

# **bENC Feature Catalogue**

**Edition 1.0**

**2014-12-04**



## Introduction

The bENC 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	<a href="http://registry.iho.int">http://registry.iho.int</a>
IENC Data Dictionary	IENC	IEHG	<a href="http://registry.iho.int">http://registry.iho.int</a>

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## 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	Depth area
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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.

Remark: Intertidal areas are encoded as depth areas. These do not have to include soundings. The depth range within a depth area is defined by the attributes 'DRVAL1' and 'DRVAL2'.

Attribute Bindings:

acronym	usage	constraints
DRVAL1	M	unit = " m,ft " decimal digits = " 2 "
DRVAL2	M	unit = " m,ft " decimal digits = " 2 "
QUASOU	O	value list = " 1,2,3,4,5,6,7,8,9,10,11 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
SCAMIN	O	decimal digits = " 0 "
TXTDSC	O	
SORDAT	O	format = " ccyyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Depth contour
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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)

Remark: Drying contours are encoded with negative values.

Attribute Bindings:

acronym	usage	constraints
VALDCO	M	unit = " m,ft " decimal digits = " 1 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
SCAMIN	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,ccccc,c... "

Feature	Dredged area
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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)

Remark:

Attribute Bindings:

acronym	usage	constraints
DRVAL1	M	unit = " m,ft " decimal digits = " 2 "
DRVAL2	O	unit = " m,ft " decimal digits = " 2 "
NOBJNM	O	
OBJNAM	O	
QUASOU	O	value list = " 1,2,3,4,5,6,7,8,9,10,11 "
SOUACC	O	
TECSOU	O	value list = " 1,2,3,4,5,6,7,8,9,10,11,12,13,14 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
SCAMIN	O	decimal digits = " 0 "
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "



Feature	Unsurveyed area
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Acronym: **UNSARE**

Code: 154

Type: G

Primitive: A

Data Dictionary (DD) Reference:

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

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

Remark:

Attribute Bindings:

acronym	usage	constraints
INFORM	O	
NINFOM	O	
NTXTDS	O	
SCAMIN	O	decimal digits = " 0 "
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Accuracy of data
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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..

Remark:

Attribute Bindings:

acronym	usage	constraints
POSACC	O	decimal digits = " 1 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Compilation scale of data
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Acronym: **M\_CSCL** Code: 301

Type: M

Primitive: A

Data Dictionary (DD) Reference:

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

Definition: An area within which the data was originally compiled at a uniform scale. For example, it may define the scale of the paper chart from which the data was digitised.

Remark:

Attribute Bindings:

acronym	usage	constraints
CSCALE	M	decimal digits = " 0 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Coverage
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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.

Remark:

Attribute Bindings:

acronym	usage	constraints
CATCOV	M	value list = " 1,2 "
INFORM	O	
NINFOM	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Nautical publication information
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Acronym: **M\_NPUB**

Code: 305

Type: M

Primitive: P,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.

Remark:

Attribute Bindings:

acronym	usage	constraints
INFORM	O	
NINFOM	O	
NTXTDS	O	
PICREP	O	
PUBREF	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Quality of data
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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.

Remark:

Attribute Bindings:

acronym	usage	constraints
CATZOC	M	value list = " 1,2,3,4,5,6 "
DRVAL1	O	decimal digits = " 1 "
DRVAL2	O	decimal digits = " 1 "
POSACC	O	decimal digits = " 1 "
SOUACC	O	decimal digits = " 1 "
SUREND	O	format = " ccyymmdd "
SURSTA	O	format = " ccyymmdd "
TECSOU	O	value list = " 1,2,3,4,5,6,7,8,9,10,11,12,13,14 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Sounding datum
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Acronym: **M\_SDAT**

Code: 309

Type: M

Primitive: A

Data Dictionary (DD) Reference:

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

Definition:            An area of uniform sounding datum.

Remark:

Attribute Bindings:

acronym	usage	constraints
		value list = "
VERDAT	M	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 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Survey reliability
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Acronym: **M\_SREL** Code: 310

Type: M

Primitive: L,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.

Remark:

Attribute Bindings:

acronym	usage	constraints
QUAPOS	O	value list = " 1,2,3,4,5,6,7,8,9,10,11 "
QUASOU	O	value list = " 1,2,3,4,5,6,7,8,9,10,11 "
SDISMN	O	decimal digits = " 0 "
SDISMX	O	decimal digits = " 0 "
SURATH	O	
SUREND	O	format = " ccyymmdd "
SURSTA	O	format = " ccyymmdd "
SURTYP	O	value list = " 1,2,4,5,6 "
TECSOU	O	value list = " 1,2,3,4,5,6,7,8,9,10,11,12,13,14 "
INFORM	O	
NINFOM	O	
NTXTDS	O	
TXTDSC	O	
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Depth area
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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.

Remark: Intertidal areas are encoded as depth areas. These do not have to include soundings. The depth range within a depth area is defined by the attributes 'DRVAL1' and 'DRVAL2'.

Attribute Bindings:

acronym	usage	constraints
DRVAL1	M	unit = " m,ft " decimal digits = " 2 "
DRVAL2	M	unit = " m,ft " decimal digits = " 2 "
eleva1	C	unit = " m,ft " decimal digits = " 2 "
eleva2	C	unit = " m,ft " decimal digits = " 2 "
QUASOU	C	value list = " 1,2,3,4,5,6,7,8,9,10,11 "
hunits	M	value list = " 1,2,3,4,5,6 "
wtwdis	M	decimal digits = " 3 "
SORDAT	O	format = " ccyyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Feature	Sounding datum
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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.

Remark:

Attribute Bindings:

acronym	usage	constraints
verdat	M	value list = " 12,31,32,33,34,35,36,37,38,39,40 "
SORDAT	O	format = " ccyymmdd "
SORIND	O	format = " cc,cc,cccc,c... "

Attribute	Category of coverage
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Acronym: **CATCOV** Code: 18

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

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

Definition:

Remark:

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 zone of confidence in data
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Acronym: **CATZOC** Code: 72

Use Type: F

Value Type: E

Data Dictionary (DD) Reference:

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

Definition:

Remark: 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. See the CATZOC Table in S-57 for the full table layout.

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

Value      Data Dictionary (DD) Reference

Definition:

6            DD Name: HYDRO            Code: CATZOC\_6            Date accepted: 2000-11-01

Name:        zone of confidence U (data not assessed)

Definition:

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Attribute	Compilation scale
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Acronym: **CSCALE**

Code: 80

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

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

Definition:            The scale at which the data was originally compiled.

Remark:

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Attribute	Depth range value 1
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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.

Remark:                Where the area dries, the value is negative. The unit of measure is defined in the DUNI subfield of the DSPM record or in the DUNITS attribute of the M\_UNIT meta object class, e.g., metre (m). The resolution is 0.1 m or 0.1 fm or 0.1 ft.

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Attribute	Depth range value 2
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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.

Remark: Where the area dries, the value is negative. The unit of measure is defined in the DUNI subfield of the DSPM record or in the DUNITS attribute of the M\_UNIT meta object class, e.g., metre (m). The resolution is 0.1 m or 0.1 fm or 0.1 ft.

Attribute	Exposition of sounding
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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.

Remark:                This attribute indicates objects with a 'value of sounding' not within the range of depth of the surrounding depth area. These objects could be a potential danger for navigation.

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.

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Attribute	Information
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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.

Remark: The textual information could be, for example, a list, a table or a text. This attribute should be used, for example, to hold the information that is shown on paper charts by cautionary and explanatory notes. No formatting of text is possible within INFORM. If formatted text is required, then the attribute TXTDSC must be used.

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Attribute	Object name
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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.

Remark:

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Attribute	Pictorial representation
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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.

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

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Attribute	Positional Accuracy
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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.

Remark: The unit of measure is defined in the PUNI subfield of the DSPM record, e.g., metre (m). The resolution is 0.1 m or 0.1 mm.

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Attribute	Publication reference
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Acronym: **PUBREF**

Code: 124

Use Type: F

Value Type: T

Data Dictionary (DD) Reference:

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

Definition:            A reference to a nautical publication.

Remark:

Attribute	Quality of sounding measurement
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Acronym: **QUASOU**

Code: 125

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

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

Definition:

Remark:                      The attribute 'quality of sounding measurement' indicates the reliability of the value of sounding.

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.

5                      DD Name: HYDRO                      Code: QUASOU\_5                      Date accepted: 2000-11-01

Name:                      no bottom found at value shown

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Value	Data Dictionary (DD) Reference		
	Definition: upon investigation the bottom was not found at this depth. (adapted from IHO Dictionary, S-32, 5th Edition, 4848)		
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		
	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.		

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Attribute	Scale minimum
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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.

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

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Attribute	Sounding accuracy
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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.

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

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Attribute	Sounding distance - maximum
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Acronym: **SDISMX**

Code: 145

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

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

Definition:            The maximum spacing of the principal sounding lines of a survey.

Remark:

Attribute	Sounding distance - minimum
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Acronym: **SDISMN**

Code: 146

Use Type: F

Value Type: I

Data Dictionary (DD) Reference:

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

Definition:            The minimum spacing of the principal sounding lines of a survey.

Remark:

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Attribute	Source date
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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.

Remark:

Attribute	Source indication
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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.

Remark:

Attribute	Survey authority
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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.

Remark:                The attribute 'survey authority' encodes the name of the source survey authority.

Attribute	Survey date - end
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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.

Remark:

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Attribute	Survey date - start
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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.

Remark:

Attribute	Survey type
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Acronym: **SURTYP** Code: 153

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

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

Definition:

Remark:

Enumerations

Value Data Dictionary (DD) Reference

- |   |                                                                                                                                                                                                                      |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | DD Name: HYDRO Code: SURTYP_1 Date accepted: 2000-11-01<br>Name: reconnaissance / sketch survey<br>Definition: a survey made to a lower degree of accuracy and detail than the chosen scale would normally indicate. |
| 2 | DD Name: HYDRO Code: SURTYP_2 Date accepted: 2000-11-01<br>Name: controlled survey<br>Definition: a thorough survey usually conducted with reference to guidelines.                                                  |
| 4 | DD Name: HYDRO Code: SURTYP_4 Date accepted: 2000-11-01<br>Name: examination survey<br>Definition: a survey principally aimed at the investigation of underwater obstructions and dangers.                           |
| 5 | DD Name: HYDRO Code: SURTYP_5 Date accepted: 2000-11-01<br>Name: passage survey<br>Definition: a survey where soundings are acquired by vessels on passage.                                                          |
| 6 | DD Name: HYDRO Code: SURTYP_6 Date accepted: 2000-11-01<br>Name: remotely sensed                                                                                                                                     |

Value      Data Dictionary (DD) Reference

Definition:    a survey where features have been positioned and delimited using remote sensing techniques.

Attribute	Technique of sounding measurement
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Acronym: **TECSOU** Code: 156

Use Type: F

Value Type: L

Data Dictionary (DD) Reference:

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

Definition:

Remark:

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

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Value	Data Dictionary (DD) Reference
	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 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

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Value	Data Dictionary (DD) Reference		
	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
	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.		

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Attribute	Textual description
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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

Remark: The attribute 'textual description' indicates that a file containing text extracted from relevant pilot books or navigational publications is available.

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Attribute	Value of depth contour
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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.

Remark: Drying contours are indicated by a negative value. The unit of measure is defined in the DUNI subfield of the DSPM record or in the DUNITS attribute of the M\_UNIT meta object class, e.g., metre (m). The resolution is 0.1 m or 0.1 fm or 0.1 ft.

Attribute	Vertical datum
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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

Remark:

Enumerations

Value Data Dictionary (DD) Reference

1 DD Name: HYDRO Code: VERDAT\_1 Date accepted: 2000-11-01

Name: Mean low water springs

Definition: (MLWS) - the average height of the low waters of spring tides. Also called spring low water. (IHO Dictionary, S-32, 5th Edition, 3150)

2 DD Name: HYDRO Code: VERDAT\_2 Date accepted: 2000-11-01

Name: Mean lower low water springs

Definition: (MLLWS) - the average height of lower low water springs at a place. (IHO Dictionary, S-32, 5th Edition, 3146)

3 DD Name: HYDRO Code: VERDAT\_3 Date accepted: 2000-11-01

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)

4 DD Name: HYDRO Code: VERDAT\_4 Date accepted: 2000-11-01

Name: Lowest low water

Definition: an arbitrary level conforming to the lowest tide observed at a place, or some what lower.

Value	Data Dictionary (DD) Reference		
5	DD Name: HYDRO	Code: VERDAT_5	Date accepted: 2000-11-01
	Name: Mean low water		
	Definition: (MLW) - the average height of all low waters at a place over a 19-year period. (IHO Dictionary, S-32, 5th Edition, 3147)		
6	DD Name: HYDRO	Code: VERDAT_6	Date accepted: 2000-11-01
	Name: Lowest low water springs		
	Definition: an arbitrary level conforming to the lowest water level observed at a place at spring tides during a period of time shorter than 19 years. (Hydrographic Service, Royal Australian Navy)		
7	DD Name: HYDRO	Code: VERDAT_7	Date accepted: 2000-11-01
	Name: Approximate mean low water springs		
	Definition: an arbitrary level, usually within " 0.3m from that of mean low water springs (MLWS). (Hydrographic Service, Royal Australian Navy)		
8	DD Name: HYDRO	Code: VERDAT_8	Date accepted: 2000-11-01
	Name: Indian spring low water		
	Definition: (ISLW) - an arbitrary tidal datum approximating the level of the mean of the lower low water at spring tides. Also called Indian tidal plane. (IHO Dictionary, S-32, 5th Edition, 2427) A tidal datum approximating the lowest water level observed at a place, originated by G.H. Darwin for the tides of India at a level below MSL being equal to the sum of amplitudes of the harmonic constituents M2, S2, K1 and O1; usually below that of the lower low water at spring tides. Also called Indian tide plane. (Hydrographic Service, Royal Australian Navy).		
9	DD Name: HYDRO	Code: VERDAT_9	Date accepted: 2000-11-01
	Name: Low water springs		
	Definition: an arbitrary level, approximating that of mean low water springs (MLWS). (Hydrographic Service, Royal Australian Navy)		
10	DD Name: HYDRO	Code: VERDAT_10	Date accepted: 2000-11-01
	Name: Approximate lowest astronomical tide		
	Definition: an arbitrary level, usually within " 0.3m from that of lowest astronomical tide (LAT). (Hydrographic Service, Royal Australian Navy)		
11	DD Name: HYDRO	Code: VERDAT_11	Date accepted: 2000-11-01
	Name: Nearly lowest low water		

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Value	Data Dictionary (DD) Reference		
	Definition: an arbitrary level approximating the lowest water level observed at a place, usually equivalent to the Indian spring low water (ISLW). (Hydrographic Service, Royal Australian Navy)		
12	DD Name: HYDRO	Code: VERDAT_12	Date accepted: 2000-11-01
	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)		
13	DD Name: HYDRO	Code: VERDAT_13	Date accepted: 2000-11-01
	Name: Low water		
	Definition: an approximation of mean low water adopted as the reference level for a limited area, irrespective of better determinations at a later date. Used mostly in harbour and river engineering. Used in inland (non-tidal) waters. It is generally defined as a level which the daily mean water level would fall below less than 5% of the time and by no more than 0.2 metres during the navigation season. A single level surface is usually chosen as the low water datum for a whole lake. On a river, low water datum is a sloping surface which approximates the river surface at a low state. (Canadian Hydrographic Service)		
14	DD Name: HYDRO	Code: VERDAT_14	Date accepted: 2000-11-01
	Name: Approximate mean low water		
	Definition: an arbitrary level, usually within " 0.3m from that of mean low water (MLW). (Hydrographic Service, Royal Australian Navy)		
15	DD Name: HYDRO	Code: VERDAT_15	Date accepted: 2000-11-01
	Name: Approximate mean lower low water		
	Definition: an arbitrary level, usually within " 0.3m from that of mean lower low water (MLLW). (Hydrographic Service, Royal Australian Navy)		
16	DD Name: HYDRO	Code: VERDAT_16	Date accepted: 2000-11-01
	Name: Mean high water		
	Definition: (MHW) - the average height of all high waters at a place over a 19-year period. (IHO Dictionary, S-32, 5th Edition, 3141)		
17	DD Name: HYDRO	Code: VERDAT_17	Date accepted: 2000-11-01
	Name: Mean high water springs		
	Definition: (MHWS) - the average height of the high waters of spring tides. Also called spring high water. (IHO Dictionary, S-32, 5th Edition, 3144)		

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Value	Data Dictionary (DD) Reference		
18	DD Name: HYDRO	Code: VERDAT_18	Date accepted: 2000-11-01
	Name: High water		
	Definition: the highest level reached at a place by the water surface in one tidal cycle. Also called high tide. (IHO Dictionary, S-32, 5th Edition, 2251) when used on inland (non-tidal) waters it is generally defined as a level which the daily mean water level exceeds less than 5% of the time.		
19	DD Name: HYDRO	Code: VERDAT_19	Date accepted: 2000-11-01
	Name: Approximate mean sea level		
	Definition: an arbitrary level, usually within " 0.3m from that of mean sea level (MSL). (Hydrographic Service, Royal Australian Navy)		
20	DD Name: HYDRO	Code: VERDAT_20	Date accepted: 2000-11-01
	Name: High water springs		
	Definition: an arbitrary level, approximating that of mean high water springs (MHWS). (Hydrographic Service, Royal Australian Navy)		
21	DD Name: HYDRO	Code: VERDAT_21	Date accepted: 2000-11-01
	Name: Mean higher high water		
	Definition: (MHHW) - the average height of higher high waters at a place over a 19-year period. (IHO Dictionary, S-32, 5th Edition, 3140)		
22	DD Name: HYDRO	Code: VERDAT_22	Date accepted: 2000-11-01
	Name: Equinoctial spring low water		
	Definition: the level of low water springs near the time of an equinox.		
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 meteorological conditions and under any combination of astronomical conditions. (IHO Dictionary, S-32, 5th Edition, 2936)		
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.		

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Value	Data Dictionary (DD) Reference
25	<p>DD Name: HYDRO      Code: VERDAT_25      Date accepted: 2000-11-01</p> <p>Name:      International Great Lakes Datum 1985</p> <p>Definition:      (IGLD 1985) - a vertical reference system with its zero based on the mean water level at Rimouski/Pointe-au-Pere, Quebec, over the period 1970 to 1988.</p>
26	<p>DD Name: HYDRO      Code: VERDAT_26      Date accepted: 2000-11-01</p> <p>Name:      Mean water level</p> <p>Definition:      the average of all hourly water levels over the available period of record.</p>
27	<p>DD Name: HYDRO      Code: VERDAT_27      Date accepted: 2000-11-01</p> <p>Name:      Lower low water large tide</p> <p>Definition:      (LLWLT) - the average of the lowest low waters, one from each of 19 years of observations.</p>
28	<p>DD Name: HYDRO      Code: VERDAT_28      Date accepted: 2000-11-01</p> <p>Name:      Higher high water large tide</p> <p>Definition:      (HHWLT) - the average of the highest high waters, one from each of 19 years of observations.</p>
29	<p>DD Name: HYDRO      Code: VERDAT_29      Date accepted: 2000-11-01</p> <p>Name:      Nearly highest high water</p> <p>Definition:      an arbitrary level approximating the highest water level observed at a place, usually equivalent to the high water springs.</p>
30	<p>DD Name: HYDRO      Code: VERDAT_30      Date accepted: 2000-11-01</p> <p>Name:      Highest astronomical tide (HAT)</p> <p>Definition:      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).</p>

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Attribute	Information in national language
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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

Remark: The attribute 'information in national language' encodes any textual information about an object using a specified national language. The textual information could be, for example, a list, a table or a text. This attribute should be used, for example, to hold the information that is shown on paper charts by cautionary and explanatory notes.

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Attribute	Object name in national language
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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

Remark:                  The attribute 'object name in national language' encodes the individual name of an object in the specified national language.

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Attribute	Textual description in national language
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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.

Remark: The attribute 'textual description in national language' indicates whether a text file containing text extracted from relevant pilot books or navigational publications is available.

Attribute	Quality of position
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Acronym: **QUAPOS** Code: 402

Use Type: F,S

Value Type: E

Data Dictionary (DD) Reference:

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

Definition:

Remark:

Enumerations

Value Data Dictionary (DD) Reference

1 DD Name: HYDRO Code: QUAPOS\_1 Date accepted: 2000-11-01

Name: surveyed

Definition: the position(s) was(were) determined by the operation of making measurements for determining the relative position of points on, above or beneath the earth=s surface. Survey implies a regular, controlled survey of any date. (adapted from IHO Dictionary, S-32, 5195, and IHO Chart Specifications, M-4, 175.2)

2 DD Name: HYDRO Code: QUAPOS\_2 Date accepted: 2000-11-01

Name: unsurveyed

Definition: survey data is does not exist or is very poor. (adapted from IHO Dictionary, S-32, 5732)

3 DD Name: HYDRO Code: QUAPOS\_3 Date accepted: 2000-11-01

Name: inadequately surveyed

Definition: position data is of a very poor quality. (adapted from IHO Dictionary, S-32, 5732)

4 DD Name: HYDRO Code: QUAPOS\_4 Date accepted: 2000-11-01

Name: approximated

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

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Value	Data Dictionary (DD) Reference		
	object whose position does not remain fixed. (adapted from IHO Dictionary, S-32, 213, 3967, and IHO Specifications, M-4, 424.1)		
5	DD Name: HYDRO	Code: QUAPOS_5	Date accepted: 2000-11-01
	Name: position doubtful		
	Definition: an object whose position has been reported but which is considered to be doubtful.		
6	DD Name: HYDRO	Code: QUAPOS_6	Date accepted: 2000-11-01
	Name: unreliable		
	Definition: an object's position obtained from questionable or unreliable data.		
7	DD Name: HYDRO	Code: QUAPOS_7	Date accepted: 2000-11-01
	Name: reported (not surveyed)		
	Definition:		
8	DD Name: HYDRO	Code: QUAPOS_8	Date accepted: 2000-11-01
	Name: reported (not confirmed)		
	Definition: an object whose position has been reported and its position confirmed by some means other than a formal survey such as an independent report of the same object.		
9	DD Name: HYDRO	Code: QUAPOS_9	Date accepted: 2000-11-01
	Name: estimated		
	Definition: the most probable position of an object determined from incomplete data or data of questionable accuracy. (adapted from IHO Dictionary, S-32, 3960)		
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.		
11	DD Name: HYDRO	Code: QUAPOS_11	Date accepted: 2000-11-01
	Name: calculated		
	Definition: a position that is computed from data.		

Attribute	Vertical datum
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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

Remark:

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)

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Value	Data Dictionary (DD) Reference		
	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
	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:		

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Attribute	Waterway distance
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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

Remark:

Attribute	Height/length units
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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

Remark:

Enumerations

Value Data Dictionary (DD) Reference

- |   |                                                                                                                                                      |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | DD Name: IENC Code: hunits_1 Date accepted: 2001-05-31<br>Name: metres<br>Definition: heights/lengths are specified in metres (SI units of length)   |
| 2 | DD Name: IENC Code: hunits_2 Date accepted: 2001-05-31<br>Name: feet<br>Definition: heights/lengths are specified in feet (imperial units of length) |
| 3 | DD Name: IENC Code: hunits_3 Date accepted: 2001-05-31<br>Name: kilometres<br>Definition: heights/lengths are specified in kilometres (1000 metres)  |
| 4 | DD Name: IENC Code: hunits_4 Date accepted: 2001-05-31<br>Name: hectometres<br>Definition: heights/lengths are specified in hectometres (100 metres) |
| 5 | DD Name: IENC Code: hunits_5 Date accepted: 2001-05-31<br>Name: statute miles<br>Definition: heights/lengths are specified in statue (land) miles    |

Value      Data Dictionary (DD) Reference

6            DD Name: IENC            Code: hunits\_6            Date accepted: 2001-05-31

Name:      nautical miles

Definition: heights/lengths are specified in nautical (sea) miles

