (un-watched)] (O) VERLEN = [xxx.x] (metres), e.g., 0.5 (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.1 Tracks

L.1.1 Navigation Line (O)

A navigation line either defines a recommended track or marks the boundary between a safe and a dangerous area.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  *IENC Symbolization* 	A) A navigation line is usually defined by two (leading) lights or beacons or a directional light. B) The extent of the navigation line depends on the visibility of the navigational aid(s). C) The recommended track (L.1.2) is that portion of a 'navigation line' that a ship should use for navigation. D) ORIENT is the direction from the waterside towards the lights or beacons.	**Object Encoding** **Object Class =** NAVLNE(L) (M) CATNAV = [1 (clearing line), 2 (transit line), 3 (leading line bearing a recommended track)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

From IHO S57 Appendix B.1 Annex A - Use of the Object Catalogue for ENC

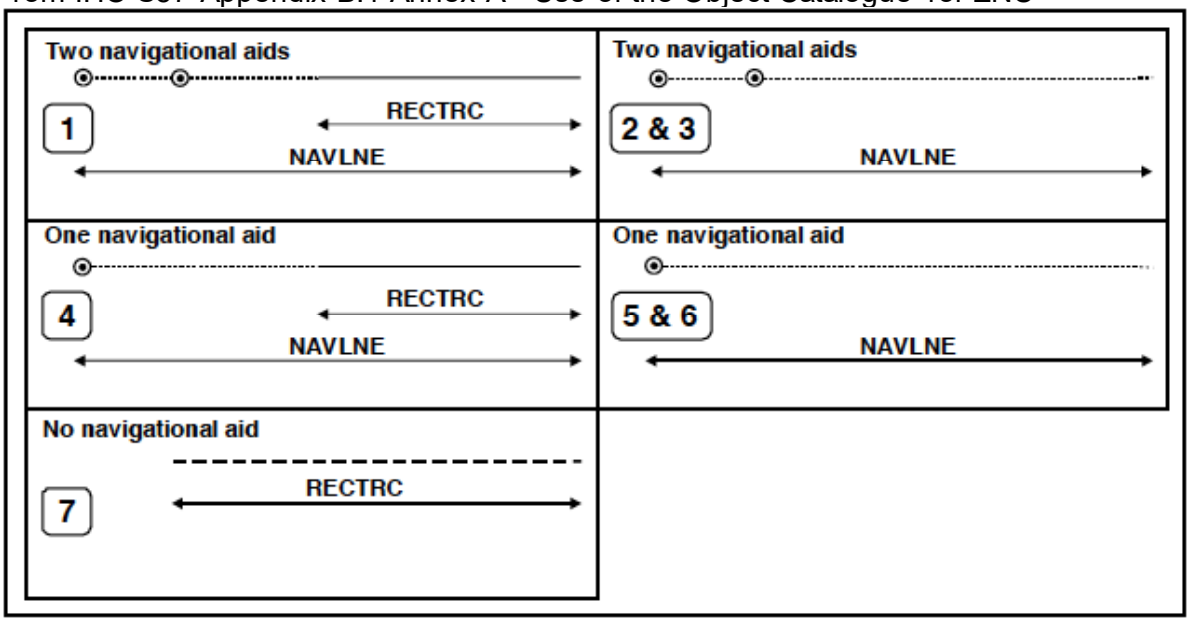


Figure 15		NAVLNE	RECTRC	Navigational aids
1	Recommended track on a leading line	CATNAV = 3	CATTRK = *1*	at least 2
2	Clearing line on marks in line	CATNAV = *1*	none	at least 2
3	Transit line on marks in line	CATNAV = *2*	none	at least 2
4	Recommended track on a bearing	CATNAV = 3	CATTRK = *1*	1
5	Clearing line on a bearing	CATNAV = *1*	none	1
6	Transit line on a bearing	CATNAV = *2*	none	1
7	Recommended track not based on fixed marks	none	CATTRK = *2*	none

L - Tracks, Routes

L.1 Tracks

L.1.2 Sailing Line / Recommended Track (C)

Recommended sailing route for all or certain vessels.

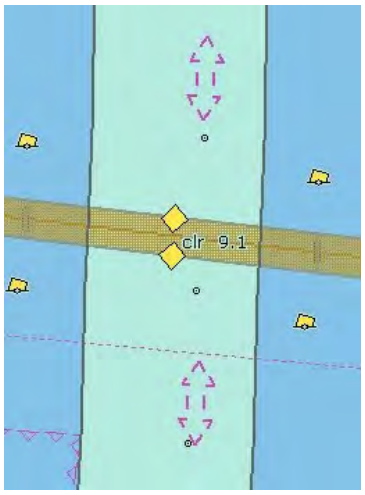
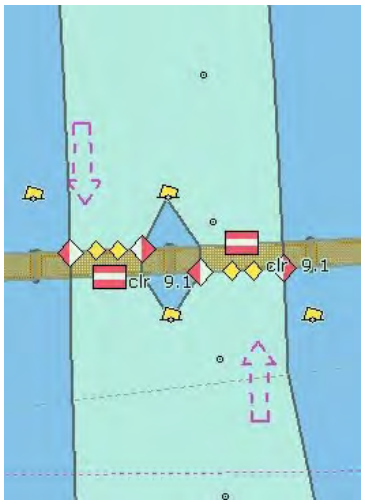
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Line should follow known safe and optimal route used by commercial vessels. If no such route is known, the deepest area within the channel, current patterns, and any obstructions to navigation should be considered. B) The recommended track is that portion of a 'navigation line' that a ship should use for navigation. C) ORIENT is the direction from the waterside towards the lights or beacons. D) US: CATTRK always = 2 (not based on a system of fixed marks) ORIENT always = "unknown" E) US: A second sailing line should be used only if needed for routing through an alternate lock, or around a lock, if warranted. Primary and secondary sailing line must be distinguished with INFORM attribute, and use of SEAARE object for labeling. F) US: Sailing line must be within Depth Area or Lock Chamber. G) EU: If a recommended track exists, it must be encoded.	**Object Encoding** **Object Class =** RECTRC(L) (M) CATTRK = [1 (based on a system of fixed marks), 2 (not based on a system of fixed marks)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) TRAFIC = [1 (inbound), 2 (outbound), 3 (one-way), 4 (two-way)] (C) INFORM = (Refer to letter E) (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Conditional - Please refer to F** **Object Class =** SEAARE(P) (M) OBJNAM = [“Primary Sailing Line” or “Secondary Sailing Line”] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

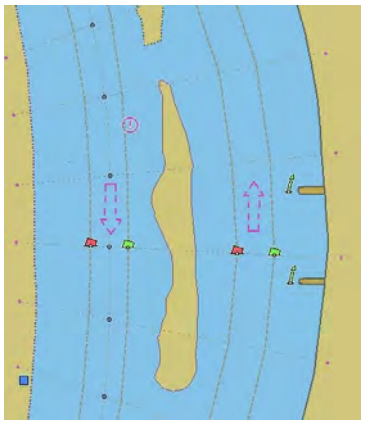
L - Tracks, Routes

L.1 Tracks

L.1.3 Two-way Route Part (O)

A two-way route part is either for the entire area, or a part of an area where the traffic flow is restricted to one-way.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization  *IENC Symbolization*  	A) Two way route parts will generally be two-way but some may be restricted to one-way traffic flow. B) In a two-way route with one-way sections, separate area objects should be made for parts with TRAFIC = 3 (one-way) C) In one-way sections the attribute ORIENT must indicate the true direction of traffic flow, not its reciprocal. In two-way sections ORIENT may indicate either direction. D) The two-way route parts in front and behind of a bridge must be at least 200m long. E) To avoid the symbolization of the boundary of a two-way route part at the borderline between two cells, the edge may be masked. F) This feature could be aggregated to a bridge by a C_AGGR object.	**Object Encoding** **Object Class =** TWRTPT(A) (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) TRAFIC = [3 (one-way), 4 (two-way)] (M) SCAMIN = [EU: 12000; US: 18750] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

IENC Symbolization 		

L - Tracks, Routes

L.1 Tracks

L.1.4 Waterway Axis (C)

The waterway axis can be defined by e.g.,:
1.the middle line of a fairway,
2.the middle line of a waterway (the waterway covers the entire area of a river or a canal)

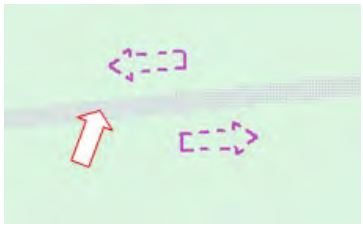
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) EU: The waterway axis must be encoded if an Inland ENC is intended to be used for navigation mode. B) If a fairway exists, the middle line of the fairway shall be used to define the waterway axis. C) For an update of an existing Inland ENC, if possible, the waterway axis (wtwaxs) should be based on the middle line of a fairway rather than the middle line of a waterway. (For EU Member States: The replacement of an axis can be done in connection with the fulfilment of the minimum requirements set out in article 4 of the European RIS Directive.) D) Ideally, the waterway axis should be a continuous line that marks, at every position, the middle line of a fairway. If this is not feasible, the axis can be built as a lineal connection between points that show the middle line of the fairway every 100 metres (= 1/10 kilometre) or 1/10 mile, 1/10 sea mile etc. E) For distance marks along the waterway axis see L.3.2. F) In case of two different systems of waterway distances in one area, one of them has to be selected for the waterway axis.	**Object Encoding** **Object Class =** wtwaxs(L) (O) catccl = [1 (0 small vessels and pleasure craft), 2 (I peniche), 3 (II campine barge), 4 (III Dortmund-Ems barge), 5 (IV Rhine-Herne barge), 6 (Va Large Rhine barge; 1-barge push-tow unit), 7 (Vb 2-barge push-tow unit; long formation), 8 (VIa 2-barge push-tow unit; wide formation), 9 (VIb 4-barge push-tow unit), 10 (VIc 6-barge push-tow unit), 11 (No CEMT class), 12 (VII 9-barge push-town unit)] (M) OBJNAM = [name of public waterway / or part of a waterway] (O) NOBJNM = [content of OBJNAM in national language] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.1 Tracks

L.1.5 Traffic Separation Zone (C)

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).

Graphics	Encoding Instructions	Object Encoding
Chart Symbol *IENC Symbolization* 	A) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. B) Use STATUS if any of the conditions apply. C) EU: Traffic Separation Zones must be encoded.	**Object Encoding** **Object Class =** TSEZNE(A) (M) CATTSS = [1 (IMO - adopted), 2 (not IMO - adopted)] (O) DATSTA = (Refer to Section B, General Guidance) (O) DATEND = (Refer to Section B, General Guidance) (C) STATUS = [3 (recommended), 9 (mandatory)] (C) TXTDSC = (Refer to letter A) (M) SCAMIN = [EU: 260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.1 Tracks

L.1.6 Radar Line (O)

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).

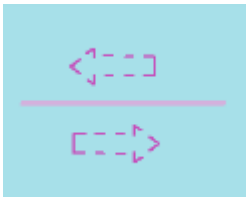
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) If it is required to encode a radar reference line, it must be done using the object class RADLNE. B) ORIENT - value of the bearing from seaward	**Object Encoding** **Object Class =** RADLNE(L) (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.1 Tracks

L.1.7 Recommended Traffic Lane Part (O)

A recommended traffic lane part is an area of a recommended direction of traffic control area within which traffic flow is generally along one bearing. (IHO Definition)

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) When the area is not defined, a point feature should be encoded. B) The orientation of the recommended traffic lane part is defined by the centreline of the part and is related to the general direction of traffic flow in the recommended traffic lane.	**Object Encoding** **Object Class =** RCTLPT(P,A) (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (O) STATUS = [3 (recommended), 4 (not in use)] (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU:260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.1 Tracks

L.1.8 Traffic Separation Scheme Boundary (O)

The outer limit of a traffic lane part or a traffic separation scheme roundabout (S-57 Edition 3.1, Appendix A - Chapter 1, Page 1.185, November 2000).

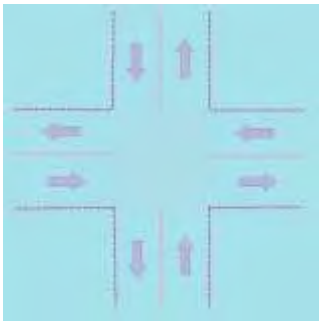
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Traffic Separation Scheme Boundary must not be used to encode the boundary between a traffic separation scheme lane or roundabout and a traffic separation zone; or a traffic separation zone and an inshore traffic zone.	**Object Encoding** **Object Class =** TSSBND(L) (O) CATTSS = [1 (IMO - adopted), 2 (not IMO - adopted)] (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [1 (permanent), 3 (recommended), 9 (mandatory)] (O) DATSTA = (Refer to Section B, General Guidance) (O) DATEND = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

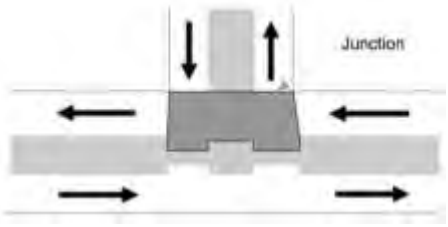
L - Tracks, Routes

L.1 Tracks

L.1.9 Traffic Separation Scheme Crossing (O)

A defined area where traffic lanes cross. (S- 57 Edition 3.1, Appendix A – Chapter 1, Page 1.186, November 2000).

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) The feature Traffic Separation Scheme Crossing must only be used to encode the area where at least four traffic lanes cross. B) Junctions other than crossings and roundabouts should be encoded using the feature Traffic Separation Scheme Lane Part. C) A Traffic Separation Scheme Crossing feature must not overlap a Traffic Separation Zone feature at its centre.	**Object Encoding** **Object Class =** TSSCRS(A) (O) CATTSS = [1 (IMO - adopted), 2 (not IMO - adopted)] (C) RESTRN = [1 (anchoring prohibited), 2 (anchoring restricted), 3 (fishing prohibited), 4 (fishing restricted), 5 (trawling prohibited), 6 (trawling restricted), 7 (entry prohibited), 8 (entry restricted), 9 (dredging prohibited), 10 (dredging restricted), 11 (diving prohibited), 12 (diving restricted), 13 (no wake), 16 (discharging prohibited), 17 (discharging restricted), 18 (industrial or mineral exploration/development prohibited), 19 (industrial or mineral exploration/development restricted), 20 (drilling prohibited), 21 (drilling restricted), 22 (removal of historical artifacts prohibited), 23 (cargo transhipment (lightering) prohibited), 24 (dragging prohibited), 25 (stopping prohibited), 27 (speed restricted)] (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [1 (permanent), 3 (recommended), 6 (reserved), 9 (mandatory)] (M) SCAMIN = [EU: 260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

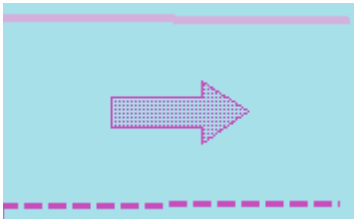


L - Tracks, Routes

L.1 Tracks

L.1.10 Traffic Separation Scheme Lane Part (O)

A traffic separation scheme lane part is an area of a traffic lane in which the direction of flow of traffic is generally along one bearing. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.187, November 2000).

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) The attribute ORIENT is mandatory for all Traffic Separation Scheme Lane Part features, unless the part is a junction. B) At junctions, other than crossings and roundabouts, a separate Traffic Separation Scheme Lane Part feature must be encoded. For this feature, the complex attribute orientation must be omitted, in order to avoid implying that one lane has priority over another. Warning text may be encoded using the complex attributes information or textual description. C) The orientation of the traffic separation scheme lane part is defined by the centreline of the part and is related to the general direction of traffic flow in the traffic separation lane.	**Object Encoding** **Object Class =** TSSLPT(A) (O) CATTSS = [1 (IMO - adopted), 2 (not IMO - adopted)] (C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (C) RESTRN = [1 (anchoring prohibited), 2 (anchoring restricted), 3 (fishing prohibited), 4 (fishing restricted), 5 (trawling prohibited), 6 (trawling restricted), 7 (entry prohibited), 8 (entry restricted), 9 (dredging prohibited), 10 (dredging restricted), 11 (diving prohibited), 12 (diving restricted), 13 (no wake), 16 (discharging prohibited), 17 (discharging restricted), 18 (industrial or mineral exploration/development prohibited), 19 (industrial or mineral exploration/development restricted), 20 (drilling prohibited), 21 (drilling restricted), 22 (removal of historical artifacts prohibited), 23 (cargo transhipment (lightering) prohibited), 24 (dragging prohibited), 25 (stopping prohibited), 27 (speed restricted)] (C) STATUS = [1 (permanent), 3 (recommended), 6 (reserved), 9 (mandatory)] (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.2 Ferries

L.2.1 Cable Ferry (M)

A route in a body of water where a ferry crosses from one shoreline to another. In this specific case a ferry that follows a fixed route guided by a cable (adapted from IHO Specifications , M-4). (Digital Geographic Information Working Group, Oct.87) Cable ferries (either assisted by propulsion or not) are fixed to a cable. This cable is crossing the river either above or below water surface

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Code the route that connects the docks or mooring facilities used by the ferry. B) The route should be the path officially permitted by the relevant authority. If no such official designation, use the route typically used by the ferry vessel(s). C) Use STATUS if any of the conditions apply. D) A ferry may use a high water route and low water route. Label in INFORM as “Used for Low Water” and “Used for High Water” E) If the ferry is connected to a leading cable, which crosses the fairway above the water surface, this cable shall be encoded as an overhead cable. F) If the ferry has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' see T.1.1 G) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. H) EU: If the ISRS Location Code is available, It must be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** FERYRT(L) (M) CATFRY = [2 (cable ferry)] (O) OBJNAM = [name of ferry] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [2 (occasional), 4 (not in use)] (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter G) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.2 Ferries

L.2.2 Free Moving Ferry (C)

A route in a body of water where a ferry crosses from one shoreline to another. In this specific case a ferry which may have routes that vary with weather, tide and traffic. (adapted from M-4) (Digital Geographic Information Working Group, Oct.87)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol **Image to be included at a later date** *IENC Symbolization* 	A) Code the route that connects the docks or mooring facilities used by the ferry. B) The route should be the path officially permitted by the relevant authority. If no such official designation exists, use the route typically used by the ferry vessel(s). C) Use STATUS if any of the conditions apply. D) A ferry may use a high water route and low water route. Label in INFORM as “Used for Low Water” and “Used for High Water” E) If the ferry has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose refer to the time schedule (general) object 'tisdge' see T.1.1 F) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. G) If an officially designated route exists and a free moving ferry is crossing the waterway and not following the traffic flow it must be encoded. H) EU: If the ISRS Location Code is available, It must be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** FERYRT(L) (M) CATFRY = [1 ('free-moving' ferry)] (O) OBJNAM = [name of ferry] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [2 (occasional), 4 (not in use)] (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter F) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.2 Ferries

L.2.3 Swinging Wire Ferry (M)

A route in a body of water where a ferry crosses from one shoreline to another. A "Swinging Wire Ferry" is connected to a fixed point (e.g., an anchor in the middle of the waterway) and swings around this point from shore to shore via a cable to an anchor. The cable runs more or less parallel to the current. (Digital Geographic Information Working Group, Oct.87)

Graphics	Encoding Instructions	Object Encoding
Real World 	A) Code the route that connects the docks or mooring facilities used by the ferry. B) The route should be the path officially permitted by the relevant authority. If no such official designation exists, use the route typically used by the ferry vessel(s). C) Use special purpose mark with CATSPM =37 (ferry crossing mark) to encode the supporting pontoons. D) Use STATUS if any of the conditions apply. E) A ferry may use a high water route and low water route. Label in INFORM as “Used for Low Water” and “Used for High Water” F) If the ferry has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' see T.1.1 G) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. H) For the cable between the ferry and the fixed point (e.g. anchor, mast) use a CBLARE (not a CBLSUB or cblohd), as the position of the cable changes during the ride. I) EU: If the ISRS Location Code is available, It must be encoded (refer to General Guidance section H).	**Object Encoding** **Object Class =** feryrt(L) (M) catfry = [4 (swinging wire ferry)] (O) OBJNAM = [name of ferry] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter E) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [2 (occasional), 4 (not in use)] (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter G) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** BOYSPP(P) (O) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical)), 3 (spherical), 4 (pillar), 5 (spar (spindle)), 6 (barrel (tun))] (O) OBJNAM = [name of ferry] (O) NOBJNM = (Refer to Section B, General Guidance) (M) CATSPM = [37 (ferry crossing mark)] (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (M) SCAMIN = [EU: 22000; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding**

		Object Class = CBLARE(A) (M) CATCBL = [6 (mooring cable / chain) or "unknown"] (O) OBJNAM = [Ferry name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.3 Supplemental Navigation References

L.3.1 CEMT Classification, ISRS Location Code (O)

Classification of the waterway according to CEMT; local International Ship Reporting System code.

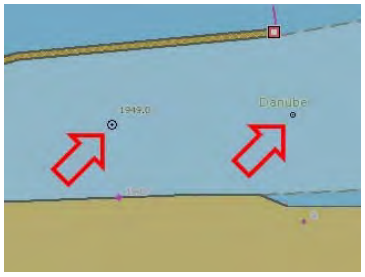
Graphics	Encoding Instructions	Object Encoding
	A) 'dirimp', the orientation of the official distance numbering, is upstream if the official distance numbering increases towards the origin of a river and downstream if the numbering decreases towards the origin of a river. Otherwise, e.g., in case of a canal, downstream is in the direction of the general water flow or to be decided arbitrarily B) If the ISRS Location Code is available, it has to be encoded (refer to general guidance section H).	**Object Encoding** **Object Class =** wtware(A) (M) catccl = [1 (0 small vessels and pleasure craft), 2 (I peniche), 3 (II campine barge), 4 (III Dortmund-Ems barge), 5 (IV Rhine-Herne barge), 6 (Va Large Rhine barge; 1-barge push-tow unit), 7 (Vb 2-barge push-tow unit; long formation), 8 (VIa 2-barge push-tow unit; wide formation), 9 (VIb 4-barge push-tow unit), 10 (VIc 6-barge push-tow unit), 11 (No CEMT class), 12 (VII 9-barge push-town unit)] (M) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (C) unlocd = [ISRS Location Code] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.3 Supplemental Navigation References

L.3.2 Distance Mark Along Waterway Axis (C)

A distance mark indicates the distance measured from an origin and consists of a distinct location without special installation, used to serve as a reference along the waterway. (Adapted from S-57 Standard).

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization*  	A) EU: Preferably the waterway axis shall be the middle line between the border lines of the navigable channel rather than the middle line between the riverbanks. B) Encode the referenced unit of measure using the 'hunits' attribute C) The point has to be a connected node. D) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). E) Negative values of wtwdis are allowed. F) EU: Distance Marks along the Waterway Axis must be encoded.	**Object Encoding** **Object Class =** dismar(P) (M) CATDIS = [1 (distance mark not physically installed)] (M) wtwdis = [xxxx.x (value of unit according to hunit)] (C) unlocd = [ISRS Location Code] (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (M) SCAMIN = [EU: 8000; US: 120000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

L - Tracks, Routes

L.3 Supplemental Navigation References

L.3.3 Distance Mark Ashore (O)

A distance mark indicates the distance measured from an origin and consists of a distinct location without special installation, used to serve as a reference along the waterway. (Adapted from S-57 Standard). Due to natural or historic changes in the waterway, the distance can deviate from real distance to the origin.

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *Real World* 	A) Distance marks ashore may be either stones or signs, from the encoding point of view this is no difference. B) EU: For hectometre distance marks, use 'hunits' = 4 (hectometres) For kilometre distance marks, use 'hunits' = 3 (kilometres), e.g., 1147 for km or 4 for hm C) Negative values of wtwdis are allowed.	**Object Encoding** **Object Class =** dismar(P) (M) CATDIS = [1 (distance mark not physically installed), 2 (visible mark, pole), 3 (visible mark, board), 4 (visible mark, unknown shape)] (M) hunits = [3 (kilometres), 4 (hectometres), 5 (statute miles), 6 (nautical miles)] (M) wtwdis = [xxxx.x (value of unit according to hunit)] (M) SCAMIN = [22000 (except: 8000 for hunits=4)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

IENC Symbolization 		

L - Tracks, Routes

L.3 Supplemental Navigation References

L.3.4 Magnetic Variation (O)

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

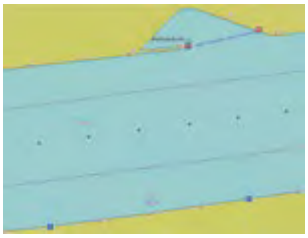
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Until a world magnetic model is universally available for inclusion in ECDIS, if it is required to encode magnetic variation, it must be done using the object class MAGVAR. As a minimum, updates should be supplied to coincide with changes of epoch (i.e. every five years). B) For VALMAG (value of magnetic variation) and VALACM (value of annual change) a positive value, i.e. unsigned, indicates a variation (change) in an easterly direction and a negative value indicates a variation (change) in a westerly direction.	**Object Encoding** **Object Class =** MAGVAR(P,L,A) (M) VALMAG = [sxx.xx] s:sign, negative values only (M) VALACM = [sxx.xx] s:sign, negative values only (M) RYRMGV = [CCYY] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

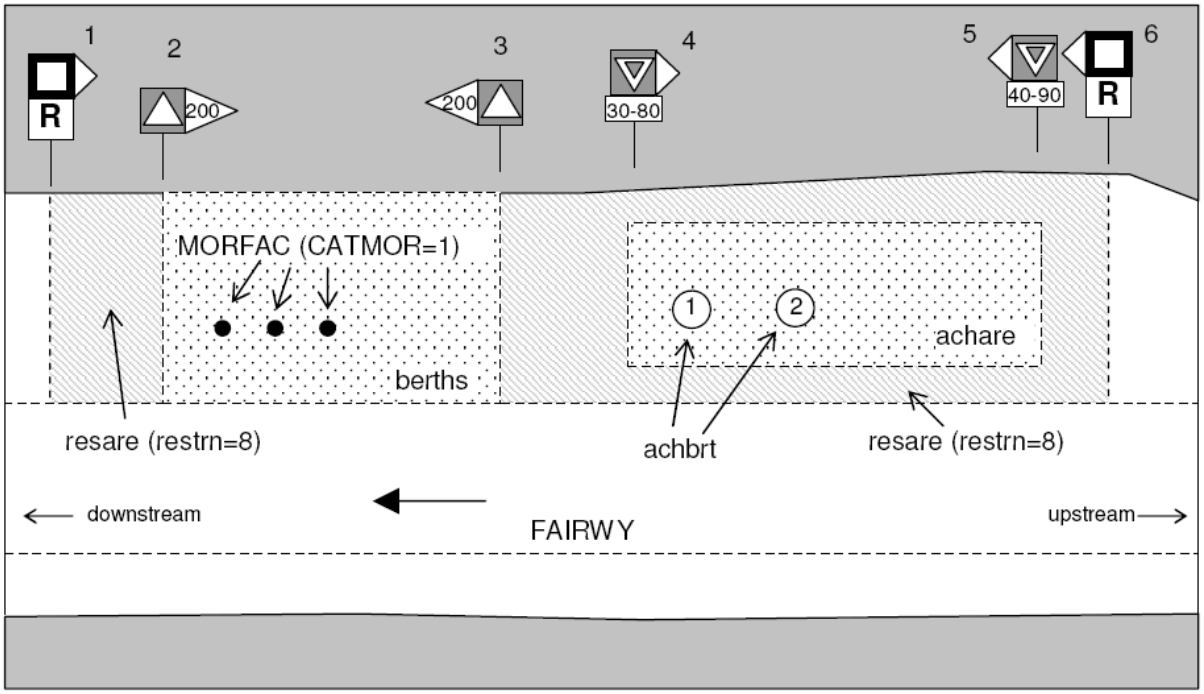
M.1 Anchorage Areas and Berths

M.1.1 Anchorage Area (C)

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

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) For anchorage berth see M.1.2 For berth without transshipment see M.1.3 B) For individual recommended anchorages without defined limits, the associated spatial object is a point with 'catach' = 1 and STATUS = 3. C) Where an anchorage may only be used for a limited period the duration should be indicated in INFORM. If there is a time schedule referring to special dates or times, use time schedule (general) object 'tisdge' (see T.1.1). D) To encode an anchorage, objects such as 'achare', 'achbrt', MORFAC, resare and navigational aids like 'notmrk' may be associated using a collection object C_ASSO. E) EU: The linear extent of 'achare' object is defined by markers or notice marks (CEVNI signs E.5 – E.5.15 or E.6) on the bank. F) If the name of the anchorage is important for navigation and should be displayed without the use of the pick report, use SEAARE object additional. G) If a structured external XML-file with more detailed communication infomation is available, the reference to the file has to be entered in the TXTDSC attribute. H) The class of dangerous goods in accordance with ADN and CEVNI: 1 (one blue light/cone, CEVNI signs E.5.5, E.5.9, E.5.13), 2 (two blue lights/cones, CEVNI signs E.5.6, E.5.10, E.5.14), 3 (three blue lights/cones, CEVNI signs E.5.7, E.5.11, E.5.15), 4 (no blue lights/cones, CEVNI signs E.5.4, E.5.8, E.5.12). Dangerous goods in accordance with inland waterway regulations of the Russian Federation: 5 (one red light/cone	**Object Encoding** **Object Class =** achare(P,A) (O) catach = [1 (unrestricted anchorage), 2 (deep water anchorage), 3 (tanker anchorage), 4 (explosives anchorage), 5 (quarantine anchorage), 6 (sea-plane anchorage), 7 (small craft anchorage), 9 (anchorage for periods up to 24 hours), 10 (anchorage for pushing-navigation vessels), 11 (anchorage for other vessels than pushing-navigation vessels), 12 (anchorage for dry cargo vessels), 13 (anchorage for rafts)] (O) clsdng = [1 (one blue light / cone), 2 (two blue lights / cones), 3 (three blue lights / cones), 4 (no blue light / cone), 5 (one red light / red cone top down)] (O) TXTDSC = (Refer to letter G) (O) OBJNAM = [name or number designation to the anchorage area] (O) NOBJNM = (Refer to Section B, General Guidance) (O) restrn = [2 (anchoring restricted), 8 (entry restricted), 13 (no wake), 27 (speed restricted), 32 (berthing restricted), 38 (use of spuds prohibited)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (O) STATUS = [3 (recommended), 8 (private), 12 (illuminated), 14 (public), 16 (watched), 17 (un-watched)] (C) unlocd = [ISRS Location Code] (O) INFORM = [additional information, e.g., limited duration of use, restrictions of the number, the kind or size of vessels] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000 for areas, 12000 for points; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	top down). I) If the ISRS Location Code is available, it has to be encoded (please refer to general guidance section H). J) EU: Anchorage areas must be encoded. K) EU: If the authority has extended the application of the prohibition of anchoring to the use of telescopic piles (spuds) in accordance with Article 7.03 of CEVNI rev. 5, restrn =38 (use of spuds prohibitied) must be encoded.	**Conditional (Refer to letter F)** **Object Class =** SEAARE(A) (M) OBJNAM = [name or number designation of the anchorage area] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [45000 or use SCAMIN formula to calculate value] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

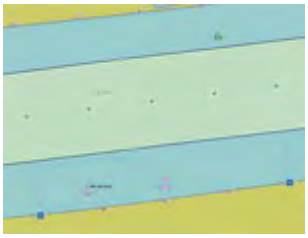


M - Areas, Limits

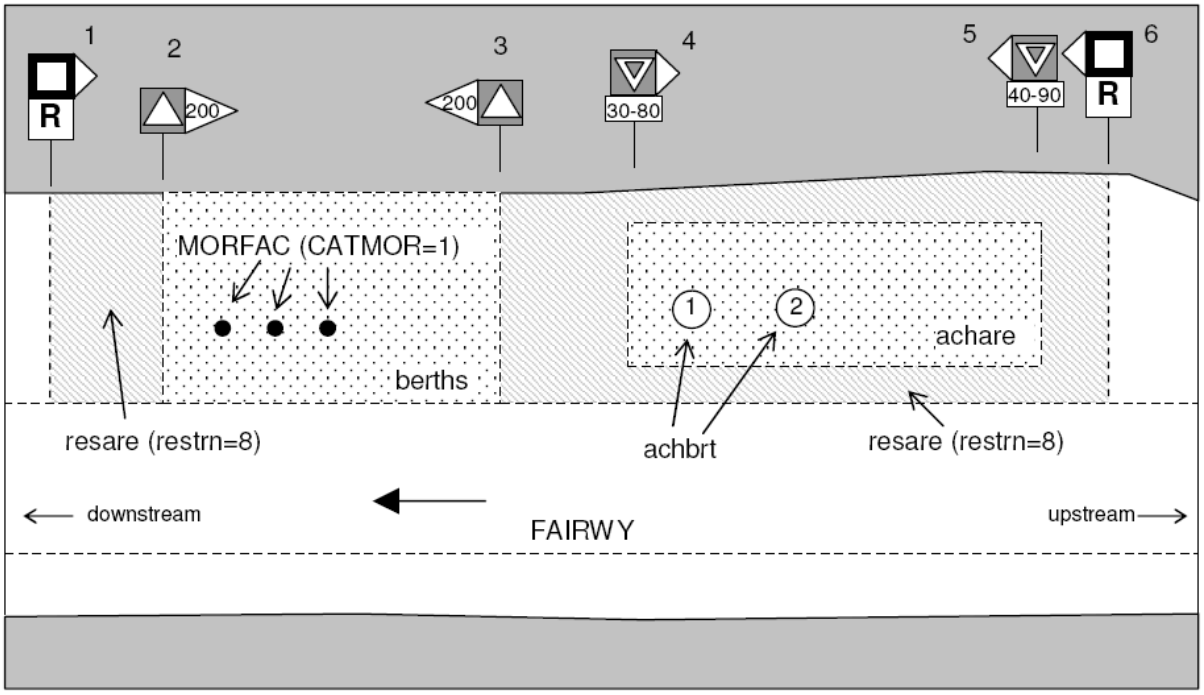
M.1 Anchorage Areas and Berths

M.1.2 Anchorage Berth (C)

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

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) If the anchor berth is defined by the centre point and a swinging circle, the associated spatial object is a point. B) Where an anchor berth may only be used for a limited period the duration should be indicated in INFORM. If there is a time schedule referring to special dates or times, use time schedule (general) object 'tisdge' (see T.1.1). C) To encode an anchor berth, objects such as 'achare', 'achbrt', MORFAC, 'resare' and navigational aids like 'notmrk' may be associated using a collection object C_ASSO. D) If the width of 'achbrt' is not defined by notice marks, it should be 110' / 33,55 m (approximately three barge widths). E) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. F) EU: The linear extent of 'achbrt' object is defined by markers or notice marks (CEVNI signs E.5 – E.5.15 or E.6) on the bank. G) The class of dangerous goods in accordance with ADN and CEVNI: 1 (one blue light/cone, CEVNI signs E.5.5, E.5.9, E.5.13), 2 (two blue lights/cones, CEVNI signs E.5.6, E.5.10, E.5.14), 3 (three blue lights/cones, CEVNI signs E.5.7, E.5.11, E.5.15), 4 (no blue lights/cones, CEVNI signs E.5.4, E.5.8, E.5.12). Dangerous goods in accordance with inland waterway regulations of the Russian Federation: 5 (one red light / cone top down). H) If the ISRS Location Code is available, it has to be encoded (refer to general guidance section H).	**Object Encoding** **Object Class =** achbrt(P,A) (O) catach = [1 (unrestricted anchorage), 2 (deep water anchorage), 3 (tanker anchorage), 4 (explosives anchorage), 5 (quarantine anchorage), 6 (sea-plane anchorage), 7 (small craft anchorage), 9 (anchorage for periods up to 24 hours), 10 (anchorage for pushing-navigation vessels), 11 (anchorage for other vessels than pushing-navigation vessels), 12 (anchorage for dry cargo vessels), 13 (anchorage for rafts)] (O) clsdng = [1 (one blue light / cone), 2 (two blue lights / cones), 3 (three blue lights / cones), 4 (no blue light / cone), 5 (one red light / red cone top down)] (O) TXTDSC = (Refer to letter E) (O) OBJNAM = [name or number designation of the anchorage area] (O) NOBJNM = (Refer to Section B, General Guidance) (O) restrn = [2 (anchoring restricted), 8 (entry restricted), 13 (no wake), 27 (speed restricted), 32 (berthing restricted), 38 (use of spuds prohibited)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (O) STATUS = [3 (recommended), 8 (private), 12 (illuminated), 14 (public), 16 (watched), 17 (un-watched)] (C) unlocd = [ISRS Location Code] (O) INFORM = [additional information, e.g. limited duration of use, restrictions of the kind or the size of vessels] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000 for areas, 12000 for points; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	I) EU: Anchorage berths must be encoded. J) EU: If the authority has extended the application of the prohibition of anchoring to the use of telescopic piles (spuds) in accordance with Article 7.03 of CEVNI rev. 5, restrn =38 (use of spuds prohibitied) must be encoded.	

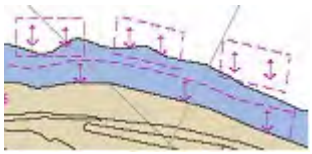


M - Areas, Limits

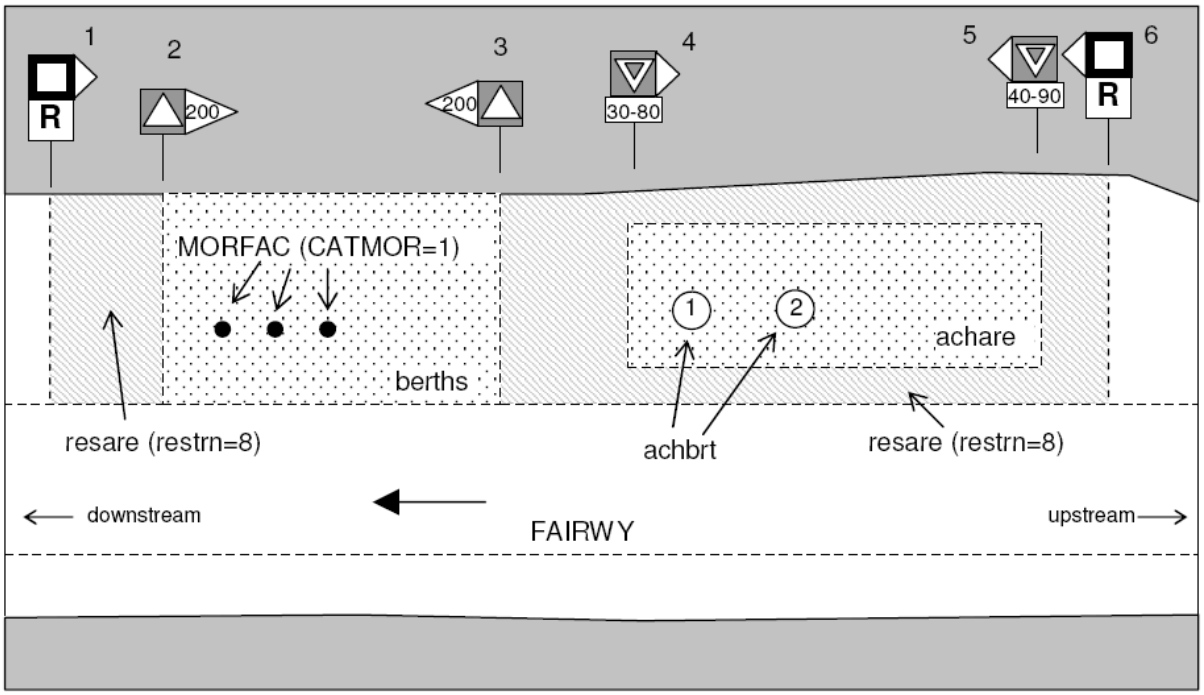
M.1 Anchorage Areas and Berths

M.1.3 Berth without Transshipment / Fleeting Areas (M)

A designated named or numbered place at the bank of the river or in a harbour basin for the mooring of vessels without transshipment of cargo.

Graphics	Encoding Instructions	Object Encoding
Real World (Fleeting Area)  *Chart Symbol (Fleeting Area)*  *IENC Symbolization* 	A) For anchorage area see M.1.1 For anchorage berth see M.1.2 B) US: - First Class Landing: An area providing tie-ups and at least 9 feet of water depth during low water level - Second Class Landing: An area providing tie-ups and at least 9 feet of water depth during normal pool level Mandatory attributes: 'catbrt' = 7 (first class landing) or 8 (second class landing) OBJNAM = "First Class Landing" or "Second Class Landing" in both 'berths' and SEAARE. C) US: Fleeting Areas: Area in waterway designated for temporary barge mooring. Mandatory attribute: 'catbrt' = 6 (fleeting area) D) Where a berth may only be used for a limited period the duration should be indicated in INFORM. If the berth has special operating hours, the berths object can be combined with a time schedule (general) 'tisdge' object (T.1.1) E) To encode a berth, objects such as 'berths', MORFAC, 'resare' and navigational aids like 'notmrk' may be associated using a collection object C_ASSO. F) The linear extent of berths object is defined by markers or notice marks (CEVNI signs E.5 – E.5.15, E.6, E.7 or E.7.1) on the bank. G) Within port areas it is allowed to encode berthes as line objects. H) Land facilities should be represented with buildings (BUISGL) and storage tank (SILTNK) or harbor facility ('hrbfac') feature objects. I) The berth encodes the named place	**Object Encoding** **Object Class =** berths(P,L,A) (C) catbrt = [3 (overnight accommodation), 4 (berth for pushing-navigation vessels), 5 (berth for other vessels than pushing-navigation vessels), 6 (fleeting area), 7 (first class landing), 8 (second class landing)] (O) clsdng = [1 (one blue light / cone), 2 (two blue lights / cones), 3 (three blue lights / cones), 4 (no blue light / cone), 5 (one red light / red cone top down)] (O) TXTDSC = (Refer to letter L) (O) DRVAL1 = [The minimum (shoalest) value; unit defined in the cell header, e.g., metres] (C) QUASOU = (Refer to letter P) (C) SOUACC = (Refer to letter P) (C) verdat = (Refer to letter P) (O) OBJNAM = [name or number designation of the berth] (O) NOBJNM = (Refer to Section B, General Guidance) (O) STATUS = [3 (recommended), 8 (private), 12 (illuminated), 14 (public), 16 (watched), 17 (un-watched)] (C) unlocd = (Refer to letter O) (O) INFORM = [additional information, e.g., limited duration of use, restrictions of the number, the kind or the size of vessels] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000 for areas, 12000 for points; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** SLCONS(L,A) (M) CATSLC = [4 (pier (jetty)), 5 (promenade pier), 6 (wharf (quay)), 15 (solid face wharf),

	at a wharf. The wharf itself is encoded as a shoreline construction J) For SLCON Multiple NATCON values can be used, if applicable. K) Use CATSLC as follows: •4, Pier: facility is primarily a structure generally extending perpendicular from shoreline into water. •6, Wharf: facility is primarily a structure parallel to shoreline; use if details of 15 or 16 no known. •15, Solid face wharf: Facility consisting of a solid wall such that water can not circulate underneath. •16, Open face wharf: Facility supported on piles or other structures that allow free circulation of water under the wharf. L) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. M) If the width of achare is not defined by notice marks, consider using 110'/33.55m (approximately three barge widths). N) The class of dangerous goods in accordance with ADN and CEVNI: 1 (one blue light / cone, CEVNI signs E.5.5, E.5.9, E.5.13), 2 (two blue lights / cones, CEVNI signs E.5.6, E.5.10, E.5.14), 3 (three blue lights / cones, CEVNI signs E.5.7, E.5.11, E.5.15), 4 (no blue lights / cones, CEVNI signs E.5 4, E.5.8, E.5.12). Dangerous goods in accordance with inland waterway regulations of the Russian Federation: 5 (one red light / cone top down). O) EU: 'unlocd' mandatory P) If the DRVAL1 attribute is used, QUASOU, SOUACC and verdat should also be provided.	16 (open face wharf)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (M) WATLEV = [1 (partly submerged at high water), 2 (always dry)] (M) SCAMIN = [45000 for line objects and 22000 for area objects] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)


1
R
2
200
3
200
4
30-80
5
40-90
6
R
MORFAC (CATMOR=1)
berths
1
2
achare
resare (restrn=8)
achbrt
resare (restrn=8)
downstream
FAIRWY
upstream

M - Areas, Limits

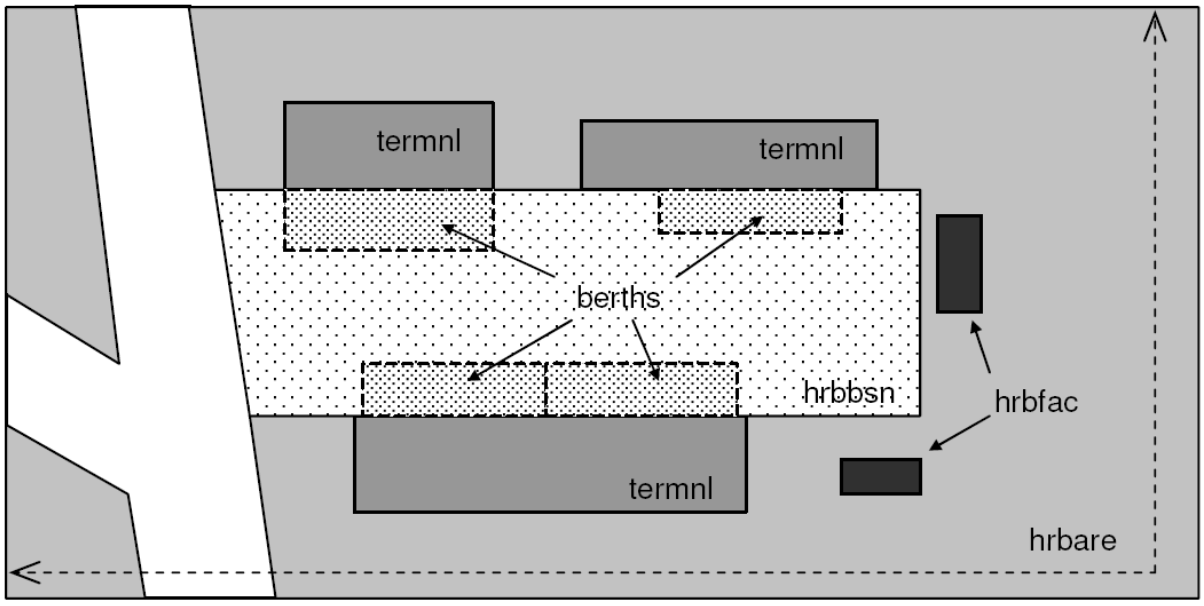
M.1 Anchorage Areas and Berths

M.1.4 Transshipment Berth (M)

A designated named or numbered place at the bank of the river or in a harbour basin for the mooring of vessels and transshipment

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) For berths without transshipment see M.1.3 B) Where a berth may only be used for a limited period the duration should be indicated in INFORM. If there is a time schedule referring to special dates or times, use time schedule (general) object 'tisdge' (see T.1.1). C) To encode a berth, objects such as 'berths', MORFAC, 'resare' and navigational aids like 'notmrk' may be associated using a collection object C_ASSO. D) The linear extent of berths object is defined by markers or notice marks (CEVNI signs E.5 – E.5.15, E.6, E.7 or E.7.1) on the bank. E) If the width of a berth is not defined by notice marks, consider using 110' / 33,55 m (approximately three barge widths). F) Within port areas it is allowed to encode berths as line objects. G) Land facilities should be represented with buildings (BUISGL) and storage tank (SILTNK) or harbor facility (hrbfac) feature objects. H) The berth encodes the named place at a wharf. The wharf itself is encoded as a shoreline construction I) For SLCON Multiple NATCON values can be used, if applicable. J) Use CATSLC as follows: • 4, Pier: facility is primarily a structure generally extending perpendicular from shoreline into water. • 6, Wharf: facility is primarily a structure parallel to shoreline; use if details of 15 or 16 no known. • 15, Solid face wharf: Facility consisting of a solid wall such that water can not circulate underneath.	**Object Encoding** **Object Class =** berths(P,L,A) (O) catbrt = [1 (loading), 2 (unloading), 4 (berth for pushing-navigation vessels), 5 (berth for other vessels than pushing-navigation vessels), 9 (berth for passenger vessels)] (O) clsdng = [1 (one blue light / cone), 2 (two blue lights / cones), 3 (three blue lights / cones), 4 (no blue light / cone), 5 (one red light / red cone top down)] (O) TXTDSC = (Refer to letter K) (O) DRVAL1 = [The minimum (shoalest) value; unit defined in the cell header, e.g., metres (C) QUASOU = (Refer to letter N) (C) SOUACC = (Refer to letter N) (C) verdat = (Refer to letter N) (O) OBJNAM = [name or number designation of the berth] (O) NOBJNM = (Refer to Section B, General Guidance) (O) STATUS = [3 (recommended), 8 (private), 12 (illuminated), 14 (public), 16 (watched), 17 (un-watched)] (O) trshgd = [1 (containers), 2 (bulk goods), 3 (oil), 4 (fuel), 5 (chemicals), 6 (liquid goods), 7 (explosive goods), 8 (fish), 9 (cars), 10 (general cargo)] (C) unlocd = [ISRS Location Code] (O) INFORM = [additional information, e.g., limited duration of use, restrictions of the number, the kind or the size of vessels] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000 for areas, 12000 for points; US: 45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding**

	• 16, Open face wharf: Facility supported on piles or other structures that allow free circulation of water under the wharf. K) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. L) If the ISRS Location Code is available, it has to be encoded (refer to General Guidance section H). M) The class of dangerous goods in accordance with ADN and CEVNI: 1 (one blue light / cone, CEVNI signs E.5.5, E.5.9, E.5.13), 2 (two blue lights / cones, CEVNI signs E.5.6, E.5.10, E.5.14), 3 (three blue lights / cones, CEVNI signs E.5.7, E.5.11, E.5.15), 4 (no blue lights / cones, CEVNI signs E.5 4, E.5.8, E.5.12). Dangerous goods in accordance with inland waterway regulations of the Russian Federation: 5 (one red light/cone top down). N) If the DRVAL1 attribute is used, QUASOU, SOUACC and verdat should also be provided.	**Object Class =** SLCONS(L,A) (M) CATSLC = [4 (pier (jetty)), 5 (promenade pier), 6 (wharf (quay)), 15 (solid face wharf), 16 (open face wharf)] (O) NATCON = [1 (masonry), 2 (concreted), 3 (loose boulders), 4 (hard surfaced), 5 (unsurfaced), 6 (wooden), 7 (metal), 8 (glass reinforced plastic (GRP))] (M) WATLEV = [1 (partly submerged at high water), 2 (always dry)] (M) SCAMIN = [45000 (A), 22000 (L) or use SCAMIN formula to calculate value] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

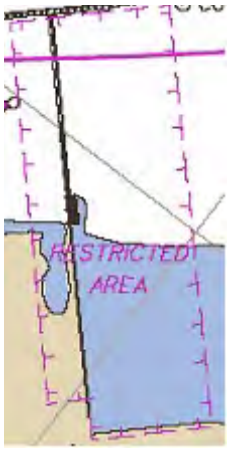
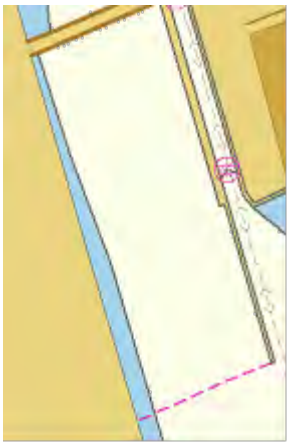


M - Areas, Limits

M.2 Restricted Areas

M.2.1 Restricted Area (C)

Area designated by the competent authority in which entry is prohibited or restricted to certain vessels, or certain transit rules apply. Restricted areas typically surround dams; see G.4.2 Dams.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Outline restricted area. The shoreline can be part of it, but may not be overlapped. B) EU: Restricted areas that are or could be defined by the CEVNI signs A.1 to A.9, B.6, C.1, C.3, C.5 (see annex "notice_marks.xls) shall be encoded. C) EU: To encode a restricted area that is defined by notice marks, the object 'resare' and the objects 'notmrk' may be associated using a collection object C_ASSO. D) If a restriction is more complicated see U.1 (legal ECDIS) E) The object class should not be used for restrictions that apply to whole waterways or large sections of waterways. For instance, If one restricted area covers a waterway, smaller restricted areas with more important information for the safety of navigation may not be noticed by the user. Especially restricted fairway depth and restricted fairway width should only be used for small areas of up to 1 km. F) EU: CATREA = 26 (waterskiing area) may only be used, if navigation is not allowed in the area. Water skiing areas marked by CEVNI signs E.17, where navigation is allowed, should be encoded as CTNARE, like areas for water bikes or sail boards. G) For areas of limited width or limited depth see M.4.3 and M.4.4. H) EU: If the authority has extended the application of the prohibition of anchoring to the use of telescopic piles (spuds) in accordance with Article 7.03 of CEVNI rev. 5, restrn =38 (use of spuds prohibitied) must be encoded.	**Object Encoding** **Object Class =** resare(A) (M) restrn = [1 (anchoring prohibited), 2 (anchoring restricted), 7 (entry prohibited), 8 (entry restricted), 13 (no wake), 14 (area to be avoided), 27 (speed restricted), 28 (overtaking prohibited), 29 (overtaking of convoys by convoys prohibited), 30 (passing or overtaking prohibited), 31 (berthing prohibited), 32 (berthing restricted), 33 (making fast prohibited), 34 (making fast restricted), 35 (turning prohibited), 36 (restricted fairway depth), 37 (restricted fairway width), 38 (use of spuds prohibited), 40 (SOx emission restricted), 41 (NOx emission restricted)] (O) CATREA = [1 (offshore safety zone), 4 (nature reserve), 5 (bird sanctuary), 9 (military area), 12 (navigational aid safety zone), 19 (waiting area), 22 (fish sanctuary), 23 (ecological reserve), 25 (swinging area), 33 (ship pollution emission control)] (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (C) INFORM = [if restrn = 2, 8, 32, 34: brief description of restriction; if over 10 words, use TXTDSC; if restrn = 27: maximum speed limit with unit] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.3 Caution Areas

M.3.1 Caution Area (C)

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

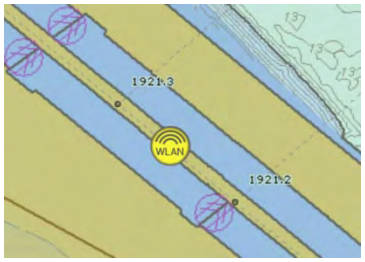
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) To be used on a limited basis only for short sections and in case of real importance for safety of navigation. B) Areas signposted by notice marks (areas for water scooters, high speed motorboats and slipping of boats) the object CTNARE shall also be used. Refer to the list of notice marks in the annex. C) Names of the sections shall be those, that are generally known by the skippers. In case no specific name is known the name of the closest town or land region should be used. D) EU: To encode a caution area, which is defined by notice marks, the object CTNARE and the objects 'notmrk' may be associated using a collection object C_ASSO.	**Object Encoding** **Object Class =** CTNARE(P,A) (O) OBJNAM = [name of section or closest town] (O) NOBJNM = (Refer to Section B, General Guidance) (M) INFORM = [short description of the impact on the skipper in English language] (O) NINFOM = (Refer to Section B, General Guidance) (O) HORACC = [xx.xx] (metres), e.g., 1.54 (O) VERACC = [xx.xx] (metres), e.g., 1.54 (O) CATTEV = [4 (likely to change), 5 (unlikely to change), 6 (unassessed)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.1 Communication Area (C)

An area, in which a vessel has to report or may request information

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization (No IENC symbolization (only in pick report)) 	A) EU: A communication area can be defined by notice marks (CEVNI signs B.11 or E.23, see O.3.1) or by regulations. Communication areas at locks should include the waiting areas and advance signals. The communication area at bridges should cover about 1 to 1,5 km on both sides of the bridge, depending on the normal radar range. B) Use 'comare' object class. C) If there is a reporting duty at a specific point/line use 'rdocal' object class. (Refer to Q.2.1) D) The purpose of communication area should be given in the 'catcom' attribute. E) The channel number assigned to a specific radio frequency, frequencies or frequency band has to be indicated in the COMCHA attribute. F) EU: The STATUS attribute should be used to indicate whether communication is recommended (CEVNI sign E.23) or mandatory (CEVNI sign B.11). G) Detailed communication information (postal address, phone, fax, e-mail etc.) should also be encoded in the respective object class. H) To encode a communication area, objects such as locks (lokbsn), bridges (bridge), customs (BUISGL, chkpnt), harbours (hrbare, prtare, hrbbsn), berths (berths) and notice marks (notmrk), may be associated using a collection object C_ASSO. I) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in TXTDSC. If some other means of communication is used for time-critical navigation-related communication, this should be mentioned in the remarks of the	**Object Encoding** **Object Class =** comare(A) (O) catcom = [1 (VTS centre), 2 (VTS sector), 3 (IVS point), 4 (MIB), 5 (lock), 6 (bridge), 7 (custom), 8 (harbour), 9 (WLAN area)] (M) COMCHA = [[XXXX];[XXXX];...] (O) OBJNAM = [name of the communication area], e.g. “lock xy” (O) NOBJNM = (Refer to Section B, General Guidance) (O) STATUS = [3 (recommended), 8 (private), 9 (mandatory), 14 (public)] (O) TXTDSC = (Refer to letter I) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

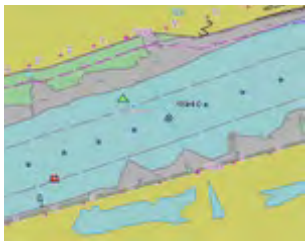
	XML-file. J) Communication Areas must be encoded. K) For areas where Wireless Networks are available free of charge catcom 9 = WLAN area should be used. COMCHA shall be coded as "unknown". The network name (SSID = Service Set Identifier) shall be coded within OBJNAM, whereas INFORM can be used to provide additional information as intended coverage, encryption, available services, etc.	

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.2 River Surveillance Area (O)

A defined and named administrative area of a river surveillance

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Use ADMARE object class, if the information about the competent river surveillance is important for navigation. B) If a structured external XML-file with detailed communication information is available, the reference to the file has to be entered here.	**Object Encoding** **Object Class =** ADMARE(A) (M) JRSDTN = [1 (international), 2 (national), 3 (national sub-division)] (M) NATION = (Nationality is encoded by a 2 character-code following ISO 3166 (refer to Annex A to S-57 Appendix A)) (M) OBJNAM = [name of the river surveillance] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = [communication information] (O) NINFOM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter B) (M) SCAMIN = [90000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.3 Section of Limited Depth (O)

Generally, a short section of a waterway with limited depth and well known to skippers as of high relevance for safety, also by shipping companies as the reference for the planning of the draught of vessels.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) To be used on a limited basis only for short sections. B) Names of the sections shall be those, which are generally known by the skippers. In case no specific name is known the name of the closest town or land region should be used. C) EU: To encode a limited depth area, that is defined by notice marks, the object 'resare' and the object 'notmrk' may be associated using a collection object C_ASSO. D) If it is not sure that the bottom of the river is stable, INFORM shall equal, "water depth may change rapidly".	**Object Encoding** **Object Class =** resare(A) (M) restrn = [36 (restricted fairway depth)] (O) OBJNAM = ["Shallow water area" + name of section or closest town] (O) NOBJNM = (Refer to Section B, General Guidance) (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.4 Section of Limited Width (O)

Generally, a short section of a waterway with limited width and well known to skippers.

Graphics	Encoding Instructions	Object Encoding
	A) To be used on a limited basis only for short sections. B) Names of the sections shall be those, which are generally known by the skippers. In case no specific name is known the name of the closest town or land region should be used. C) EU: To encode a limited width area, which is defined by notice marks, the object 'resare' and the object 'notmrk' may be associated using a collection object C_ASSO.	**Object Encoding** **Object Class =** resare(A) (M) restrn = [37 (restricted fairway width)] (O) OBJNAM = ["Constricted section" + name of section or closest town)] (O) NOBJNM = (Refer to Section B, General Guidance) (O) NATSUR = [1 (mud), 2 (clay), 3 (silt), 4 (sand), 5 (stone), 6 (gravel), 7 (pebbles), 8 (cobbles), 9 (rock), 11 (lava), 14 (coral), 17 (shells), 18 (boulder)] (M) INFORM = [Section of high navigational importance due to limited width of fairway] (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.5 Turning Basin (C)

An area of water or enlargement of a channel used for turning vessels. Indicated by CEVNI sign E.8

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Use 'trnbsn' object class B) To encode a turning basin, which is defined by notice marks, the object 'trnbsn' and the object 'notmrk' may be associated using a collection object C_ASSO. C) If the ISRS Location Code is available it has to be encoded (refer to General Guidance section H). D) EU: Turning Basins must be encoded.	**Object Encoding** **Object Class =** trnbsn(P,A) (O) HORCLR = [The width of the basin, which is available for safe navigation. This may, or may not, be the same as the total physical width of the basin.] (O) OBJNAM = [name of the tuning basin] (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (M) SCAMIN = [EU: 22000; US: 75000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.6 Dumping Ground (C)

An 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)

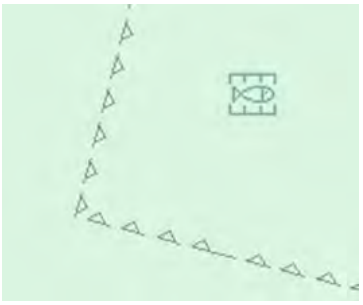
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) Use RESTRN if any of the conditions apply. B) Dumping grounds in navigable waters shall be encoded if any one of the listed restrictions applies.	**Object Encoding** **Object Class =** DMPGRD(A) (M) CATDPG = [2 (chemical waste dumping ground), 4 (explosives dumping ground), 5 (spoil ground)] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) RESTRN = [1 (anchoring prohibited), 3 (fishing prohibited), 5 (trawling prohibited), 7 (entry prohibited), 8 (entry restricted), 24 (dragging prohibited)] (M) SCAMIN = [EU: 260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.7 Marine Farm/Culture (C)

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)

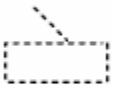
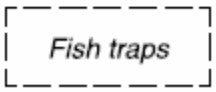
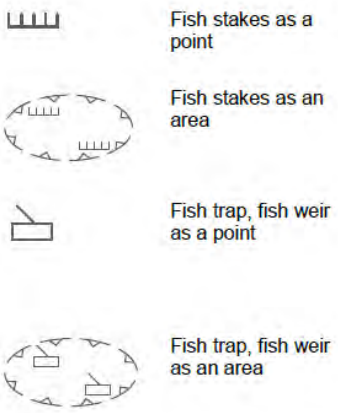
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) EXPSOU, VALSOU and WATLEV must be encoded for all MARCUL objects if they are under water. B) If VALSOU is provided SOUACC and verdat should also be provided. C) Use STATUS if any of the conditions apply. D) Marine Farms/Cultures in navigable waters shall be encoded.	**Object Encoding** **Object Class =** MARCUL(P,L,A) (M) CATMFA = [1 (crustaceans), 2 (oysters/mussels), 3 (fish), 4 (seaweed)] (O) DATSTA = (Refer to Section B, General Guidance) (O) DATEND = (Refer to Section B, General Guidance) (O) PERSTA = (Refer to Section B, General Guidance) (O) PEREND = (Refer to Section B, General Guidance) (C) EXPSOU = [1 (within the range of depth of the surrounding depth area), 2 (shoaler than the range of depth of the surrounding depth area), 3 (deeper than the range of depth of the surrounding depth area)] (C) VALSOU = [sxxxxx.xx] (s: sign, negative values only) (O) QUASOU = [1 (depth known), 2 (depth unknown), 3 (doubtful sounding), 4 (unreliable sounding), 6 (least depth known), 7 (least depth unknown, safe clearance at depth shown), 8 (value reported (not surveyed)), 9 (value reported (not confirmed))] (C) SOUACC = [xx.x] (C) STATUS = [2 (occasional), 4 (not in use)] (C) WATLEV = [1 (partly submerged at high water), 2 (always dry), 3 (always under water/submerged), 4 (covers and uncovers), 5 (awash), 7 (floating)] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.8 Fishing Facility (O)

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.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*    *IENC Symbolization*  	A) If it is required to encode the (possible) presence of fishing facilities, it must be done using the feature FSHFAC B) The highest possible height of the fishing facilities above the river/seabed should be encoded in VERLEN. Vertical length measurements (VERLEN) do not require a datum.	**Object Encoding** **Object Class =** FSHFAC(P,L,A) (O) CATFIF = [1 (fishing stake), 2 (fish trap), 3 (fish weir)] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [2 (occasional, seasonal), 4 (not in use)] (O) PERSTA = (Refer to Section B, General Guidance) (O) PEREND = (Refer to Section B, General Guidance) (O) VERLEN = [xxx.x] (metres), e.g., 1.5 (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.9 Military Practice Area (O)

An area within which naval, military or aerial exercises are carried out. Also called an exercise area.

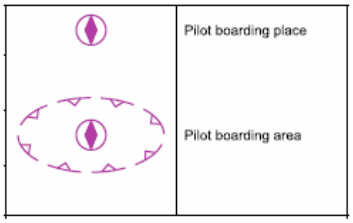
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) If it is required to encode a military practice area, it must be done using the object class MIPARE.	**Object Encoding** **Object Class =** MIPARE(P,A) (O) CATMPA = [4 (firing danger area)] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Additional Information) (O) NINFOM = (Refer to Section B, General Guidance) (C) STATUS = [2 (occasional), 4 (not in use)] (M) SCAMIN = [260000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

M - Areas, Limits

M.4 Miscellaneous Areas / Limits

M.4.10 Pilot Boarding Place (O)

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

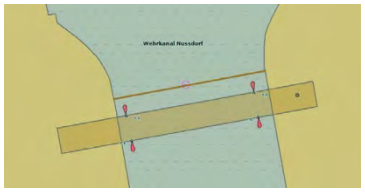
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) If it is required to encode a pilot boarding place, it must be done using the object class PILBOP B) Use STATUS if it is a temporary pilot boarding place.	**Object Encoding** **Object Class =** PILBOP(P,A) (O) CATPIL = [1 (boarding by pilot-cruising vessel), 2 (boarding by helicopter), 3 (pilot comes out from shore)] (O) COMCHA = [[XXXX];[XXXX];...] (O) PILDST = [pilot district] (O) NPLDST = [pilot district in national language] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (C) STATUS = [7 (temporary)] (M) SCAMIN = [24000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

N - Lights

N.1 Light Structures

N.1.1 Bridge Light (C)

A navigation light positioned on a bridge span or support pier.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) EU: If the lights are CEVNI signs A.1, D.1 and D.2, which are combined with the corresponding notice marks for day time (see N.3.2), they do not need to be encoded as LIGHTS. But, if they are important for the safety of navigation, they should be indicated (e.g., to prevent confusion with other lights). B) US: Name of the light should be placed in the INFORM field, e.g. "Bridge Name" + (River Mile) C) Place the LIGHTS object on navigable span and piers bounding navigable span. No master object is required. D) If there are multiple lights in the same position, make one LIGHTS object and use MLTYLT to define the number of lights represented. E) Use one LIGHTS feature to represent upper and lower deck lights, unless the two lights are used for navigation alignment. F) EU: The exhibition condition of light EXCLIT is defined as follows: 1. light shown without change of character: a light shown throughout the 24 hours without change of character. 2. daytime light: a light that is only exhibited by day. 3. fog light: a light that is exhibited in fog or conditions of reduced visibility. 4. night light: a light that is only exhibited at night. G) The light characteristic LITCHR is defined as follows: 1. fixed: a signal light that shows continuously, in any given direction, with constant luminous intensity and colour	**Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (C) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds, coded as 12) (C) INFORM = (Refer to letter B) (C) MLTYLT = Integer number of lights, minimum 2. (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) VALNMR = [xx.x] (M) SCAMIN = [EU: 8000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	2. flashing: a rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal duration 3. long-flashing: a flashing light in which a single flash of not less than two seconds duration is regularly repeated 4. quick-flashing: a light exhibiting without interruption very rapid regular alternations of light and darkness 5. very quick flashing: a flashing light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute 6. ultra quick flashing: a flashing light in which flashes are repeated at a rate of not less than 160 flashes per minute 7. isophased: a light with all durations of light and darkness equal 8. occulting: a rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration 9. interrupted quick flashing: a quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration 10. interrupted very quick flashing: a light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration 11. interrupted ultra quick flashing: a light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration 12. morse: a rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code 28. alternating: a signal light that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity H) The signal period SIGPER is the time occupied by an entire cycle of	

	intervals of light and eclipse. I) The signal group SIGGRP is the number of signals, and the combination of signals or the morse character(s) within one period of full sequence. The signal group of a light is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. A fixed light has no signal group. Where no specific signal group is given for one of the light characteristics, this should be shown by an empty pair of brackets. J) The sequence of times occupied by intervals of light and eclipse is encoded in SIGSEQ. Example: “00.8+(02.2)+00.8+(05.2)” encodes a signal sequence with two intervals of light and two intervals of eclipse. K) This feature must be aggregated to a bridge by a C_AGGR object.	

N - Lights

N.1 Light Structures

N.1.2 Minor Light (C)

A navigation light that is supported on a structure, which cannot be depicted using the encoding in Sections O.1 or O.2. As a 'minor' light, its name does not need to be displayed.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) PILPNT, MORFAC or LNDMRK must be defined as the master object with LIGHTS as the slave object. If the supporting structure is not known, PILPNT must be used. B) OBJNAM should be placed on the supporting structure (master object) and not on the LIGHTS. C) When no specific signal group is provided, use SIGGRP=(). D) If there are multiple lights in the same position, make one LIGHTS object and use MLTYLT to define the number of lights represented. E) EU: The exhibition condition of light EXCLIT is defined as follows: 1. light shown without change of character: a light shown throughout the 24 hours without change of character. 2. daytime light: a light that is only exhibited by day. 3. fog light: a light that is exhibited in fog or conditions of reduced visibility. 4. night light: a light which is only exhibited at night. F) US: STATUS = 8 (private) G) US: Western River Rules, RED will always be a double flash SIGGRP (2), and Green will always be a single flash. H) The light characteristic LITCHR is defined as follows: 1. fixed: a signal light that shows continuously, in any given direction, with constant luminous intensity and colour 2. flashing: a rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness, and all the appearances of light are of equal	**Coding of Structure Object** **Object Class =** PILPNT(P) (O) OBJNAM = [“Name” +(River Mile), e.g. Blackburn Island Lt.(284.4)] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) VERLEN = [xxx.x] (units defined in hunits), e.g. 21.7 (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (C) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28

	duration 3. long-flashing: a flashing light in which a single flash of not less than two seconds duration is regularly repeated 4. quick-flashing: a light exhibiting without interruption very rapid regular alternations of light and darkness 5. very quick flashing: a flashing light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute 6. ultra quick flashing: a flashing light in which flashes are repeated at a rate of not less than 160 flashes per minute 7. isophased: a light with all durations of light and darkness equal 8. occulting: a rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration 9. interrupted quick flashing: a quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration 10. interrupted very quick flashing: a light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration 11. interrupted ultra quick flashing: a light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration 12. morse: a rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code 28. alternating: a signal light that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity I) The signal period SIGPER is the time occupied by an entire cycle of intervals of light and eclipse. J) The signal group SIGGRP is the number of signals, the combination of signals or the morse character(s)	(alternating), 29 (fixed and alternating flashing)] (C) CATLIT = (Refer to letters N or O) (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds, coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (O) LITVIS = [3 (faint), 7 (obscured), 8 (partially obscured)] (O) INFORM = [descending bank, structure_up, structure_down (e.g. LDB)] (C) MLTYLT = Integer number of lights, minimum 2. (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) VALNMR = [xx.x] (C) STATUS = (Refer to letter F) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	within one period of full sequence. The signal group of a light is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. A fixed light has no signal group. Where no specific signal group is given for one of the light characteristics, this should be shown by an empty pair of brackets. K) The sequence of times occupied by intervals of light and eclipse is encoded in SIGSEQ. Example: "00.8+(02.2)+00.8+(05.2)" encodes a signal sequence with two intervals of light and two intervals of eclipse. L) Example of encoding: red night light on a buoy (see illustration): LIGHTS (COLOUR 3, EXCLIT 4, LITCHR 4, SIGPER 3.5, SIGGRP (), SIGSEQ 00.7+(02.8), STATUS 14, SCAMIN 22000) M) Official aids to navigation shall be encoded. N) US: For airport runway lights, encode CATLIT = 5 (aero light). Encode EXCLIT = 4 (night light) if appropriate O) For an air obstruction light which may also be used as a navigational reference, encode CATLIT = 6 (air obstruction light) P) If an encoded light is obscured in a part of the navigable area of a sector (see Figure A) beyond an offshore obstruction, it must be encoded as several LIGHTS objects. The partially obscured sector of (b), seaward of the island, must be encoded as a LIGHTS object, with attributes LITVIS = 8 (partially obscured) and INFORM = Sector obscured only beyond "…". The sectors in which the light is visible from seaward ((a) and ©) must be encoded as separate LIGHTS objects. If there is no navigable water between the light and the obstacle (see Figure B), the masked sector must be encoded as a LIGHTS object, with LITVIS = 3 (faint) or 7 (obscured). Q) Encoding of COLPAT is mandatory for any pile or post that has more than one colour and when COLOUR	

	is encoded.	

Refer to Letter L

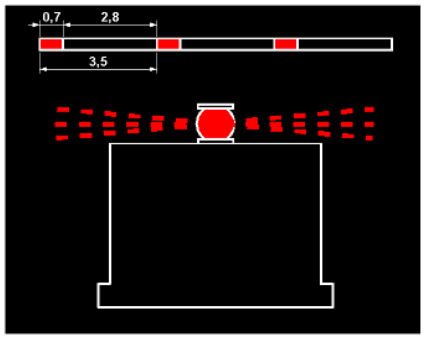


Figure A (Refer to Letter P)

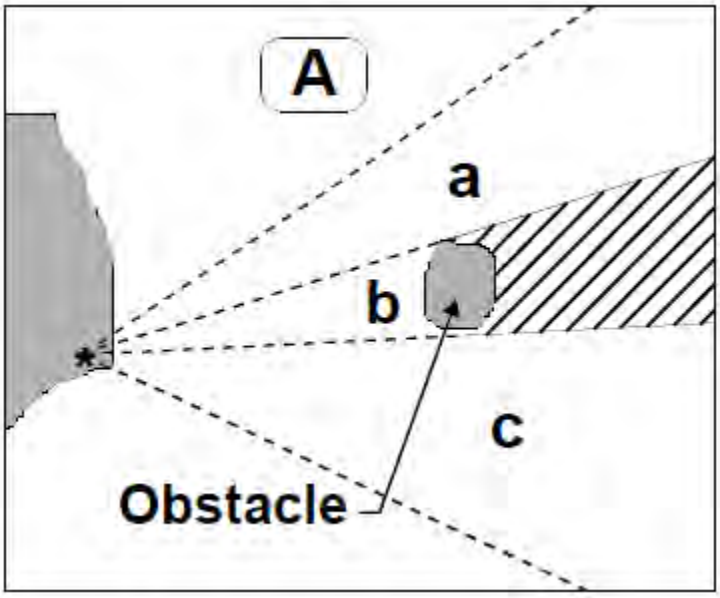
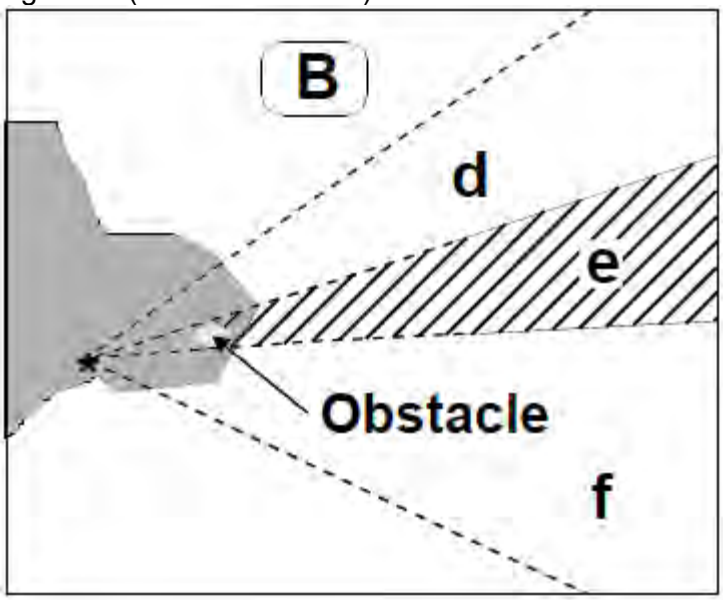


Figure B (Refer to Letter P)



N - Lights

N.1 Light Structures

N.1.3 Leading Light (C)

A light associated with other lights so as to form a leading line to be followed. (adapted from IHO Dictionary, S-32, 5th Edition, 2794).

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  	A) Leading lights are encoded as a collection object M_AGGR (Aggregation) consisting of the front and rear lights, which are encoded separately. B) PILPNT, MORFAC or LNDMRK must be defined as the master object with LIGHTS as the slave object. If the supporting structure is not known, PILPNT must be used. C) OBJNAM should be placed on the supporting structure (master object) and not on the LIGHTS. D) The attribute ORIENT is not used for leading lights, except for directional lights. E) If there are multiple lights in the same position, make one LIGHTS object and use MLTYLT to define the number of lights represented. The sector in which the leading light is visible from seaward is encoded as a LIGHTS with CATLIT = 4,12 - front leading light 4,13 - rear leading light 4,14 - lower leading light 4,15 - upper leading light F) EU: The exhibition condition of light EXCLIT is defined as follows: 1. light shown without change of character: a light shown throughout the 24 hours without change of character. 2. daytime light: a light that is only exhibited by day. 3. fog light: a light that is exhibited in fog or conditions of reduced visibility. 4. night light: a light that is only exhibited at night. G) The light characteristic LITCHR is defined as follows:	**Coding of Master Object** **Object Class =** PILPNT(P) (M) OBJNAM = [“Name”+(River Mile), e.g. Blackburn Island Lt. (284.4)] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) VERLEN = [xxx.x] (units defined in hunits), e.g. 21.7 (O) HEIGHT = [xxx.x] (units defined in hunits), e.g. 21.7 (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** LIGHTS(P) (M) CATLIT = [1 (directional function), 4 (leading light), 5 (aero light), 6 (air obstruction light), 12 (front), 13 (rear), 14 (lower), 15 (upper)] (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing),

	1. fixed: a signal light that shows continuously, in any given direction, with constant luminous intensity and colour 2. flashing: a rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal duration 3. long-flashing: a flashing light in which a single flash of not less than two seconds duration is regularly repeated 4. quick-flashing: a light exhibiting without interruption very rapid regular alternations of light and darkness 5. very quick flashing: a flashing light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute 6. ultra quick flashing: a flashing light in which flashes are repeated at a rate of not less than 160 flashes per minute 7. isophased: a light with all durations of light and darkness equal 8. occulting: a rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration 9. interrupted quick flashing: a quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration 10. interrupted very quick flashing: a light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration 11. interrupted ultra quick flashing: a light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration 12. morse: a rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code 28. alternating: a signal light that shows, in any given direction, two or	12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (C) SIGPER = [xx.xx] (e.g. signal period of 12 secondscoded as "12") (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (O) LITVIS = [3 (faint), 7 (obscured), 8 (partially obscured)] (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) VALNMR = [xx.x] (C) INFORM = US: descending bank (e.g. LDB for left descending bank) (C) MLTYLT = Integer number of lights, minimum 2. (O) STATUS = [8 (private), 14 (public)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** NAVLNE(L) (M) CATNAV = [1 (clearing line), 2 (transit line), 3 (leading line bearing a recommended track)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** RECTRC(L) (M) CATTRK = [1 (based on a system of fixed marks)] (O) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (O) DRVAL2 = Maximum known depth of

	more colours in a regularly repeated sequence with a regular periodicity H) The signal period SIGPER is the time occupied by an entire cycle of intervals of light and eclipse. I) The signal group SIGGRP is the number of signals, the combination of signals or the morse character(s) within one period of full sequence. The signal group of a light is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. A fixed light has no signal group. Where no specific signal group is given for one of the light characteristics, this should be shown by an empty pair of brackets. J) The sequence of times occupied by intervals of light and eclipse is encoded in SIGSEQ. Example: “00.8+(02.2)+00.8+(05.2)” encodes a signal sequence with two intervals of light and two intervals of eclipse. K) Navigation line of the leading line is encoded as a line object class NAVLNE (Navigation line) with attribute ORIENT (Orientation) set to the direction of the navigation line and attribute CATNAV set to 3 (leading line bearing a recommended track). The running part of the leading line is encoded as a line object class RECTRC (Recommended track) with attribute ORIENT (Orientation) set to the direction of the recommended track. The line objects RECTRC and NAVLNE are als components of the meta object C_AGGR. L) The extent of the navigation line depends on the visibility of the navigational aid(s). M) The recommended track is that portion of a 'navigation line' that a ship should use for navigation. N) ORIENT is the direction from the waterside towards the lights or beacons. O) Official aids to navigation shall be encoded. P) If an encoded light is obscured in a part of the navigable area of a sector (see Figure A) beyond an offshore obstruction, it must be encoded as several LIGHTS	depth area: [xx.xx] (metres) or "unknown" (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) TRAFIC = [1 (inbound), 2 (outbound), 3 (one-way), 4 (two-way)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	objects. The partially obscured sector of (b), seaward of the island, must be encoded as a LIGHTS object, with attributes LITVIS = 8 (partially obscured) and INFORM = Sector obscured only beyond "…". The sectors in which the light is visible from seaward ((a) and ©) must be encoded as separate LIGHTS objects. If there is no navigable water between the light and the obstacle (see Figure B), the masked sector must be encoded as a LIGHTS object, with LITVIS = 3 (faint) or 7 (obscured). Q) Encoding of COLPAT is mandatory for any pile or post that has more than one colour and when COLOUR is encoded.	

From IHO S-57 APPENDIX B.1 Annex A - Use of the Object Catalogue for ENC

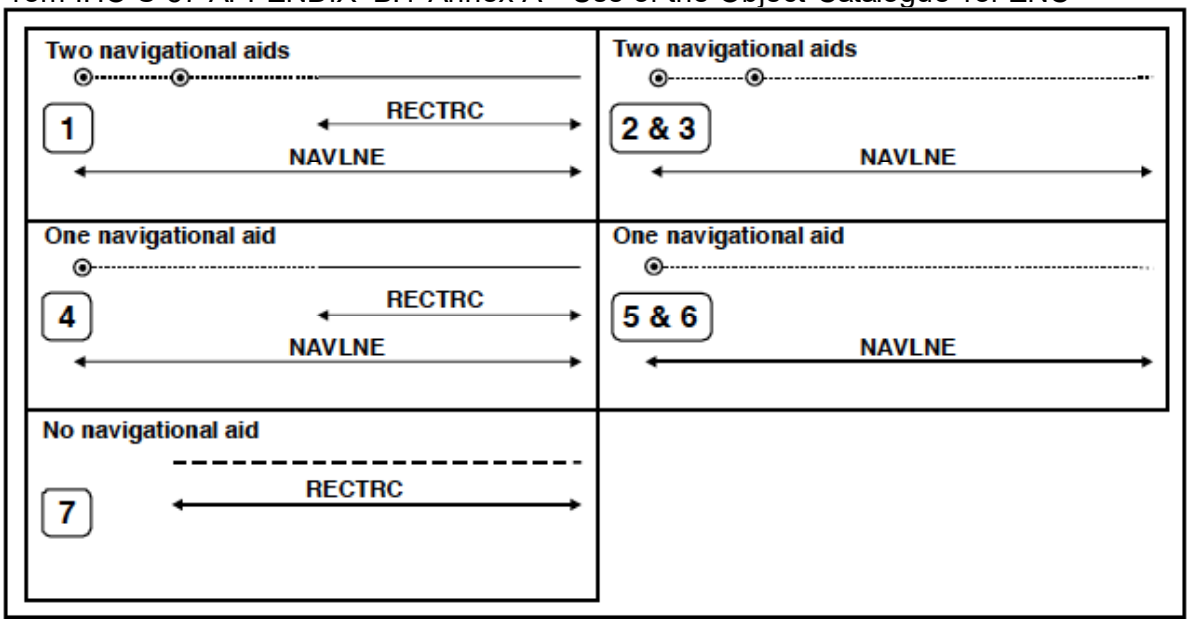


Figure A

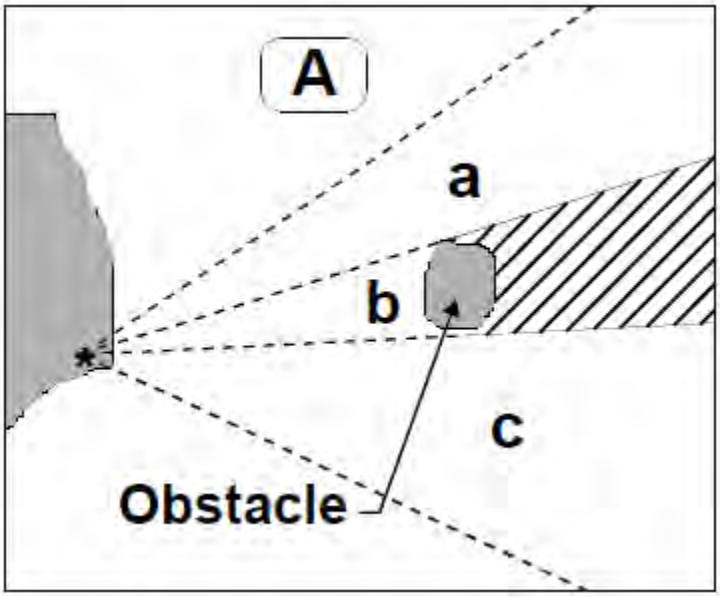
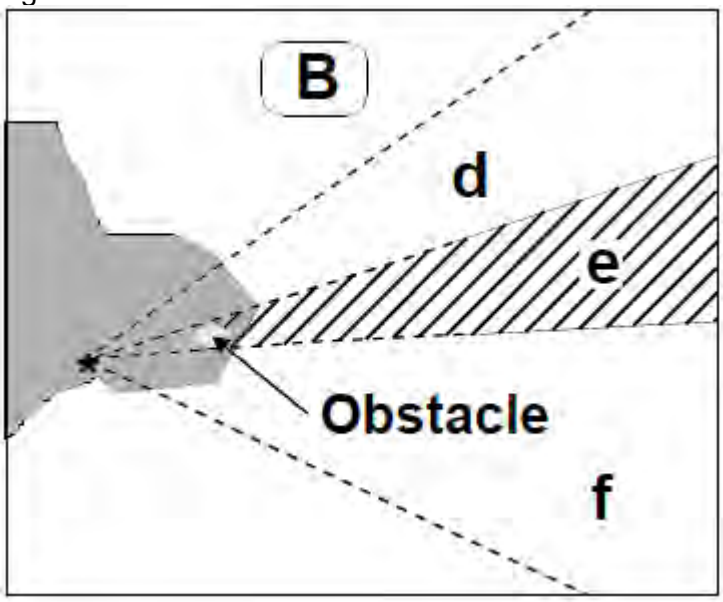


Figure B



N - Lights

N.1 Light Structures

N.1.4 Directional Light (C)

A light illuminating a sector of very narrow angle and intended to mark a direction to follow. (IHO Dictionary, S-32, 5th Edition, 2778)

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) PILPNT, MORFAC or LNDMRK must be defined as the master object with LIGHTS as the slave object. If the supporting structure is not known, PILPNT must be used. B) OBJNAM should be placed on the supporting structure (master object) and not on the LIGHTS. C) If there are multiple lights in the same position, make one LIGHTS object and use MLTYLT to define the number of lights represented. D) EU: The exhibition condition of light EXCLIT is defined as follows: 1. light shown without change of character: a light shown throughout the 24 hours without change of character. 2. daytime light: a light that is only exhibited by day. 3. fog light: a light that is exhibited in fog or conditions of reduced visibility. 4. night light: a light that is only exhibited at night. E) The light characteristic LITCHR is defined as follows: 1. fixed: a signal light that shows continuously, in any given direction, with constant luminous intensity and colour 2. flashing: a rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal duration 3. long-flashing: a flashing light in which a single flash of not less than two seconds duration is regularly repeated 4. quick-flashing: a light exhibiting without interruption very rapid regular alternations of light and	**Coding of Master Object** **Object Class =** PILPNT(P) (M) OBJNAM = [“Name”+(River Mile), e.g. Blackburn Island Lt. (284.4)] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) VERLEN = [xxx.x] (units defined in hunits), e.g. 21.7 (O) HEIGHT = [xxx.x] (units defined in hunits), e.g. 21.7 (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** LIGHTS(P) (M) CATLIT = [1 (directional function)] (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-

	darkness 5. very quick flashing: a flashing light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute 6. ultra quick flashing: a flashing light in which flashes are repeated at a rate of not less than 160 flashes per minute 7. isophased: a light with all durations of light and darkness equal 8. occulting: a rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration 9. interrupted quick flashing: a quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration 10. interrupted very quick flashing: a light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration 11. interrupted ultra quick flashing: a light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration 12. morse: a rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code 28. alternating: a signal light that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity	flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) LITVIS = [3 (faint), 4 (intensified), 7 (obscured), 8 (partially obscured)] (C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (C) SIGPER = [xx.xx] (e.g. signal period of 12 secondscoded as "12") (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (C) INFORM = US: descending bank (e.g. LDB for left descending bank) (C) MLTYLT = Integer number of lights, minimum 2. (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) VALNMR = [xx.x] (O) STATUS = [8 (private), 14 (public)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)
	F) The signal period SIGPER is the time occupied by an entire cycle of intervals of light and eclipse. G) The signal group SIGGRP is the number of signals, the combination of signals or the morse character(s) within one period of full sequence. The signal group of a light is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. A fixed light has no signal group. Where no specific signal group is given for	**Object Encoding** **Object Class =** NAVLNE(L) (M) CATNAV = [1 (clearing line), 2 (transit line), 3 (leading line bearing a recommended track)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** RECTRC(L) (M) CATTRK = [1 (based on a system of fixed marks)] (O) DRVAL1 = [x.xx] (metres), e.g., 2.74 or "unknown" (O) DRVAL2 = Maximum known depth of depth area: [xx.xx] (metres) or "unknown" (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76

	one of the light characteristics, this should be shown by an empty pair of brackets. H) The sequence of times occupied by intervals of light and eclipse is encoded in SIGSEQ. Example: “00.8+(02.2)+00.8+(05.2)” encodes a signal sequence with two intervals of light and two intervals of eclipse. I) Navigation line of the leading line is encoded as a line object class NAVLNE (Navigation line) with attribute ORIENT (Orientation) set to the direction of the navigation line and attribute CATNAV set to 3 (leading line bearing a recommended track). The running part of the leading line is encoded as a line object class RECTRC (Recommended track) with attribute ORIENT (Orientation) set to the direction of the recommended track. The line objects RECTRC and NAVLNE are als components of the meta object M_AGGR. J) The extent of the navigation line depends on the visibility of the navigational aid(s). K) The recommended track is that portion of a 'navigation line' that a ship should use for navigation. L) ORIENT is the direction from the waterside towards the lights or beacons. M) Official aids to navigation shall be encoded. N) If an encoded light is obscured in a part of the navigable area of a sector (see Figure A) beyond an offshore obstruction, it must be encoded as several LIGHTS objects. The partially obscured sector of (b), seaward of the island, must be encoded as a LIGHTS object, with attributes LITVIS = 8 (partially obscured) and INFORM = Sector obscured only beyond "…". The sectors in which the light is visible from seaward ((a) and ©) must be encoded as separate LIGHTS objects. If there is no navigable water between the light and the obstacle (see Figure B), the masked sector must be encoded as a LIGHTS object, with LITVIS = 3 (faint) or 7 (obscured). O) Encoding of COLPAT is mandatory for any pile or post that has more	(M) TRAFIC = [1 (inbound), 2 (outbound), 3 (one-way), 4 (two-way)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

	than one colour and when COLOUR is encoded.	

From IHO S-57 APPENDIX B.1 Annex A - Use of the Object Catalogue for ENC

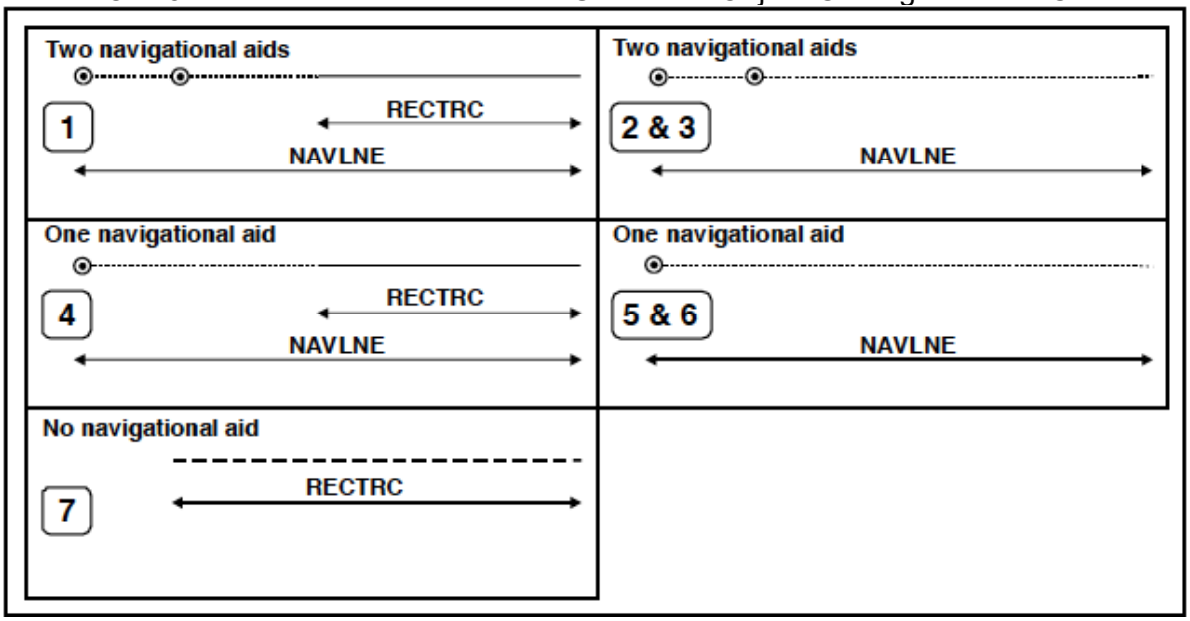


Figure A

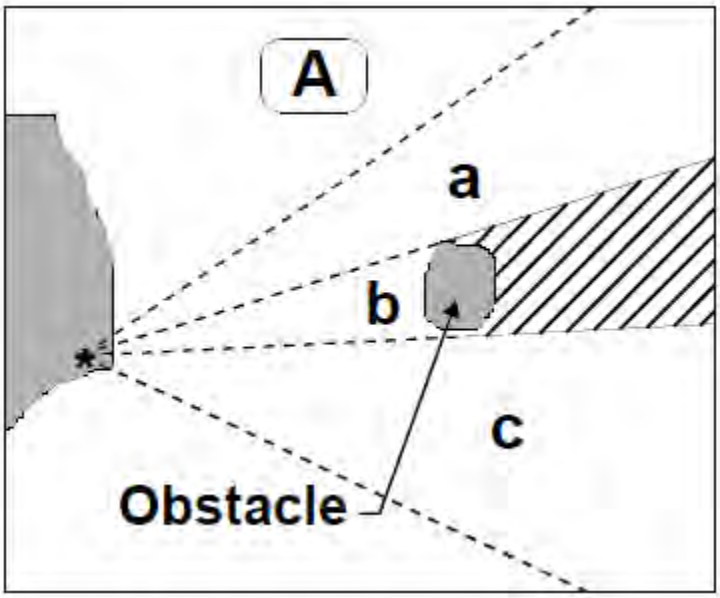
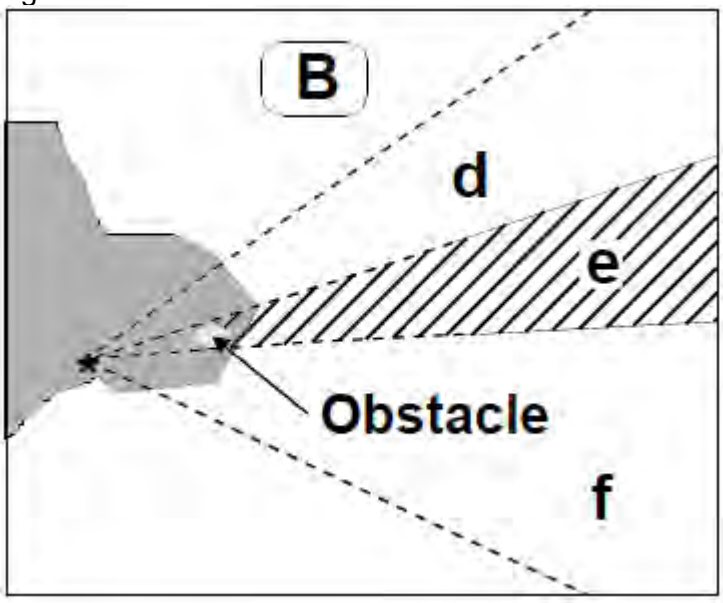


Figure B

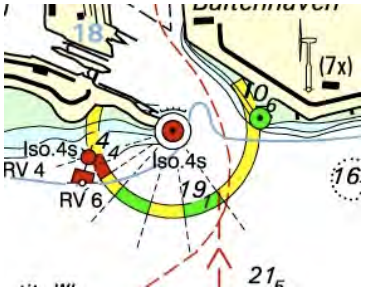


N - Lights

N.1 Light Structures

N.1.5 Sector Light (C)

A sector light consists of a single light whose total luminous beam is divided into sectors of different colours to provide a warning or a leading line to mariners. (IALA Aids to Navigation Manual – IALA NAVGUIDE 3 Edition 5 2006)

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  	A) PILPNT, MORFAC or LNDMRK must be defined as the master object with LIGHTS as the slave object. If the supporting structure is not known, PILPNT must be used. B) Each sector in which the light is visible from the waterway is encoded with one object LIGHTS C) No object is created to encode a sector where no light is transmitted. D) Limits of sectors are encoded with the attributes SECTR1 and SECTR2. E) SECTR1 specifies the first limit of the sector. The order of SECTR1 and SECTR2 i s clockwise around the central object (e.g. a light). F) OBJNAM should be placed on the supporting structure (master object) and not on the LIGHTS. G) EU: The exhibition condition of light EXCLIT is defined as follows: 1. light shown without change of character: a light shown throughout the 24 hours without change of character. 2. daytime light: a light that is only exhibited by day. 3. fog light: a light that is exhibited in fog or conditions of reduced visibility. 4. night light: a light that is only exhibited at night. H) The light characteristic LITCHR is defined as follows: 1. fixed: a signal light that shows continuously, in any given direction, with constant luminous intensity and colour 2. flashing: a rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal	**Coding of Master Object** **Object Class =** PILPNT(P) (M) OBJNAM = ["Name"+(River Mile), e.g. Blackburn Island Lt. (284.4)] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) VERLEN = [xxx.x] (units defined in hunits), e.g. 21.7 (O) HEIGHT = [xxx.x] (units defined in hunits), e.g. 21.7 (O) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 5 (blue), 6 (yellow), 7 (grey), 8 (brown), 9 (amber), 10 (violet), 11 (orange), 12 (magenta), 13 (pink)] (C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20

	duration 3. long-flashing: a flashing light in which a single flash of not less than two seconds duration is regularly repeated 4. quick-flashing: a light exhibiting without interruption very rapid regular alternations of light and darkness 5. very quick flashing: a flashing light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute 6. ultra quick flashing: a flashing light in which flashes are repeated at a rate of not less than 160 flashes per minute 7. isophased: a light with all durations of light and darkness equal 8. occulting: a rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration 9. interrupted quick flashing: a quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration 10. interrupted very quick flashing: a light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration 11. interrupted ultra quick flashing: a light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration 12. morse: a rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code 28. alternating: a signal light that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity I) The signal period SIGPER is the time occupied by an entire cycle of intervals of light and eclipse. J) The signal group SIGGRP is the number of signals, the combination of signals or the morse character(s)	(group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (M) SECTR1 = [xxx.xx] (M) SECTR2 = [xxx.xx] (C) SIGPER = [xx.xx] (e.g. signal period of 12 secondscoded as "12") (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (O) LITVIS = [3 (faint), 7 (obscured), 8 (partially obscured)] (O) HEIGHT = [xxx.x] metres, e.g., 27.4 (O) VALNMR = [xx.x] (C) INFORM = US: descending bank (e.g. LDB for left descending bank) (O) STATUS = [8 (private), 14 (public)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

within one period of full sequence. The signal group of a light is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. A fixed light has no signal group. Where no specific signal group is given for one of the light characteristics, this should be shown by an empty pair of brackets.

K) The sequence of times occupied by intervals of light and eclipse is encoded in SIGSEQ. Example: “00.8+(02.2)+00.8+(05.2)” encodes a signal sequence with two intervals of light and two intervals of eclipse.

L) Official aids to navigation shall be encoded.

M) If is required to encode an oscillating light sector, it should be done using a Light Sectored feature, with iterations of the complex attribute light sector as follows: For light sectors in the IALA A system that are alternating and oscillate increasingly from white to green (to starboard) and red (to port) with increasing deviation from the track defined by the directional light:

light sector: light characteristic = 28 (Alternating); colour = 1,3 (White, Red); sector limit; information (text) = White phase decreases as bearing to light increases

light sector: light characteristic = 28 (Alternating); colour = 1,4 (White, Green); sector limit; information (text) = White phase increases as bearing to light increases

For lights in the IALA B system that are alternating and oscillate increasingly from white to red (to starboard) and green (to port) with increasing deviation from the track defined by the directional light; transpose the colours red and green in the above encoding.

For lights in the IALA A system that

	are occulting green (to starboard) and red (to port) which oscillate with increasing period of eclipse to isophased or flashing with increasing deviation from the track defined by the directional light: light sector: light characteristic = 8 (Occulting); colour = 3 (Red); sector limit; information (text) = Light phase decreases as bearing to light increases light sector: light characteristic = 8 (Occulting); colour = 4 (Green); sector limit; information (text) = Light phase increases as bearing to light increases For lights in the IALA B system that are occulting red (to starboard) and green (to port) which oscillate with increasing period of eclipse to isophased or flashing with increasing deviation from the track defined by the directional light; transpose the colours red and green in the above encoding. Oscillating lights which are not IALA should be encoded similar to the above. For instance, where a light contains white sectors that are occulting and oscillate with increasing period of eclipse to isophased or flashing with increasing deviation from the track defined by the directional light: For the sector to port of the track defined by the directional light:1light sector: light characteristic = 8 (Occulting); colour = 1 (White); sector limit; information (text) = Light phase decreases as bearing to light increases For the sector to starboard of the track defined by the directional light:1light sector: light characteristic = 8 (Occulting); colour = 1 (White); sector limit; information (text) = Light phase increases as bearing to light increases All other light sectors must be	

	encoded using additional iterations of light sector, with sub-attributes (including light characteristic) populated in accordance with the characteristics of the sector, or using the feature Light Directional N) If an encoded light is obscured in a part of the navigable area of a sector (see Figure A) beyond an offshore obstruction, it must be encoded as several LIGHTS objects. The partially obscured sector of (b), seaward of the island, must be encoded as a LIGHTS object, with attributes LITVIS = 8 (partially obscured) and INFORM = Sector obscured only beyond "…". The sectors in which the light is visible from seaward ((a) and ©) must be encoded as separate LIGHTS objects. If there is no navigable water between the light and the obstacle (see Figure B), the masked sector must be encoded as a LIGHTS object, with LITVIS = 3 (faint) or 7 (obscured). O) Encoding of COLPAT is mandatory for any pile or post that has more than one colour and when COLOUR is encoded.	

Figure A

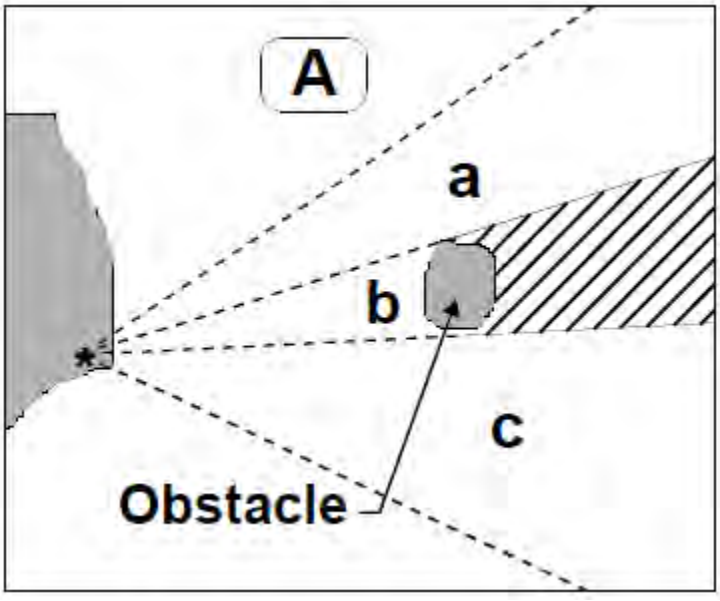
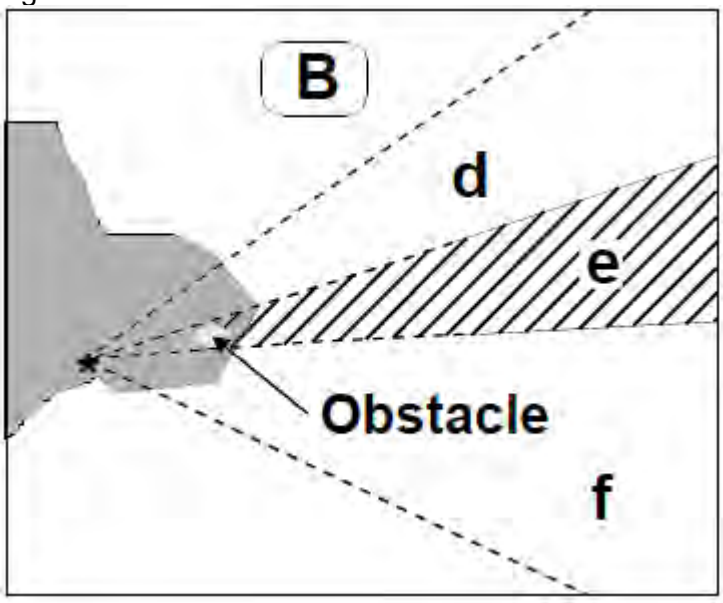


Figure B



O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.1 Buoy at Bifurcation of Channel (M)

A buoy at a fairway junction may indicate by its top mark on which side it is preferable to pass (main channel).

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *Chart Symbol (single mark)*  *Chart Symbol (double marks)* 	A) In the event there is a light on the day mark, the BOYSPP object should be designated as the master and coded with the OBJNAM of the LIGHTS object. B) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. C) EU: If a buoy is according to IALA with preference of channel, object class: BOYLAT, CATLAM = 3 or 4 shall be used. D) EU: Coding of the CATLAM attribute is mandatory. In case TOPMAR is added: the buoy has to be encoded as master and TOPMAR as slave TOPSHP = 3 (sphere) and COLOUR/COLPAT see buoy; and/or TOPSHP = 1 (cone, up) if CATLAM = 3 or TOPSHP = 5 (cylinder, can) if CATLAM= 4 If buoy according to IALA with preference of channel, BOYLAT, CATLAM = 3 or 4 E) IALA: If there is no preference to pass BOYSPP with (M) CATSPM = 54 (channel separation mark) is used F) EU: If a buoy is according to CEVNI, object class: 'boylat', 'catlam' = 3, 4 or 8 shall be used. catlam/COLOUR attributes must be used in the following combinations: 10 (bifurcation of channel) / 3,4,3,4 (red / green)	**<u>Coding of Structure Object</u>** **Object Class =** BOYLAT(P) (M) CATLAM = [3 (preferred channel to starboard lateral mark), 4 (preferred channel to port lateral mark)] (M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical)), 3 (spherical), 4 (pillar), 5 (spar (spindle))] (M) COLOUR = [1 (white), 3 (red), 4 (green)] (C) OBJNAM = (Refer to letter B) (C) NOBJNM = (Refer to letter B) (C) MARSYS = [1 (IALA A), 2 (IALA B)] (C) INFORM = (Refer to letter I) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **<u>Alternative (see coding instruction E)</u>** **Object Class =** BOYSPP(P) (M) BOYSHP = [1 (conical (nun, ogival)), 3 (spherical), 4 (pillar), 5 (spar (spindle))] (M) CATSPM = [54 (channel separation mark)] (M) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green)] (M) COLPAT = [1 (horizontal stripes), 2 (vertical stripes)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter B) (O) NOBJNM = (Refer to letter B) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3

Chart Symbol (double marks)

IENC Symbolization

G) EU: If not under the issuing authority, use INFORM to indicate responsibility of operation of the buoy.

H) EU: For CEVNI buoy with two topmarks, encode only the upper TOPMAR.

I) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', the attribute MARSYS, INFORM or 'marsys' must be used.

(Virtual AIS AtoN)]

(M) SCAMIN = [EU: 22000; US: 60000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

alternative (see coding instruction F)

Object Class = boylat(P)

(M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical)), 3 (spherical), 4 (pillar), 5 (spar (spindle))]

(M) catlam = [3 (preferred channel to starboard lateral mark), 4 (preferred channel to port lateral mark), 10 (bifurcation of the channel)]

(M) COLOUR = [3 (red), 4 (green)]

(M) COLPAT = [1 (horizontal stripes)]

(C) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)]

(O) CONRAD = [3 (radar conspicuous (has radar reflector))]

(O) INFORM = (EU: Refer to letter G)

(O) NINFOM = (Refer to Section B, General Guidance)

(C) OBJNAM = (EU: designator as it appears on the structure; US: "Name" + (River Mile), e.g., Avoca Island Cutoff Buoy (132.7)

(O) NOBJNM = (Refer to Section B, General Guidance)

(O) mmsico = [xxxxxxxxx] (e.g., 366777490)

(O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)]

(M) SCAMIN = [EU: 22000; US: 60000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

Coding of Equipment Object

Object Class = TOPMAR(P)

(M) COLOUR = [3 (red), 4 (green)]

(M) TOPSHP = [1 (cone, point up), 3 (sphere), 5 (cylinder (can))]

(C) COLPAT = [1 (horizontal stripes)]

(M) SCAMIN = [EU: 22000; US: 60000]

(C) SORDAT = [YYYYMMDD]

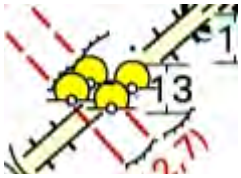
		(C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) SIGPER = [xx.xx (e.g. signal period of 12 seconds coded as 12)] (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.2 Buoy at Bridge Pillar (M)

A buoy at a bridge pillar may be used to improve the visibility of the pillar location on the radar.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) 'boylat' can act as a master object to a light object or to a top mark object. B) Mandatory attributes must be coded to ensure proper presentation C) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. D) EU: If not under the issuing authority, use INFORM to indicate responsibility of operation of the buoy. E) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute 'marsys' must be used. F) This feature must be aggregated to a bridge by a C_AGGR object.	**Object Encoding** **Object Class =** boylat(P) (M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical)), 3 (spherical), 4 (pillar), 5 (spar (spindle)), 6 (barrel (tun)), 8 (ice buoy)] (M) catlam = [23 (bridge pier mark)] (M) COLOUR = [6 (yellow)] (C) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter C) (O) NOBJNM = (Refer to letter C) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-

		flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.3 Buoy Marking Danger Point (M)

Buoys to indicate the presence of potentially dangerous obstructions such as groyns, banks, or wrecks.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *Chart Symbol*  *Chart Symbol*  *IENC Symbolization* 	A) Where top mark is present, use TOPMAR as the slave object and BOYSPP as the master object. B) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. C) In the event there is a light on the day mark, the BOYSPP object should be designated as the master and coded with the name of the light. D) EU: If buoys according to CEVNI are used object class 'boylat' has to be used. BOYSHP/catlam/COLOUR attributes must be used in the following combinations: 5 (spar/spindle) / 16 (danger point or obstacle at the left-hand side) / 1,4,1,4 (white / green) 5 (spar/spindle) / 15 (danger point or obstacle at the right-hand side) / 1,3,1,3 (white / red) E) US: Use INFORM to note the river tender or vessel used to place/set buoy F) EU: If not under the issuing authority, use INFORM to indicate responsibility of operation of the buoy. G) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS, INFORM or 'marsys' must be used.	**Object Encoding** **Object Class =** BOYSPP(P) (M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical)), 5 (spar (spindle))] (M) CATSPM = [41 (clearing mark), 45 (foul ground mark)] (M) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green)] (M) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter B) (O) NOBJNM = (Refer to letter B) (O) INFORM = (US: refer to letter E; EU: refer to letter F; EU & RU: refer to letter G) (O) NINFOM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **alternative (see coding instruction D)** **Object Class =** boylat(P) (M) catlam = [15 (danger point or obstacles at the right-hand side), 16 (danger point or obstacles at the left-hand side)] (M) BOYSHP = [5 (spar (spindle)), 8 (ice buoy)] (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) COLPAT = [1 (horizontal stripes)] (C) marsys = [1 (IALA A), 2 (IALA B), 9 (no

		system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter B) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = [US: refer to letter E; EU: refer to letter F] (O) NINFOM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [2 (black), 3 (red), 4 (green)] (M) TOPSHP = [1 (cone, point up), 2 (cone, point down), 4 (2 spheres), 5 (cylinder (can)), 10 (2 cones, point to point), 24 (triangle, point up), 25 (triangle, point down)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-

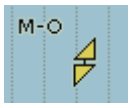
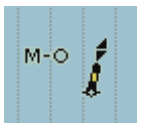
		flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) SIGPER = [xx.xx (e.g. signal period of 12 seconds coded as 12)] (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.4 Cardinal Buoy (M)

A cardinal buoy is used to mark the position of danger points, obstacles and special features on lakes and broad waterways.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  *IENC Symbolization*  	A) BOYCAR must act as a master object to a top mark object and light object (if it exists) B) Mandatory attributes must be coded to ensure proper presentation. C) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. D) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Object Encoding** **Object Class =** BOYCAR(P) (M) BOYSHP = [1 (conical (nun, ogival)), 4 (pillar), 5 (spar (spindle))] (M) CATCAM = [1 (north cardinal mark), 2 (east cardinal mark), 3 (south cardinal mark), 4 (west cardinal mark)] (M) COLOUR = [2 (black), 6 (yellow)] West: COLOUR=6,2,6 East: COLOUR=2,6,2 North: COLOUR=2,6 South: COLOUR=6,2 (M) COLPAT = [1 (horizontal stripes)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter C) (C) NOBJNM = (Refer to letter C) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [2 (black)] (M) TOPSHP = [10 (2 cones, point to point), 11 (2 cones, base to base), 13 (2 cones (points upward)), 14 (2 cones (points downward))] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General

		Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.5 Lateral Buoy (M)

Lateral buoys are used to mark the direction of the fairway / navigation channel.

Graphics	Encoding Instructions	Object Encoding
Real World (Can)  *Real World (Nun)*  *Real World (EU)*  *Real World (EU)*  	A) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. B) US: Buoys used on the inland system are not uniquely named or identified. C) EU: In case TOPMAR is added: TOPSHP = 5 (cylinder, can) for right hand side buoys TOPSHP = 1 (cone, up) for left hand side buoys D) EU: BOYSHP/catlam/COLOUR attributes must be used in the following combinations: 1 (nun) / 8 (left fairway side) / 4 (green) 2 (can) / 7 (right fairway side) / 3 (red) E) US: BOYSHP/catlam/COLOUR attributes must be used in the following combinations: 1 (nun) / 2 (starboard-hand lateral mark) / 3 (red) 2 (can) / 1 (port-hand lateral mark) / 4 (green) F) US: Use INFORM to note the river tender or vessel used to place/set buoy G) EU: If not under the issuing authority, use INFORM to indicate responsibility of operation of the buoy. H) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute 'marsys' has to	**Object Encoding** **Object Class =** boylat(P) (M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical)), 3 (spherical), 4 (pillar), 5 (spar (spindle)), 8 (ice buoy)] (M) catlam = [1 (port-hand lateral mark), 2 (starboard-hand lateral mark), 5 (right-hand side of the waterway), 6 (left-hand side of the waterway), 7 (right-hand side of the channel), 8 (left-hand side of the channel), 11 (channel near the right bank), 12 (channel near the left bank), 13 (channel cross-over to the right bank), 14 (channel cross-over to the left bank)] (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (C) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter A) (C) NOBJNM = (Refer to letter A) (C) INFORM = (US: refer to letter F; EU: refer to letter G) (O) NINFOM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P)

Real World (RU)

Chart Symbol

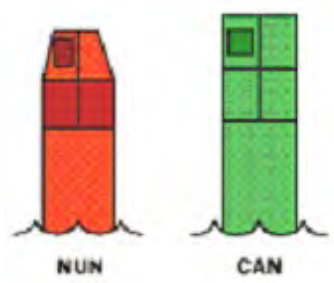


Chart Symbol

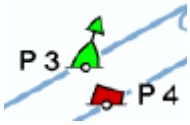
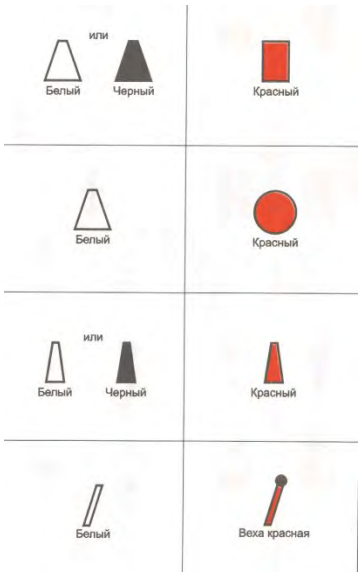


Chart Symbol



be used.

I) 'boylat' must act as master object to a TOPMAR and LIGHTS object (if they exist).

J) EU: In the Po River, a red buoy represents an obstacle near the right bank. The buoy has to be kept on the right when navigating in the downstream direction and has to be kept on the left when navigating in the upstream direction. COLOUR = [3 (red)]

K) EU: In the Po River, a white buoy represents an obstacle near the left bank. The buoy has to be kept on the left when navigating in the downstream direction and has to be kept on the right when navigating in the upstream direction. COLOUR = [1 (white)]

(M) COLOUR = [3 (red), 4 (green)]

(M) TOPSHP = [1 (cone, point up), 5 (cylinder (can))]

(C) COLPAT = [1 (horizontal stripes)]

(C) INFORM = (Refer to letters F and G)

(O) NINFOM = (Refer to Section B, General Guidance)

(M) SCAMIN = [EU: 22000; US: 60000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

Object Encoding

Object Class = LIGHTS(P)

(M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)]

(M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)]

(M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)]

(C) SIGPER = [xx.xx (e.g. signal period of 12 seconds coded as 12)]

(C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1)

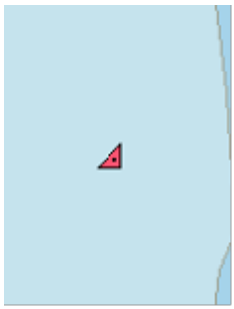
(C) SIGSEQ = [LL.L + (EE.E)] (seconds)

(M) SCAMIN = [EU: 22000; US: 60000]

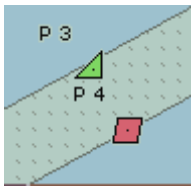
(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

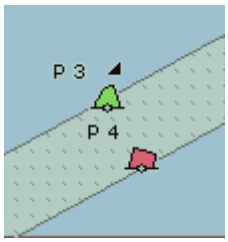
IENC Symbolization

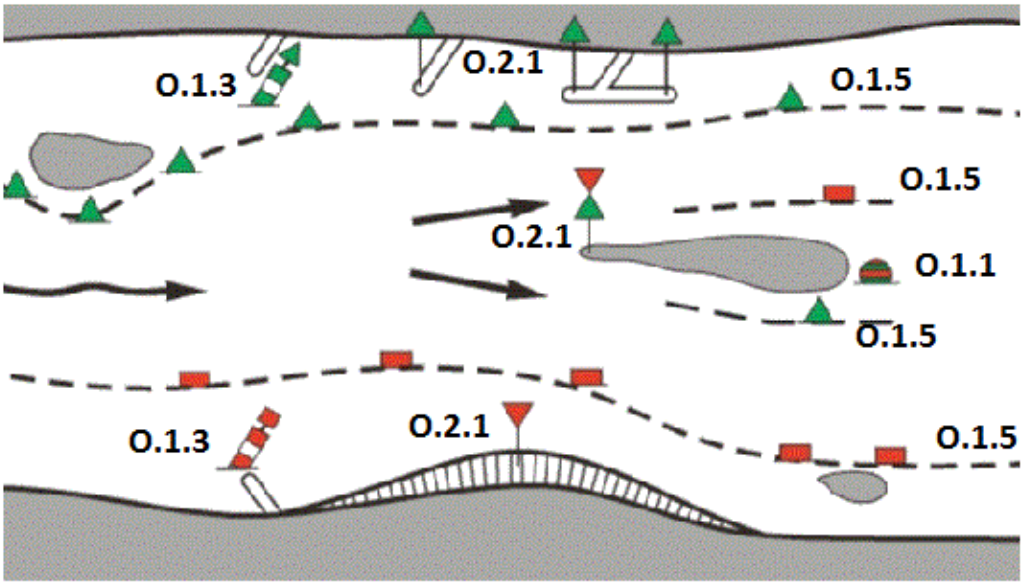


IENC Symbolization



IENC Symbolization



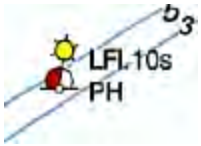
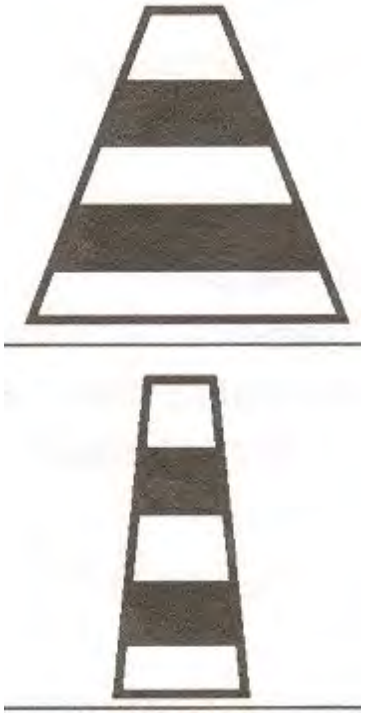

O.1.3
O.2.1
O.1.5
O.1.5
O.2.1
O.1.1
O.1.5
O.1.3
O.2.1
O.1.5

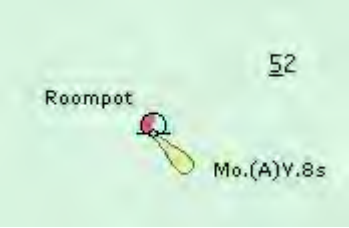
O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.6 Safe Water Buoy (M)

A safe water buoy marking the axis or middle of a channel may be used as a centerline, mid-channel on lakes and broad waterways

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *Chart Symbol* 	A) BOYSAW can act as a master object to a top mark object and a light object B) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. C) Mandatory attributes must be coded to ensure proper presentation D) In case TOPMAR is added: TOPSHP = 3 (sphere) and COLOUR = (3 (red)] E) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Object Encoding** **Object Class =** BOYSAW(P) (M) BOYSHP = [1 (conical (nun, ogival)), 3 (spherical), 4 (pillar), 5 (spar (spindle))] (M) COLOUR = [1 (white), 2 (black), 3 (red)] (M) COLPAT = [1 (horizontal stripes), 2 (vertical stripes)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (C) INFORM = (Refer to letter E) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter B) (O) NOBJNM = (Refer to letter B) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [3 (red)] (M) TOPSHP = [3 (sphere)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7

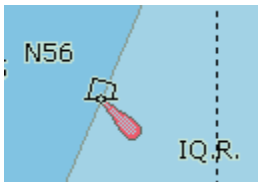
IENC Symbolization 		(isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.7 Stalling Buoy (M)

The buoys (floating beacons) are used to mark stalling current which does not coincide with a direction of the fairway

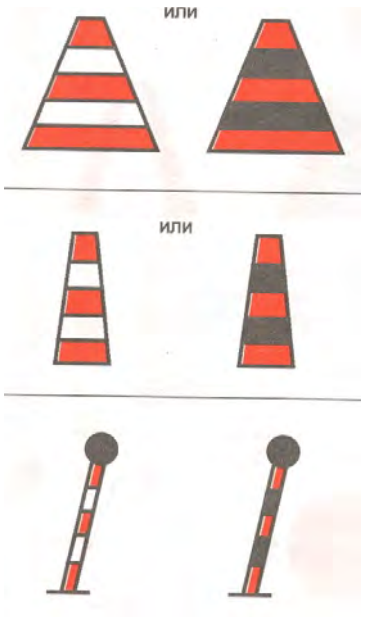
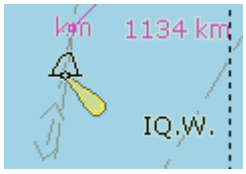
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *Chart Symbol*  *IENC Symbolization*  	A) BOYLAT must be defined as the master object, with and LIGHTS as the slave objects B) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Object Encoding** **Object Class =** BOYLAT(P) (M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical))] (M) CATLAM = [1 (port-hand lateral mark), 2 (starboard-hand lateral mark)] (M) COLOUR = [3, 2 (red, black), 3, 1 (red, white), 1, 2 (white, black)] (M) COLPAT = [1 (horizontal stripes)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (C) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (O) OBJNAM = (buoy number) (O) NOBJNM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [3 (red), 4 (green)] (M) LITCHR = [2 (flashing), 9 (interrupted quick-flashing)] (M) SIGGRP = [4] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.8 Swinging Axial Buoy (M)

The buoys are used to mark swinging points of the fairway axis

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) BOYSAW must be defined as the master object, with TOPMAR and LIGHTS as the slave objects B) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Object Encoding** **Object Class =** BOYSAW(P) (M) BOYSHP = [1 (conical (nun, ogival)), 5 (spar (spindle))] (M) COLOUR = [3, 2, 3, 2, 3 (red, black, red, black, red), 3, 1, 3, 1, 3 (red, white, red, white, red)] (M) COLPAT = [1 (horizontal stripes)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (C) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (O) OBJNAM = (buoy number) (O) NOBJNM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white)] (M) LITCHR = [9 (interrupted quick-flashing)] (M) SIGGRP = [4] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) TOPSHP = [26 (circle)] (O) COLOUR = [2 (black)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General

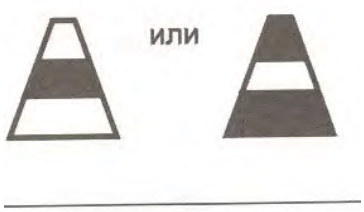
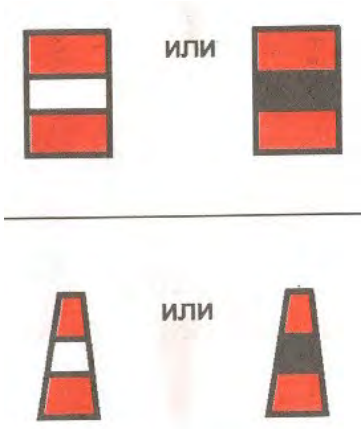
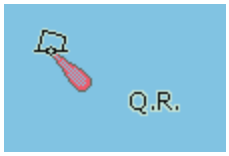
		Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.9 Swinging Lateral Buoy (M)

The buoys are used to mark swinging points at the edges of the extended rectilinear fairways, as well as at the fairway edges where the vision is limited.

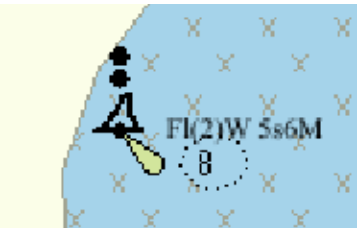
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *Chart Symbol*  *IENC Symbolization*  *IENC Symbolization*  	A) BOYLAT must be defined as the master object, with LIGHTS as the slave object B) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Object Encoding** **Object Class =** BOYLAT(P) (M) BOYSHP = [1 (conical (nun, ogival)), 2 (can (cylindrical))] (M) CATLAM = [1 (port-hand lateral mark), 2 (starboard-hand lateral mark)] (M) COLOUR = [1, 2, 1 (white, black, white), 2, 1, 2 (black, white, black), 3, 1, 3, (red, white, red), 3, 2, 3, (red, black, red)] (M) COLPAT = [1 (horizontal stripes)] (C) MARSYS = [1 (IALA A), 2 (IALA B)] (O) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (M) LITCHR = [2 (flashing), 4 (quick-flashing)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.10 Isolated Danger Buoy (M)

An isolated danger buoy is used in Brazilian rivers to mark the position of a danger of limited extent, which has navigable water all around it.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) BOYISD must act as a master object to a top mark object and light object (if it exists). B) If there is any complementary characteristic on the buoy body or top mark, it should be described in the attribute INFORM. C) In the event there is a light on the buoy, the BOYISD object should be designated as the master and coded with the name of the light. D) BR: The Brazilian national number of the buoy (if it exists) should be encoded in the attribute NOBJNM. It is not repeated for each slave object.	**Object Encoding** **Object Class =** BOYISD(P) (M) BOYSHP = [4 (pillar), 5 (spar (spindle))] (M) COLOUR = [2 (black), 3 (red)] (M) COLPAT = [1 (horizontal stripes)] (C) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter C) (C) NOBJNM = (Refer to letter D) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (M) SCAMIN = [BR: 50000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [2 (black)] (M) TOPSHP = [4 (2 spheres)] (C) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [BR: 50000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [2 (flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12

		seconds, coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [BR: 50000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.1 Buoys

O.1.11 Virtual AIS Aids to Navigation (O)

An aid to navigation which is being transmitted from a remote site to appear to be coming from a physically non-existent aid to navigation.

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) For reasons of backward compatibility the mandatory attribute INFORM must contain the values of CLSNAM and CLSDEF for the object; e.g. “Virtual AIS AtoN Port lateral (IALA B); A virtual object marking the port side of a channel” for a Virtual AIS aid to navigation performing the function of a Port Lateral mark. B) Where known the attribute OBJNAM should be populated with the MMSI number of the Virtual AIS aid to navigation, in addition to its individual name. C) Virtual AIS aids to navigation should only be encoded where it is known that the Virtual aid is intended to be permanent, or deployed for a specified fixed period. Where it is known that a Virtual AIS aid to navigation is moved or withdrawn on a regular basis and/or at short notice, such that implementing these changes through the application of ENC Updates is impractical, the Virtual aid should not be encoded.	**Object Encoding** **Object Class =** NEWOBJ(P) (M) CLSNAM = (Refer to Diagram below) (M) CLSDEF = (Refer to Diagram below) (M) SYMINS = (Refer to Diagram below) (M) INFORM = (Refer to letter A) (O) NINFOM = (Refer to Section B, General Guidance) (C) OBJNAM = (Refer to letter B) (O) NOBJNM = (Refer to Section B, General Guidance) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (M) SCAMIN = [US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

Purpose of Virtual Aid	CLSDEF	CLSNAM	SYMINS	PORTRAYAL
North Cardinal	A Virtual object which indicates navigable water lies northwards	Virtual AtoN, North Cardinal	SY(BRTHNO01);SY(BCNCAR01); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
East Cardinal	A Virtual object which indicates navigable water lies eastwards	Virtual AtoN, East Cardinal	SY(BRTHNO01);SY(BCNCAR02); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
South Cardinal	A Virtual object which indicates navigable water lies southwards	Virtual AtoN, South Cardinal	SY(BRTHNO01);SY(BCNCAR03); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
West Cardinal	A Virtual object which indicates navigable water lies westwards	Virtual AtoN, West Cardinal	SY(BRTHNO01);SY(BCNCAR04); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Port lateral (IALA A)	A Virtual object marking the port side of a channel	Virtual AtoN, Port Lateral	SY(BRTHNO01);SY(BOYLAT24); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Starboard Lateral (IALA A)	A Virtual object marking the starboard side of a channel	Virtual AtoN, Starboard Lateral	SY(BRTHNO01);SY(BOYLAT13); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Port lateral (IALA B)	A Virtual object marking the port side of a channel	Virtual AtoN, Port Lateral	SY(BRTHNO01);SY(BOYLAT23); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Starboard Lateral (IALA B)	A Virtual object marking the starboard side of a channel	Virtual AtoN, Starboard Lateral	SY(BRTHNO01);SY(BOYLAT14); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Isolated Danger	A Virtual object marking an isolated danger	Virtual AtoN, Isolated Danger	SY(BRTHNO01);SY(BCNISD21); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Safe Water	A Virtual object marking safe water	Virtual AtoN, Safe Water	SY(BRTHNO01);SY(BOYSAW12); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Special Purpose	A Virtual object used to mark an area or feature referred to in nautical documents	Virtual AtoN, Special Purpose	SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Emergency Wreck Marking	A Virtual object marking a wreck	Virtual AtoN, Wreck Marking	SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.1 Day Mark (M)

Day marks are used to code passing and crossing day beacons on the inland river system.

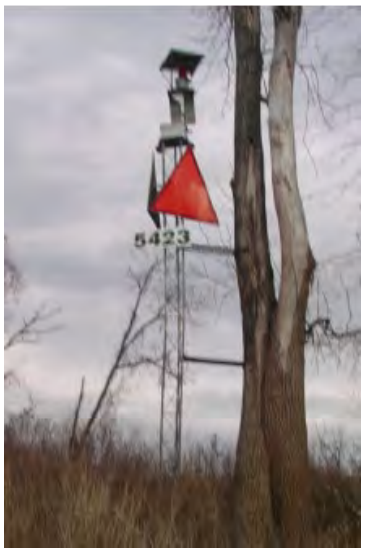
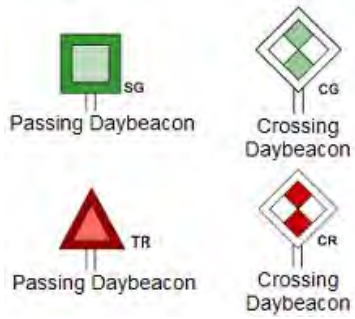
Graphics	Encoding Instructions	Object Encoding
Real World (US)  *Real World (CEVNI)*  *Chart Symbol (Version 1)*  	A) 'bcnlat' must be defined as the master object, with DAYMAR/daymar as the slave object. B) In the event there is a light on the day mark, the 'bcnlat' object should be designated as the master and coded with the name of the light. C) EU: For marks indicating the position of the channel the DAYMAR/daymar COLOUR/ COLPAT/ TOPSHP attributes must be used in the following combinations: 1, 3, 1 (white, red, white), 1 (horizontal stripes) and 19 (square) for the right hand shore or 4, 1 (green, white), 1 (horizontal stripes) and 12 (rhombus (diamond)) for the left hand shore. D) EU: For marks indicating danger points DAYMAR ('daymar') COLOUR/ TOPSHP attributes must be used in the following combinations: 3 (red) and 2 (cone, point down) for the right hand shore or 4 (green) and 1 (cone, point up) for the left hand shore E) EU: The designator as it appears on the 'bcnlat', if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. F) US: For daybeacons with more than one color, such as a crossing or non-laterally significant day beacon, use multiple COLOUR attributes and populate the COLPAT field based upon the color pattern of the day beacon. For example, a NR daybeacon would be encoded as COLOUR = 1,3 with TOPSHP = 12 (rhombus(diamond)), and COLPAT	**Coding of Structure Object** **Object Class =** bcnlat(P) (M) BCNSHP = [1 (stake, pole, perch, post), 5 (pile beacon)] (M) catlam = [1 (port-hand lateral mark), 2 (starboard-hand lateral mark), 5 (right-hand side of the waterway), 6 (left-hand side of the waterway), 7 (right-hand side of the channel), 8 (left-hand side of the channel), 9 (bifurcation of the waterway), 11 (channel near the right bank), 12 (channel near the left bank), 13 (channel cross-over to the right bank), 14 (channel cross-over to the left bank), 15 (danger point or obstacles at the right-hand side), 16 (danger point or obstacles at the left-hand side), 24 (entry from a lake to a narrower waterway, right bank), 25 (entry from a lake to a narrower waterway, left bank)] (C) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (M) COLOUR = ["unknown" or 1 (white), 3 (red), 4 (green),] (C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)] (M) OBJNAM = (EU: refer to letter E; US: refer to letter H) (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3 (Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** DAYMAR(P)

Chart Symbol

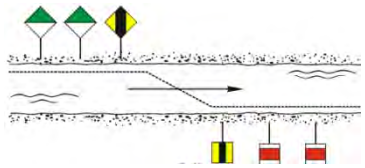


Chart Symbol

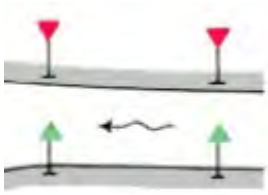


Chart Symbol

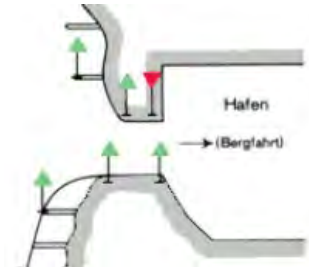
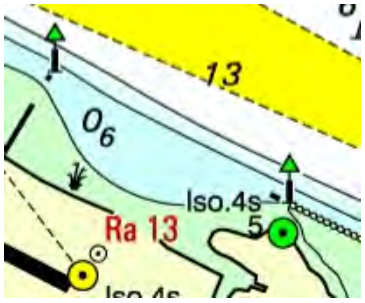


Chart Symbol

Chart Symbol



= 4 (squared).

G) Code two daymar objects at the same location if two different day marks are present. Use 'dirimp' to designate whether the daymar impacts up-bound or down-bound traffic. If only 1 day mark is present but only impacts one direction, 'dirimp' should also be used.

H) US: OBJNAM of 'bcnlat' must be the name designated by the US Coast Guard Light List followed by the river mile, e.g, Debutte Light and Daymark (233.4). OBJNAM should not be repeated for each slave object.

I) If two 'daymar' objects are at the same location, as in letter G, for the daymark that is visible to up-bound vessels code ORIENT to indicate the heading of an up-bound vessel parallel to the riverbank (North = 0 degrees) and for the daymark that is visible to down-bound vessels code ORIENT to indicate the heading of a down-bound vessel parallel to the riverbank.

(M) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 6 (yellow)]

(M) TOPSHP = [1 (cone, point up), 2 (cone, point down), 7 (x-shape (St. Andrew's cross)), 8 (upright cross (St George's cross)), 10 (2 cones, point to point), 12 (rhombus (diamond)), 19 (square), 24 (triangle, point up), 25 (triangle, point down), 33 (other shape (see INFORM))]

(M) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)]

(C) INFORM = (Refer to TOPSHP above)

(O) NINFOM = (Refer to Section B, General Guidance)

(O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)]

(M) SCAMIN = [EU: 22000; US: 60000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

Coding of Equipment Object

Object Class = daymar(P)

(M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)]

(M) TOPSHP = [1 (cone, point up), 2 (cone, point down), 7 (x-shape (St. Andrew's cross)), 8 (upright cross (St George's cross)), 10 (2 cones, point to point), 12 (rhombus (diamond)), 19 (square), 24 (triangle, point up), 25 (triangle, point down), 33 (other shape (see INFORM))]

(C) COLPAT = [1 (horizontal stripes), 2 (vertical stripes), 3 (diagonal stripes), 4 (squared), 5 (stripes (direction unknown)), 6 (border stripe)]

(C) INFORM = (Refer to TOPSHP above)

(O) NINFOM = (Refer to Section B, General Guidance)

(C) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)]

(C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76

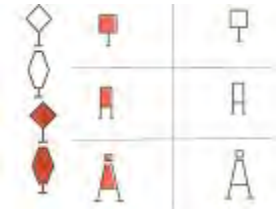
(O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)]

(M) SCAMIN = [EU: 22000; US: 60000]

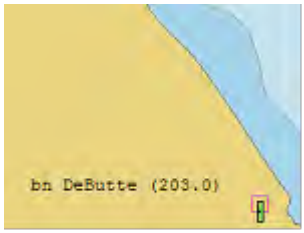
(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

Chart Symbol



IENC Symbolization



IENC Symbolization

IENC Symbolization

Object Encoding

Object Class = LIGHTS(P)

(M) COLOUR = [1 (white), 3 (red), 4 (green)]

(O) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)]

(M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)]

(C) SIGPER = [xx.xx] (e.g., signal period of 12 seconds coded as 12)

(C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1)

(C) SIGSEQ = [LL.L + (EE.E)] (seconds)

(C) INFORM = (US: descending bank (e.g., LDB))

(O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)]

(M) SCAMIN = [EU: 22000; US: 60000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

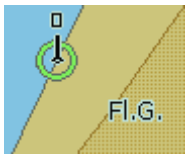
O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.2 Landmark Beacon (M)

The beacons are used to mark specific "Landmarks"

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *Chart Symbol* 	A) BCNLAT must be defined as the master object, with TOPMAR and LIGHTS as the slave objects	**Object Encoding** **Object Class =** BCNLAT(P) (M) BCNSHP = [1 (stake, pole, perch, post)] (M) CATLAM = [1 (port-hand lateral mark), 2 (starboard-hand lateral mark)] (M) COLOUR = [2,1, 2, 1, 2 (white, black, white, black, white), 3, 1, 3, 1, 3 (red, white, red, white, red)] (M) COLPAT = [1 (horizontal stripes)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) TOPSHP = [21 (rectangle, vertical), 22 (trapezium, up)] (O) COLOUR = [2,1, 2, 1, 2 (white, black, white, black, white), 3, 1, 3, 1, 3 (red, white, red, white, red)] (O) COLPAT = [1 (horizontal stripes)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green), 6 (yellow)] (M) LITCHR = [2 (flashing)] (M) SIGGRP = [2] (O) CONDTN = [1 (under construction), 2

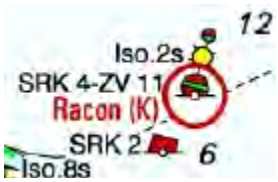
IENC Symbolization 		(ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.3 Radar Beacon, RACON (M)

A radar transponder beacon (racon) may be used to indicate an entrance of a canal or a bridge passage.

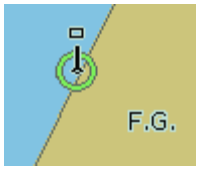
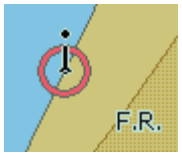
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) RTPBCN may be slave object to PILPNT, BOYLAT, BOYSPP, BOYCAR, BOYSAW. B) The signal group is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. C) RADWAL and SIGGRP are relevant for the safety of navigation and should be encoded therefore.	**Object Encoding** **Object Class =** RTPBCN(P) (M) CATRTB = [1 (ramark, radar beacon transmitting continuously), 2 (racon, radar transponder beacon), 3 (leading racon/radar transponder beacon)] (O) RADWAL = (The wavelength (V) (metres) and the band code character (B)), e.g., V.VV-B (O) SIGGRP = [A] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.4 Spring Flood Beacon (M)

The beacons are used to mark submerged banks

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *Chart Symbol*  *IENC Symbolization*  *IENC Symbolization*  	A) BCNLAT must be defined as the master object, with TOPMAR and LIGHTS as the slave objects	**Object Encoding** **Object Class =** BCNLAT(P) (M) BCNSHP = [1 (stake, pole, perch, post)] (M) CATLAM = [1 (port-hand lateral mark), 2 (starboard-hand lateral mark)] (M) COLOUR = [1 (white), 3 (red)] (O) INFORM = (Spring flood mark of the left (right) bank) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) TOPSHP = [22 (trapezium, up), 26 (circle)] (O) COLOUR = [1 (white), 3 (red)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [3 (red), 4 (green)] (M) LITCHR = [1 (fixed)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000]

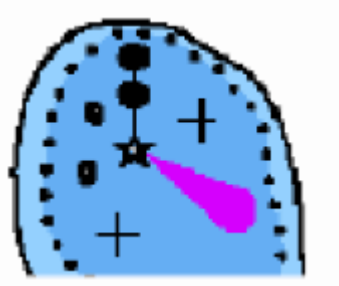
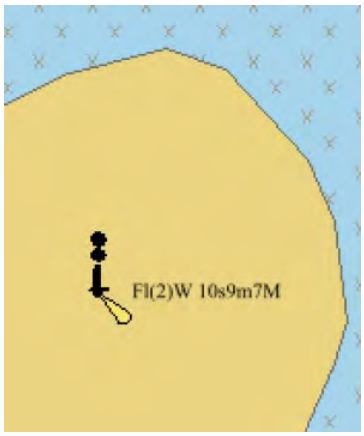
		(C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.5 Isolated Danger Beacon (M)

An isolated danger beacon is used to mark the position of a danger of limited extent, which has navigable water all around it.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) BCNISD must act as a master object to a top mark object and light object (if it exists) B) BR: If there is any complementary characteristic on the beacon, it should be described in the attribute INFORM. C) In the event there is a light on the beacon, the BCNISD object should be designated as the master and coded with the name of the light. D) BR: The national number of the beacon (if it exists) should be encoded in the attribute NOBJNM. It is not repeated for each slave object.	**Object Encoding** **Object Class =** BCNISD(P) (M) BCNSHP = [1 (stake, pole, perch, post), 5 (pile beacon)] (M) COLOUR = [2 (black), 3 (red)] (M) COLPAT = [1 (horizontal stripes)] (C) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (C) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter C) (C) NOBJNM = (Refer to letter D) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [BR: 50000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [2 (black)] (M) TOPSHP = [4 (2 spheres)] (C) INFORM = (Refer to letter B) (O) NINFOM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [BR: 50000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P)

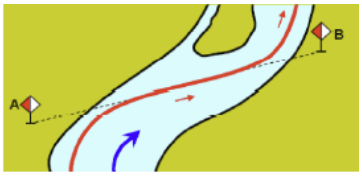
		(M) COLOUR = [1 (white)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [2 (flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds, coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [BR: 50000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.6 Change Bank (O)

Used only in the Po river (Italy). Indicates that the recommended track changes to the other side of the waterway. The white half of the mark shows the direction to be followed.

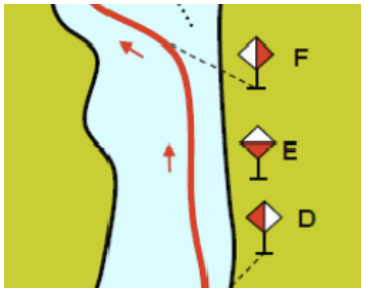
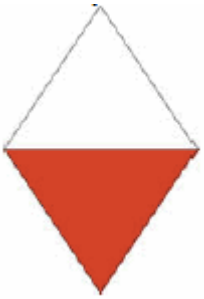
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) 'Change bank' marks are used in pairs (two equal marks, one on each bank); the alignment of the two marks indicates the track to be followed for crossing the river. Single 'change bank' marks are only used in combination with the 'touch and go' mark. B) Referring to navigation in the downstream direction, if it is placed on the right bank, it indicates that you have to move to the other bank; if it is place on the left bank, it indicates that you have to approach the bank. Ships must always move in the direction indicated by the white triangle. C) COLOUR = [1 (white), 3 (red)] when, navigating in the downstream direction, the ship has to move to the left bank, or when navigating in the upstream direction, the ship has to move to the right bank. D) COLOUR = [3 (red), 1 (white)] when, navigating in the downstream direction, the ship has to move to the right bank, or when navigating in the upstream direction, the ship has to move to the left bank.	**Object Encoding** **Object Class =** bcnlat(P) (M) BCNSHP = [1 (stake, pole, perch, post)] (M) catlam = [26 (change bank)] (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) SCAMIN = [EU: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** DAYMAR(P) (M) COLOUR = [1 (white), 3 (red)] (M) TOPSHP = [12 (rhombus (diamond))] (M) COLPAT = [2 (vertical stripes)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.7 Continue Along Bank (O)

Used only in the Po river (Italy). Indicates that the recommended track continues along the same side of the waterway.

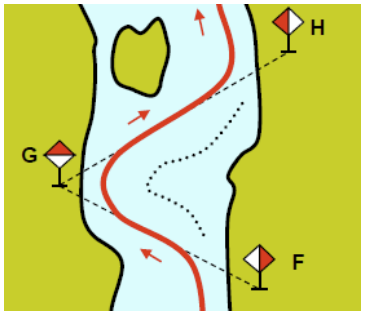
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) 'Continue along bank' marks are used to indicate that the recommended track continues along the bank on which it is placed. B) Referring to navigation in both directions, it generally follows a 'Change bank' mark. C) It is repeated about every 0.5 km, until the next 'Change bank' mark. D) In this case COLOUR has to be always encoded as [1,3].	**Object Encoding** **Object Class =** bcnlat(P) (M) BCNSHP = [1 (stake, pole, perch, post)] (M) catlam = [27 (continue along the bank)] (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) SCAMIN = [EU: 20000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** DAYMAR(P) (M) COLOUR = [1 (white), 3 (red)] (M) TOPSHP = [12 (rhombus (diamond))] (M) COLPAT = [1 (horizontal stripes)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.8 Touch and Go (O)

Used only in the Po river (Italy). Indicates that the ship has to reach the bank and immediately move to the other bank.

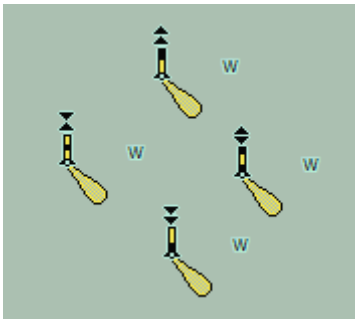
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization* 	A) It is used instead of two consecutive 'Change bank' marks, which should be placed very close on the same bank, to indicate that the recommended track changes again to the previous side of the waterway. B) It is preceded and followed by two 'Change bank' marks, both on the opposite bank of the waterway. C) In this case COLOUR has to be always encoded as [3,1].	**Object Encoding** **Object Class =** bcnlat(P) (M) BCNSHP = [1 (stake, pole, perch, post)] (M) CATLAM = [26 (change bank)] (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** DAYMAR(P) (M) COLOUR = [1 (white, 3 (red)] (M) TOPSHP = [12 (rhombus)] (M) COLPAT = [1 (horizontal stripes)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.9 Cardinal Beacon (O)

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.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *IENC Symbolization*  	A) BCNCAR must be defined as the master object, with TOPMAR and LIGHTS as the slave objects. B) Mandatory attributes must be coded to ensure proper presentation. C) EU: The designator as it appears on the beacon, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the beacon that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. D) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Coding of Structure Object** **Object Class =** BCNCAR(P) (M) BCNSHP = [1 (stake, pole, perch, post), 3 (beacon tower), 4 (lattice beacon), 5 (pile beacon)] (M) CATCAM = [1 (north cardinal mark), 2 (east cardinal mark), 3 (south cardinal mark), 4 (west cardinal mark)] (M) COLOUR = [2 (black), 6 (yellow)] West: COLOUR = 6,2,6 East: COLOUR = 2,6,2 North: COLOUR = 2,6 South: COLOUR = 6,2 (M) COLPAT = [1 (horizontal stripes)] (C) MARSYS = (Refer to letter D) (C) INFORM = (Refer to letter D) (O) CONRAD = [1 (radar conspicuous), 2 (not radar conspicuous), 3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter C) (C) NOBJNM = (Refer to letter C) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** TOPMAR(P) (M) COLOUR = [2 (black)] (M) TOPSHP = [10 (2 cones, point to point), 11 (2 cones, base to base), 13 (2 cones (points upward)), 14 (2 cones (points downward))] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

		Object Encoding **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds, coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.10 Safe Water Beacon (O)

A safe water beacon may be used to indicate that there is navigable water around the mark.

Graphics	Encoding Instructions	Object Encoding
	A) BCNSAW can act as a master object to a top mark object and a light object. B) EU: The designator as it appears on the beacon, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the beacon that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. C) Mandatory attributes must be coded to ensure proper presentation. D) In case TOPMAR is added: TOPSHP = 3 (sphere) and COLOUR = (3 (red)]. E) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute MARSYS or INFORM must be used.	**Encoding of Structure Object** **Object Class =** BCNSAW(P) (M) BCNSHP = [1 (stake, pole, perch, post), 3 (beacon tower), 4 (lattice beacon), 5 (pile beacon)] (M) COLOUR = [3,1 (red, black), 1,3 (black, red)] (M) COLPAT = [2 (vertical stripes)] (C) MARSYS = (Refer to letter E) (C) INFORM = (Refer to letter E) (O) CONRAD = [1 (radar conspicuous), 2 (not radar conspicuous), 3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter B) (C) NOBJNM = (Refer to letter B) (M) SCAMIN = [EU: 45000, US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** TOPMAR(P) (M) COLOUR = [3 (red)] (M) TOPSHP = [3 (sphere)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS() (M) COLOUR = [1 (white), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [3 (long-flashing), 7 (isophased), 8 (occulting), 12 (morse)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds, coded as 12)

		(C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.11 Special Purpose Beacon (M)

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.

Graphics	Encoding Instructions	Object Encoding
	A) BCNSPP must be defined as the master object, with TOPMAR and LIGHTS as the slave objects. B) Mandatory attributes must be coded to ensure proper presentation. C) EU: The designator as it appears on the beacon, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object. D) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the atribute MARSYS or INFORM must be used.	**Coding of Structure Object** **Object Class =** BCNSPP(P) (M) BCNSHP = [1 (stake, pole, perch, post), 3 (beacon tower), 4 (lattice beacon), 5 (pile beacon)] (M) CATSPM = [1 (firing danger area mark), 6 (cable mark), 10 (recording mark), 12 (recreation zone mark), 17 (measured distance mark), 39 (pipeline mark), 45 (foul ground mark), 50 (entry prohibited mark), 52 (mark with unknown purpose), 55 (marine farm mark)] (M) COLOUR = [6 (yellow)] (O) CONRAD = [1 (radar conspicuous), 2 (not radar conspicuous), 3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter C) (C) NOBJNM = (Refer to letter C) (C) MARSYS = (Refer to letter D) (C) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 4 (quick-flashing), 7 (isophased)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds, coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds)

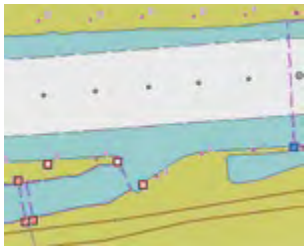
		(M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 6 (yellow)] (O) COLPAT = [1 (horizontal stripes), 2 (vertical stripes)] (M) TOPSHP = [1 (cone, point up), 2 (cone, point down), 3 (sphere), 4 (2 spheres), 5 (cylinder (can)), 6 (board), 7 (x-shape (St. Andrew's cross)), 8 (upright cross (St George's cross)), 9 (cube, point up), 10 (2 cones, point to point), 11 (2 cones, base to base), 12 (rhombus (diamond)), 15 (besom, point up (broom or perch)), 16 (besom, point down (broom or perch)), 17 (flag), 18 (sphere over rhombus), 19 (square), 20 (rectangle, horizontal), 21 (rectangle, vertical), 22 (trapezium, up), 23 (trapezium, down), 24 (triangle, point up), 25 (triangle, point down), 26 (circle), 27 (two upright crosses (one over the other)), 28 (T-shape), 29 (triangle pointing up over a circle), 30 (upright cross over a circle), 31 (rhombus over a circle), 32 (circle over a triangle pointing up), 33 (other shape (see INFORM))] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.3 Notice Marks

O.3.1 Notice Marks (M)

Waterway signs in accordance with the European Code for Inland Waterways of UN/ECE (http://www.unece.org/trans/doc/finaldocs/sc3/TRANS-SC3-115r2e.pdf).
Used also in Brazil in accordance with Normas da Autoridade Marítima para Auxílios à Navegação (NORMAM-17) - Diretoria de Hidrografia e Navegação (DHN) and for Waterway signs in the Russian Federation in accordance with Russian Inland Waterway Regulations GOST 26600-98.
For notice marks on bridges see O.3.2

Graphics	Encoding Instructions	Object Encoding
Real World (Europe)  *IENC Symbolization (CEVNI)*  *Real World (Brazil - two sides system)* 	A) For detailed list of all available input ID's for category of notice mark (catnmk) see annexes "AA - CEVNI", "AB - Russian Inland Waterways", "AC - Brazilian Two Sides System", "AD - Brazilian Side Independent System" and "AE - Brazilian Paraguay-Parana Waterway". In Annex AA, all order numbers are referenced to the European Code for Inland Waterways – CEVNI, revision 2, edited by the Economic Commission for Europe of the United Nations. B) Although the list is originally based on CEVNI, the codes can be used for other notice marks with the same meaning (e.g., on the Paraguay-Parana Waterway in Brazil). C) For CEVNI: The function of the notice mark (fnctnm) has to be encoded for display purposes as follows: 1 (prohibition mark, CEVNI signs A), 2 (regulation mark, CEVNI signs B), 3 (restriction mark, CEVNI signs C), 4 (recommendation mark, CEVNI signs D), 5 (information mark, CEVNI signs E). D) For CEVNI: If the notice mark is positioned rectangular to the bank, it can be seen only by vessels heading upstream (dirimp = 1) or by vessels heading downstream (dirimp = 2). If the notice mark is positioned parallel to the bank, it can be seen by vessels heading upstream as well as vessels heading downstream. In this case, the direction of impact is defined by triangular additional marks.	**Object Encoding** **Object Class =** notmrk(P) (M) catnmk = Refer to Annexes AA, AB, AC, AD and AE (M) fnctnm = [1 (prohibition mark), 2 (regulation mark), 3 (restriction mark), 4 (recommendation mark), 5 (information mark)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank), 5 (to harbor)] (O) disipd = (distance of impact, downstream: unit defined in the cell header, e.g. metre (m), resolution: 1 m) (O) disipu = (distance of impact, upstream: unit defined in the cell header, e.g. metre (m), resolution: 1 m) (O) disbk1 = Minimum distance of the impact from the notice mark rectangular to the bank: unit defined in the M_UNIT meta object class, e.g. metre (m), resolution: 1 m (O) disbk2 = Maximum distance of the impact from the notice mark rectangular to the bank: unit defined in the M_UNIT meta object class, e.g. metre (m), resolution: 1 m (O) addmrk = [1 (top (board)), 2 (bottom (board)), 3 (right (triangle to the right)), 4 (left (triangle to the left)), 5 (bottom (triangle to the bottom))] (O) bnkwtw = [1 (left), 2 (right)] (C) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (C) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (O) STATUS = [8 (private), 12 (illuminated)]

Real World

Chart Symbol

IENC Symbolization

Real World (Brazil - one side system)

Real World (Paraguay-Parana (Brazilian))

E) For CEVNI: The distance of impact (downstream or upstream, 'disipd' or 'disipu') can be defined by the distance between two notice marks, by a number, which is shown on the top board or by a number, which is shown on an triangular additional mark.

F) For CEVNI: The minimum distance of impact from the notice mark rectangular to the bank (disbk1) can be defined by:

1. the number on a sign C.5 (distance of the waterway from the bank),

2. the first number on a sign E.5.2 (berthing permitted between two distances).

G) For CEVNI: The maximum distance of impact from the notice mark rectangular to the bank (disbk2) can be defined by:

3. the number on a sign A.5.1 (berthing prohibited within the breadth indicated),

4. the number on a sign E.5.1 (berthing permitted within the distance indicated),

5. the second number on a sign E.5.2 (berthing permitted between two distances).

H) For CEVNI: Rectangular boards on top of the main sign ('addmrk' = 1) are showing the distance at which the regulation applies or the special feature indicated by the notice mark is to be found.

Rectangular boards at the bottom of the main sign ('addmrk' = 2) are showing explanations or additional information.

Triangular pointers at the side of the main sign ('addmrk' = 3 or 4) are showing the direction of the section to which the notice mark applies.

Triangular pointers at the bottom ('addmrk' = 5) are showing the distance from the shore, within which the regulation applies.

The attribute 'addmrk' is only defining the position and shape of the additional mark. The content is given by other attributes ('disipd', 'disipu', 'disbk1', 'disbk2', INFORM, NINFOM)

I) For CEVNI: If the system of

(O) INFORM = (text of additional marks in English)

(O) NINFOM = (Refer to Section B, General Guidance)

(O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)]

(O) mmsico = [xxxxxxxxx] (e.g., 366777490)

(M) SCAMIN = [EU: 22000; US: 60000; BR: 50000]

(C) SORDAT = [YYYYMMDD]

(C) SORIND = (Refer to Section B, General Guidance)

Real World

Chart Symbol

IENC Symbolization

navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute 'marsys' must be used.

J) For CEVNI: If a notice mark is illuminated, this should be indicated by the attribute STATUS = 12).

K) For CEVNI: Explanations or additional information shown on additional marks and

1. the number shown on the CEVNI signs B.6 (maximum speed limit) amended by the unit (e.g., “10 km/h”),

2. the frequency band and the number shown on the CEVNI sign B.11 (mandatory radiophone channel) and E.23 (nautical radio information channel) (e.g., “VHF 11”),

3. the number shown on the CEVNI signs C.1 (restricted fairway depth), C.2 (restricted vertical clearance), C.3 (restricted width of the fairway or passage), and E.5.3 (maximum number of vessels berthing abreast) have to be indicated in the INFORM attribute.

If the sign E.5.3 is used as an additional mark, the text “maximum x vessels berthing abreast” should be used. The maximum number of vessels berthing abreast has to be indicated in arabic numbers.

L) For CEVNI: The standard SCAMIN value for notice marks is 25000. Different values can be used to improve the display with regard to the safety of navigation.

M) For CEVNI: For more detailed information regarding Notice Marks and which makrs should be accompanied by area features, see Section AA, Notice Marks for more detailed information.

N) For CEVNI: To encode an area, where notice marks apply, objects such as 'resare', 'achare', 'trnbsn', CTNARE, 'comare', 'achbrt' or 'berths' must be associated using a collection object C_ASSO.

O) For CEVNI: Signs with textual description, which have the same meaning as a CEVNI sign (for example a white board with the text “mooring prohibited”) can be encoded as notice marks with

	INFORM = “textual description only”. P) For CEVNI: Signs, which are installed by private companies, should be encoded with STATUS = 8 (private). Q) For CEVNI: If the chart producer wants to ensure that a notice mark is displayed correctly, if detailed symbolization is used instead of the generalized symbols, ORIENT has to be encoded. R) BR: The function of the notice mark (fnctnm) has to be encoded. S) BR: The attribute bnkwtw must be encoded for display purposes when adopting marsys = 13 (Brazilian national inland waterway regulations - two sides) or marsys = 15 (Paraguay-Parana waterway - Brazilian complementary aids). It indicates the board colours. T) BR: The attribute orientation (ORIENT) must be used to rotate the symbol according the orientation of the board for all Brazilian notice marks. U) BR: The direction of impact attribute (dirimp) must be used to define if the notice mark is addressed to vessels heading upstream or downstream. V) This feature could be aggregated to for example a lock, bridge, communication area, anchorage area, anchor berth, berth, turning basin by a C_AGGR object.	

	◄Triangle left side	Triangle right side ►
Left bank (downstream)	dirimp = 1	dirimp = 2
Right bank (downstream)	dirimp = 2	dirimp = 1

Diagram for Brazilian national inland waterway regulations - two sides

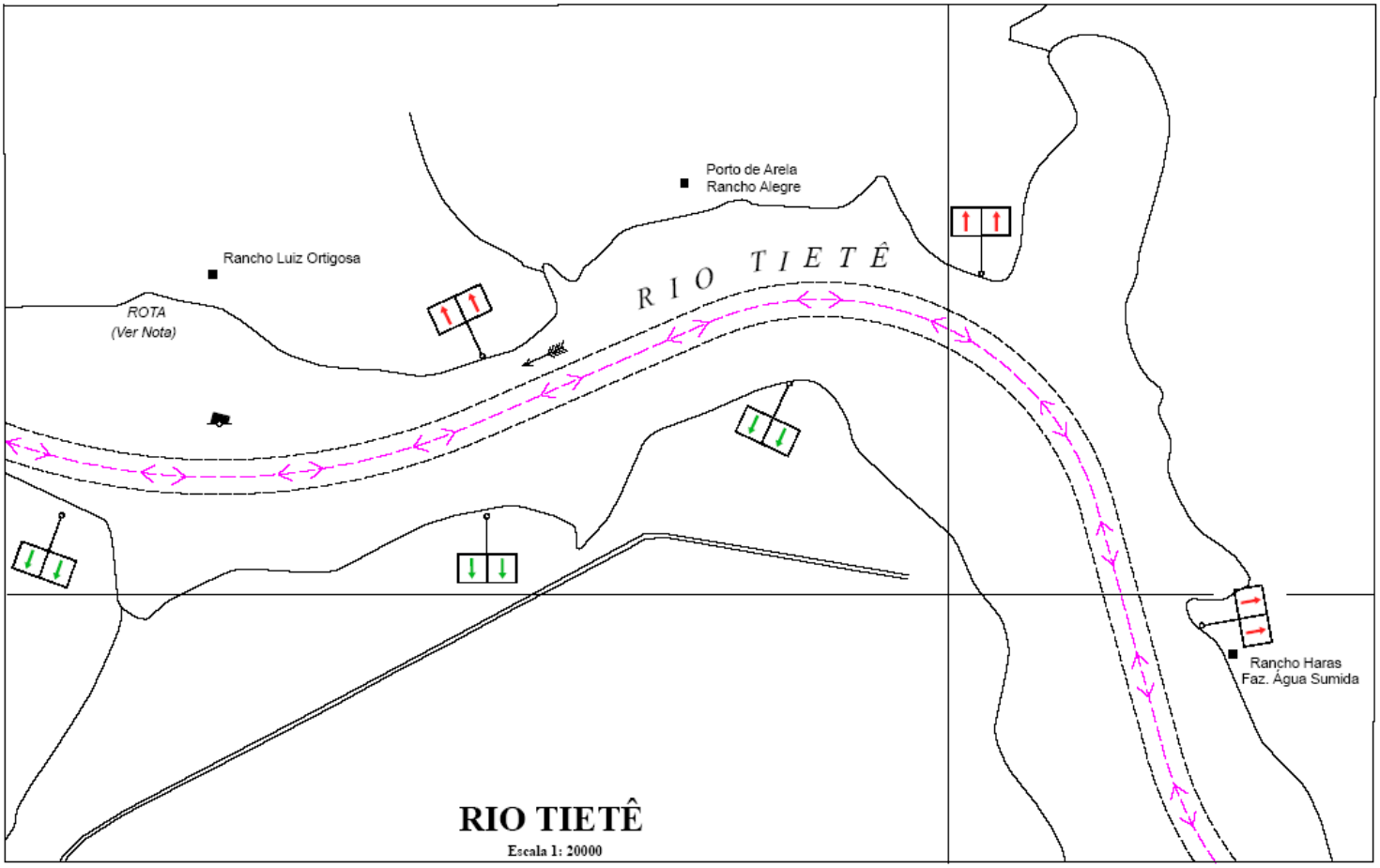


Diagram for Brazilian national inland waterway regulations – side independent

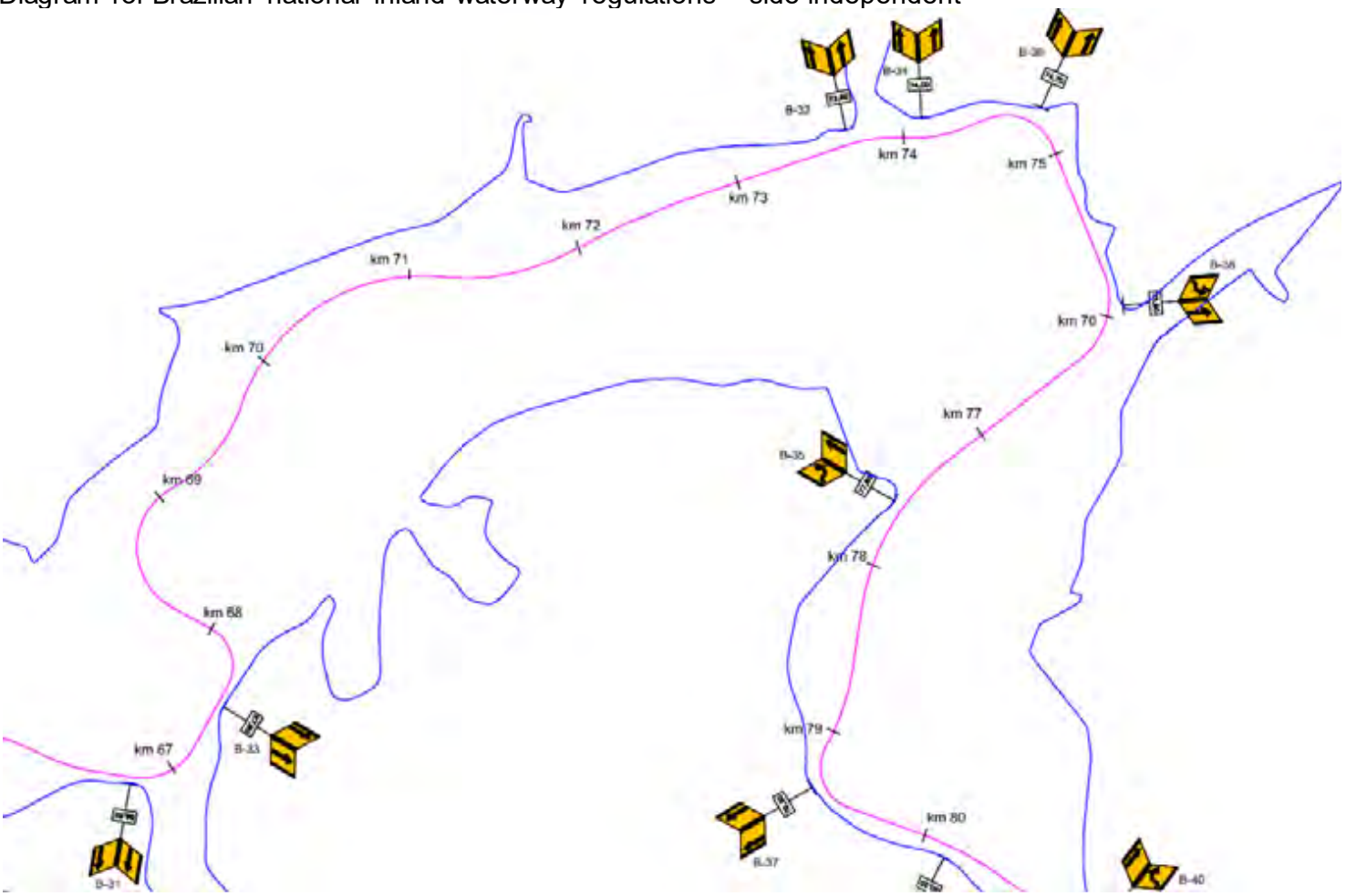
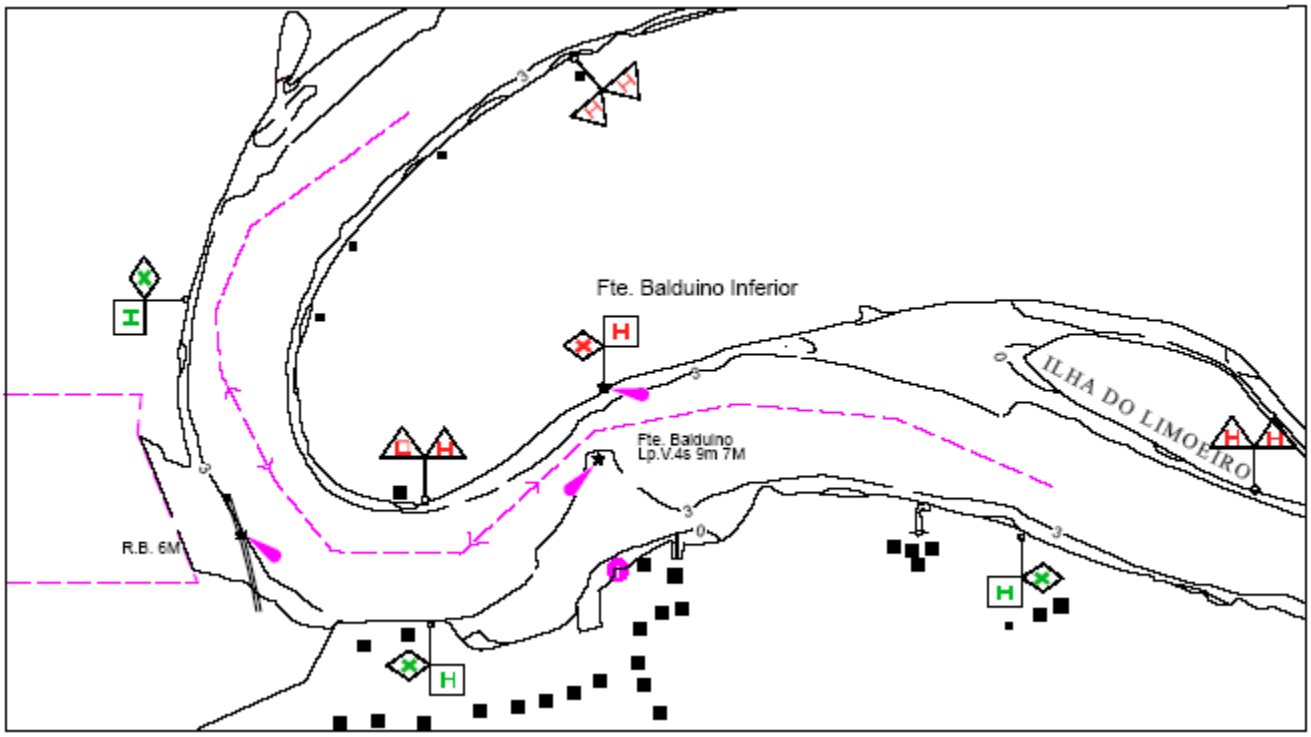


Diagram for Paraguay-Parana waterway - Brazilian complementary aids

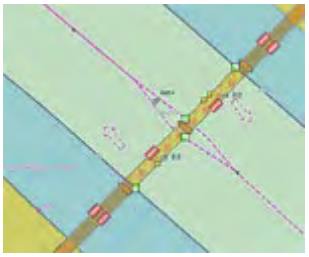


O - Buoys, Beacons and Daymarks, Notice Marks

O.3 Notice Marks

O.3.2 Notice Marks on Bridges (M)

Waterway signs in accordance with the European Code for Inland Waterways of UN/ECE (http://www.unece.org/trans/doc/finaldocs/sc3/TRANS-SC3-115r2e.pdf)
For notice marks not positioned on bridges see O.3.1

Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) For detailed list of all available input ID's for category of notice mark (catnmk) see annex "notice-marks.xls". All order numbers are referenced to the European Code for Inland Waterways – CEVNI, revision 2, edited by the Economic Commission for Europe of the United Nations B) Although the list is based on CEVNI, the codes can be used for other notice marks with the same meaning, too (e.g., on the river Po in Italy) C) The function of the notice mark (fnctnm) has to be encoded for display purposes. D) If the system of navigational marks of a special sign is different from the system mentioned in 'm_nsys', or there is no 'm_nsys' object class in the cell, the attribute 'marsys' must be used. E) The attribute orientation (ORIENT) must be used to rotate the symbol according the orientation of the bridge. The value of ORIENT at bridges should correspond to the prescribed heading of the vessels. F) If a notice mark is illuminated, this should be indicated by the attribute STATUS = 12, e.g. at bridges). If the CEVNI signs A.1, D.1 and D.2 are not illuminated, but the corresponding lights (with the same meaning according to CEVNI) are shown by night, the attribute STATUS = 12 can be used, too. If it is important for the safety of navigation to indicate the existence of the lights on the chart (e.g. to prevent confusion with other lights), the object class LIGHTS can be used instead of the attribute (see N.1.1). G) The SCAMIN value 8000 should be used. Different values may be used	**Object Encoding** **Object Class =** notmrk(P) (M) catnmk = Refer to Annexes AA, AB, AC, AD and AE (M) fnctnm = [1 (prohibition mark, CEVNI signs A), 2 (regulation mark, CEVNI signs B), 4 (recommendation mark, CEVNI signs D), 5 (information mark, CEVNI signs E)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (C) marsys = [1 (IALA A), 2 (IALA B), 9 (no system), 10 (other system), 11 (CEVNI), 12 (Russian inland waterway regulations), 13 (Brazilian national inland waterway regulations - two sides), 14 (Brazilian national inland waterway regulations - side independent), 15 (Paraguay-Parana waterway - Brazilian complementary aids)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (O) STATUS = [12 (illuminated)] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 8000; US: 12000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

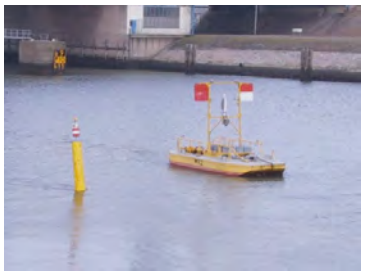
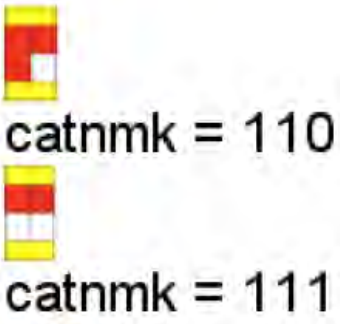
	to improve the display with regard to the safety of navigation. H) This feature must be aggregated to a bridge by a C_AGGR object.	

O - Buoys, Beacons and Daymarks, Notice Marks

O.3 Notice Marks

O.3.3 Wreck Pontoon (M)

A usually temporarily installed pontoon to draw attention to obstacles and danger points and to require vessels under way to avoid causing wash.

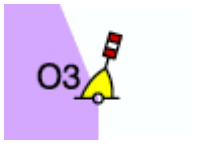
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  	A) In order to show which side the wreck pontoon may be passed the ORIENT attribute has to be encoded. B) For catnmk = 110 ORIENT = 0 means that the safe passage is on the east side of the wreck pontoon, ORIENT = 90 means that the safe passage is on the south side, ORIENT = 180 means that the safe passage is on the west side, etc.	**Object Encoding** **Object Class =** notmrk(P) (M) catnmk = [110 (wreck pontoon, passage allowed on side showing red-white sign), 111 (wreck pontoon, passage allowed on both sides)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (O) INFORM = (Information about obstruction) (O) NINFOM = (Refer to Section B, General Guidance) (O) DATSTA = (Refer to Section B, General Guidance) (O) DATEND = (Refer to Section B, General Guidance) (O) PERSTA = (Refer to Section B, General Guidance) (O) PEREND = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.4 IALA Maritime Buoyage System

O.4.1 Special Purpose Buoy IALA (M)

A special purpose buoy is primarily used to indicate an area or feature, the nature of which is apparent from reference to a chart.

Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol*  *Chart Symbol*  *IENC Symbolization*  *IENC Symbolization*  	A) BOYSPP can act as a master object to a top mark object B) BOYSPP can act as a master object to a light object. C) Mandatory attributes must be coded to ensure proper presentation. D) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object.	**Object Encoding** **Object Class =** BOYSPP(P) (M) BOYSHP = [1 (conical (nun, ogival)), 3 (spherical), 4 (pillar), 5 (spar (spindle)), 6 (barrel (tun))] (M) CATSPM = [1 (firing danger area mark), 2 (target mark), 3 (marker ship mark), 4 (degaussing range mark), 5 (barge mark), 6 (cable mark), 7 (spoil ground mark), 8 (outfall mark), 9 (ODAS (Ocean-Data-Acquisition-System)), 10 (recording mark), 11 (seaplane anchorage mark), 12 (recreation zone mark), 13 (private mark), 14 (mooring mark), 15 (LANBY (Large Automatic Navigational Buoy)), 16 (leading mark), 17 (measured distance mark), 18 (notice mark), 19 (TSS mark), 20 (anchoring prohibited mark), 21 (berthing prohibited mark), 22 (overtaking prohibited mark), 23 (two-way traffic prohibited mark), 24 ('reduced wake' mark), 25 (speed limit mark), 26 (stop mark), 27 (general warning mark), 28 ('sound ship's siren' mark), 29 (restricted vertical clearance mark), 30 (maximum vessel's draught mark), 31 (restricted horizontal clearance mark), 32 (strong current warning mark), 33 (berthing permitted mark), 34 (overhead power cable mark), 35 ('channel edge gradient' mark), 36 (telephone mark), 37 (ferry crossing mark), 39 (pipeline mark), 40 (anchorage mark), 41 (clearing mark), 42 (control mark), 43 (diving mark), 44 (refuge beacon), 45 (foul ground mark), 46 (yachting mark), 47 (heliport mark), 48 (GPS mark), 49 (seaplane landing mark), 50 (entry prohibited mark), 51 (work in progress mark), 52 (mark with unknown purpose), 53 (wellhead mark), 54 (channel separation mark), 55 (marine farm mark), 56 (artificial reef mark)] (M) COLOUR = [6 (yellow)] (O) CONRAD = [3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter D) (O) NOBJNM = (Refer to letter D) (O) mmsico = [xxxxxxxxx] (e.g., 366777490) (O) typatn = [1 (AtoN), 2 (Real AIS AtoN), 3

		(Virtual AIS AtoN)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS(P) (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [1 (fixed), 2 (flashing), 3 (long-flashing), 4 (quick-flashing), 5 (very quick-flashing), 6 (ultra quick flashing), 7 (isophased), 8 (occulting), 9 (interrupted quick-flashing), 10 (interrupted very quick-flashing), 11 (interrupted ultra quick-flashing), 12 (morse), 13 (fixed/flash), 14 (flash/long-flash), 15 (occulting/flash), 16 (fixed/long-flash), 17 (occulting alternating), 18 (long-flash alternating), 19 (flash alternating), 20 (group alternating), 25 (quick-flash plus long-flash), 26 (very quick-flash plus long-flash), 27 (ultra quick-flash plus long-flash), 28 (alternating), 29 (fixed and alternating flashing)] (C) SIGPER = [xx.xx] (e.g. signal period of 12 seconds coded as 12) (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** TOPMAR(P) (M) COLOUR = [1 (white), 2 (black), 3 (red), 4 (green), 6 (yellow)] (O) COLPAT = [1 (horizontal stripes), 2 (vertical stripes)] (M) TOPSHP = [1 (cone, point up), 2 (cone, point down), 3 (sphere), 4 (2 spheres), 5 (cylinder (can)), 6 (board), 7 (x-shape (St. Andrew's cross)), 8 (upright cross (St George's cross)), 9 (cube, point up), 10 (2 cones, point to point), 11 (2 cones, base to base), 12 (rhombus (diamond)), 15 (besom, point up (broom or perch)), 16 (besom, point down (broom or perch)), 17 (flag), 18 (sphere over rhombus), 19 (square), 20 (rectangle, horizontal), 21 (rectangle, vertical), 22 (trapezium, up), 23 (trapezium, down), 24 (triangle, point up), 25 (triangle, point down),

		26 (circle), 27 (two upright crosses (one over the other)), 28 (T-shape), 29 (triangle pointing up over a circle), 30 (upright cross over a circle), 31 (rhombus over a circle), 32 (circle over a triangle pointing up), 33 (other shape (see INFORM))] (C) INFORM = (Refer to TOPSHP above) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

O - Buoys, Beacons and Daymarks, Notice Marks

O.4 IALA Maritime Buoyage System

O.4.2 Emergency Wreck Marking Buoy (O)

A Special Purpose Buoy to be used as initial marking of a dangerous wreck.

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) If it is required to encode an emergency wreck marking buoy, it must be done using a BOYSPP object. B) BOYSPP is encoded as master object to the light object, the top mark object and the radar transponder beacon object. C) Mandatory attributes must be coded to ensure proper presentation. D) EU: The designator as it appears on the buoy, if it can be read from a passing vessel, should be encoded in the attribute OBJNAM. Administrative information on the buoys that is not relevant for navigation should be encoded in the attribute NOBJNM. It is not repeated for each slave object.	**Coding of Structure Object** **Object Class =** BOYSPP(P) (M) BOYSHP = [4 (pillar), 5 (spar (spindle))] (M) CATSPM = [27 (general warning mark)] (M) COLOUR = [5 (blue), 6 (yellow)] (O) CONRAD = [1 (radar conspicuous), 2 (not radar conspicuous), 3 (radar conspicuous (has radar reflector))] (C) OBJNAM = (Refer to letter D) (C) NOBJNM = (Refer to letter D) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Coding of Equipment Object** **Object Class =** TOPMAR(P) (M) TOPSHP = [8 (upright cross (St George's cross))] (M) COLOUR = [6 (yellow)] (M) SCAMIN = [EU: 45000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** LIGHTS() (M) COLOUR = [5 (blue), 6 (yellow)] (M) EXCLIT = [1 (light shown without change of character), 2 (daytime light), 3 (fog light), 4 (night light)] (M) LITCHR = [17 (occulting alternating)] (M) SIGPER = [3] (M) SIGGRP = [(1)] (M) SIGSEQ = [LL.L + (EE.E)] (seconds) (M) VALNMR = [xx.x] (M) SCAMIN = [45000]

		(C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding** **Object Class =** RTPBCN(P) (M) CATRTB = [2 (racon, radar transponder beacon)] (M) SIGGRP = [(D)] (M) SCAMIN = [45000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

P - Fog Signals

P.1 Fog Signal

P.1.1 Fog Signal (M)

A fog signal transmits a warning signal from an aid to navigation, during periods of low visibility.

Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization*  	A) FOGSIG must be a slave object to PILPNT, 'boylat', BOYSPP, BOYCAR, BOYSAW, etc. B) The name of the navigational aid must be encoded in the attribute OBJNAM and possibly NOBJNM of the master object. It is not repeated for each slave object. C) The signal group is encoded using brackets to separate the individual groups. A group of signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters or a letter and a number. D) L in SIGSEQ stands for signal duration in xx.x seconds. E stands for duration of silence in xx.x seconds.	**Object Encoding** **Object Class =** FOGSIG(P) (M) CATFOG = [1 (explosive), 2 (diaphone), 3 (siren), 4 (nautophone), 5 (reed), 6 (tyfon), 7 (bell), 8 (whistle), 9 (gong), 10 (horn)] (O) SIGFRQ = [xxxxxx] (Hz), e.g. 12 for 12 Hz (O) SIGGEN = [1 (automatically), 2 (by wave action)] (C) SIGPER = [xx.xx (e.g., signal period of 12 seconds coded as 12)] (C) SIGGRP = [(x),(x)…], e.g., (), (2), (2+1) (C) SIGSEQ = [LL.L + (EE.E)] (seconds) (O) VALMXR = [xx.x] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

Q - Radar, Radio, Electronic Positioning

Q.1 Radar

Q.1.1 Radar Station (O)

The radar station of a VTS or a lock to locate vessels and/or monitor the traffic.

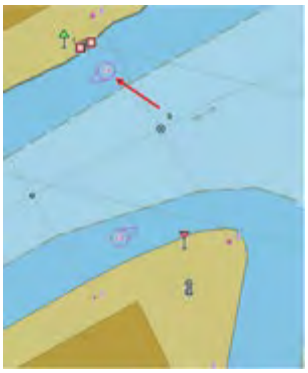
Graphics	Encoding Instructions	Object Encoding
Chart Symbol  *IENC Symbolization* 	A) The object radar station (RADSTA) is used to encode the technical equipment itself independent of the building or structure where it is installed. This building or structure, e.g., mast, tower, building, radar dome is a different object. B) The communication information of the VTS or lock to which the radar antenna belongs should be encoded by a 'comare' object (M.4.1). C) RADSTA has to be the slave object of the supporting structure (e.g., landmark, see F.3.1 or building single, see E.1.2). If both objects have the same name, it is only encoded in the master object.	**Object Encoding** **Object Class =** RADSTA(P) (M) CATRAS = [1 (radar surveillance station)] (O) OBJNAM = (name and/or operator/owner) (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

Q - Radar, Radio, Electronic Positioning

Q.2 Radio

Q.2.1 Radio Calling-in Point (M)

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)

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) If it's not a one-way route use TRAFIC = 4 two-way in general. Use inbound (upstream) and outbound (downstream), if the obligation to report applies only to one direction of traffic. B) The attribute ORIENT (orientation) is used to point in the direction of impact and enables to fix the pointer of the symbol C) COMCHA (communication channel) has to be used. The attribute "communication channel" encodes the various VHF-channels used for communication. Each VHF-channel should be indicated by 2 digits and up to 2 characters (A-Z); e.g., VHF-channel 7 -> 07', VHF-channel 16 -> >16'; The indication of several VHF-channels is possible. D) 'catcom' should always be used. E) The use of line objects crossing the waterway is preferred, but it is not allowed to encode two different 'rdocal' objects on the same spatial line geometry. F) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. G) A communication area should be encoded where relevant. H) This feature could be aggregated to a lock, bridge or communication area, etc. by a C_AGGR object.	**Object Encoding** **Object Class =** rdocal(P,L) (M) TRAFIC = [1 (inbound), 2 (outbound), 3 (one-way), 4 (two-way)] (M) ORIENT = [xxx.xx or "unknown"] (degree (°)), e.g., 110.76 (M) COMCHA = [[XXXX];[XXXX];...] (M) catcom = [1 (VTS centre), 2 (VTS sector), 3 (IVS point), 4 (MIB), 5 (lock), 6 (bridge), 7 (custom), 8 (harbour)] (O) TXTDSC = (Refer to letter F) (M) OBJNAM = (name and/or operator/owner) (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (M) SCAMIN = [EU: 12000; US: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.1 Check Points

R.1.1 Check Point (C)

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

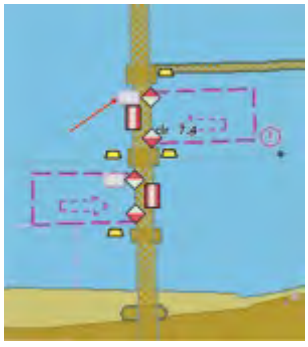
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) Places for customs controls and immigration control have to be encoded as a 'chkpnt'. B) This object only encodes the function. The object 'checkpoint' does not include facilities such as buildings, gates, or other installations. They may be encoded as separate objects. C) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. D) If an UNLOCODE or an ISRS is available, it must be encoded (see General Guidance H). E) EU: Check points must be encoded.	**Object Encoding** **Object Class =** chkpnt(P,A) (M) catchp = [1 (custom), 2 (border)] (M) NATION = (Nationality is encoded by a 2 character-code following ISO 3166 (refer to Annex A to S-57 Appendix A)) (O) OBJNAM = (name of the control station) (O) NOBJNM = (Refer to Section B, General Guidance) (C) unlocd = [ISRS Location Code] (O) TXTDSC = (Refer to letter C) (M) SCAMIN = [EU: 12000; US: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.2 Signal Stations

R.2.1 Traffic Signal Station - Bridge Passage (O)

Place on shore from which signals are made for the control of vessels wishing to pass under a bridge.

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *IENC Symbolization* 	A) COMCHA should not be used, communication area can be given in 'comare' object class. B) It's recommended to show the direction of the impact (object attribute 'dirimp') if the traffic signal station is only valid for one direction. C) If the traffic signal station has an official name it's has to be encoded with the object attribute OBJNAM. D) INFORM can be used to give unformatted text as additional information. For formatted text TXTDSC has to be used. E) The signals have to be aggregated with the other bridge objects by C_AGGR.	**Object Encoding** **Object Class =** sistat(P) (M) catsit = [8 (bridge passage)] (O) dirimp = [1 (upstream), 2 (downstream)] (C) OBJNAM = (name and/or operator/owner) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.2 Signal Stations

R.2.2 Traffic Signal Station - Lock (O)

Place on shore from which signals are made for the control of vessels entering or leaving a lock.

Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *Real World*  *IENC Symbolization* 	A) COMCHA should not be used, communication area can be given in 'comare' object class. B) It's recommended to show the direction of the impact (object attribute 'dirimp') if the traffic signal station is only valid for one direction. C) If the traffic signal station has an official name it has to be encoded with the object attribute OBJNAM. D) INFORM can be used to give unformatted text as additional information. For formatted text TXTDSC must be used. E) The signals have to be aggregated with the other lock objects using C_AGGR.	**Object Encoding** **Object Class =** sistat(P) (M) catsit = [6 (lock)] (O) dirimp = [1 (upstream), 2 (downstream)] (C) OBJNAM = (Refer to letter C) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.2 Signal Stations

R.2.3 Traffic Signal Station - Oncoming Traffic Indicator (O)

Place on shore from which signals are made to inform about oncoming traffic.

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) COMCHA should not be used, communication area can be given in 'comare' object class. B) It's recommended to show the direction of the impact (object attribute 'dirimp') if the traffic signal station is only valid for one direction. C) If the traffic signal station has an official name it's has to be encoded with the object attribute OBJNAM. D) INFORM can be used to give unformatted text as additional information. For formatted text TXTDSC must be used.	**Object Encoding** **Object Class =** sistat(P) (M) catsit = [10 (oncoming traffic indication)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (C) OBJNAM = (Refer to letter C) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.2 Signal Stations

R.2.4 Traffic Signal Station - Port Entry and Departure (O)

Place on shore from which signals are made for the control of vessels entering or leaving a port.

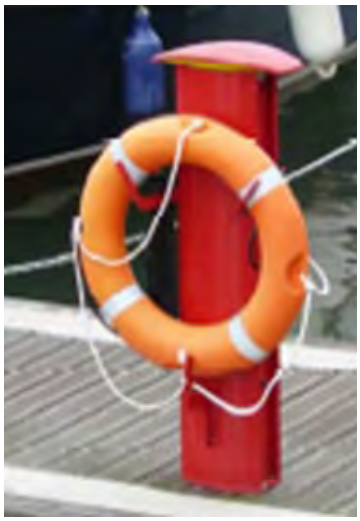
Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *IENC Symbolization* 	A) COMCHA should not be used, communication area can be given in 'comare' object class. B) It's recommended to show the direction of the impact (object attribute 'dirimp') if the traffic signal station is only valid for one direction. C) If the traffic signal station has an official name it's has to be encoded with the object attribute OBJNAM. D) INFORM can be used to give unformatted text as additional information. For formatted text TXTDSC has to be used.	**Object Encoding** **Object Class =** sistat(P) (M) catsit = [2 (port entry and departure)] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (C) OBJNAM = (Refer to letter C) (O) NOBJNM = (Refer to Section B, General Guidance) (O) INFORM = (Refer to letter D) (O) NINFOM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter D) (C) unlocd = [ISRS Location Code] (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 22000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.3 Coastguard and Rescue Stations

R.3.1 Rescue Station (O)

A place at which life saving equipment is held.

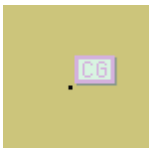
Graphics	Encoding Instructions	Object Encoding
Real World  *Real World*  *IENC Symbolization* 		**Object Encoding** **Object Class =** RSCSTA(P) (M) catrsc = [1 (rescue station with life boat), 2 (rescue station with rocket), 3 (not in use), 4 (refuge for ship-wrecked mariners), 5 (refuge for intertidal area walkers), 6 (lifeboat lying at a mooring), 7 (aid radio station), 8 (first aid equipment), 9 (lifebuoy, ring buoy, life ring, life saver)] (O) DATEND = (Refer to Section B, General Guidance) (O) DATSTA = (Refer to Section B, General Guidance) (O) PERSTA = (Refer to Section B, General Guidance) (O) PEREND = (Refer to Section B, General Guidance) (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) STATUS = [2 (occasional), 4 (not in use)] (M) SCAMIN = [8000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.3 Coastguard and Rescue Stations

R.3.2 Coastguard Station (O)

Watch keeping stations at which a watch is kept either continuously, or at certain times only.

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) If it is required to encode a coastguard station, it must be done using the feature Coastguard Station. B) The Coastguard Station must only be used to describe the function of the coastguard station, independent of the building or structure itself. If it is required to encode the building or structure in which the coastguard station operates, it must be done using an appropriate feature (e.g. Building, Landmark). C) Maritime Rescue and Coordination Centres (MRCC) are part of a constantly manned communications watch system. If it is required to encode a MRCC, it should be done using Coastguard Station, with complex attribute information (sub-attribute text) = Maritime Rescue and Coordination Centre. The name of the station may be populated using the complex attribute feature name (sub-attribute name), e.g. MRCC Swansea. D) Each VHF-channel should be indicated, using the attribute communication channel. E) A Rescue Station should be encoded using Rescue Station (see R.3.1). F) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute. G) Use STATUS if any of the conditions apply.	**Object Encoding** **Object Class =** CGUSTA(P) (M) COMCHA = [[XXXX];[XXXX];...] (O) OBJNAM = [Name] (O) NOBJNM = (Refer to Section B, General Guidance) (O) STATUS = [2 (occasional), 4 (not in use)] (O) INFORM = (additional information) (O) NINFOM = (Refer to Section B, General Guidance) (M) SCAMIN = [8000] (O) TXTDSC = (additional information) (O) NTXTDS = (Refer to Section B, General Guidance) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

R - Services

R.4 Sensors

R.4.1 Sensor (O)

A device that responds to a physical stimulus (as heat, light, sound, pressure, magnetism or a particular motion) and transmits a resulting impulse (as for measurement or operating a control).

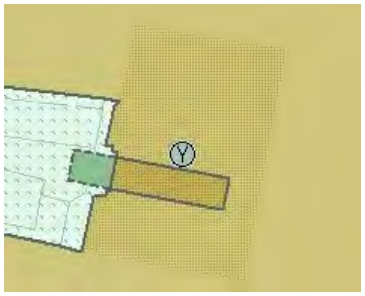
Graphics	Encoding Instructions	Object Encoding
Real World 	A) For a sensor used to reduce or to turn off bridge lighting, choose appropriate category of sensor and fnctsn = 1 (reduce bridge lighting).	**Object Encoding** **Object Class =** sensor(P) (M) catsen = [1 (light activated), 2 (telephone activated)] (M) fnctsn = [1 (reduce bridge lighting)] (O) OBJNAM = [name and/or operator/owner] (O) NOBJNM = (Refer to Section B, General Guidance) (M) SCAMIN = [22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

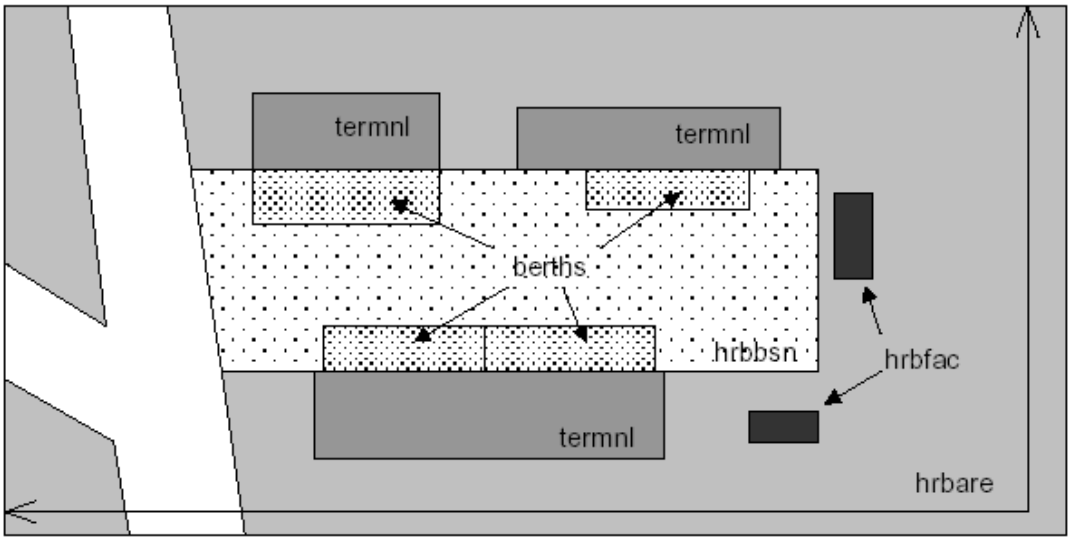
S - Small Craft Facilities

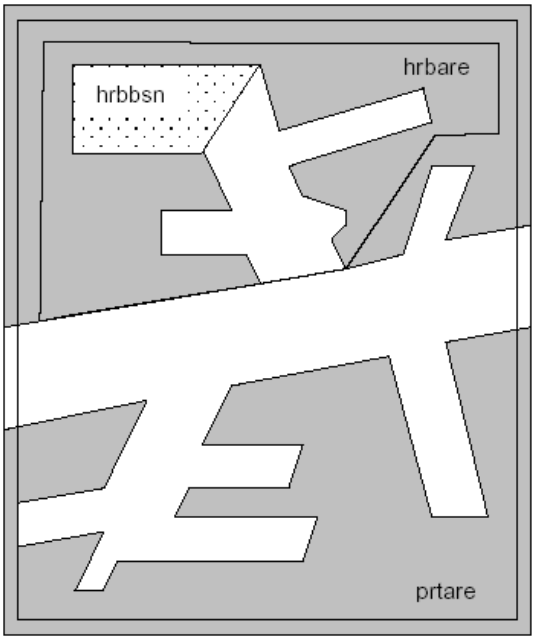
S.1 Marinas and Other Facilities

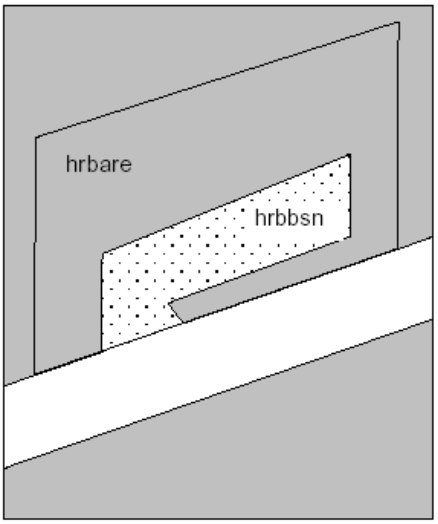
S.1.1 Harbor Facilities (O)

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

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Harbor facilities indicate only the services and not the physical buildings or other structures. B) Terminals are not encoded as 'hrbfac' but as 'termnl' (see G.3.19). C) A shipyard on shore is always encoded as hrbfac with cathaf = 9. The single slipways are encoded as SLCONS (see G.3.18). For docks see G.3.5 to G.3.7. D) If the harbour facility has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' see T.1.1. E) If a structured external XML-file with more detailed communication information is available, the reference to the file must be entered in the TXTDSC attribute. F) Harbor master's offices, pilot offices, water police offices and custom offices are encoded as BUISGL	**Object Encoding** **Object Class =** hrbfac(P,A) (M) cathaf = [4 (fishing harbour), 6 (naval base), 9 (shipyard), 12 (syncrolift), 13 (straddle carrier), 16 (service and repair), 17 (quarantine station)] (O) TXTDSC = (Refer to letter E) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 12000; US: 22000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)




hrbare
hrbbsn
prtare


hrbare
hrbbsn

S - Small Craft Facilities

S.1 Marinas and Other Facilities

S.1.2 Marina (O)

A harbour installation with a service or commercial operation of public interest. (S-57 Standard)

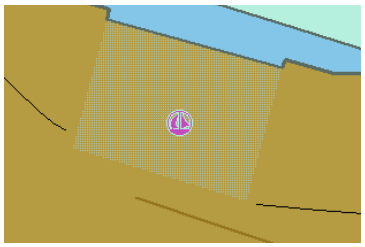
Graphics	Encoding Instructions	Object Encoding
Real World  *Chart Symbol* *Image to be included at a later date* *IENC Symbolization* 	A) Only code HRBFAC (A) object when extents of marina feature are known. Use HRBFAC (P) when extents are not known.	**Object Encoding** **Object Class =** HRBFAC(P,A) (M) CATHAF = [5 (yacht harbour/marina)] (M) OBJNAM = [(Marina Name) + "Marina"] (O) NOBJNM = (Refer to Section B, General Guidance) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 12000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

S - Small Craft Facilities

S.1 Marinas and Other Facilities

S.1.3 Small Craft Facility (O)

A place at which a service generally of interest to small craft or pleasure boats is available.

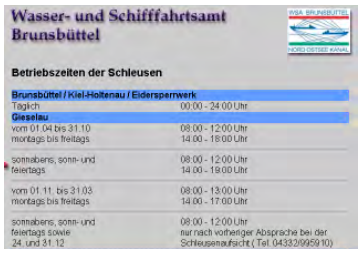
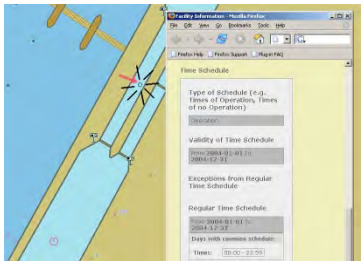
Graphics	Encoding Instructions	Object Encoding
IENC Symbolization 	A) This object class encodes only the service available for small craft or pleasure boats at this location. B) The structure housing the service may be encoded separately. C) If the small craft facility has a special time schedule or special operating hours apply, the object can be combined with a time schedule. For this purpose please refer to the time schedule (general) object 'tisdge' see T.1.1 D) For bunker, fuel and water supply for commercial vessels see G.3.2, for refuse dump see G.3.17. E) If a structured external XML-file with more detailed communication information is available, the reference to the file has to be entered in the TXTDSC attribute.	**Object Encoding** **Object Class =** SMCFAC(P,A) (M) CATSCF = [1 (visitor's berth), 2 (nautical club), 3 (boat hoist), 4 (sailmaker), 5 (boatyard), 6 (public inn), 7 (restaurant), 8 (chandler), 9 (provisions), 10 (doctor), 11 (pharmacy), 12 (water tap), 13 (fuel station), 14 (electricity), 15 (bottle gas), 16 (showers), 17 (launderette), 18 (public toilets), 19 (post box), 20 (public telephone), 21 (refuse bin), 22 (car park), 23 (parking for boats and trailers), 24 (caravan site), 25 (camping site), 26 (sewerage pump-out station), 27 (emergency telephone), 28 (landing/launching place for boats), 29 (visitors mooring), 30 (scrubbing berth), 31 (picnic area), 32 (mechanics workshop), 33 (guard and/or security service)] (O) OBJNAM = (name and/or operator/owner) (O) NOBJNM = (Refer to Section B, General Guidance) (O) TXTDSC = (Refer to letter E) (O) CONDTN = [1 (under construction), 2 (ruined), 3 (under reclamation), 5 (planned construction)] (M) SCAMIN = [EU: 8000; US: 12000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

T - Time and Behaviour

T.1 Schedules

T.1.1 Time Schedule (general) (C)

Time schedules are used to encode operating hours of locks, bridges etc.

Graphics	Encoding Instructions	Object Encoding
Real World  *IENC Symbolization* 	A) Encoded without dedicated spatial reference. Always associated with respective geo object (see below). B) Operating hours should be included in at least all movable bridges and all locks, even if these are operated 24 hours a day 7 days a week all year round. C) Operating hours should preferably be added for all other objects that have limited operating/ availability hours (Offices of waterway authorities, harbor masters, police, etc. / bunker services, fresh water supplies, refuse dumps, etc. / terminals, berths, pontoons, etc.) D) Detailed schedule information is contained in external file. The attribute 'schref' contains the respective reference. E) If there are different time schedules for different ship types or usages of ships, or there are different categories of time and behavior, several 'tisdge' objects must be used. F) Information about average passing times is encoded in an additional external file. The file name is encoded in the 'aptref' attribute G) Operating times have to be encoded in local time. H) EU: Time schedules must be encoded, however if the same time schedule applies to all kinds of vessels the reference to the external XML file can be encoded in the TXTDSC attribute of the object itself. It is not necessary to encode the tisdge object in this case.	**Object Encoding** **Object Class =** tisdge() (M) cattab = [1 (operational period), 2 (non-operational period)] (M) schref = (Time schedule reference: if a structured external XML-file is available, the reference to the file has to be entered here.) (M) shptyp = [1 (general cargo vessel), 2 (container vessel), 3 (tanker), 4 (sailing vessel), 5 (fishing vessel)] (M) useshp = [1 (liner trade), 2 (occasional professional shipping), 3 (leisure)] (O) aptref = Average passing time reference; if a structured external XLM-file is available, the reference to the files has to be entered here] (O) dirimp = [1 (upstream), 2 (downstream), 3 (to the left bank), 4 (to the right bank)] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

U - Legal ECDIS

U.1 Maximum Dimensions, Speed

U.1.1 Maximum Permitted Ship Dimensions (C)

Waterway or waterway section for which a juridical regulation with respect to the maximum permitted vessel dimensions exists.

Graphics	Encoding Instructions	Object Encoding
	A) The actual value for ship dimension limits are encoded by the respective regulation attributes ('lg_bme', 'lg_lgs', 'lg_drt', 'lg_wdp'). B) If 'lg_wdp' is encoded the unit for the water displacement must be given as well. C) Use 'lg_rel' to indicate if the particular regulation is meant to control the general usage of the waterway, the carriage of equipment, tasks/operations performed by the skipper or other instructions. D) Condition attributes ('lc_csi'; 'lc_cse'; 'lc_asi'; 'lc_ase'; 'lc_cci'; 'lc_cce') must be used to describe the conditions under which a particular law / regulation is applicable. E) To describe the categories for ship types, ship formations and cargo type use either implicit or explicit type selection. F) If the value 1 'other' is used for one of the above category attributes the description attribute (lg_des) must be used to describe the details or indicate where detailed information can be found. G) EU: Must be encoded if a regulation for (a stretch of) a waterway with regard to maximum permitted ship dimensions exists unless a CEMT class has been encoded by a wtware feature (L.3.1 CEMT Classification, ISRS Location Code) and the permitted ship dimensions are equal to the CEMT class.	**Object Encoding** **Object Class =** lg_sdm(A) (O) lg_rel = [1 (other), 2 (usage of waterway), 3 (carriage of equipment), 4 (task,operation)] (O) lg_bme = [xx.xx] (metres), e.g., 10.45 (O) lg_lgs = [xxx.xx] (metres), e.g., 110.00 (O) lg_drt = [xx.xx] (metres), e.g., 3.10 (O) lg_wdp = [xxxx.x] (m³ or tonnes), e.g., 310.0 (O) lg_wdu = [1 (other), 2 (cubic meters), 3 (tonnes)] (C) lg_des = [legal description; please refer to F] (O) lc_csi = [1 (all types), 2 (other), 3 (non-motorized vessel), 5 (craft), 6 (vessel), 7 (inland waterway vessel), 8 (sea going ship), 9 (motor vessel), 10 (motor tanker), 11 (motor cargo vessel), 12 (canal barge), 13 (tug), 14 (pusher), 15 (barge), 16 (tank barge), 17 (dumb barge), 18 (lighter), 19 (tank lighter), 20 (cargo lighter), 21 (ship borne lighter), 22 (passenger vessel), 23 (passenger sailing vessel), 24 (day trip vessel), 25 (cabin vessel), 26 (High-speed vessel), 27 (floating equipment), 28 (worksite craft), 29 (recreational craft), 30 (Dinghy), 31 (floating establishment), 32 (floating object)] (O) lc_cse = [1 (all types), 2 (other), 3 (non-motorized vessel), 5 (craft), 6 (vessel), 7 (inland waterway vessel), 8 (sea going ship), 9 (motor vessel), 10 (motor tanker), 11 (motor cargo vessel), 12 (canal barge), 13 (tug), 14 (pusher), 15 (barge), 16 (tank barge), 17 (dumb barge), 18 (lighter), 19 (tank lighter), 20 (cargo lighter), 21 (ship borne lighter), 22 (passenger vessel), 23 (passenger sailing vessel), 24 (day trip vessel), 25 (cabin vessel), 26 (High-speed vessel), 27 (floating equipment), 28 (worksite craft), 29 (recreational craft), 30 (Dinghy), 31 (floating establishment), 32 (floating object)] (O) lc_asi = [1 (all types), 2 (other), 3 (single vessel), 5 (convoy), 6 (formation), 7 (rigid convoy), 8 (pushed convoy), 9 (breasted up

		formation), 10 (towed convoy)] (O) lc_ase = [1 (all types), 2 (other), 3 (single vessel), 5 (convoy), 6 (formation), 7 (rigid convoy), 8 (pushed convoy), 9 (breasted up formation), 10 (towed convoy)] (O) lc_cci = [1 (all types), 2 (other), 4 (bulk), 5 (dry cargo), 6 (liquid cargo), 7 (liquid cargo (type N)), 8 (liquid cargo (type C)), 9 (gas)] (O) lc_cce = [1 (all types), 2 (other), 4 (bulk), 5 (dry cargo), 6 (liquid cargo), 7 (liquid cargo (type N)), 8 (liquid cargo (type C)), 9 (gas)] (O) lg_pbr = (publication reference) (C) SORDAT = [YYYYMMDD] (C) SORDAT = [YYYYMMDD]

U - Legal ECDIS

U.1 Maximum Dimensions, Speed

U.1.2 Maximum Permitted Vessel Speed (C)

Waterway or waterway section for which a juridical regulation with respect to the maximum permitted vessel speed exists.

Graphics	Encoding Instructions	Object Encoding
	A) The actual value for the speed limit is encoded by the respective regulation attribute (lg_spd). B) The reference of the given speed value (e.g., speed over ground, speed through water) must be encoded by means of 'lg_spr'. C) Use 'lg_rel' to indicate if the particular regulation is meant to control the general usage of the waterway, the carriage of equipment, tasks/operations performed by the skipper or other instructions. D) Condition attributes ('lc_csi'; 'lc_cse'; 'lc_asi'; 'lc_ase'; 'lc_cci'; 'lc_cce') must be used to describe the conditions under which a particular law / regulation is applicable. E) To describe the categories for ship types, ship formations and cargo type use either implicit or explicit type selection. F) If the value 1 'other' is used for one of the above category attributes the description attribute (lg_des) must be used to describe the details or indicate where detailed information can be found. G) EU: Must be encoded if a regulation for (a stretch of) a waterway with regard to maximum permitted vessel speed exists.	**Object Encoding** **Object Class =** lg_vsp(A) (O) lg_rel = [1 (other), 2 (usage of waterway), 3 (carriage of equipment), 4 (task,operation)] (O) lg_spd = [xx.x] (km/h), e.g., 10.0 for a maximum permitted speed of 10.0 km/h (O) lg_spr = [1 (other), 2 (speed over ground), 3 (speed through water)] (C) lg_des = (legal description: please refer to F) (O) lc_csi = [1 (all types), 2 (other), 3 (non-motorized vessel), 5 (craft), 6 (vessel), 7 (inland waterway vessel), 8 (sea going ship), 9 (motor vessel), 10 (motor tanker), 11 (motor cargo vessel), 12 (canal barge), 13 (tug), 14 (pusher), 15 (barge), 16 (tank barge), 17 (dumb barge), 18 (lighter), 19 (tank lighter), 20 (cargo lighter), 21 (ship borne lighter), 22 (passenger vessel), 23 (passenger sailing vessel), 24 (day trip vessel), 25 (cabin vessel), 26 (High-speed vessel), 27 (floating equipment), 28 (worksite craft), 29 (recreational craft), 30 (Dinghy), 31 (floating establishment), 32 (floating object)] (O) lc_cse = [1 (all types), 2 (other), 3 (non-motorized vessel), 5 (craft), 6 (vessel), 7 (inland waterway vessel), 8 (sea going ship), 9 (motor vessel), 10 (motor tanker), 11 (motor cargo vessel), 12 (canal barge), 13 (tug), 14 (pusher), 15 (barge), 16 (tank barge), 17 (dumb barge), 18 (lighter), 19 (tank lighter), 20 (cargo lighter), 21 (ship borne lighter), 22 (passenger vessel), 23 (passenger sailing vessel), 24 (day trip vessel), 25 (cabin vessel), 26 (High-speed vessel), 27 (floating equipment), 28 (worksite craft), 29 (recreational craft), 30 (Dinghy), 31 (floating establishment), 32 (floating object)] (O) lc_asi = [1 (all types), 2 (other), 3 (single vessel), 5 (convoy), 6 (formation), 7 (rigid convoy), 8 (pushed convoy), 9 (breasted up formation), 10 (towed convoy)] (O) lc_ase = [1 (all types), 2 (other), 3 (single vessel), 5 (convoy), 6 (formation), 7 (rigid convoy), 8 (pushed convoy), 9 (breasted up

		formation), 10 (towed convoy)] (O) lc_cci = [1 (all types), 2 (other), 4 (bulk), 5 (dry cargo), 6 (liquid cargo), 7 (liquid cargo (type N)), 8 (liquid cargo (type C)), 9 (gas)] (O) lc_cce = [1 (all types), 2 (other), 4 (bulk), 5 (dry cargo), 6 (liquid cargo), 7 (liquid cargo (type N)), 8 (liquid cargo (type C)), 9 (gas)] (O) lg_pbr = (publication reference) (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance)

V - Abbreviations

ADN	Agreement on the Transport of Dangerous Goods on Inland Waterways
CEMT	Conference of European Maritime Transportation
CEVNI	European Code for Inland Waterways of the Economic Commission for Europe of the United Nations
CO	Company
Corp	Corporation
Dbn	Daybeacon
DSPM	Data set parameter
DSPM	Data Set Field Parameter
ECDIS	Electronic Chart Display and Information Systems
Hwy	Highway
IALA	International Association of Lighthouse Authorities
IEHG	Inland ENC Harmonization Group
IENC	Inland Electronic Navigational Chart
IHO	International Hydrographic Organisation
INTU	Intended usage subfield
ISO	International Standard Organisation
ISRS	International standard for electronic ship reporting in inland navigation
IVS	Reporting and Information system for inland navigation in the Netherlands
I-xx	Interstate, where xx equals interstate number
JPEG	stanndardized image file formate of the Joint Photographic Expert Group
LDB	Left Descending Bank
Ldg	Landing
LL	Light List number
Lt	Light
MIB	Reporting and Information system for inland navigation in Germany
No	Number
RACON	Radar Transformer Beacon
RDB	Right Descending Bank
RIS	River Information Services
RR	Railway, railroad
SOTE	Skin of the Earth, (Group I features)

TIFF	Tagged Image File Format
UN	United Nations
UNECE	European Commission for Europe of the United Nations
UNLOCODE	Location Codes of the United Nations
USACE	US Army Corps of Engineers
VHF	Very High Frequency Radio
VTS	Vessel Traffic Services
XML	Extended Markup Language

W - Naming Conventions

Bridges	Hwy,RR/Bridge Name Bridge (e.g.,Kansas City Southern RR Swing Bridge)
Cities and Towns	St. Louis, MO Vicksburg, MS
Interstates/Highways	I-90 Hwy 20
Railways	Kansas City Southern RR Union Pacific RR

X - References

IHO S-57 Standard	IHO TRANSFER STANDARD for DIGITAL HYDROGRAPHIC DATA Edition 3.1 - November 2000
S-57 Appendix A	IHO Object Catalogue Edition 3.1 - November 2000
S-57 Appendix B.1	ENC Product Specification Edition 2.0 - November 2000
S-57 Appendix B.1, Annex A	Use of the Object Catalogue Editon 2.1 - April 2002

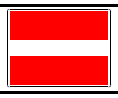
Y - Regions

BR	Brazil
EU	Europe
RU	Russian Federation
US	United States

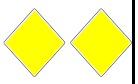
Z - Record of Changes

CR409 | *FC - CATBRG | D. LaDue	CATBRG, enumeration 12, corrected spelling of encyclopedia.
CR409 | *FC - CATSPM | D, LaDue	CATSPM, enumeration 9, corrected spelling of acquisition.
CR409 | *FC - VERDAT | D. LaDue	VERDAT, enumeration 24, replaced "leves" with "levels"
CR409 | C.1.7 Survey Reliability | D. LaDue	Removed "L" (Line) as a valid object type.
CR410 | LITCHR | B. Birklhuber	Replaced all instances of LITCHR 25 (very quick-flash plus long-flash) with 25 (quick-flash plus long-flash)
CR411 | *FC - GATCON | B. Birklhuber	GATCON, CATGAT value = 2 added.
CR411 | *FC - LITCHR | B. Birklhuber	LITHCR, enumeration 25 - replaced 25 (very quick-flash plus long-flash) with 25 (quick-flash plus long-flash)
CR411 | *FC - M_ACCY | B. Birklhuber	M_ACCY attributes VERACC and HORACC replaced "1" with "2"
CR411 | *FC - MARCUL | B. Birklhuber	MARCUL, attribute VALSOU, added "unit = m decimal digits = "2""
CR411 | *FC - uwtroc | B. Birklhuber	uwtroc, attributes VERACC and HORACC replaced "1" with "2"
CR411 | *FC - vehtrf | B. Birklhuber	vehtrf, attribute verdat - enumeration "29" deleted
CR411 | *FC - VERDAT | B. Birklhuber	VERDAT, enumeration 30 - replaced the Code VERDAT_29 with VERDAT_30.
CR411 | *FC - wtwgag | B. Birklhuber	wtwgag, attribute verdat - enumerations "23" and "24" added.
CR411 | *FC - wtwprf | B. Birklhuber	wtwprf, attribute verdat - enumeration "24" added

Annex AA - Notice Marks (CEVNI)

catnmk ID	Meaning	CEVNI	Picture	Area of Impact	Objects / (Attributes)
1	no entry (general sign)	A.1		no area, when at a bridge, otherwise bank to bank	resare (restrn = 7)
2	sections closed to use, no entry except for non-motorized small craft	A.1.1			resare (restrn = 8)
3	no overtaking	A.2		bank to bank	resare (restrn = 28)
4	no overtaking of convoys by convoys	A.3		bank to bank	resare (restrn = 29)
5	no passing or overtaking	A.4		bank to bank	resare (restrn = 30)
6	no berthing (i.e. no anchoring or making fast to the bank) on the side of the waterway on which the sign is placed	A.5		bank to fairway	resare (restrn = 1, 31)
7	no berthing on the stretch of water whose breadth, measured from the sign, is shown in metres on the sign	A.5.1		bank to indicated distance	resare (restrn = 1, 31)
8	no anchoring or trailing of anchors, cables or chains on the side of the waterway on which the sign is placed	A.6		bank to fairway or bank to bank if the sign is placed on both banks	resare (restrn = 1)
9	no making fast to the bank on the side of the waterway on which the sign is placed	A.7		bank to fairway	resare (restrn = 31) (restrn = 38 if applicable)
10	no turning	A.8		bank to bank	resare (restrn = 35)
11	do not create wash likely to cause damage	A.9		bank to bank or bank to middle of fairway depending on the size of the waterway	resare (restrn = 13)
12	no passing on left side (in openings of bridges or weirs)	A.10			
13	no passing on right side (in openings of bridges or weirs)	A.10			
14	motorized craft prohibited	A.12		bank to bank	resare (restrn = 8, INFORM = motorized craft prohibited)
15	sports or pleasure craft prohibited	A.13			
16	water skiing prohibited	A.14			
17	sailing vessels prohibited	A.15			
18	all craft other than motorized vessels or sailing craft prohibited	A.16			

19	use of sailboards prohibited	A.17			
20	water bikes prohibited	A.20			
21	end of zone authorized for high speed navigation of small sport and pleasure craft	A.18			
22	no launching or beaching of vessels	A.19			
23	proceed in left direction	B.1			
24	proceed in right direction	B.1			
25	move to the side of the fairway on your port side	B.2a			
26	move to the side of the fairway on your starboard side	B.2b			
27	keep the side of the fairway on your port side	B.3a			
28	keep the side of the fairway on your starboard side	B.3b			
29	cross fairway to port	B.4a			
30	cross fairway to starboard	B.4b			
31	stop as prescribed in the Regulations	B.5			
32	do not exceed the speed indicated (in km/h)	B.6		bank to bank	resare (restrn = 27, INFORM = 12 km/h)
33	give a sound signal	B.7			
34	keep a particularly sharp lookout	B.8			
35	do not enter the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed	B.9a			
36	do not cross the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed	B.9b			
37	obligation to enter into a radiotelephone link on the channel as indicated on the board	B.11		bank to bank	comare (catcom, COMCHA = 11, STATUS = 9)
38	depth of water limited	C.1			resare (restrn = 36, INFORM = 2.20 m)
39	headroom limited	C.2			

40	width of passage or channel limited	C.3			resare (restrn = 37, INFORM = 45 m)
41	there are restrictions on navigation: see the information plate below the sign	C.4			
42	the channel lies at a distance from the left bank; the figure shown on the sign indicates the distance in metres, measured from the sign, to which vessels should keep	C.5		bank to distance	resare (restrn = 7)
43	the channel lies at a distance from the right bank; the figure shown on the sign indicates the distance in metres, measured from the sign, to which vessels should keep	C.5		bank to distance	resare (restrn = 7)
44	recommended channel in both directions (at bridges)	D.1a			
45	recommended channel only in the direction indicated (passage in the opposite direction prohibited) (at bridges)	D.1b			
46	you are recommended to keep on right side (in openings of bridges and weirs)	D.2			
47	you are recommended to keep on left side (in openings of bridges and weirs)	D.2			
48	you are recommended to proceed in the left direction	D.3			
49	you are recommended to proceed in the right direction	D.3			
50	entry permitted (general sign)	E.1			
51	overhead cable crossing	E.2			
52	weir	E.3			
53	ferry-boat not moving independently	E.4a			
54	ferry-boat moving independently	E.4b			
55	berthing (i.e. anchoring or making fast to the bank) permitted on the side of the waterway on which the sign is placed	E.5			achare, achbrt, berths
56	berthing permitted on the stretch of water of the breadth measured from, and shown on the board in metres	E.5.1			achare, achbrt, berths
57	berthing permitted on the stretch of water bounded by the two distances measured from, and shown on the board in metres	E.5.2			achare, achbrt, berths
58	maximum number of vessels permitted to berth abreast on the side of the waterway on which the sign is placed	E.5.3			achare, achbrt, berths
59	berthing area reserved for pushing-navigation vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed	E.5.4			achare, achbrt, berths (catach = 10/catbrt = 4, clsdng = 4)
60	berthing area reserved for pushing-navigation vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed	E.5.5			achare, achbrt, berths (catach =10/catbrt = 4, clsdng = 1)

61	berthing area reserved for pushing-navigation vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed	E.5.6			achare, achbrt, berths (catach = 10/catbrt = 4, clsdng = 2)
62	berthing area reserved for pushing-navigation vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed	E.5.7			achare, achbrt, berths (catach = 10/catbrt = 4, clsdng = 3)
63	berthing area reserved for vessels other than pushing-navigation vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed	E.5.8			achare, achbrt, berths (catach = 11/catbrt = 5, clsdng = 4)
64	berthing area reserved for vessels other than pushing-navigation vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed	E.5.9			achare, achbrt, berths (catach = 11/catbrt = 5, clsdng = 1)
65	berthing area reserved for vessels other than pushing-navigation vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed	E.5.10			achare, achbrt, berths (catach = 11/catbrt = 5, clsdng = 2)
66	berthing area reserved for vessels other than pushing-navigation vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed	E.5.11			achare, achbrt, berths (catach = 11/catbrt = 5, clsdng = 3)
67	berthing area reserved for all vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed	E.5.12			achare, achbrt, berths (clsdng = 4)
68	berthing area reserved for all vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed	E.5.13			achare, achbrt, berths (clsdng = 1)
69	berthing area reserved for all vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed	E.5.14			achare, achbrt, berths (clsdng = 2)
70	berthing area reserved for all vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed	E.5.15			achare, achbrt, berths (clsdng = 3)
71	anchoring or trailing of anchors, cables or chains permitted on the side of the waterway on which the sign is placed	E.6			achare, achbrt
72	making fast to the bank permitted on the side of the waterway on which the sign is placed	E.7			berths
73	berthing area reserved for loading and unloading vehicles	E.7.1			berths
74	turning area	E.8			trnbsn
75	crossing with secondary waterway ahead	E.9a			
76	secondary waterway ahead on the right	E.9b			
77	secondary waterway ahead on the left	E.9c			
78	secondary waterway ahead (main waterway right)	E.9d			
79	secondary waterway ahead (main waterway left)	E.9e			
80	secondary waterway left (main waterway right)	E.9f			

81	secondary waterway right (main waterway left)	E.9g			
82	secondary waterway ahead and left (main waterway right)	E.9h			
83	secondary waterway ahead and right (main waterway left)	E.9i			
84	crossing with main waterway ahead	E.10a			
85	junction with main waterway ahead	E.10b			
86	junction with main waterway ahead and right	E.10c			
87	junction with main waterway ahead and left	E.10d			
88	junction with main waterway ahead and right (secondary waterway left)	E.10e			
89	junction with main waterway ahead and left (secondary waterway right)	E.10.f			
90	end of prohibition or obligation applying to traffic in one direction only, or end of a restriction	E.11			
91	drinking-water supply	E.13			
92	telephone	E.14			
93	motorized vessels permitted	E.15		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = motorized vessels permitted)
94	sport and pleasure craft permitted	E.16		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = sport and pleasure craft permitted)
95	water skiing permitted	E.17		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = water skiing permitted)
96	sailing vessels permitted	E.18		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = sailing vessels permitted)
97	craft other than motorized vessels or sailing craft permitted	E.19		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = craft other than motorized vessels or sailing craft permitted)
98	use of sailboards permitted	E.20		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = use of sailboards permitted)
99	possibility of obtaining nautical information by radio-telephone on the channel indicated	E.23		bank to bank	come (catcom, COMCHA = 11, STATUS = 3)
100	water bikes permitted	E.24		bank to fairway	CTNARE (INFORM = water bikes permitted)
101	zone authorized for high speed navigation of small sport and pleasure craft	E.21		bank to fairway or bank to bank depending on local situation	CTNARE (INFORM = zone authorized for high speed navigation of small sport and pleasure craft)

102	launching or beaching of small craft permitted	E.22		bank to fairway	CTNARE (INFORM = launching or beaching of small craft permitted)
110	wreck pontoon, passage allowed on side showing red-white sign				
111	wreck pontoon, passage allowed on both signs				
117	electrical power supply point	E.25			
118	winter harbor	E.26			
119	maximum number of vessels permitted to berth in winter harbor	E.26.1			
120	winter shelter	E.27			
121	maximum number of vessels permitted to berth in winter shelter maximum number of vessels permitted to berth abreast maximum number of rows of vessels which are berthed abreast	E.27.1			
122	use of spuds permitted	E.6.1			
123	Obligation to use onshore power supply point	B.12			

Annex AB - Notice Marks (Russian Inland Waterway Regulations)

catnmk ID	Meaning	Russian IW Regulations GOST 26600-98	Picture	Area of Impact	Objects / (Attributes)
5	no passing or overtaking	1.3		bank to bank	resare (restrn = 30)
8	no anchoring or trailing of anchors, cables or chains	1.1		bank to fairway	resare (restrn = 1)
11	do not create wash	1.4		bank to bank	resare (restrn = 13)
39	headroom limited	2.4			
74	turning area	3.2			
112	no passing or overtaking of convoys	1.2		bank to bank	resare (restrn = 30, INFORM = no passing or overtaking of convoys)
113	small crafts prohibited	1.5		bank to bank	resare (INFORM = small crafts prohibited)
114	Attention! (Keep caution)	2.1			
115	fairway crossing	2.2			
116	shipping inspection point	3.3			

Annex AC - Notice Marks (Brazilian Two Sides System)

catnmk ID	Meaning	Picture	Bank	Area of Impact	Function	Objects / (Attributes)
8	no anchoring or trailing of anchors, cables or chains		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Prohibition mark (fnctnm_1)	resare (restrn = 1)
8	no anchoring or trailing of anchors, cables or chains		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Prohibition mark (fnctnm_1)	resare (restrn = 1)
39	headroom limited		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Restriction mark (fnctnm_3)	
39	headroom limited		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Restriction mark (fnctnm_3)	
103	proceed close to the margin on your portside		left (bnkwtw_1)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
103	proceed close to the margin on your portside		right (bnkwtw_2)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
104	proceed close to the margin on your starboard side		left (bnkwtw_1)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
104	proceed close to the margin on your starboard side		right (bnkwtw_2)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
105	proceed in the middle of the river		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
105	proceed in the middle of the river		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
106	cross river to port		left (bnkwtw_1)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
106	cross river to port		right (bnkwtw_2)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
107	cross river to starboard		left (bnkwtw_1)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
107	cross river to starboard		right (bnkwtw_2)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
108	traffic between margins		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	CTNARE
108	traffic between margins		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	CTNARE
109	reduce speed		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	resare (restrn = 27)
109	reduce speed		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	resare (restrn = 27)

Annex AD - Notice Marks (Brazilian Side Independent System)

catnmk ID	Meaning	Picture	Area of Impact	Function	Objects / (Attributes)
8	no anchoring or trailing of anchors, cables or chains		upstream (dirimp_1) or downstream (dirimp_2)	Prohibition mark (fnctnm_1)	resare (restrn = 1)
39	headroom limited		upstream (dirimp_1) or downstream (dirimp_2)	Restriction mark (fnctnm_3)	
82	secondary waterway ahead on the left, main waterway on the right		upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	
83	secondary waterway ahead on the right, main waterway on the left		upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	
103	proceed close to the margin on your portside		upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
104	proceed close to the margin on your starboard side		upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
105	proceed in the middle of the river		upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
106	cross river to port		upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
107	cross river to starboard		upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
108	traffic between margins		upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	CTNARE
109	reduce speed		upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	resare (restrn = 13)

Annex AE - Notice Marks (Brazilian Paraguay-Parana Waterway)

catnmk ID	Meaning	Picture	Bank	Area of Impact	Function	Objects / (Attributes)
82	secondary waterway ahead on the left, main waterway on the right		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	
82	secondary waterway ahead on the left, main waterway on the right		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	
83	secondary waterway ahead on the right, main waterway on the left		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	
83	secondary waterway ahead on the right, main waterway on the left		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Information mark (fnctnm_5)	
103	proceed close to the margin on your portside		left (bnkwtw_1)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
103	proceed close to the margin on your portside		right (bnkwtw_2)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
104	proceed close to the margin on your starboard side		left (bnkwtw_1)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
104	proceed close to the margin on your starboard side		right (bnkwtw_2)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
105	proceed in the middle of the river		left (bnkwtw_1)	upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
105	proceed in the middle of the river		right (bnkwtw_2)	upstream (dirimp_1) or downstream (dirimp_2)	Regulation mark (fnctnm_2)	
106	cross river to port		left (bnkwtw_1)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	
106	cross river to port		right (bnkwtw_2)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
107	cross river to starboard		left (bnkwtw_1)	downstream (dirimp_2)	Regulation mark (fnctnm_2)	
107	cross river to starboard		right (bnkwtw_2)	upstream (dirimp_1)	Regulation mark (fnctnm_2)	

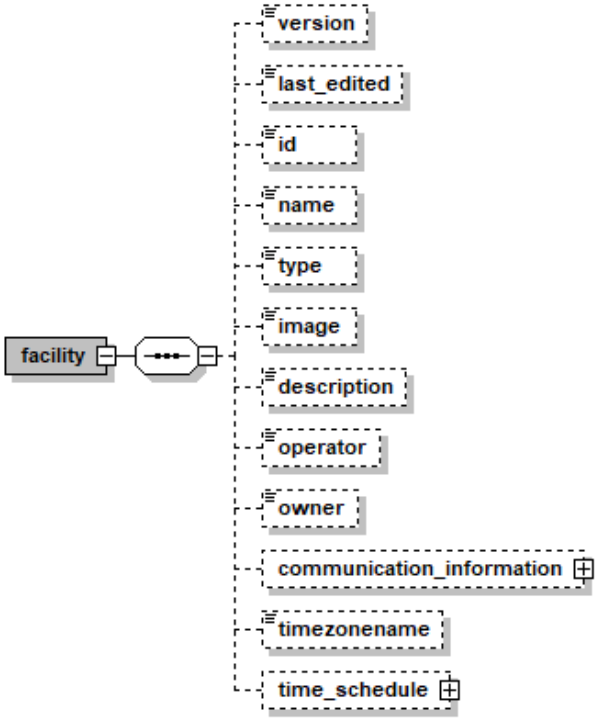
Schema File Name: **facility_2.5.xsd**

Schema File Location: **https://github.com/cesniti/iehg_gitbook/tree/edition-2.5/.gitbook/assets/facility_2.5.xsd**

Target Namespace: **http://www.openecdis.org/facility/2.5**

element facility

diagram



namespace http://www.openecdis.org/facility/2.5

properties isRef

content complex

children **version last_edited id name type image description operator owner communication_information timezonename time_schedule**

source

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<xs:element name="facility">
 <xs:complexType>
  <xs:sequence>
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   <xs:element name="last_edited" type="xs:string" minOccurs="0"/>
   <xs:element name="id" minOccurs="0">
    <xs:simpleType>
     <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
   <xs:element name="name" minOccurs="0">
    <xs:simpleType>
     <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
   <xs:element name="type" type="TFacilityType" minOccurs="0"/>
   <xs:element name="image" minOccurs="0">
    <xs:simpleType>
     <xs:restriction base="xs:anyURI">
      <xs:maxLength value="250"/>
     </xs:restriction>
```

```
 </xs:simpleType>
</xs:element>
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  <xs:restriction base="xs:string">
   <xs:maxLength value="1000"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
<xs:element name="operator" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
<xs:element name="owner" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
<!-- COMMUNICATION INFORMATION -->
<xs:element name="communication_information" minOccurs="0">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="address" type="TAddress" minOccurs="0"/>
   <xs:element name="contact" type="TContact" minOccurs="0" maxOccurs="unbounded"/>
   <xs:element name="radio_communication" type="TRadioCommunication" minOccurs="0"/>
   <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
<xs:element name="timezonename" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="40"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
<!-- TIME SCHEDULE -->
<xs:element name="time_schedule" minOccurs="0" maxOccurs="unbounded">
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  <xs:sequence>
   <xs:element name="type" minOccurs="0">
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     <xs:restriction base="xs:string">
      <xs:enumeration value="Operation"/>
      <xs:enumeration value="No Operation"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
   <xs:element name="valid" minOccurs="0">
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     <xs:sequence>
      <xs:element name="from" type="xs:date"/>
      <xs:element name="to" type="xs:date"/>
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   </xs:element>
   <xs:element name="individual_schedule" minOccurs="0">
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    </xs:complexType>
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   <xs:element name="regular_schedule" minOccurs="0">
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     <xs:sequence>
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    </xs:complexType>
   </xs:element>
   <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
```

```
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     </xs:complexType>
    </xs:element>
   </xs:sequence>
  </xs:complexType>
 </xs:element>
```

element facility/version

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:positiveinteger**

properties isRef 0

content simple

source
```
<xs:element name="version" type="xs:positiveInteger" minOccurs="0"/>
```

element facility/last_edited

diagram 

namespace http://www.openecdis.org/facility/2.5

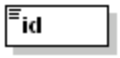
type **xs:string**

properties isRef 0

content simple

source
```
<xs:element name="last_edited" type="xs:string" minOccurs="0"/>
```

element facility/id

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

content simple

source
```
<xs:element name="id" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/name

diagram 

namespace http://www.openecdis.org/facility/2.5

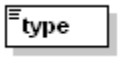
type **xs:string**

properties isRef 0

content simple

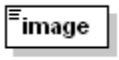
source
```
<xs:element name="name" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/type

diagram 

namespace http://www.openecdis.org/facility/2.5
type **TFacilityType**
properties isRef 0
content simple
source
```
<xs:element name="type" type="TFacilityType" minOccurs="0"/>
```

element facility/image

diagram 

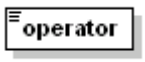
namespace http://www.openecdis.org/facility/2.5
type **xs:anyURL**
properties isRef 0
content simple
source
```
<xs:element name="image" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:anyURI">
   <xs:maxLength value="250"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/description

diagram 

namespace http://www.openecdis.org/facility/2.5
type **xs:string**
properties isRef 0
content simple
source
```
<xs:element name="description" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="1000"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/operator

diagram 

namespace http://www.openecdis.org/facility/2.5
type **xs:string**
properties isRef 0
content simple
source
```
<xs:element name="operator" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="1000"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/owner

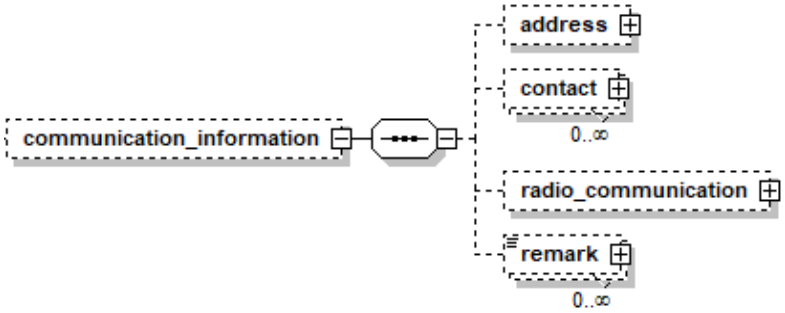
diagram 

namespace http://www.openecdis.org/facility/2.5
type **xs:string**
properties isRef 0
content simple

source
```
<xs:element name="owner" minOccurs="0">
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
    </xs:restriction>
  </xs:simpleType>
</xs:element>
```

element facility/communication_information

diagram



namespace http://www.openecdis.org/facility/2.5

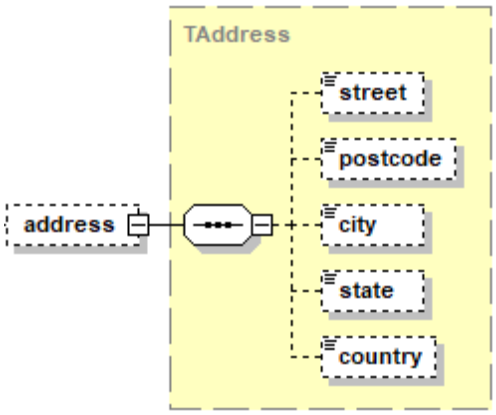
properties
- isRef 0
- content complex

children **address contact radio_communication remark**

source
```
<xs:element name="communication_information" minOccurs="0">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="address" type="TAddress" minOccurs="0"/>
      <xs:element name="contact" type="TContact" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="radio_communication" type="TRadioCommunication" minOccurs="0"/>
      <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

element facility/communication_information/address

diagram



namespace http://www.openecdis.org/facility/2.5

type **TAddress**

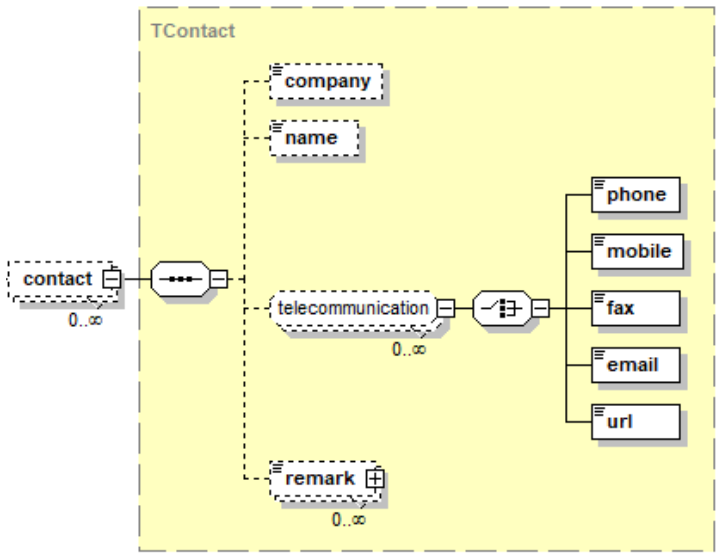
properties
- isRef 0
- content complex

children **street postcode city state country**

source
```
<xs:element name="address" type="TAddress" minOccurs="0"/>
```

element facility/communication_information/contact

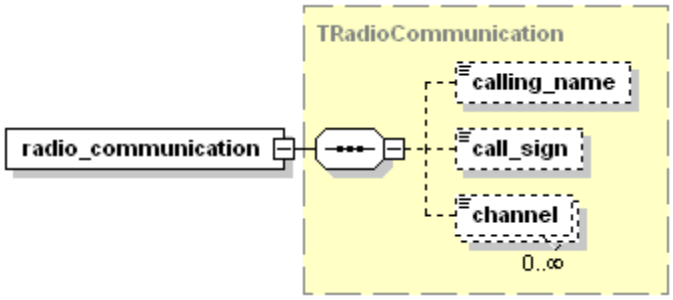
diagram



namespace http://www.openecdis.org/facility/2.5
type **TContact**
properties isRef 0
content complex
children **company name phone mobile fax email url remark**
source <xs:element name="contact" type="TContact" minOccurs="0" maxOccurs="unbounded"/>

element facility/communication_information/radio_communication

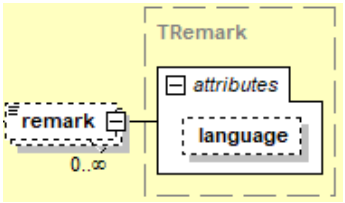
diagram



namespace http://www.openecdis.org/facility/2.5
type **TRadioCommunication**
properties isRef 0
content complex
children **calling_name call_sign channel**
source <xs:element name="radio_communication" type="TRadioCommunication" minOccurs="0"/>

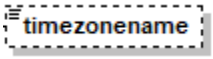
element facility/communication_information/remark

diagram



namespace http://www.openecdis.org/facility/2.5
type **TRemark**
properties isRef 0
content complex
children **language**
source <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>

element facility/timezonename

diagram 

namespace http://www.openecdis.org/facility/2.5

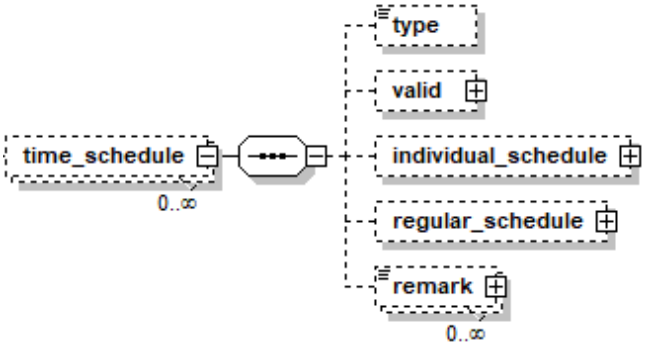
type **xs:string**

properties isRef 0

content simple

source
```
<xs:element name="timezonename" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="40"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/time_schedule

diagram 

namespace http://www.openecdis.org/facility/2.5

properties isRef 0

content complex

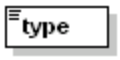
children **type valid individual_schedule regular_schedule remark**

source
```
<xs:element name="time_schedule" minOccurs="0" maxOccurs="unbounded" >
 <xs:complexType>
  <xs:sequence>
   <xs:element name="type" minOccurs="0">
    <xs:simpleType>
     <xs:restriction base="xs:string">
      <xs:enumeration value="Operation"/>
      <xs:enumeration value="No Operation"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
   <xs:element name="valid" minOccurs="0">
    <xs:complexType>
     <xs:sequence>
      <xs:element name="from" type="xs:date"/>
      <xs:element name="to" type="xs:date"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
   <xs:element name="individual_schedule" minOccurs="0">
    <xs:complexType>
     <xs:sequence>
      <xs:element name="day" type="TDay" maxOccurs="unbounded"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
   <xs:element name="regular_schedule" minOccurs="0">
    <xs:complexType>
     <xs:sequence>
      <xs:element name="period" type="TPeriod" maxOccurs="unbounded"/>
```

```
      </xs:sequence>
     </xs:complexType>
    </xs:element>
    <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
   </xs:sequence>
  </xs:complexType>
</xs:element>
```

element facility/time_schedule/type

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties
- isRef 0
- content simple

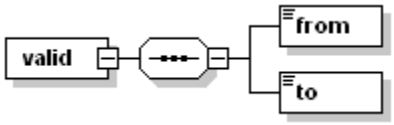
facets Operation
No Operation

source

```
<xs:element name="type" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:enumeration value="Operation"/>
   <xs:enumeration value="No Operation"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element facility/time_schedule/valid

diagram



namespace http://www.openecdis.org/facility/2.5

properties
- isRef 0
- content complex

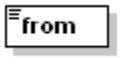
children **from to**

source

```
<xs:element name="valid" minOccurs="0">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="from" type="xs:date"/>
   <xs:element name="to" type="xs:date"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element facility/time_schedule/valid/from

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:date**

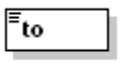
properties
- isRef 0
- content simple

source

```
<xs:element name="from" type="xs:date"/>
```

element facility/time_schedule/valid/to

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:date**

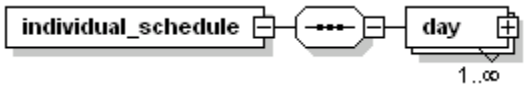
properties
- isRef 0

content simple

source
```
<xs:element name="to" type="xs:date"/>
```

element facility/time_schedule/individual_schedule

diagram



namespace http://www.openecdis.org/facility/2.5

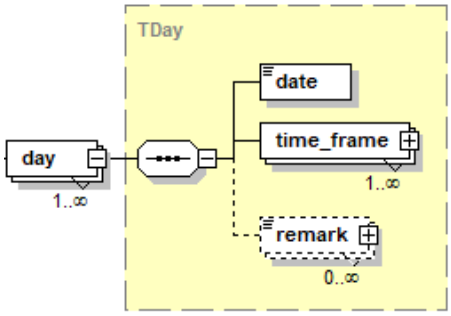
properties
- isRef 0
- content complex

children **day**

source
```
<xs:element name="individual_schedule" minOccurs="0">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="day" type="TDay" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element facility/time_schedule/individual_schedule/day

diagram



namespace http://www.openecdis.org/facility/2.5

type **TDay**

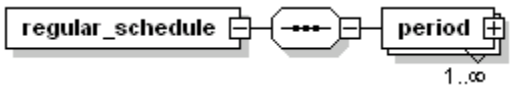
properties
- isRef 0
- content complex

children **date time_frame remark**

source
```
<xs:element name="day" type="TDay" maxOccurs="unbounded"/>
```

element facility/time_schedule/regular_schedule

diagram



namespace http://www.openecdis.org/facility/2.5

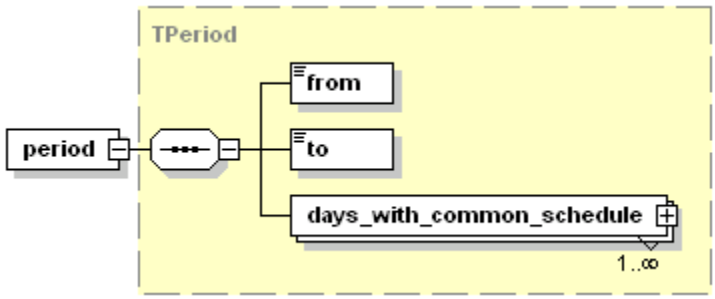
properties
- isRef 0
- content complex

children **period**

source
```
<xs:element name="regular_schedule" minOccurs="0">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="period" type="TPeriod" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element facility/time_schedule/regular_schedule/period

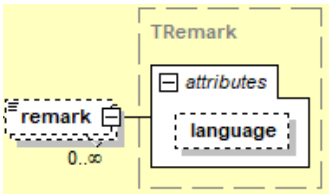
diagram



namespace http://www.openecdis.org/facility/2.5
type **TPeriod**
properties isRef 0
content complex
children **from to days_with_common_schedule**
source
```
<xs:element name="period" type="TPeriod" maxOccurs="unbounded"/>
```

element facility/time_schedule/remark

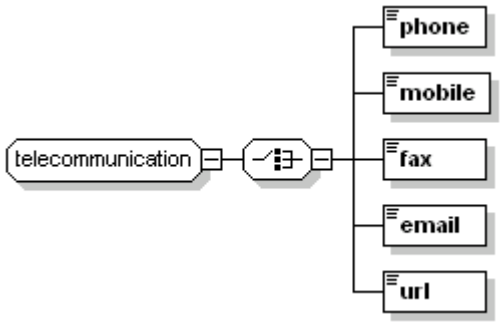
diagram



namespace http://www.openecdis.org/facility/2.5
type **TRemark**
properties isRef 0
content complex
children **language**
source
```
<xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
```

group telecommunication

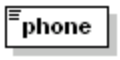
diagram



namespace http://www.openecdis.org/facility/2.5
children **phone mobile fax email url**
used by **Tcontact**
source
```
<xs:group name="telecommunication">
  <xs:choice>
    <xs:element name="phone">
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:maxLength value="50"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
    <xs:element name="mobile">
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:maxLength value="50"/>
        </xs:restriction>
```

```
    </xs:simpleType>
   </xs:element>
   <xs:element name="fax">
    <xs:simpleType>
     <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
   <xs:element name="email">
    <xs:simpleType>
     <xs:restriction base="xs:string">
      <xs:maxLength value="250"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
   <xs:element name="url">
    <xs:simpleType>
     <xs:restriction base="xs:anyURI">
      <xs:maxLength value="250"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:element>
  </xs:choice>
</xs:group>
```

element telecommunication/phone

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

content simple

source

```
<xs:element name="phone">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element telecommunication/mobile

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

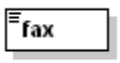
properties isRef 0

content simple

source

```
<xs:element name="mobile">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element telecommunication/fax

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

content simple

source

```
<xs:element name="fax">
```

```
  <xs:simpleType>
   <xs:restriction base="xs:string">
    <xs:maxLength value="50"/>
   </xs:restriction>
  </xs:simpleType>
</xs:element>
```

element telecommunication/email

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

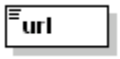
properties isRef 0

content simple

source

```
<xs:element name="email">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="250"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element telecommunication/url

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:anyURL**

properties isRef 0

content simple

source

```
<xs:element name="url">
 <xs:simpleType>
  <xs:restriction base="xs:anyURI">
   <xs:maxLength value="250"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

simple type TFacilityType

diagram

namespace http://www.openecdis.org/facility/2.5

type **restriction of xs:string**

used by **facility/type**

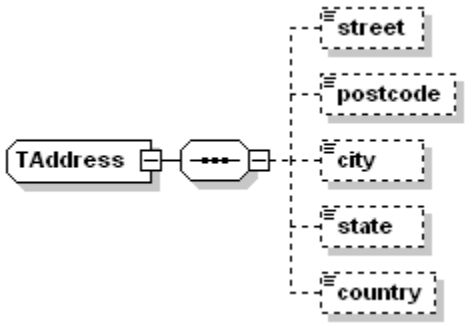
facets
Lock
Bridge
Port Facility
Navigation Authority
Port Authority
Other Authority
Water Police
Berth
Bunker Station
Waste Reception
Cargo Terminal
Passenger Terminal
Navigation Surveillance
Waterway Authority
RIS Provider
Environmental Agency
Customs
Safety Inspection
Harbour
Vessel Traffic Center
Hydrometeo Center
Ship Lift
Other

source

```
<xs:simpleType name="TFacilityType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Lock"/>
    <xs:enumeration value="Bridge"/>
    <xs:enumeration value="Port Facility"/>
    <xs:enumeration value="Navigation Authority"/>
    <xs:enumeration value="Port Authority"/>
    <xs:enumeration value="Other Authority"/>
    <xs:enumeration value="Water Police"/>
    <xs:enumeration value="Berth"/>
    <xs:enumeration value="Bunker Station"/>
    <xs:enumeration value="Waste Reception"/>
    <xs:enumeration value="Cargo Terminal"/>
    <xs:enumeration value="Passenger Terminal"/>
    <xs:enumeration value="Navigation Surveillance"/>
    <xs:enumeration value="Waterway Authority"/>
    <xs:enumeration value="RIS Provider"/>
    <xs:enumeration value="Environmental Agency"/>
    <xs:enumeration value="Customs"/>
    <xs:enumeration value="Safety Inspection"/>
    <xs:enumeration value="Harbour"/>
    <xs:enumeration value="Vessel Traffic Center"/>
    <xs:enumeration value="Hydrometeo Center"/>
    <xs:enumeration value="Ship Lift"/>
    <xs:enumeration value="Other"/>
  </xs:restriction>
</xs:simpleType>
```

complex type TAddress

diagram



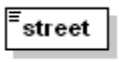
namespace http://www.openecdis.org/facility/2.5

children **street postcode city state country**

used by **facility/communication_information/address**

source
```
<xs:complexType name="TAddress">
 <xs:sequence>
  <xs:element name="street" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
  <xs:element name="postcode" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="20"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
  <xs:element name="city" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
  <xs:element name="state" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
  <xs:element name="country" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
 </xs:sequence>
</xs:complexType>
```

element TAddress/street

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties
- isRef 0
- content simple

source
```
<xs:element name="street" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element TAddress/postcode

diagram 

namespace http://www.openecdis.org/facility/2.5

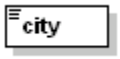
type **xs:string**

properties
- isRef 0
- content simple

source
```
<xs:element name="postcode" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="20"/>
  </xs:restriction>
 </xs:simpleType>
```

```
</xs:element>
```

element TAddress/city

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

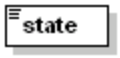
properties isRef 0

content simple

source

```
<xs:element name="city" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element TAddress/state

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

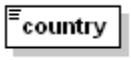
properties isRef 0

content simple

source

```
<xs:element name="state" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element TAddress/country

diagram 

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

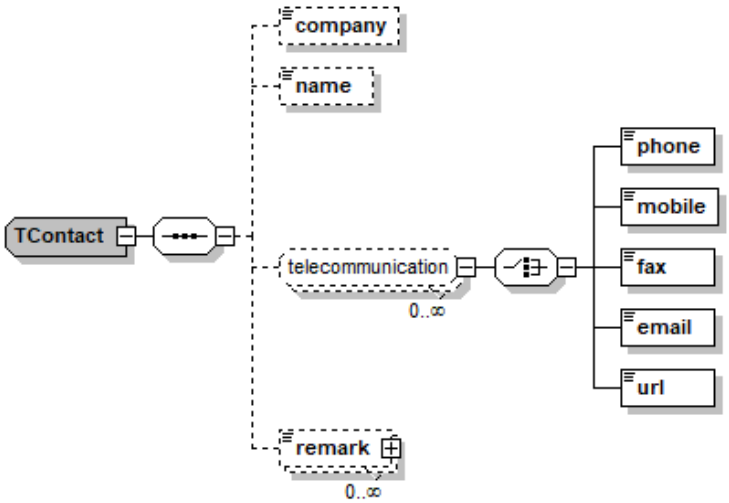
content simple

source

```
<xs:element name="country" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

complex type TContact

diagram



namespace http://www.openecdis.org/facility/2.5

children **company name phone mobile fax email url remark**

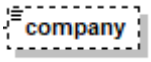
used by **facility/communication_information/contact**

source

```
<xs:complexType name="TContact">
  <xs:sequence>
    <xs:element name="company" minOccurs="0">
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:maxLength value="50"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
    <xs:element name="name" minOccurs="0">
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:maxLength value="50"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
    <xs:group ref="telecommunication" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
```

elemet TContact/company

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

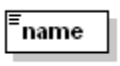
content simple

source

```
<xs:element name="company" minOccurs="0">
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
    </xs:restriction>
  </xs:simpleType>
</xs:element>
```

element TContact/name

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:string**

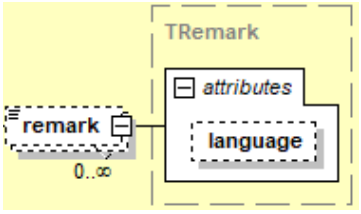
properties isRef 0

content simple

source
```
<xs:element name="name" minOccurs="0">
 <xs:simpleType>
  <xs:restriction base="xs:string">
   <xs:maxLength value="50"/>
  </xs:restriction>
 </xs:simpleType>
</xs:element>
```

element TContact/remark

diagram



namespace http://www.openecdis.org/facility/2.5

type **TRemark**

properties isRef 0

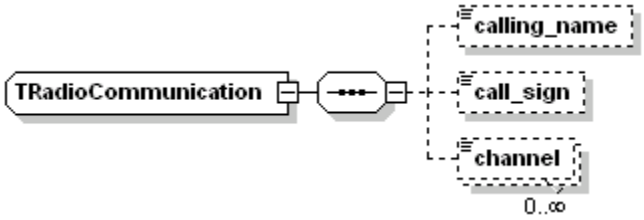
content complex

children **language**

source
```
<xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
```

complex type TRadioCommunication

diagram



namespace http://www.openecdis.org/facility/2.5

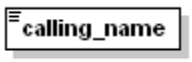
children **calling_name call_sign channel**

used by **facility/communication_information/radio_communication**

source
```
<xs:complexType name="TRadioCommunication">
 <xs:sequence>
  <xs:element name="calling_name" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
  <xs:element name="call_sign" minOccurs="0">
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:element>
  <xs:element name="channel" type="xs:positiveInteger" minOccurs="0" maxOccurs="unbounded"/>
 </xs:sequence>
</xs:complexType>
```

element TRadioCommunication/calling_name

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

content simple

source
```
<xs:element name="calling_name" minOccurs="0">
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
    </xs:restriction>
  </xs:simpleType>
</xs:element>
```

element TRadioCommunication/call_sign

diagram

namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

content simple

source
```
<xs:element name="call_sign" minOccurs="0">
  <xs:simpleType>
    <xs:restriction base="xs:string">
      <xs:maxLength value="50"/>
    </xs:restriction>
  </xs:simpleType>
</xs:element>
```

element TRadioCommunication/channel

diagram

namespace http://www.openecdis.org/facility/2.5

type **xs:positiveinteger**

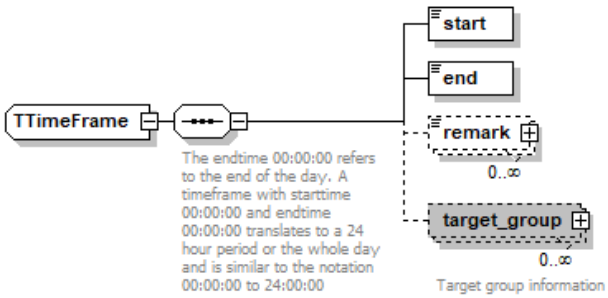
properties isRef 0

content simple

source
```
<xs:element name="channel" type="xs:positiveInteger" minOccurs="0" maxOccurs="unbounded"/>
```

complex type TTimeFrame

diagram



namespace http://www.openecdis.org/facility/2.5

children **start end remark target_group**

annotation The endtime 00:00:00 refers to the end of the day. A timeframe with starttime 00:00:00 and endtime 00:00:00 translates to a 24 hour period or the whole day and is similar to the notation 00:00:00 to 24:00:00

used by **TPeriod/days_with_common_schedule/time_frame TDay/time_frame**

source
```
<xs:complexType name="TTimeFrame">
  <xs:sequence>
    <xs:annotation>
      <xs:documentation>The endtime 00:00:00 refers to the end of the day. A timeframe with starttime 00:00:00 and endtime 00:00:00 translates to a 24 hour period or the whole day and is similar to the notation 00:00:00 to 24:00:00</xs:documentation>
    </xs:annotation>
    <xs:element name="start" type="xs:time"/>
    <xs:element name="end" type="xs:time"/>
    <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="target_group" type="TTargetGroup" minOccurs="0" maxOccurs="unbounded">
```

```
      <xs:annotation>
        <xs:documentation>Target group information</xs:documentation>
      </xs:annotation>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

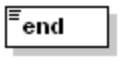
element TTimeFrame/start

diagram

namespace http://www.openecdis.org/facility/2.5
type **xs:string**
properties isRef 0
content simple
source `<xs:element name="start" type="xs:string"/>`

element TTimeFrame/end

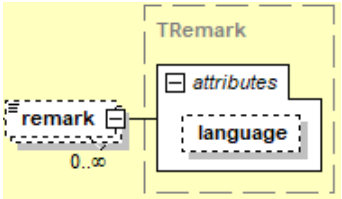
diagram



namespace http://www.openecdis.org/facility/2.5
type **xs:string**
properties isRef 0
content simple
source `<xs:element name="end" type="xs:string"/>`

element TTimeFrame/remark

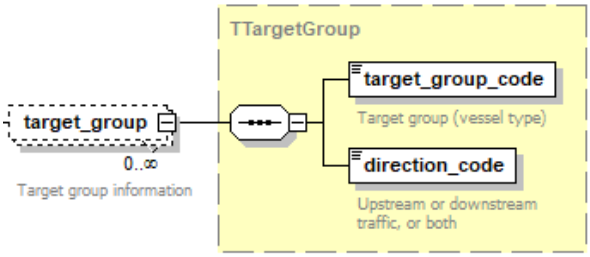
diagram



namespace http://www.openecdis.org/facility/2.5
type **TRemark**
properties isRef 0
content complex
children **language**
source `<xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>`

element TTimeFrame/target_group

diagram



namespace http://www.openecdis.org/facility/2.5
type **TTargetGroup**
properties isRef 0
content complex
children **target_group_code direction_code**
source `<xs:element name="target_group" type="TTargetGroup" minOccurs="0" maxOccurs="unbounded"/>`

simple type TDays

diagram

namespace http://www.openecdis.org/facility/2.5

type **restriction of xs:string**

used by **TListDays**

facets Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Public_Holidays

source

```
<xs:simpleType name="TDays">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Monday"/>
    <xs:enumeration value="Tuesday"/>
    <xs:enumeration value="Wednesday"/>
    <xs:enumeration value="Thursday"/>
    <xs:enumeration value="Friday"/>
    <xs:enumeration value="Saturday"/>
    <xs:enumeration value="Sunday"/>
    <xs:enumeration value="Public_Holidays"/>
  </xs:restriction>
</xs:simpleType>
```

simple type TListDays

diagram

namespace http://www.openecdis.org/facility/2.5

type **list of TDays**

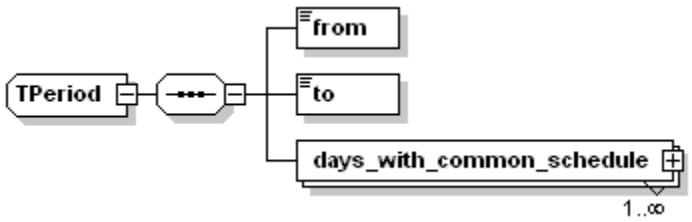
used by **TPeriod/days_with_common_schedule/name_of_days**

source

```
<xs:simpleType name="TListDays">
  <xs:list itemType="TDays"/>
</xs:simpleType>
```

complex type TPeriod

diagram



namespace http://www.openecdis.org/facility/2.5

children **from to days_with_common_schedule**

used by **facility/time_schedule/regular_schedule/period**

source

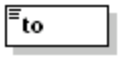
```
<xs:complexType name="TPeriod">
  <xs:sequence>
    <xs:element name="from" type="xs:date"/>
    <xs:element name="to" type="xs:date"/>
    <xs:element name="days_with_common_schedule" maxOccurs="unbounded">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="name_of_days" type="TListDays"/>
          <xs:element name="time_frame" type="TTimeFrame" maxOccurs="unbounded"/>
          <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

element TPeriod/from

diagram 

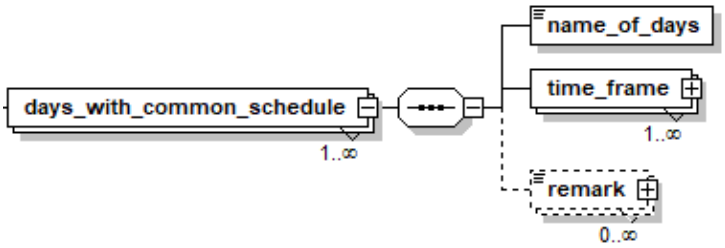
namespace http://www.openecdis.org/facility/2.5
type **xs:date**
properties isRef 0
content simple
source
```
<xs:element name="from" type="xs:date"/>
```

element TPeriod/to

diagram 

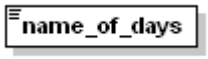
namespace http://www.openecdis.org/facility/2.5
type **xs:date**
properties isRef 0
content simple
source
```
<xs:element name="to" type="xs:date"/>
```

element TPeriod/days_with_common_schedule

diagram 

namespace http://www.openecdis.org/facility/2.5
properties isRef 0
content complex
children **name_of_days time_frame remark**
source
```
<xs:element name="days_with_common_schedule" maxOccurs="unbounded">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="name_of_days" type="TListDays"/>
   <xs:element name="time_frame" type="TTimeFrame" maxOccurs="unbounded"/>
   <xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

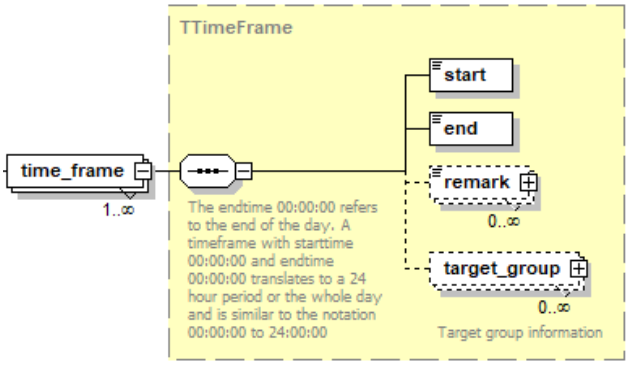
element TPeriod/days_with_common_schedule/name_of_days

diagram 

namespace http://www.openecdis.org/facility/2.5
type **TListDays**
properties isRef 0
content simple
source
```
<xs:element name="name_of_days" type="TListDays"/>
```

element TPeriod/days_with_common_schedule/time_frame

diagram

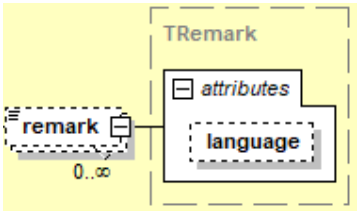


namespace http://www.openecdis.org/facility/2.5
type **TTimeFrame**
properties isRef 0
content complex
children **start end remark target_group**
source

```
<xs:element name="time_frame" type="TTimeFrame" maxOccurs="unbounded"/>
```

element TPeriod/days_with_common_schedule/remark

diagram

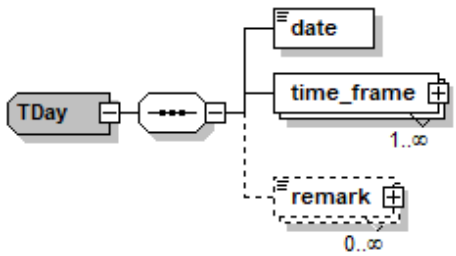


namespace http://www.openecdis.org/facility/2.5
type **TRemark**
properties isRef 0
content complex
children **language**
source

```
<xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
```

complex type TDay

diagram



namespace http://www.openecdis.org/facility/2.5
children **date time_frame remark**
used by **facility/time_schedule/individual_schedule/day**
source

```
<xs:complexType name="TDay">
<xs:sequence>
<xs:element name="date" type="xs:date"/>
<xs:element name="time_frame" type="TTimeFrame" maxOccurs="unbounded"/>
<xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
```

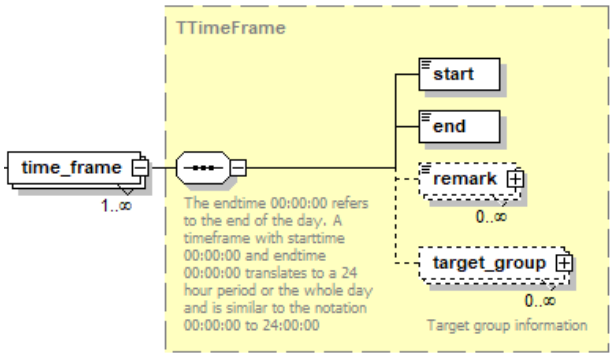
element TDay/date

diagram

namespace http://www.openecdis.org/facility/2.5
type **xs:date**
properties isRef 0
content simple
source
```
<xs:element name="date" type="xs:date"/>
```

element TDay/time_frame

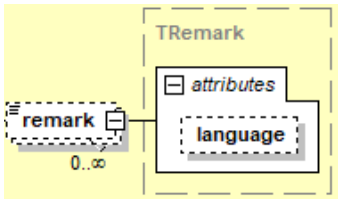
diagram



namespace http://www.openecdis.org/facility/2.5
type **TTimeFrame**
properties isRef 0
content complex
children **start end remark target_group**
source
```
<xs:element name="time_frame" type="TTimeFrame" maxOccurs="unbounded"/>
```

element TDay/remark

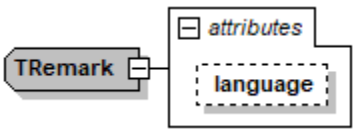
diagram



namespace http://www.openecdis.org/facility/2.5
type **TRemark**
properties isRef 0
content complex
children **language**
source
```
<xs:element name="remark" type="TRemark" minOccurs="0" maxOccurs="unbounded"/>
```

complex type TRemark

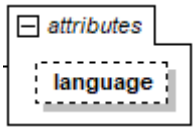
diagram



namespace http://www.openecdis.org/facility/2.5
children **language**
used by **facility/communication_information/remark**
source
```
<xs:complexType name="TRemark">
  <xs:simpleContent>
    <xs:extension base="RemarkLength">
      <xs:attribute name="language" type="LanguageLength"/>
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>
```

element TRemark/language

diagram



namespace http://www.openecdis.org/facility/2.5

type **xs:string**

properties isRef 0

content simple

source
```
<xs:attribute name="language" type="LanguageLength"/>
```

simple type RemarkLength

diagram

namespace http://www.openecdis.org/facility/2.5

type **restriction of xs:string**

used by **TRemark**

source
```
<xs:simpleType name="RemarkLength">
  <xs:restriction base="xs:string">
    <xs:maxLength value="1000"/>
  </xs:restriction>
</xs:simpleType>
```

simple type LanguageLength

diagram

namespace http://www.openecdis.org/facility/2.5

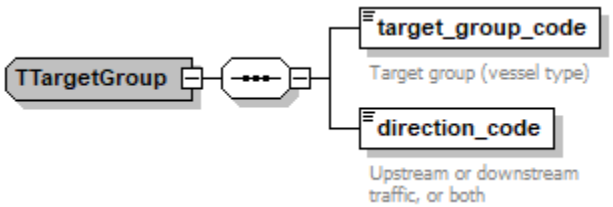
type **restriction of xs:string**

used by **TRemark**

source
```
<xs:simpleType name="LanguageLength">
  <xs:restriction base="xs:string">
    <xs:minLength value="2"/>
    <xs:maxLength value="2"/>
  </xs:restriction>
</xs:simpleType>
```

complex type TTargetGroup

diagram



namespace http://www.openecdis.org/facility/2.5

children **target_group_code direction_code**

used by **facility/time_schedule/individual_schedule/day/time_frame/target_group**

source
```
<xs:complexType name="TTargetGroup">
  <xs:sequence>
    <xs:element name="target_group_code" type="TTargetGroupCode" default="all vessels">
      <xs:annotation>
        <xs:documentation>Target group (vessel type)</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:element name="direction_code" type="TDirectionCode" default="all directions">
      <xs:annotation>
        <xs:documentation>Upstream or downstream traffic, or both</xs:documentation>
      </xs:annotation>
```

```
    </xs:element>
   </xs:sequence>
  </xs:complexType>
```

element TTargetGroup/target_group_code

diagram

namespace http://www.openecdis.org/facility/2.5

type **TTargetGroupCode**

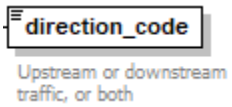
properties
- isRef 0
- content simple

source

```
<xs:element name="target_group_code" type="TTargetGroupCode" default="all vessels">
```

element/TTargetGroup/direction_code

diagram



namespace http://www.openecdis.org/facility/2.5

type **TDirectionCode**

properties
- isRef 0
- content simple

source

```
<xs:element name="direction_code" type="TDirectionCode" default="all directions">
```

simple type TTargetGroupCode

diagram

namespace http://www.openecdis.org/facility/2.5

type **restriction of xs:string**

used by **TTargetGroup/target_group_code**

facets
all vessels
commercial vessels
passenger vessels
pleasure crafts
small crafts
convoys
pushed convoys
convoys with dangerous goods
vessels with dangerous goods
motorized vessels
non-motorized vessels

source

```
<xs:simpleType name="TTargetGroupCode">
  <xs:restriction base="xs:string">
    <xs:enumeration value="all vessels"/>
    <xs:enumeration value="commercial vessels"/>
    <xs:enumeration value="passenger vessels"/>
    <xs:enumeration value="pleasure crafts"/>
    <xs:enumeration value="small crafts"/>
    <xs:enumeration value="convoys"/>
    <xs:enumeration value="pushed convoys"/>
    <xs:enumeration value="convoys with dangerous goods"/>
    <xs:enumeration value="vessels with dangerous goods"/>
    <xs:enumeration value="motorized vessels"/>
    <xs:enumeration value="non-motorized vessels"/>
  </xs:restriction>
</xs:simpleType>
```

simple type TDirectionCode

diagram

namespace http://www.openecdis.org/facility/2.5

type **restriction of xs:string**

used by **TTargetGroup/direction_code**

facets all directions
upstream
downstream

source

```
<xs:simpleType name="TDirectionCode">
  <xs:restriction base="xs:string">
    <xs:enumeration value="all directions"/>
    <xs:enumeration value="upstream"/>
    <xs:enumeration value="downstream"/>
  </xs:restriction>
</xs:simpleType>
```