

U.S. Chart No. 1

Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts

12th Edition

April 15, 2013

Prepared Jointly by

Department of Commerce
National Oceanic and Atmospheric Administration

Department of Defense
National Geospatial-Intelligence Agency



New in Edition 12: ECDIS Symbols and Other ECDIS Information

Symbology for displaying Electronic Navigational Charts (ENCs) on an Electronic Chart Display and Information System (ECDIS) has been added to U.S. Chart No. 1. See the Preface and Introduction sections for more details.

In addition to the ECDIS symbols shown in the traditional lettered sections of U.S. Chart No. 1, there are now several special pages devoted exclusively to providing important details about ECDIS. These pages are distinguished by the ECDIS icon, as shown in the top left corner of this page. The ECDIS pages are also listed in the table of contents in *italic type*.

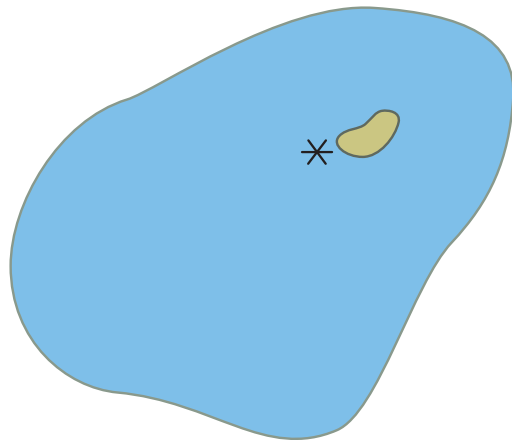


One major difference in the use of paper charts and ENCs is the ability of ECDIS to display the same feature differently depending on user settings and other conditions, such as a ship's draft. An important example is that ECDIS displays wrecks, rocks and other obstructions with their traditional "paper-chart" symbols if they are at or deeper than the depth of the safety contour set for the ship. Dangers that are shoaler are portrayed with the unique ECDIS "isolated danger" symbol shown at left. (See the ECDIS Portrayal of Depths page for more information about the ECDIS safety contour.)



Another advantage that ECDIS provides over paper charts is enabling users to obtain more information about a feature through a "cursor pick." Some feature attribute values that can be obtained by cursor pick are noted throughout U.S. Chart No. 1. This is especially true if a particular value, such as height, vertical clearance or the like is included in the INT symbol description. The cursor pick icon, shown at left, is used to indicate when a reference to a cursor pick is made.

There are many other attribute values that users may obtain through a cursor pick that are not specifically noted. These include, but are not limited to, the purpose, seasonality, periodicity, status, color, height, type of structure and the visual or radar conspicuousness of features; shape, color or color pattern of buoys; characteristics of lights; category of obstructions and wrecks; radar wave length, radio frequency, communication channel and call signs; the presence of AIS transmitted signals; information regarding pilotage services and many more.



No man is an island and no single reference document stands on its own. U.S. Chart No. 1 is a handy guide for ECDIS users, but it is no substitute for mandated ECDIS training.

The ECDIS user and developer communities are invited to help improve the presentation of ECDIS symbology and information in U.S. Chart No. 1. We want to know what you think works well, which parts are a little rocky, and what additional information you would like to have included in the next edition of U.S. Chart No. 1.

Please send any recommendations or corrections to:

USChart1@noaa.gov

or

National Ocean Service, NOAA (N/CS2)

Attention: U.S. Chart No. 1

1315 East West Highway

Silver Spring, MD 20912-3282

SYMBOLS, ABBREVIATIONS AND TERMS

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NAVIGATION AIDS AND SERVICES

- P Lights
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- R Fog Signals
- S Radar, Radio, Satellite Navigation Systems
- T Services
- U Small Craft (Leisure) Facilities

PREFACE

Presentation of Two Symbology Sets

This edition of U.S. Chart No. 1 has a new name and a new look. Its title is now *Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts*. For the first time, U.S. Chart No. 1 presents both of the major symbology sets used for marine navigation.

As in previous editions, the symbols used on paper nautical charts produced by the National Oceanic and Atmospheric Administration (NOAA) and the National Geospatial-Intelligence Agency (NGA) and digital raster representations of those charts, such as NOAA Raster Nautical Charts (NOAA RNCs[®]), are presented in lettered sections organized in categories, such as Landmarks, Depths, and Lights. New in this edition is the inclusion of the corresponding symbols used to portray Electronic Navigational Chart (ENC) data on Electronic Chart Display and Information Systems (ECDIS) as specified by the International Hydrographic Organization (IHO).

Other Non-ECDIS Digital Displays May Portray Data Differently

Navigation systems certified to meet the exacting performance standards established by the International Maritime Organization (IMO) are said to be ECDIS “type approved.” The symbology used to display ENCs or other non-ENC nautical navigational data on *non-ECDIS systems*, such as geographic information systems, recreational GPS and other chart display systems can differ significantly from the symbology specified for ECDIS type approved systems. U.S. Chart No. 1 *only shows the symbology used on ECDIS*.

INTRODUCTION

New Column Headers

The orientation of this edition of U.S. Chart No. 1 has been rotated 90° into a landscape format to allow two additional columns to be added to the right side of the page. These columns hold the ECDIS symbols corresponding to the paper chart symbols shown on the left side.

“INT 1” symbols, as specified in the *Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO*, appear in the second column from the left, after the symbol number. Any variations from INT 1 symbology that are used on charts produced by NOAA or NGA are shown in the NOAA, NGA and the “Other NGA” columns (columns 4a, 4b, and 5 respectively).

ECDIS symbols and their descriptions are shown in columns 6 and 7 respectively. The ECDIS description usually provides the generic symbol name given in the *IHO Specifications for Chart Content and Display Aspects of ECDIS*, although sometimes other clarifying terms are also provided in column 7. The ECDIS symbols shown use the day color palette (see page 9).

When columns 4a and 4b are combined, this indicates that NOAA and NGA both use the same non-INT 1 symbol for that particular feature. When any of columns 4a, 4b, or 5 are blank, then the INT 1 symbol has been adopted for use by the organization for which that column applies.

The schematic layout following this introduction shows a typical symbol table page. It provides details about the table headers and the types of information presented in each of the columns.

Sample Chart Layouts

Section A presents two schematics showing typical layouts of the major elements of NOAA and NGA charts.

INFORMATION ON SELECTED CHART FEATURES

Soundings

The sounding datum reference is stated in the chart title. Soundings on NOAA and NGA charts may be shown in fathoms, feet, fathoms and feet, fathoms and fractions, or meters and decimeters. In all cases the unit of depth used is shown in the chart title and outside the border of the chart in bold type (see item b in Section A). For ECDIS, the sounding datum is part of the ENC metadata, which can be retrieved through a cursor inquiry.

Heights

Heights of lights, landmarks, structures, etc. refer to the shoreline plane of reference. The unit of height is shown in the chart title. When the elevations of islets or bare rocks are offset into the adjacent water, they are shown in parentheses. For ECDIS, the unit of height is meters.

Drying Heights

For rocks and banks that cover and uncover, elevations are underlined and are referenced to the sounding datum as stated in the chart title (or in the ENC metadata). When the heights of rocks that cover and uncover are offset into the adjacent water, they are shown in parentheses.

Shoreline

Shoreline shown on charts represents the line of contact between the land and a selected water elevation. In areas affected by tidal fluctuation, this line of contact is usually the mean high water line. In confined coastal waters of diminished tidal influence, a mean water level may be used. The shoreline of interior waters (rivers, lakes) is usually a line representing a specified elevation above a selected datum. Shoreline is symbolized by a heavy line (symbol C 1). Apparent shoreline is used on charts to show the outer edge of marine vegetation where the limit would be expected to appear as the shoreline to the mariner or where it prevents the shoreline from being clearly defined. Apparent shoreline is symbolized by a light line (symbols C 32, C 33, C p, C q and C r).

Landmarks

A structure or a conspicuous feature on a structure may be shown by a landmark symbol with a descriptive label (see Section E). Prominent buildings that could assist the mariner may be shown by actual shape as viewed from above (see Sections D and E).

On NGA charts, landmark legends shown in capital letters indicate that a landmark is conspicuous; the landmark may also be labeled “CONSPICUOUS” or “CONSPIC.” On NOAA charts, all landmarks are considered to be conspicuous, and landmark legends shown in all capital letters indicate a landmark has been positioned accurately; legends using both upper and lower case letters indicate an approximate position.

ECDIS portrays conspicuous features with black symbols and non-conspicuous features with brown symbols. Only the conspicuous version is shown in the lettered sections of U.S. Chart No. 1. See the ECDIS “Conspicuous and Non-Conspicuous Features” page in front of Section E for more information.

IALA Buoyage System

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Maritime Buoyage System is followed by most of the world’s maritime nations; however, systems used in some foreign waters may be different. IALA buoyage is divided into two regions: Region A and Region B. All navigable waters of the United States follow IALA Region B rules, except U.S. possessions west of the International Date Line and south of 10° north latitude, which follow IALA Region A rules.

The major difference between the two buoyage regions is the color of the lateral marks. Region A uses red to port and Region B uses red to starboard (red-right-returning). The shapes of the lateral marks are the same in both regions, can to port and cone (nun) to starboard, when entering from seaward. Cardinal and other marks, such as those for isolated dangers, safe water and special marks are also the same in both regions. Section Q and Appendix 1 illustrate the IALA buoyage system for both Regions A and B.

U.S. Lateral Marks

Most of U.S. waters are in IALA Region B. In the U.S. system, on entering a channel from seaward, buoys and beacon dayboards on the starboard side are red with even numbers and have red lights, if lit. Buoys and beacon dayboards on the port side are green with odd numbers and have green lights, if lit. Preferred channel buoys have red and green horizontal bands with the top band color indicating the preferred side of passage.

Light Range (Visibility)

A light’s range or visibility is given in nautical miles, except on the Great Lakes and adjacent waterways, where light ranges are given in statute miles. For lights having more than one color, NOAA charts give only the shortest range of all the colors. On NGA charts, multiple ranges may be shown using the following convention. For lights with two colors, the first number indicates the range of the first color and the second number indicates the range of the second color. For example, FI WG 12/8M means the range of the white light is 12 nautical miles and the range of green light is 8 nautical miles. For lights with three colors, only the longest and shortest ranges are given and the middle range is indicated by a dash. For example, FI WRG 12-8M means that the range of the white light is 12 nautical miles, the range of green light is 8 nautical miles and the range of the red light is between 8 to 12 nautical miles. The dash can appear in any of the three positions.

Aids to Navigation Positioning

The fixed and floating aids to navigation depicted on charts have varying degrees of reliability. Floating aids are moored to sinkers by varying lengths of chain and may shift due to sea conditions and other causes. Buoys may also be carried away, capsized or sunk. Lighted buoys may be extinguished and sound signals may not function, because of ice or other causes. Therefore, prudent mariners will not rely solely on any single aid to navigation, particularly on floating aids, but will also use bearings from fixed objects and aids to navigation on shore.

Colors

Color conveys the nature and importance of features found on nautical charts. Chart elements significant to marine navigation, such as lights, compass roses and regulated areas, are emphasized with magenta. Lateral marks on NOAA charts are shown with a red or green fill. Shades of blue depict potential hazards to navigation, typically shallow water and submerged obstructions. Areas of deeper water believed to be clear of obstructions are shown as white. Land, and other features that are always dry, are depicted with buff on NOAA charts and gray on NGA charts. Foreshore and other intertidal features are portrayed with a green tint. Other colors may be used to provide additional information, such as protected areas, which are outlined in blue or green and mineral lease blocks, which are outlined in red.

Traffic Separation Schemes

Traffic separation schemes show recommended lanes to increase safety of navigation, particularly in areas of high density shipping. These schemes are described in the International Maritime Organization (IMO) publication, *Ships Routing*. Traffic separation schemes are generally shown on nautical charts at scales of 1:600,000 and larger. When possible, traffic separation schemes are plotted to scale and shown as depicted in Section M.

Conversion Scales

Depth conversion scales are provided on all charts to enable the user to work in meters, fathoms or feet.

Correction Date

The date of each new chart edition is shown below the lower left border of the chart. The date of the latest NGA issued U.S. Notice to Mariners applied to the chart is

shown after the edition date. NOAA charts also show the date of the latest U.S. Coast Guard Local Notice to Mariners applied to the chart.

ADDITIONAL RESOURCES

Information on the use of nautical charts, aids to navigation, sounding datums and the practice of navigation in general is in *The American Practical Navigator* (Bowditch), available through the “Publications” link on the NGA Maritime Safety Information portal at msi.nga.mil/NGAPortal/MSI.portal.

Tide and current data over U.S. waters is available from the NOAA Center for Operational Oceanographic Products and Services at tidesandcurrents.noaa.gov.

Detailed information about specific lights, buoys, and beacons and general information about the U.S. Aids to Navigation System and the Uniform State Waterway Marking Systems is in the U.S. Coast Guard *Light List*, at navcen.uscg.gov/?pageName=lightLists. Information about aids to navigation in foreign waters is in the NGA *List of Lights*, available through the “Publications” link on the NGA Maritime Safety Information portal at msi.nga.mil/NGAPortal/MSI.portal.

Other important information that cannot be shown conveniently on nautical charts can be found in the NOAA *U.S. Coast Pilot*[®], at www.nauticalcharts.noaa.gov/staff/chartspubs.html and NGA *Sailing Directions*, available through the “Publications” link on the NGA Maritime Safety Information portal at msi.nga.mil/NGAPortal/MSI.portal.

U.S. Nautical Chart Catalogs and Indexes

NGA catalogs are available through the “Product Catalog” link on the NGA Maritime Safety Information portal at msi.nga.mil/NGAPortal/MSI.portal. NOAA catalogs are available at www.nauticalcharts.noaa.gov/mcd/ccatalogs.htm. A list of the dates of the latest editions of NOAA charts is at www.nauticalcharts.noaa.gov/mcd/dole.htm.

CORRECTIONS AND COMMENTS

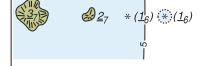

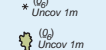


Corrections to U.S. Chart No. 1 will appear in the weekly U.S. Notice to Mariners, available through the “Notice to Mariners” link on the NGA Maritime Safety Information portal at msi.nga.mil/NGAPortal/MSI.portal.

Users may send corrections or comments to USChart1@noaa.gov or by mail to:

National Ocean Service, NOAA (N/CS2)
Attention: U.S. Chart No. 1
1315 East West Highway
Silver Spring, MD 20910-3282

Schematic Layout of U.S. Chart No. 1:

(A) **K** **(B)** **Rocks, Wrecks, Obstructions** **(D)**


(C) Rocks		(D) Supplementary national symbol: a				
(E) Plane of Reference for Heights → H		Plane of Reference for Depths → H				
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
11		Rock which covers and uncovers, height above chart datum				
(1)	(2)	(3)	(4a)	(4b)	(5)	(6)

(A)	Section designation
(B)	Section
(C)	Sub-section
(D)	Reference to "Supplementary national symbols" at the end of each section
(E)	Cross-reference to terms in other sections
(1)	Column 1: Numbering system following the "Chart Specification of the IHO". A letter in this column indicates a supplementary national symbol or abbreviation for which there is no international equivalent.
(2)	Column 2: Representation that follows the "Chart Specifications of the IHO" (INT 1 symbol)
(3)	Column 3: Description of symbol, term, or abbreviation
(4a)*	Column 4a: Representation used on charts produced by the National Oceanic and Atmospheric Administration (NOAA)
(4b)*	Column 4b: Representation used on charts produced by the National Geospatial-Intelligence Agency (NGA)
(5)	Column 5: Representation of symbols that may appear on NGA reproductions of foreign charts
(6)**	Column 6: Representation used to portray ENC data on ECDIS
(7)**	Column 7: Description of ECDIS symbols

* When columns 4a and 4b are combined then NOAA and NGA both use the same symbol. When either column 4a or 4b is blank then the respective agency uses the INT 1 symbol shown in column 2.

** When columns 6 and 7 have several rows for the same symbol number, then ECDIS portrays this feature differently depending on the ship's draft and other conditions as defined in ECDIS by the mariner (as is the case for K 11). When columns 6 and 7 combine rows to span across several symbol numbers then ECDIS portrays all of the grouped symbol numbers the same way (see C 5–C 7).

† Signifies that this representation is obsolete, but it may appear on older charts.

 Signifies that a feature attribute value, such as a height, distance or name, may be obtained through an ECDIS cursor pick report. There are many attribute values that may be obtained in this manner, but the cursor pick icon is only used to note values that are specifically referred to in the description of symbols column and that ECDIS does not display next to the symbol. Height of trees in C 14 is an example.

Day, Dusk and Night Color Palettes



ECDIS allows the mariner to change the color palette that is used to display an ENC. Three different color tables have been designed to provide the maximum clarity and contrast between features on the display under three different lighting conditions on the bridge, namely Day, Dusk and Night.

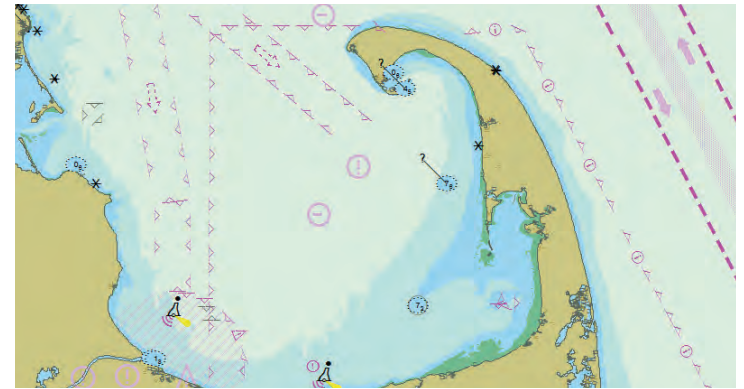
Each symbol is rendered in a different color appropriate for the lighting condition that the color table is meant for. This design provides maximum contrast for the display on a sunny day, as well as preserving night vision on a dimly lit bridge in the evening. This allows the mariner to look back and forth between the chart on the ECDIS display and out to sea through the bridge window without the mariner's eyes needing to readjust to a difference in light intensity.

- The Day Color Table, meant to be used in bright sunlight, uses a white background for deep water and looks the most like a traditional paper chart.
- The Dusk Color Table uses a black background for deep water and colors are subdued, but slightly brighter than those used in the Night Color Table.
- The Night Color Table, meant to be used in the darkest conditions, uses a black background for deep water and muted color shades for other features.

The images on the right show each of the three color palettes.

The symbols shown in the remainder of this document use the day color palette.

DAY



DUSK

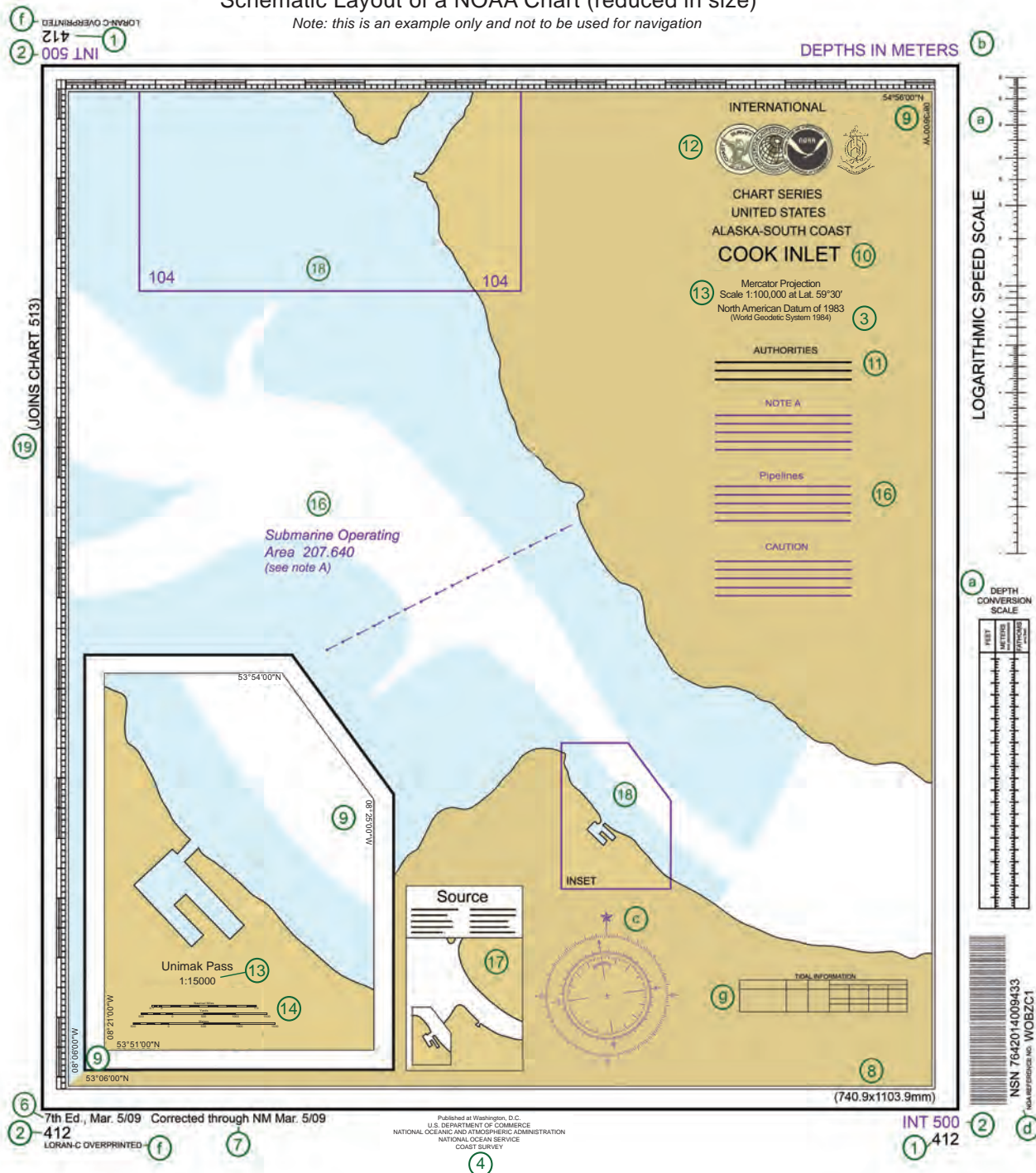


NIGHT



Schematic Layout of a NOAA Chart (reduced in size)

Note: this is an example only and not to be used for navigation



Magnetic Features → B	
Tidal Data → H	
①	Chart number in national chart series
②	Chart number in international (INT) series (if any)
③	Reference ellipsoid of the chart
④	Publication note (imprint)
⑤	Copyright note
⑥	Date of current edition
⑦	Notice to Mariners corrections
⑧	Dimensions of inner borders
⑨	Corner coordinates
⑩	Chart title
⑪	Explanatory notes on chart construction, etc. To be read before using chart.
⑫	Seal(s)
⑬	Scale of chart. Some charts have scale at a stated latitude.
⑭	Linear scale on large scale charts

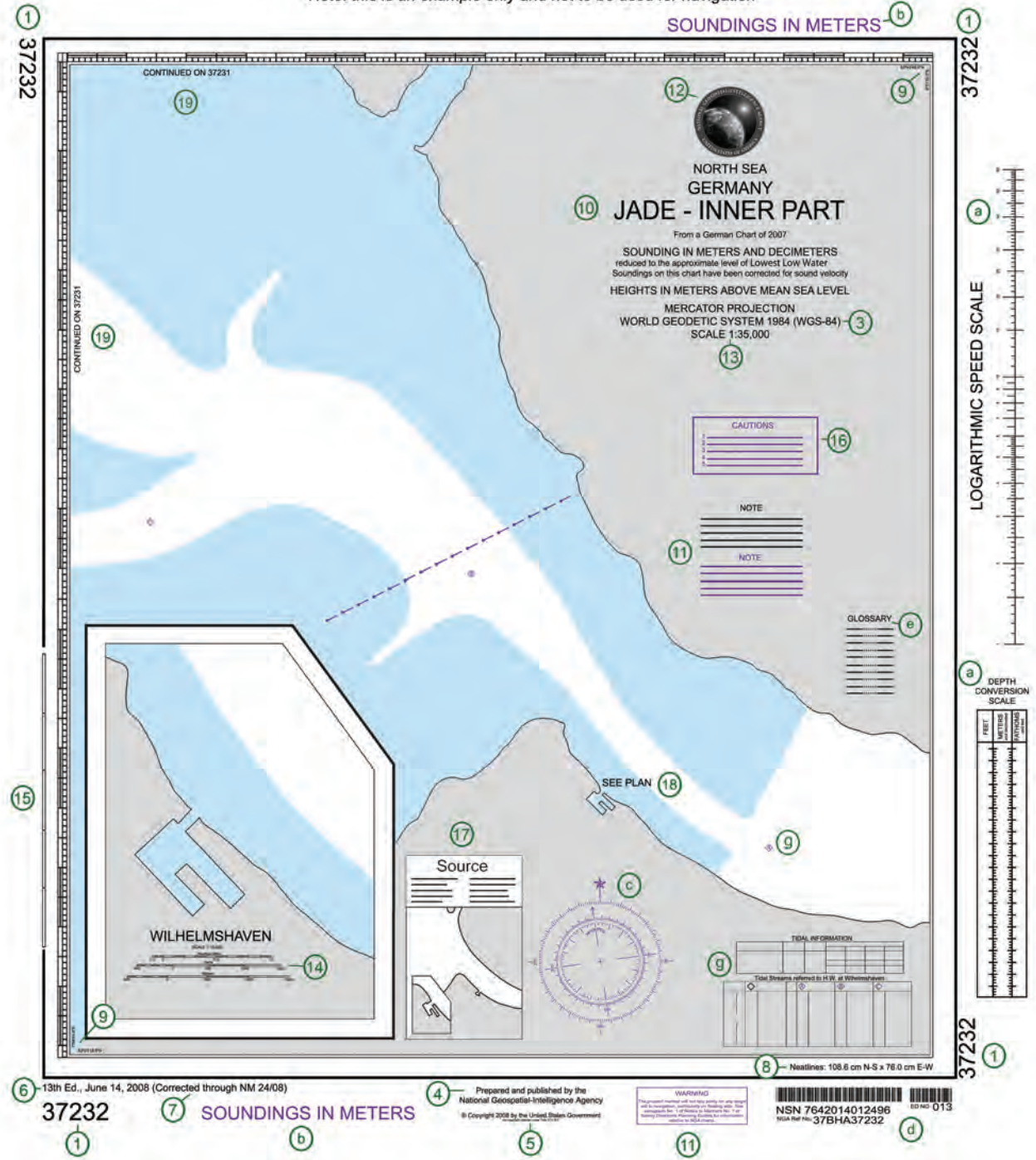
Schematic Layout of an NGA Chart (reduced in size)

Note: this is an example only and not to be used for navigation



A

Chart Number, Title, Marginal Notes

15	Linear border scale on large scale charts. On smaller scales use latitude borders for sea miles.
16	Cautionary notes (if any). Information on particular features, to be read before using chart.
17	Source Diagram (if any). Navigators should be cautious where surveys are inadequate.
18	Reference to a larger scale chart
19	Reference to an adjoining chart of similar scale
a	Conversion scales
b	Reference to the units used for depth measurement
c	Compass rose
d	Bar code and stock number
e	Glossary: Translation of words on chart that are not in English
f	Identification of a latticed chart (if any)
g	Tidal and Tidal Stream information within the chart coverage



B Positions, Distances, Directions, Compass



No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Geographical Positions							
1	Lat	Latitude					
2	Long	Longitude					
3		International Meridian (Greenwich)					
4	°	Degree(s)					
5	'	Minute(s) of arc					
6	"	Second(s) of arc					
7	PA	Position approximate (not accurately determined or does not remain fixed)	PA	(PA)			Position approximate Point feature or area of low accuracy Sounding of low accuracy
8	PD	Position doubtful (reported in various positions)	PD	(PD)			Point feature or area of low accuracy Sounding of low accuracy
9	N	North					
10	E	East					
11	S	South					
12	W	West					
13	NE	Northeast					
14	SE	Southeast					
15	NW	Northwest					
16	SW	Southwest					

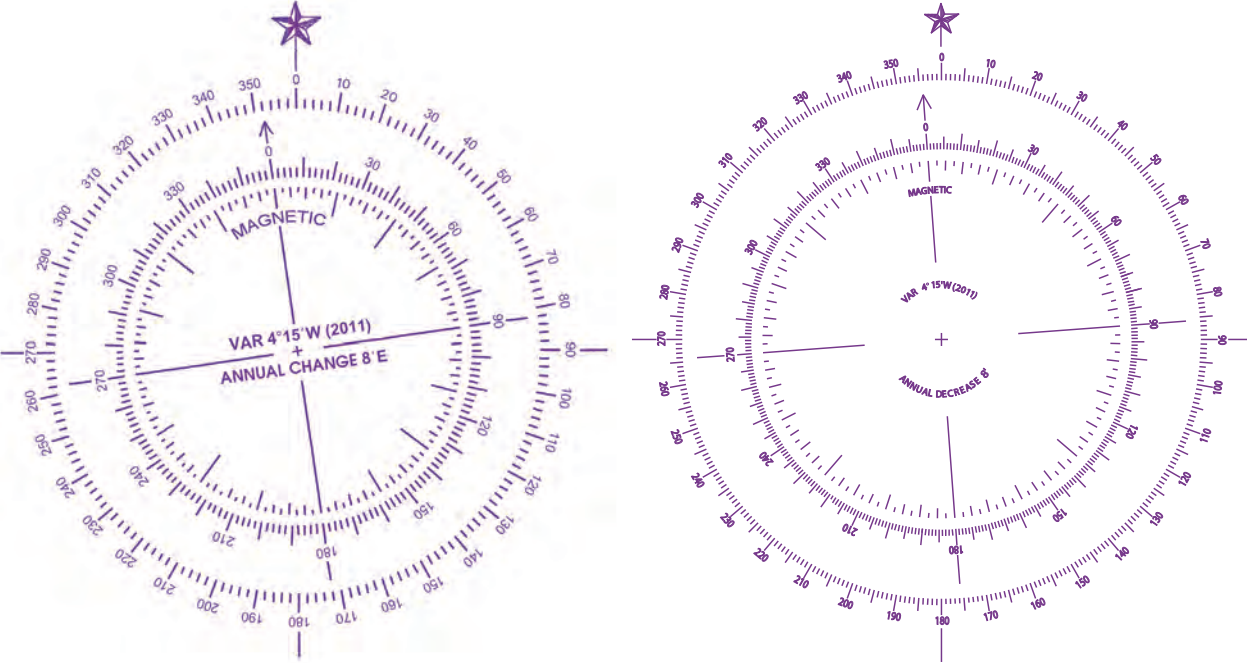

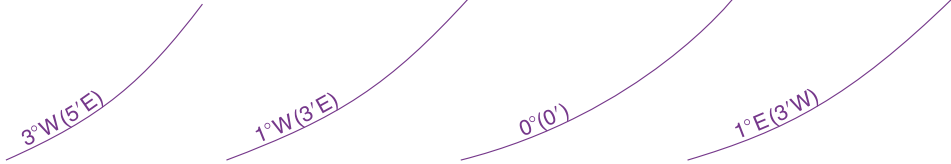

Positions, Distances, Directions, Compass

B


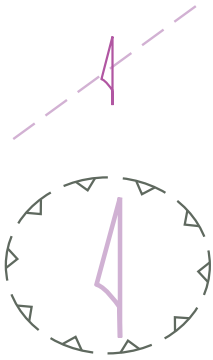

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Control Points						
20		Triangulation point				
21		Observation spot		Obs Spot		
22		Fixed point		BM		
23		Benchmark		BM		
24		Boundary mark		Bdy Mon		
25.1		Distance along waterway, no visible marker				
25.2		Distance along waterway with visible marker				
Note: ECDIS uses a magenta "km" symbol to represent distance marks. However, the distances shown along waterways on NOAA-produced ENC's are displayed in statute miles.						
Symbolized Positions (Examples)						
30		Symbols in plan: position is center of primary symbol				ECDIS follows the paper chart convention for the position of symbols, except for simplified symbols for buoys and beacons (see Q 1).
31		Symbols in profile: position is at bottom of symbol				
32		Point symbols: accurate positions		MAST		
33		Point symbol: approximate position		Mast		ECDIS indicates approximate position only for wrecks, obstructions, islets and shoreline features.
Units						Supplementary national symbols: a-m
40	km	Kilometer(s)				
41	m	Meter(s)				
42	dm	Decimeter(s)				
43	cm	Centimeter(s)				
44	mm	Millimeter(s)				
45	M	International nautical mile(s) (1852m), sea mile(s)		Mi NMi NM		
46		Cable(s) (0.1M)		cbl		


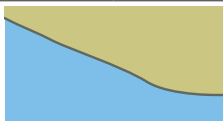
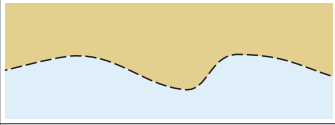
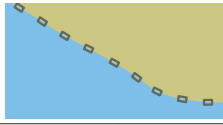
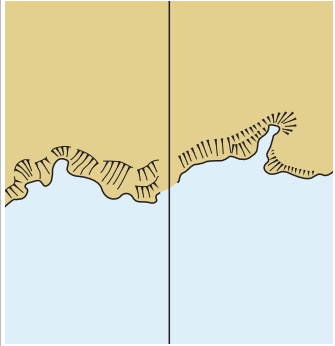
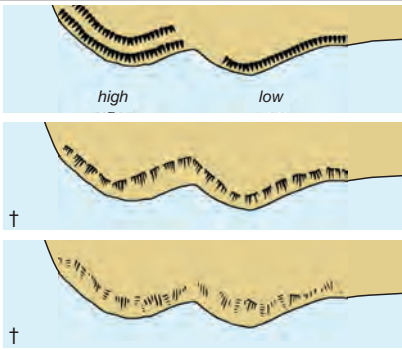
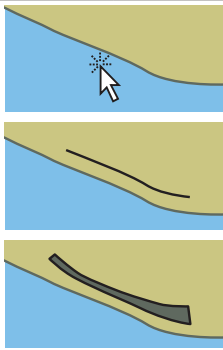



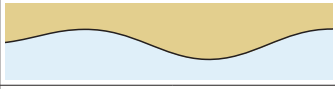
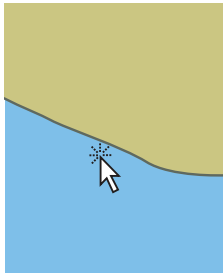
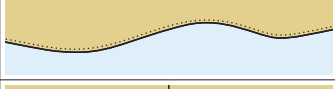
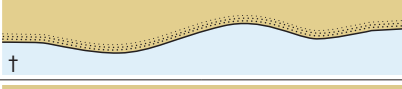
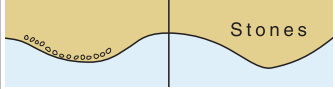




B Positions, Distances, Directions, Compass

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
47	ft	Foot/Feet				
48		Fathom(s)		fm		
49	h	Hour(s)		hr		
50	m min	Minute(s) of time				
51	s sec	Second(s) of time				
52	kn	Knot(s)				
53	t	Ton(s), Tonnage (weight)				
54	cd	Candela(s)				
Magnetic Compass						Supplementary national symbols: n
60		Variation		var VAR		Varn Magnetic variation
61		Magnetic		mag		
62		Bearing		brg		
63		True		T		
64		Decreasing				
65		Increasing				
66		Annual change				
67		Deviation		dev		
68.1	Magnetic Variation 4°30' W 2011 (8' E)	Note of magnetic variation, in position				 Cursor pick site for magnetic variation at a point
						 Cursor pick site for magnetic variation over an area
68.2	Magnetic Variation at 55°N 8°W 4°30' W 2011 (8' E)	Note of magnetic variation, out of position				

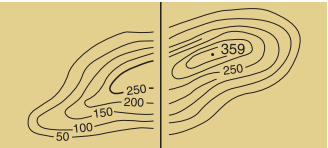
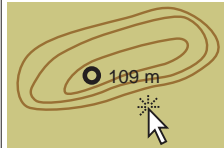
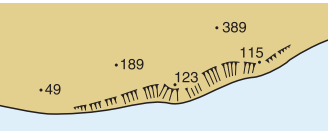
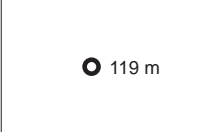


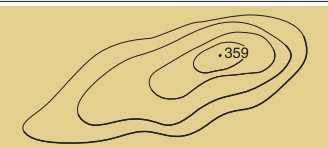


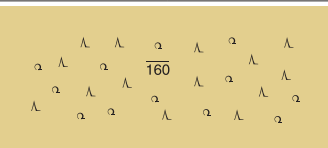
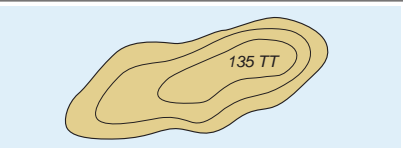


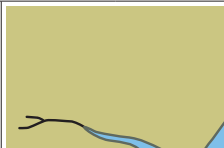
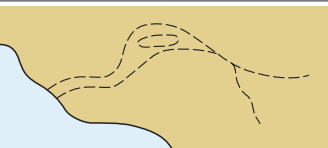


No.	NOAA / NGA	ECDIS	
70	<p>Compass rose, normal pattern (smaller patterns of compass rose may be used)</p> <p>Magnetic variation (example): VAR 4°15'W (2011) means magnetic variation was 4°15'W in 2011 ANNUAL DECREASE 8' means annual change is 8'E or decreasing 8' annually For 2012 the magnetic variation is 4°7'W</p> 		<p>Cursor pick site for magnetic variation at a point</p>
71	<p>Isogonic lines, Isogonals</p> <p>MAGNETIC VARIATION LINES ARE FOR 2011 The magnetic variation is shown in degrees, followed by the letter W or E, as appropriate, at certain positions on the lines. The annual change is expressed in minutes with the letter W or E and is given in brackets, immediately following the variation.</p> 		<p>Cursor pick site for magnetic variation along a line</p>

B Positions, Distances, Directions, Compass

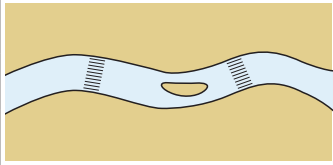
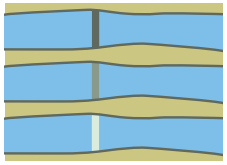
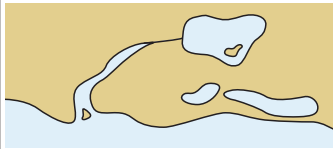

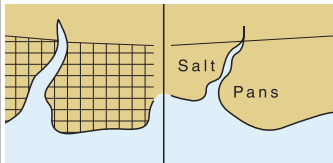
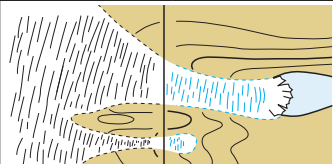

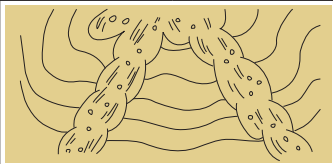

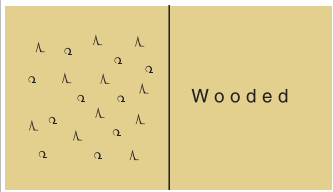
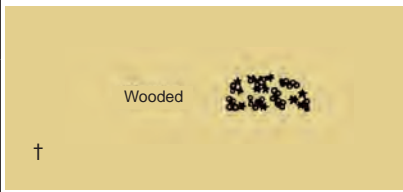
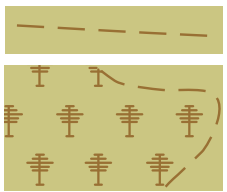
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
82.1		Local magnetic anomaly: Within the enclosed area the magnetic variation may deviate from the normal by the value shown					Cursor pick site for magnetic anomaly along a line or over an area
82.2	Local Magnetic Anomaly (see Note)	Local magnetic anomaly: Where the area affected cannot be easily defined, a legend only is shown at the position	LOCAL MAGNETIC DISTURBANCE (see note)	LOCAL MAGNETIC ANOMALY (see note)	LOCAL MAGNETIC DISTURBANCE (see note)		Cursor pick site for magnetic anomaly at a point
Supplementary National Symbols							
a		Square meter(s)		m ²			
b		Cubic meter(s)		m ³			
c		Inch(es)		in			
d		Yard(s)		yd			
e		Statute mile(s)		St M St Mi			
f		Microsecond(s)		μsec μs			
g		Hertz		Hz			
h		Kilohertz		kHz			
i		Megahertz		MHz			
j		Cycles/second		cps c/s			
k		Kilocycle(s)		kc			
l		Megacycle(s)		Mc			
m		Ton(s) (U.S. short ton) (2,000lbs)		T			
n		Degree(s)		deg			

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Coastline						Supplementary national symbols: a–e
Foreshore → I, J						
1		Coastline, surveyed				 Coastline
2		Coastline, unsurveyed				 Coastline or shoreline construction of low accuracy in position
3		Cliffs, Steep coast				 Presence of cliffs coincident with coastline is obtained by cursor pick Sloping ground crest line distant from coastline, radar or visually conspicuous Cliff as an area
4		Hillocks				 Conspicuous hill or mountain top
5		Flat coast				 Nature of coastline is obtained by cursor pick
6		Sandy shore				
7		Stony shore, Shingly shore				
8		Sandhills, Dunes				 Conspicuous hill or mountain top

C Natural Features

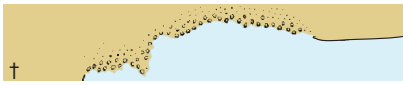




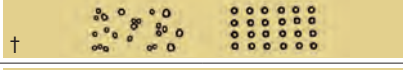

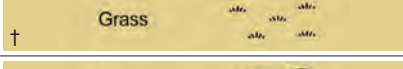
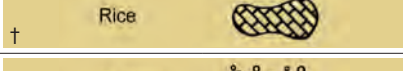
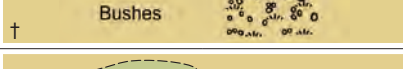


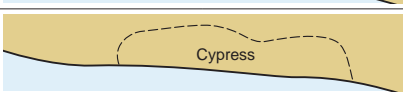
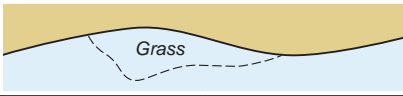
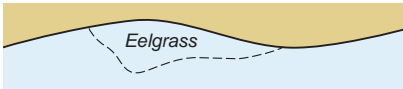
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Relief						Supplementary national symbols: e-g
Plane of reference for heights → H						
10		Contour lines with values and spot height				 Elevation contour with spot height, contour value is obtained by cursor pick
11		Spot heights				 Position of an elevation or control point
12		Approximate contour lines with values and approximate height				 Elevation contour with spot height, contour value is obtained by cursor pick
13		Form lines with spot height				 Elevation contour with spot height, contour value is obtained by cursor pick
14		Approximate height of top of trees (above height datum)				 Approximate height of trees is obtained by cursor pick
Water Features, Lava						
20		River, Stream				 River
21		Intermittent river				 River

Natural Features C

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
22		Rapids, Waterfalls				 <p>Rapids</p> <p>Waterfall</p> <p>Waterfall, visually conspicuous</p>
23		Lakes				 <p>Lake</p>
24		Salt pans				
25		Glacier				 <p>Continuous pattern for an ice area (glacier, etc.)</p>
26		Lava flow				
Vegetation						
			Supplementary national symbols: i-t			
30		Woods in general				 <p>Line of trees</p> <p>Wooded area</p>

C Natural Features

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
31	Prominent trees (isolated or in groups)					
31.1		Deciduous tree				
31.2		Evergreen (except conifer)				
31.3		Conifer				
31.4		Palm				
31.5		Nipa Palm				
31.6		Casuarina				
31.7		Filao				
31.8		Eucalypt				
32		Mangrove				
33		Marsh, Swamp, Reed beds				
Supplementary National Symbols						
a		Chart sounding datum line (surveyed)				
b		Approximate sounding datum line (inadequately surveyed)				
c		Foreshore; Strand (in general); Stones; Shingle; Gravel; Mud; Sand				
d		Breakers along a shore				

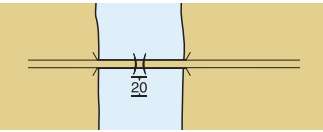
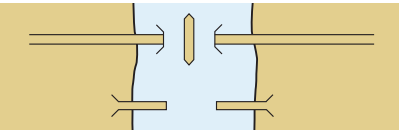
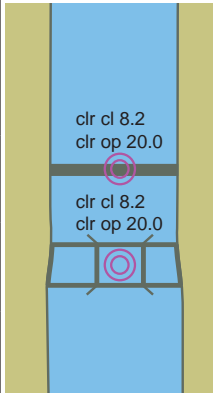
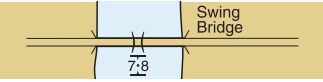
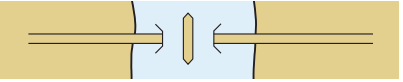
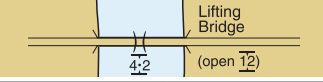
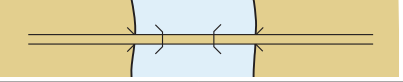
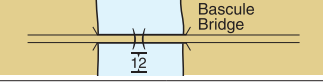
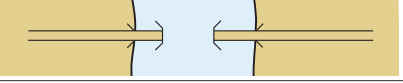
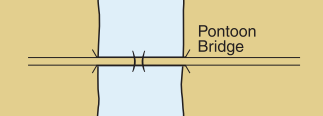
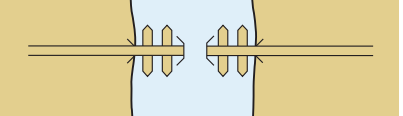

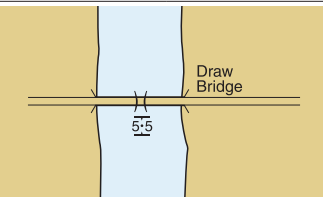
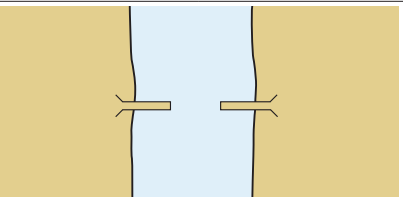
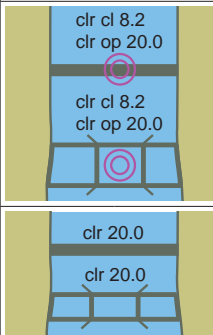
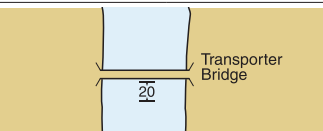
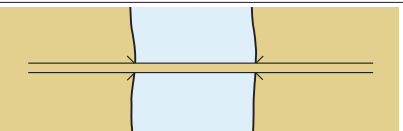

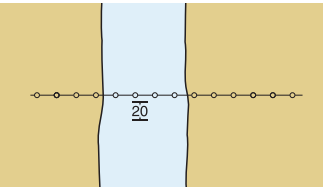
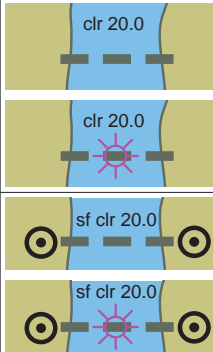
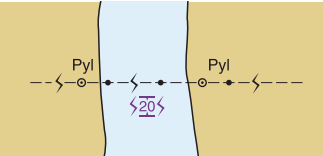
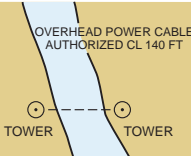

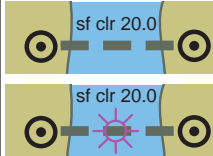
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
e		Rubble	† 			
f		Hachures	† 			
g		Shading	† 			
i		Deciduous woodland	† 			
j		Coniferous woodland	† 			
k		Tree plantation	† 			
l		Cultivated fields	† 			
m		Grassfields	† 			
n		Paddy (rice) fields	† 			
o		Bushes	† 			
p		Apparent shoreline				
q		Vegetation or topographic (Feature Area Limit-in general)				
r		Cypress				
s		Grass				
t		Eelgrass				

D Cultural Features

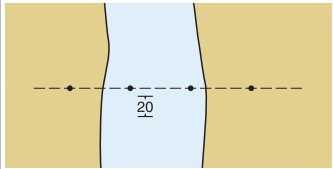
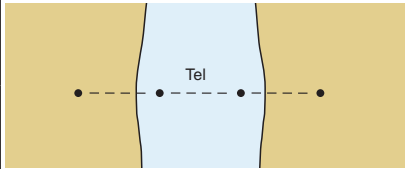
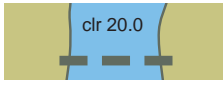

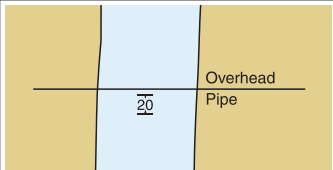
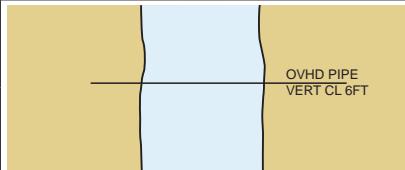
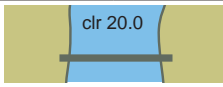
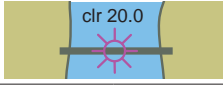

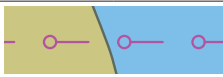

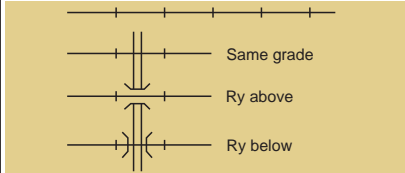
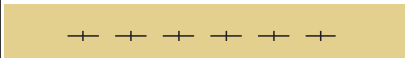
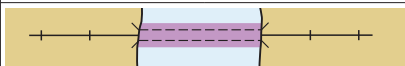
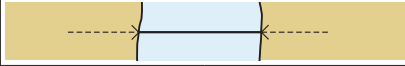
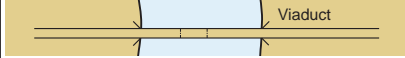

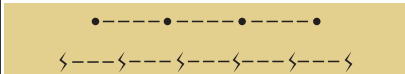
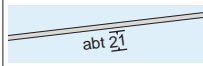
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Settlements, Buildings						
Height of objects → E		Landmarks → E				
1		Urban area				Built-up area
2		Settlement with scattered buildings				
3	○ Name □ Name	Settlement (on medium and small scale charts)				● Name Built-up area as a point
4	⊕ Name ■ Name HOTEL	Village	vii			
5		Buildings				Conspicuous single building
6		Important building in built-up area				Conspicuous single building in built-up area
7		Street name, Road name				Street name is obtained by cursor pick
8		Ruin, Ruined landmark				Status of ruins is obtained by cursor pick
Roads, Railways, Airfields						Supplementary National Symbols: a–c
10		Motorway, highway				Road, track or path as a line
11		Road (hard surfaced)				
12		Track, Path (loose or unsurfaced)				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS		
13		Railway, with station					Railway, with station	
14		Cutting					Cutting	
15		Embankment					Embankment	
							Embankment, visually or radar conspicuous	
16		Tunnel					Tunnel	
							Tunnel with depth below the seabed encoded	
17		Airport, Airfield					Airport as a point	
							Runway as a line	
							Airport area, with runway area and visually conspicuous runway area	
Other Cultural Features						Supplementary National Symbols: d-i		
20		Vertical clearance above high water					clr 20.0 clr cl 20.0 clr op 20.0 sf clr 20.0	Vertical clearance Closed clearance Open clearance Safe clearance
21		Horizontal clearance						Horizontal clearance is obtained by cursor pick
22		Fixed bridge with vertical clearance						Bridge

D Cultural Features

































No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
23.1		Opening bridge (in general) with vertical clearance					Opening bridge
23.2		Swing bridge with vertical clearance					
23.3		Lifting bridge with vertical clearance (closed and open)					
23.4		Bascule bridge with vertical clearance					
23.5		Pontoon bridge					Bridge
23.6		Draw bridge with vertical clearance					Opening bridge
24		Transporter bridge with vertical clearance below fixed structure					Bridge
25		Overhead transporter, Aerial cableway with vertical clearance					Aerial cableway
26		Overhead power cable with pylons and safe vertical clearance					Transmission line



















Note: The safe vertical clearance above the height datum, as defined by the responsible authority, is given in magenta where known; otherwise the physical vertical clearance is shown in black as in D 20 (also see diagram at H 20).

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
27		Overhead cable, Telephone line, Telegraph line with vertical clearance				 Overhead cable  Overhead cable, radar conspicuous
28		Overhead pipe with vertical clearance		OVHD PIPE VERT CL 6FT		 Overhead pipeline  Overhead pipeline, radar conspicuous
29		Pipeline on land				 Oil, gas pipeline, submerged or on land
Supplementary National Symbols						
a		Highway markers				
b		Railway (Ry) (single or double track) Railroad (RR)				
c		Abandoned railroad				
d		Bridge under construction				
e		Footbridge				
f		Viaduct				
g		Fence				
h		Power transmission line				
i		Approximate vertical clearance				








Conspicuous and Non-Conspicuous Features

There are 25 features for which ECDIS displays either a black symbol, if the feature is visually conspicuous, or a brown symbol if it is not. Only conspicuous landmarks are depicted on NOAA paper charts and ENC. Therefore, only the conspicuous symbol versions are shown in the symbol tables of U.S. Chart No. 1. Both versions of the symbols for these features are shown on this page.

Cairn		
Chimney		
Dish aerial		
Dome		
Flare stack		
Fortified structure		
Hill or mountain top		
Mast		
Monument		
Mosque or minaret		
Position of a point feature		
Radar scanner		
Radio, television tower		
Refinery		
Religious building, Christian		
Religious building, non-Christian		

Silo		
Single building		
Tank		
Tank farm		
Tower		
Water tower		
Windmill		
Windmotor		
Wind generator farm		

































































The seven symbols shown below represent features that only have a brown symbol. There is no corresponding black, conspicuous symbol. The brown symbol is displayed regardless of the conspicuousness of the feature.

Cranes	
Flagstaff, flagpole	
Mangrove	
Mine, quarry	
Quarry	
Timber yard	
Tree	




















No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Plane of Reference for Height → H		Lighthouses → P	Beacons → Q				
General							
1	Factory Hotel	Examples of landmarks	TANK Tr MONUMENT			 	Non-conspicuous point feature Non-conspicuous building Non-conspicuous water tower
2	FACTORY WATER TR HOTEL WATER TOWER	Examples of conspicuous landmarks (On NOAA charts, a large circle with dot and capitals indicates that position is accurate; a small circle with lowercase indicates that position is approximate.)	EMPIRE STATE BUILDING SPIRE RADAR MAST CHIMNEY			 	Conspicuous point feature Conspicuous building Conspicuous water tower
3.1		Pictorial sketches (in true position)					The information symbol is displayed if a supplemental image is available, which may be accessed by cursor pick
3.2		Pictorial sketches (out of position)					
4		Height of top of a structure above height datum		(30)			Height is obtained by cursor pick
5		Height of structure above ground level		(30)			
Landmarks							
10.1		Ch	Church				Church as a point
							Church as an area
10.2		Tr	Church tower				Church tower, spire, or dome
10.3		Sp	Church spire	SPIRE Spire			
10.4		Cup	Church cupola	CUPOLA Cup			
11			Chapel				Chapel

E Landmarks

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
12		Cross, Calvary			+ ±		Position of a point feature
13		Temple					Religious building, non-Christian
14		Pagoda					
15		Shinto shrine, Joss house					
16		Buddhist temple or shrine					
17		Mosque, Minaret					Mosque or minaret
18		Marabout					
19		Cemetery					Landmark area, type is obtained by cursor pick
20	Tr	Tower	TOWER Tr	Tr			Tower
21		Water tower, Water tank on a tower	STANDPIPE S'pipe	WTR TR Wtr Tr			Water tower
22	Chy	Chimney	CHIMNEY Chy	CHY (208) (202)			Chimney
23		Flare stack (on land)	FLARE Flare				Flare stack
24	Mon	Monument (including column, pillar, obelisk, statue)	MONUMENT Mon				Monument
25.1		Windmill	WINDMILL Windmill				Windmill, status of ruins is obtained by cursor pick
25.2	Ru	Windmill (without sails)					
26.1	† ‡	Wind turbine, Windmotor	WINDMOTOR Windmotor				Wind motor
26.2		Wind farm	WIND FARM Wind Farm				Wind generator farm
27	FS	Flagstaff, Flagpole	FS FP	FS FP			Flagstaff, flagpole

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
28		Radio mast, Television mast	 R MAST  TV MAST	 R Mast  TV Mast		 Mast
29		Radio tower, Television tower	 R TR  TV TR	 R Tr  TV Tr		 Radio, television tower
30.1	 Radar Mast  Radar	Radarmast	 RADAR MAST	 Radar Mast		 Mast
30.2	 Radar Tr  Radar	Radartower	 RADAR TR	 Radar Tr		 Radar tower
30.3	 Radar Sc	Radarscanner				 Radar scanner
30.4	 Radome	Radome	 DOME (RADAR)  Dome (Radar)	 RADOME  Radome		 Dome
31		Dish aerial	 ANT (RADAR)  Ant (Radar)			 Dish aerial
32	 Tanks	Tanks	 TANK  Tank farm			 Tank
						 Tank farm
33	 Silo	Silo	 SILO  ELEVATOR	 Silo  Elevator	 Silo  Elevator	 Silo
	 Silo					
34.1		Fortified structure (on large scale charts)	 Fortified structure	 Fortified structure		 Fortified structure
34.2		Castle, Fort, Blockhouse (on small scale charts)			 Castle, Fort, Blockhouse	 Fortified structure
34.3		Battery, Small fort (on small scale charts)	 Battery, Small fort			 Fortified structure
35.1		Quarry (on large scale charts)				 Quarry area
35.2		Quarry (on small scale charts)			 Quarry	 Quarry
36		Mine				

E Landmarks

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
37.1		Recreational vehicle site				
37.2		Camping site (including recreational vehicles)				
Supplementary National Symbols						
a		Muslim shrine				
b		Tomb				
c		Watermill				
d		Factory		 Facy		
e		Well		 Well		
f		School	 Sch	 Sch		
g		Hospital	 Hosp			
h		University	 Univ	 Univ		
i		Gable	 GAB	 Gab		
k		Telegraph Telegraph office		Tel Tel Off		
l		Magazine		Magz		
m		Government house		Govt Ho		
n		Institute		Inst		
o		Courthouse		Ct Ho		
p		Pavilion		Pav		
q		Telephone		T		
r		Limited		Ltd		
s		Apartment		Apt		
t		Capitol		Cap		
u		Company		Co		
v		Corporation		Corp		

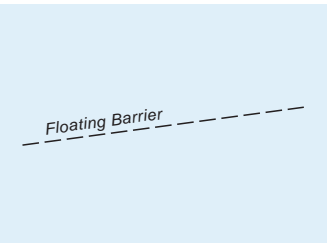




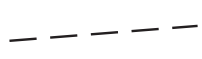

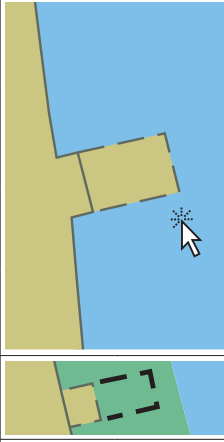
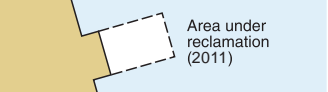

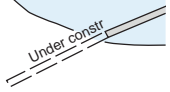

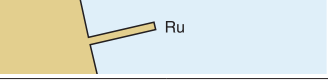

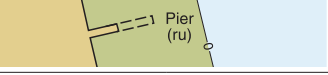




No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Protective Structures						Supplementary national symbols: a–c
1		Dike, Levee, Berm				Dike as a line Dike as a line, conspicuous Dike as an area
2.1		Seawall (on large scale charts)				Seawall
2.2		Seawall (on small scale charts)				
3		Causeway				Causeway as a line Causeway, covers and uncovers as a line Causeway as an area Causeway, covers and uncovers as an area
4.1		Breakwater (in general)				Breakwater as a line
4.2		Breakwater (loose boulders, tetrapods, etc.)				
4.3		Breakwater (slope of concrete or masonry)				
5		Training wall (partly submerged at high water)				Training wall

F Ports

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
6.1		Groin (always dry)		Groin			Groin (always dry)
6.2		Groin (intertidal)		Groin			Groin (intertidal)
6.3		Groin (always under water)		Groin			Groin (submerged)
Harbor Installations							
Depths → I		Anchorages, Limits → N		Beacons and other fixed marks → Q		Marina → U	
10		Fishing harbor					Fishing harbor
11.1		Boat harbor, Marina					Yacht harbor, marina
11.2		Yacht berths without facilities					
11.3		Yacht club, Sailing club					
12		Mole (with berthing facility)					Mole as a line
							Mole as an area
13		Quay, Wharf		Whf			Wharf (quay)
14		Pier, Jetty		Pier			Pier (jetty), promenade pier
15		Promenade pier					
16		Pontoon					Pontoon as a line
							Pontoon as an area
17		Landing for boats		Ldg	Lndg		Landing

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
18		Steps, Landing stairs				
19.1		Designation of berth	3	A	3	
19.2		Visitors' berth				
20		Dolphin				
21		Deviation dolphin				
22		Minor post or pile				
23		Slipway, Patent slip, Ramp				
24		Gridiron, Scrubbing grid				
25		Dry dock, Graving dock				
26		Floating dock				
27		Non-tidal basin, Wet dock				
28		Tidal basin, Tidal harbor				

F Ports

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
29.1		Floating barrier, e.g. oil barrier, security barrier				 Floating hazard  Boom Floating oil barrier, oil retention (high pressure pipe)  Boom, floating obstruction	
29.2		Oil retention barrier (high pressure pipe)				 Floating oil barrier, oil retention (high pressure pipe)	
30		Works on land, with year date					
31		Works at sea, Area under reclamation, with year date					Ruin or works under construction
32	Under construction (2011) Works in progress (2011)	Works under construction, with year date					Year and condition of under construction or ruin is obtained by cursor pick
33.1		Ruin					
33.2		Ruined pier, partly submerged at high water					
34		Hulk					 Hulk

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Canals, Barrages						Supplementary national symbol: d
Clearances → D		Signal Stations → T		Cultural Features → B		
40		Canal				
41.1		Lock (on large scale charts)				
41.2		Lock (on small scale charts)				
42		Caisson, Gate				
43		Flood barrage				
44		Dam, Weir (direction of flow shown is left to right)				

F Ports

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Transshipment Facilities						Supplementary national symbols: e-f
	Roads → D	Railways → D	Tanks → E			
50		Roll-on, Roll-off (RoRo), Ferry Terminal				RoRo RoRo terminal
51		Transit shed, Warehouse (with designation)				 Conspicuous single building, designation is obtained by cursor pick
52		Timber yard				 Timber yard as a point Timber yard as an area
53.1		Crane with lifting capacity, Traveling crane (on railway)				 Lifting capacity is obtained by cursor pick Crane as a point Crane as an area
53.2		Container crane (with lifting capacity)				 Crane as an area
53.3		Sheerlegs (conspicuous)				 Crane, visually conspicuous as an area
Public Buildings						Supplementary national symbol: g
60		Harbormaster's office				 Conspicuous single building
61		Custom office				 Conspicuous single building Customs
62.1		Health office, Quarantine building				 Conspicuous single building
62.2		Hospital				
63		Post office				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Supplementary National Symbols						
a		Jetty (partly below MHW)				
b		Submerged jetty				
c		Jetty (on small scale charts)				
d		Pump-out facilities				
e		Quarantine office				
f		Mooring Canal				
g		Conveyor				

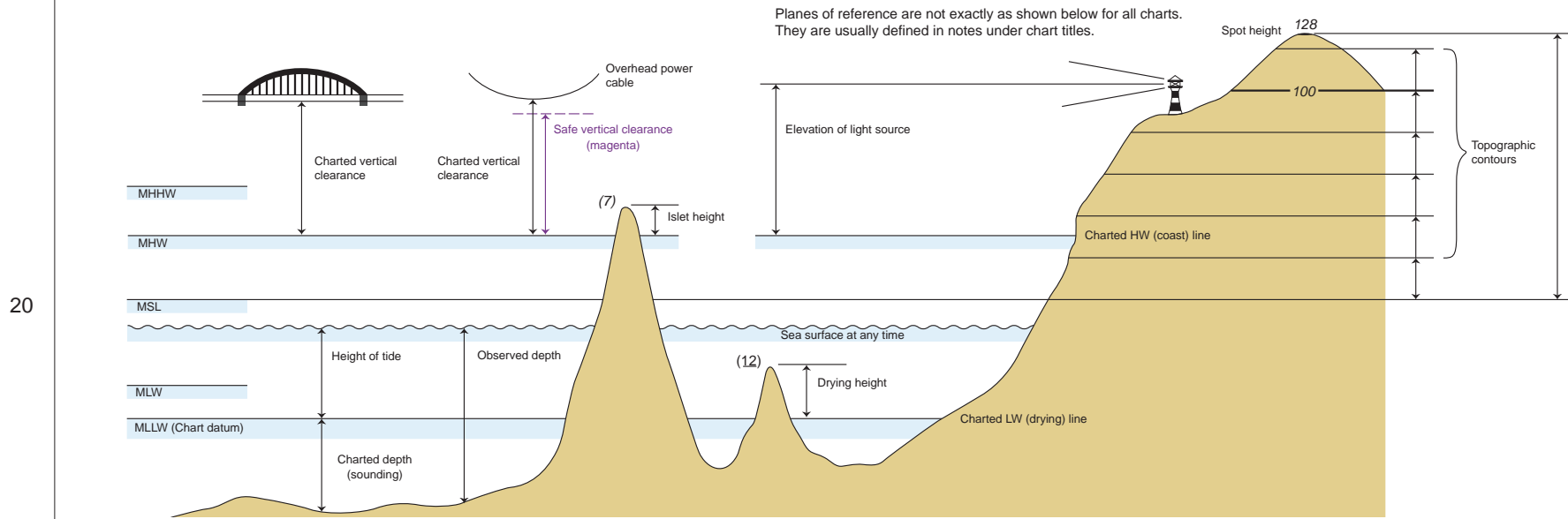
H Tides, Currents

Terms Relating to Tidal Levels					
INT Terms			Supplementary National Terms (see I-t for other terms and symbols)		
No.	Term	Description	No.	Term	Description
1	CD	Chart Datum, Datum for sounding reduction	a	HW	High Water
2	LAT	Lowest Astronomical Tide	b	HHW	Higher High Water
3	HAT	Highest Astronomical Tide	c	LW	Low Water
4	MLW	Mean Low Water	d	LWD	Low Water Datum
5	MHW	Mean High Water	e	LLW	Lower Low Water
6	MSL	Mean Sea Level	f	MTL	Mean Tide Level
7		Height datum, Land survey datum	g	ISLW	Indian Spring Low Water
8	MLWS	Mean Low Water Springs	h	HWF&C	High Water Full and Change (Vulgar establishment of the port)
9	MHWS	Mean High Water Springs	i	LWF&C	Low Water Full and Change
10	MLWN	Mean Low Water Neaps	j	CRD	Columbia River Datum
11	MHWN	Mean High Water Neaps	k	GCLWD	Gulf Coast Low Water Datum
12	MLLW	Mean Lower Low Water			
13	MHHW	Mean Higher High Water			
14	MHLW	Mean Higher Low Water			
15	MLHW	Mean Lower High Water			
16	Sp	Spring tide			
17	Np	Neap tide			

No.

Tidal Levels and Charted Data

Tide Gauge → T

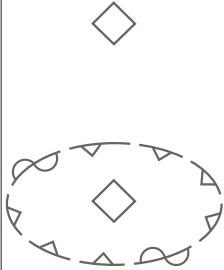

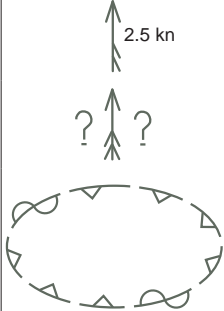

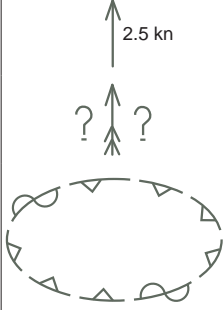


Notes:
 1) The numbers 128, 100, (7) and (12), shown above, are examples of how spot heights, topographic contour labels, islet heights and drying heights appear on NOAA paper charts. The numbers are enclosed in parentheses if the value is offset into the water to more clearly show the islet or rock.
 2) On NOAA charts, except for lake charts, the HW (coast) line is equal to the MHW line.

Tide Tables

No.	INT	Description	NOAA
30	Tidal Levels referred to datum of soundings		TIDAL INFORMATION
	Place	Lat N Long E	PLACE (LAT/LONG)
	Heights in metres above datum		Height referred to datum of soundings (MLLW)
	MHWs MHWN MLWN MLWS		Mean Higher High Water Mean High Water Mean Low Water
	MHHW MLHW MHLW MLLW		feet feet feet
		Note: The order of the columns of levels will be the same as that used in national tables of tidal predictions.	
			Dashes (---) located in datum columns indicate unavailable datum values for a tide station. Real-time water levels, tide predictions, and tidal current predictions are available on the Internet from http://tidesandcurrents.noaa.gov . (Nov 2011)

H Tides, Currents


















No.						ECDIS																																																									
31	Tidal stream table	<p>Tidal streams referred to . . .</p> <table border="1"> <tr> <td>Hours</td> <td>◇</td> <td colspan="2">Geographical Position</td> </tr> <tr> <td>Before High Water</td> <td rowspan="6">} Directions of streams (degrees)</td> <td rowspan="6">} Rates at spring tides (knots)</td> <td rowspan="6">} Rates at neap tides (knots)</td> </tr> <tr> <td>5</td> <td rowspan="6">◇ A</td> <td rowspan="6">53°51.2'N</td> <td rowspan="6">7° 17.8' E</td> </tr> <tr> <td>4</td> </tr> <tr> <td>3</td> </tr> <tr> <td>2</td> </tr> <tr> <td>1</td> </tr> <tr> <td>High Water</td> <td>0</td> <td>081</td> <td>0.7</td> <td>0.6</td> </tr> <tr> <td>After High Water</td> <td rowspan="6">} Directions of streams (degrees)</td> <td rowspan="6">} Rates at spring tides (knots)</td> <td rowspan="6">} Rates at neap tides (knots)</td> </tr> <tr> <td>1</td> <td>+1</td> <td>038</td> <td>0.3</td> <td>0.2</td> </tr> <tr> <td>2</td> <td>+2</td> <td>291</td> <td>0.6</td> <td>0.4</td> </tr> <tr> <td>3</td> <td>+3</td> <td>277</td> <td>1.0</td> <td>0.8</td> </tr> <tr> <td>4</td> <td>+4</td> <td>270</td> <td>1.2</td> <td>1.0</td> </tr> <tr> <td>5</td> <td>+5</td> <td>267</td> <td>1.1</td> <td>1.0</td> </tr> <tr> <td>6</td> <td>+6</td> <td>264</td> <td>1.0</td> <td>0.9</td> </tr> </table>				Hours	◇	Geographical Position		Before High Water	} Directions of streams (degrees)	} Rates at spring tides (knots)	} Rates at neap tides (knots)	5	◇ A	53°51.2'N	7° 17.8' E	4	3	2	1	High Water	0	081	0.7	0.6	After High Water	} Directions of streams (degrees)	} Rates at spring tides (knots)	} Rates at neap tides (knots)	1	+1	038	0.3	0.2	2	+2	291	0.6	0.4	3	+3	277	1.0	0.8	4	+4	270	1.2	1.0	5	+5	267	1.1	1.0	6	+6	264	1.0	0.9			<p>Point or area for which a tidal stream table is available</p> <p>Boundary of an area for which there is tidal information</p>
Hours	◇	Geographical Position																																																													
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1				+1	038	0.3	0.2																																																								
2				+2	291	0.6	0.4																																																								
3				+3	277	1.0	0.8																																																								
4				+4	270	1.2	1.0																																																								
5				+5	267	1.1	1.0																																																								
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Tidal Streams and Currents						Supplementary national symbols: m-t																																																									
Breakers → K		Tide Gauge → T																																																													
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS																																																									
40		Flood tide stream with rate					<p>Flood stream, rate at spring tides</p> <p>Current or tidal stream whose direction is not known</p> <p>Boundary of an area for which there is tidal information</p>																																																								
41		Ebb tide stream					<p>Ebb stream, rate at spring tides</p> <p>Current or tidal stream whose direction is not known</p> <p>Boundary of an area for which there is tidal information</p>																																																								

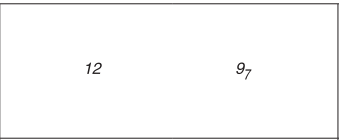
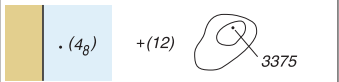
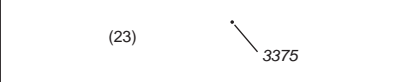
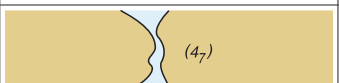



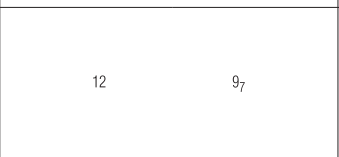

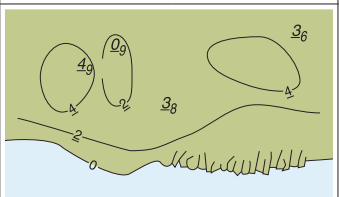
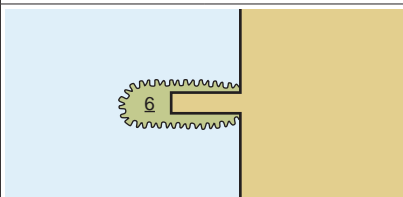
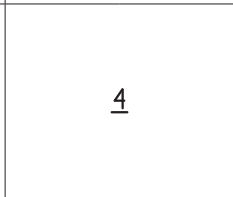
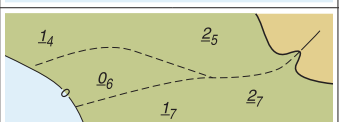

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
42		Current in restricted waters					Non-tidal current
43		Ocean current with rates and seasons					
44		Overfalls, tide rips, races					Overfalls, tide rips; eddies; breakers as point, line, and area
45		Eddies					
46		Position of tabulated tidal stream data with designation					Point for which a tidal stream table is available
47		Offshore position for which tidal levels are tabulated					

Supplementary National Symbols (Supplementary national terms relating to tidal levels are listed after H 17)

l		Stream		Str		
m		Current, general, with rate				
n		Velocity, Rate		vel		
o		Knots		kn		
p		Height		ht		
q		Flood		fl		
r		New moon				
s		Full moon				
t		Current diagram				
u		Gulf Stream Limits				<i>Approximate location of Axis of Gulf Stream</i>

I Depths

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
General						
1	<i>ED</i>	Existence doubtful				 <p>Sounding of low accuracy</p>
2	<i>SD</i>	Sounding of doubtful depth				   <p>Sounding of low accuracy</p> <p>Underwater hazard with depth greater than 20 meters</p> <p>Isolated danger of depth less than the safety contour</p>
3.1	<i>Rep</i>	Reported, but not confirmed				  <p>Sounding of low accuracy</p> <p>Point feature or area of low accuracy</p>
3.2	<i>Rep (2011)</i>	Reported (with year of report), but not confirmed				  <p>Low accuracy line demarking area wreck or obstruction</p> <p>Low accuracy line demarking foul area</p>
4	  	Reported, but not confirmed sounding or danger (on small scale charts only)				      <p>Obstruction, depth not stated</p> <p>Sounding of low accuracy</p> <p>Underwater hazard with depth of 20 meters or less</p> <p>Underwater hazard with depth greater than 20 meters</p> <p>Isolated danger of depth less than the safety contour</p> <p>Point feature or area of low accuracy</p>

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Soundings						Supplementary national symbols: a–c	
Plane of Reference for Depths → H			Plane of Reference for Heights → H				
10		Sounding in true position (NOAA shows fathoms and feet with vertical numbers and meters with sloping numbers)				9_7 30	Sounding shoaler than or equal to safety depth Sounding deeper than safety depth
11		Sounding out of position	(23)			Depths are always shown in their true position in ECDIS	
12		Least depth in narrow channel					
13		No bottom found at depth shown					Status of no bottom found is obtained by cursor pick
14		Soundings which are unreliable or taken from a smaller scale source (NOAA shows unreliable soundings in fathoms and feet with sloping numbers and in meters with vertical numbers)					Sounding of low accuracy
15		Drying heights and contours above chart datum					Drying height, less than or equal to safety depth
16		Natural watercourse (in intertidal area), tidal gully, tideway					Tideway

Depths

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Depths in Fairways and Areas						Supplementary national symbols: a, b
Plane of Reference for Depths → H						
20		Limit of dredged area				 Dredged area Depth, date of latest survey and other information is obtained by cursor pick
21		Dredged channel or area with depth of dredging in meters and decimeters				
22		Dredged channel or area with depth and year of the latest control survey				
23		Dredged channel or area with maintained depth				
24		Area swept by wire drag. The depth is shown at chart datum. (The latest date of sweeping is shown in parentheses.)				 swept to 9.6 Swept area
25		Unsurveyed or inadequately surveyed area; area with inadequate depth information				 Incompletely surveyed area Unsurveyed area



ECDIS depth related symbols closely resemble their paper chart counterparts; however, ECDIS provides valuable additional information to mariners that paper charts cannot.

Soundings

ECDIS enables mariners to set their own-ship “safety depth.” If no depth is set, ECDIS sets the value to 30m. Soundings equal to or shoaler than the safety depth are shown in black; deeper soundings are displayed in a less conspicuous gray. Fractional values are shown with subscript numbers of the same size.

Depth Contours & Depth Areas

Depth contours in ECDIS are portrayed with a thin gray line. Each pair of adjacent depth contours is used to create depth area features. These are used by ECDIS to tint different depth levels and to initiate alarms when a ship is headed into unsafe water.

Depth Contour Labels



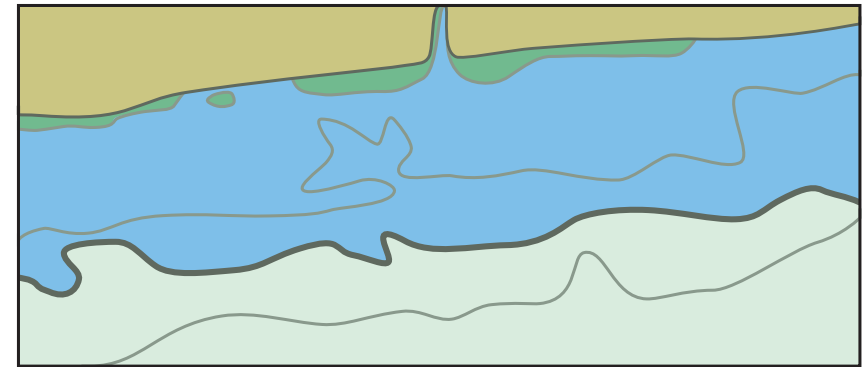
ECDIS depth contour labels are not centered and oriented along iso-lines as they appear on paper charts. They are displayed upright and may appear either on or next to the contour lines that they describe. The labels are black and the same size as soundings, but the labels have a light “halo” to set them apart. The graphic to the left shows depth labels and soundings both deeper and shoaler than the safety depth. Note that depths on NOAA paper charts and ENCs are usually compiled in fathoms and feet. Because ECDIS displays depths in meters, soundings and contour lines often show fractional meter values. The “own-ship safety contour” (described below) is always displayed, but mariners may choose to have all other depth contours turned off.

Safety Contour

ECDIS uses a “safety contour” value to show an extra thick line for the depth contour that separates “safe water” from shoaler areas. If the mariner does not set an own-ship safety contour value, ECDIS sets the value to 30m. If the ENC being displayed does not have a contour line equal to the safety contour depth value set by the mariner, then ECDIS sets the next deeper contour as the safety contour. Depending on the contour intervals used on individual ENCs, ECDIS may set different safety contours as a ship transits from one ENC to another. ECDIS will initiate an alarm if the ship’s future track will cross the safety contour within a specified time set by the mariner.

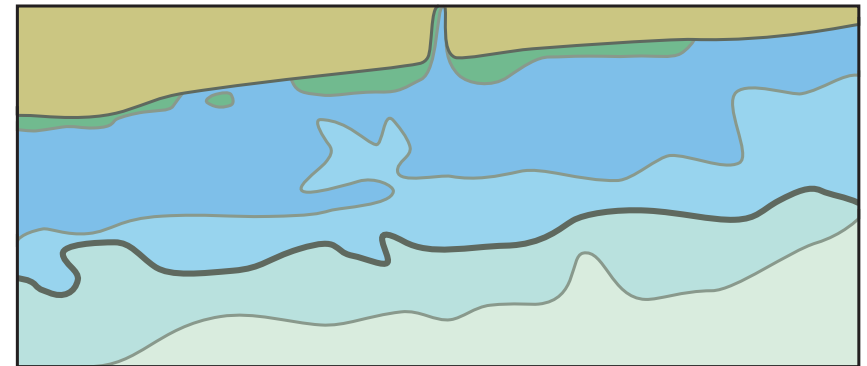
Two or Four Tints for Shading Depth Areas

ECDIS tints all depth areas beyond the (green tinted) foreshore in either one of two or one of four shades of blue. This is similar to the convention used for paper charts, but the depths used to change from one tint to another are based on the safety contour and thus “customized” for each ship. If the mariner chooses two shades to be displayed, water deeper than the safety contour is shown in an off-white color, water shoaler than the safety contour is tinted blue.

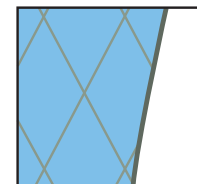


Portrayal of Depth Areas with 2 Color Settings

Some ECDIS enable mariners to define two additional depth areas for medium-deep water and medium-shallow water by setting a “deep contour” value and a “shallow contour” value. If this option is used, the safety contour is displayed between the medium deep and medium shallow contours.







Portrayal of Depth Areas with 4 Color Setting



Some ECDIS also provide the mariner with the option of displaying a cross-hatch “shallow water” pattern over all depth areas shoaler than the safety contour.

Depths

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Depth Contours						
30		<p>Drying contour Low water line</p> <p>Blue tint, in one or more shades, or tint ribbons are shown to different limits according to the scale and purpose of the chart and the nature of the bathymetry.</p> <p>On some charts, contours and values are printed in blue.</p>				
31		Approximate depth contours				<p>Approximate depth contour</p> <p>Approximate safety depth contour</p>
Supplementary National Symbols						
a		Swept channel				
b		Swept area, not adequately sounded (shown by purple or green tint)				
c		Stream				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Types of Seabed						Supplementary national abbreviations: a–ag	
Rocks → K							
1	S	Sand				S	Sand
2	M	Mud				M	Mud
3	Cy	Clay				Cy	Clay
4	Si	Silt				Si	Silt
5	St	Stones				St	Stones
6	G	Gravel				G	Gravel
7	P	Pebbles				P	Pebbles
8	Cb	Cobbles				Cb	Cobbles
9.1	R	Rock; Rocky		Rk; rky		R	Rock
9.2	Bo	Boulder(s)		BlDs		R	Boulder
						R	Lava
10	Co	Coral, Coralline algae				Co	Coral
11	Sh	Shells (skeletal remains)				Sh	Shells
12.1	S/M	Two layers, e.g. sand over mud					
12.2	fS M Sh fS.M.Sh	The main constituent is given first for mixtures, e.g. fine sand with mud and shells	f S M Sh				
13.1	Wd	Weed (including kelp)					Weed, kelp
13.2		Kelp, Weed		 Kelp			Weed, kelp as an area

J Nature of the Seabed

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
14		Sandwaves		Sandwaves		
15		Spring in seabed		Spring		
Types of Seabed, Intertidal Areas						
20		Area with stones and gravel				 Areas of gravel and stone
21		Rocky area, which covers and uncovers				 Rocky ledges or coral reef
22		Coral reef, which covers and uncovers				 Rocky ledges or coral reef
Qualifying Terms Supplementary national symbols: ah–bf						
30	<i>f</i>	Fine	} only used in relation to sand			
31	<i>m</i>	Medium				
32	<i>c</i>	Coarse				
33	<i>bk</i>	Broken				
34	<i>sy</i>	Sticky				
35	<i>so</i>	Soft				
36	<i>sf</i>	Stiff				
37	<i>v</i>	Volcanic		<i>vol</i>		
38	<i>ca</i>	Calcareous		<i>Ca</i>		 Rocky ledges or coral reef
39	<i>h</i>	Hard				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Supplementary National Abbreviations						
a		Ground		<i>Grd</i>		
b		Ooze		<i>Oz</i>		
c		Marl		<i>Ml</i>		
d		Shingle		<i>Sn</i>		
f		Chalk		<i>Ck</i>		
g		Quartz		<i>Qz</i>		
h		Schist		<i>Sch</i>		
i		Coral head		<i>Co Hd</i>		
j		Madrepores		<i>Mds</i>		
k		Volcanic ash		<i>Vol Ash</i>		
l		Lava		<i>La</i>		
m		Pumice		<i>Pm</i>		
n		Tufa		<i>T</i>		
o		Scoriae		<i>Sc</i>		
p		Cinders		<i>Cn</i>		
q		Manganese		<i>Mn</i>		
r		Oysters		<i>Oys</i>		
s		Mussels		<i>Ms</i>		
t		Sponge		<i>Spg</i>		
u		Kelp		<i>K</i>		
v		Grass		<i>Grs</i>		
w		Sea-tangle		<i>Stg</i>		
x		Spicules		<i>Spi</i>		
y		Foraminifera		<i>Fr</i>		
z		Globigerina		<i>Gl</i>		
aa		Diatoms		<i>Di</i>		
ab		Radiolaria		<i>Rd</i>		
ac		Pteropods		<i>Pt</i>		
ad		Polyzoa		<i>Po</i>		
ae		Cirripedia		<i>Cir</i>		
af		Fucus		<i>Fu</i>		

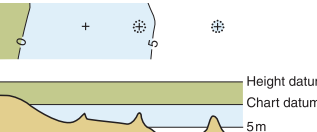

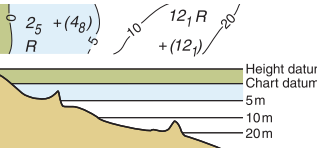

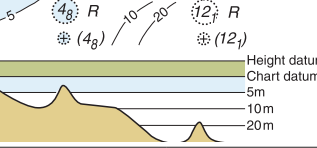




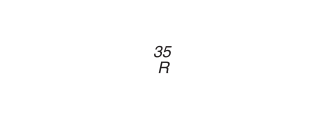

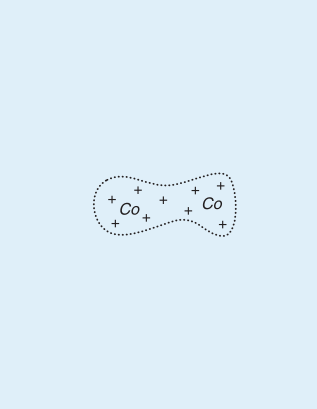
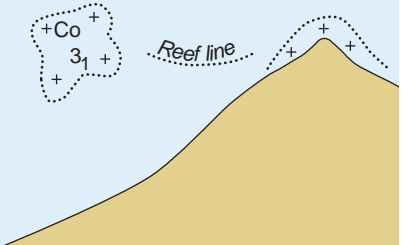





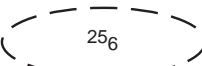
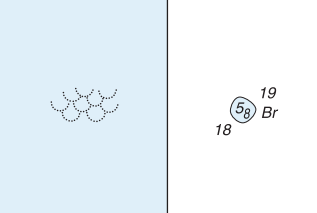
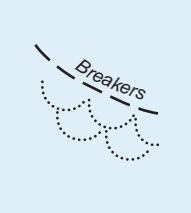
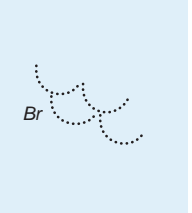
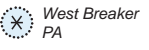





J

Nature of the Seabed

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
ag		Mattes		<i>Ma</i>		
ah		Small		<i>sml</i>		
ai		Large		<i>lrg</i>		
aj		Rotten		<i>rt</i>		
ak		Streaky		<i>str</i>		
al		Speckled		<i>spk</i>		
am		Gritty		<i>gty</i>		
an		Decayed		<i>dec</i>		
ao		Flinty		<i>fly</i>		
ap		Glacial		<i>glac</i>		
aq		Tenacious		<i>ten</i>		
ar		White		<i>wh</i>		
as		Black		<i>bl; bk</i>		
at		Violet		<i>vi</i>		
au		Blue		<i>bu</i>		
av		Green		<i>gn</i>		
aw		Yellow		<i>yl</i>		
ax		Orange		<i>or</i>		
ay		Red		<i>rd</i>		
az		Brown		<i>br</i>		
ba		Chocolate		<i>ch</i>		
bb		Gray		<i>gy</i>		
bc		Light		<i>lt</i>		
bd		Dark		<i>dk</i>		
be		Varied		<i>vard</i>		
bf		Uneven		<i>unev</i>		















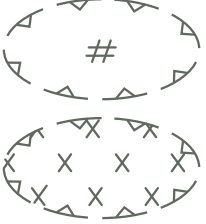





No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
General							
1		Danger line: A danger line draws attention to a danger which would not stand out clearly enough if represented solely by its symbol (e.g. isolated rock) or delimits an area containing numerous dangers, through which it is unsafe to navigate					Obstruction, depth not stated Obstruction which covers and uncovers Underwater hazard with depth of 20 meters or less Isolated danger of depth less than the safety contour Foul area, not safe for navigation
2		Swept by wire drag or diver	<u>21</u> , Rk <u>35</u> , Rk <u>46</u> Obstn <u>46</u> Wk <u>46</u> Wk (1937)		#, (15 ₇)		Swept sounding, less than or equal to safety depth Swept sounding, greater than safety depth
3		Depth unknown, but estimated to have a safe clearance to the depth shown	<u>46</u> Wk <u>35</u> Rk <u>46</u> Obstn			ECDIS displays safe clearance depths in the same manner as known depths.	
Rocks							
Plane of Reference for Heights → H			Plane of Reference for Depths → H				
10		Rock (islet) which does not cover, height above height datum					Land as a point at small scale Land as an area, with an elevation or control point
11		Rock which covers and uncovers, height above chart datum					Rock which covers and uncovers or is awash at low water Underwater hazard which covers and uncovers with drying height Isolated danger of depth less than the safety contour
12		Rock awash at the level of chart datum					Rock which covers and uncovers or is awash at low water Underwater hazard which covers and uncovers Isolated danger of depth less than the safety contour

K Rocks, Wrecks, Obstructions, Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
13		Underwater rock of unknown depth, dangerous to surface navigation					Dangerous underwater rock of uncertain depth
14.1		Underwater rock of known depth; inside the corresponding depth area	12 Rk	27 Rk 21 R			Underwater hazard with a depth of 20 meters or less
14.2		Underwater rock of known depth; outside the corresponding depth area, dangerous to surface navigation		 			Underwater hazard with depth greater than 20 meters
15		Underwater rock of known depth, not dangerous to surface navigation	35 Rk		35 R, +(35)		Underwater hazard with a depth of 20 meters or less
16		Coral reef which is always covered				     	Dangerous underwater rock of uncertain depth Obstruction, depth not stated Isolated danger of depth less than the safety contour Safe clearance shoaler than safety contour Safe clearance deeper than safety contour Safe clearance deeper than 20 meters
17		Breakers				    	Overfalls, tide rips; eddies; breakwaters as point, line, and area

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Wrecks and Fouls							
Plane of Reference for Depths → H							
20	Mast (1.2) Wk	Wreck, hull never covers, on large scale charts				Wreck, always dry, with height shown	
21	Mast (1.2) Wk	Wreck, covers and uncovers, on large scale charts		 	 	Wreck, covers and uncovers Distributed remains of wreck	
22	 	Submerged wreck, depth known, on large scale charts				 	Submerged wreck with depth of 20 meters or less Submerged wreck with depth greater than 20 meters Distributed remains of wreck
23		Submerged wreck, depth unknown, on large scale charts			 		Submerged wreck with depth less than the safety contour or depth unknown
24		Wreck showing any portion of hull or superstructure at level of chart datum			 		Wreck showing any portion of hull or superstructure at level of chart datum
25		Wreck of which the mast(s) only are visible at chart datum					
26	 	Wreck, least depth known by sounding only				 	Underwater hazard with depth of 20 meters or less Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour

K Rocks, Wrecks, Obstructions, Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
27	 	Wreck, least depth known, swept by wire drag or diver	<u>25</u> Wk			  	Swept sounding for underwater hazard less than safety depth Swept sounding for underwater hazard greater than or equal to safety depth Isolated danger of depth less than the safety contour
28		Dangerous wreck, depth unknown				 	Dangerous wreck, depth unknown Isolated danger of depth less than the safety contour
29	++	Sunken wreck, not dangerous to surface navigation				++	Non-dangerous wreck, depth unknown
30		Wreck, least depth unknown, but considered to have a safe clearance to the depth shown				  	Underwater hazard with safe clearance of 20 meters or less Underwater hazard with safe clearance greater than 20 meters Isolated danger of depth less than the safety contour
31.1	# (25)	Foul ground, not dangerous to surface navigation, but to be avoided by vessels anchoring, trawling, etc. (e.g. remains of wreck, cleared platform)				#	Foul area of seabed safe for navigation but not for anchoring
31.2							Foul ground Distributed remains of wreck
Obstructions and Aquaculture							
Plane of Reference for Depths → H		Kelp, Seaweed → J	Underwater Installations → L				
40	 	Obstruction, depth unknown				  	Obstruction, depth not stated Isolated danger of depth less than the safety contour Safe clearance shoaler than safety contour

Rocks, Wrecks, Obstructions, Aquaculture

K

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
41	<i>Obstn</i> <i>Obstn</i>	Obstruction, least depth known by sounding only				 	Underwater hazard with depth of 20 meters or less Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour
42	<i>Obstn</i> <i>Obstn</i>	Obstruction, least depth known, swept by wire drag or diver				} swept depth } Method of depth measurement is obtained by cursor pick } known by diver or other means } 	Less than or equal to safety depth Greater than safety depth Underwater hazard with depth of 20 meters or less Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour
43.1	<i>Obstn</i>	Stumps of posts or piles, wholly submerged				 	Obstruction, depth not stated Underwater hazard with depth of 20 meters or less Isolated danger of depth less than the safety contour
43.2		Submerged pile, stake, snag, or stump (with exact position)	<ul style="list-style-type: none"> ○ <i>Subm piles</i> ○ <i>Stakes</i> ○ <i>Snags</i> 	<ul style="list-style-type: none"> ○ <i>Well</i> ○ <i>Deadhead</i> ○ <i>Stump</i> 			Isolated danger of depth less than the safety contour
44.1		Fishing stakes				 	Fish stakes as a point Fish stakes as an area
44.2		Fish trap, Fish weir, Tunny nets	Fish trap				Fish trap, fish weir, tunny net as a point
45	<i>Fish traps</i> <i>Tunny nets</i>	Fish trap area, Tunny nets area					Fish trap, fish weir, tunny net as an area

K Rocks, Wrecks, Obstructions, Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
46.1		Fish haven				 	<p>Isolated danger of depth less than the safety contour</p> <p>Safe clearance shoaler than safety contour</p>
46.2		Fish haven with minimum depth				 	<p>Underwater hazard with depth of 20 meters or less</p> <p>Underwater hazard with depth greater than 20 meters</p> <p>Isolated danger of depth less than the safety contour</p> <p>Safe clearance shoaler than safety contour</p> <p>Safe clearance deeper than safety contour</p> <p>Safe clearance deeper than 20 meters</p>
47		Shellfish beds					Marine farm as a point
48.1		Marine farm (on large scale charts)					Marine farm as an area
48.2		Marine farm (on small scale charts)					

Rocks, Wrecks, Obstructions, Aquaculture

K

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Supplementary National Symbols						
a		Rock awash (height unknown)	*			
b		Shoal sounding on isolated rock or rocks				
c		Sunken wreck covered 20 to 30 meters	++			
d		Submarine volcano		<i>Sub vol</i>		
e		Discolored water		<i>Discol water</i>		
f		Sunken danger with depth cleared (swept) by wire drag				
g		Reef of unknown extent	<i>Reef</i>			
h		Coral reef, detached (uncovers at sounding datum)				
i		Submerged crib				
j		Crib, duck blind (above water)	Duck Blind Crib			
k		Submerged duck blind				
l		Submerged platform				
m		Coral reef which covers and uncovers				
n		Sinkers				
o		Foul area, foul with rocks or wreckage, dangerous to navigation				
p		Unexploded ordnance	<i>Unexploded Ordnance</i>	<i>Unexploded Ordnance</i>		
q		Float				
r		Stumps of posts or piles, which cover and uncover				























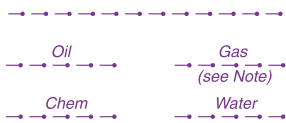
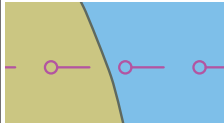
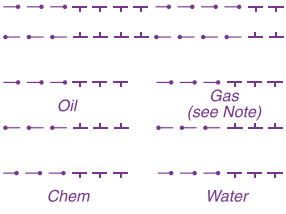

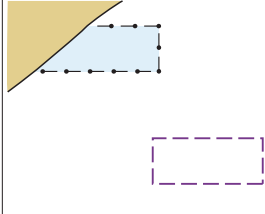

L Offshore Installations

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
General						
Areas, Limits → N						
1	<i>Ekofisk Oilfield</i>	Name of oilfield or gasfield				Area to be navigated with caution, name is obtained by cursor pick
2	Z-44	Platform with designation/name				Offshore platform, name is obtained by cursor pick
3		Limit of safety zone around offshore installation				Area where entry is prohibited or restricted or to be avoided, with other cautions
4		Limit of development area				Cautionary area, navigate with caution
5.1		Wind turbine, floating wind turbine, vertical clearance under blade				Wind motor visually conspicuous
5.2		Offshore wind farm				Wind farm (offshore)
		Offshore wind farm (floating)				
6		Wave farm				Wave farm
Platforms and Moorings						
Mooring Buoys → Q						
10		Production platform, Platform, Oil derrick				Offshore platform
11		Flare stack (at sea)				Conspicuous flare stack on offshore platform



No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
12		Single Point Mooring (SPM), including Single Anchor Leg Mooring (SALM), Articulated Loading Column (ALC)					Offshore platform, name and status of disused is obtained by cursor pick
13		Observation/research platform (with name)					
14		Disused platform with superstructure removed					
15		Artificial island					
16		Single Buoy Mooring (SBM), Oil or gas installation buoy including Catenary Anchor Leg Mooring (CALM)					Installation buoy and mooring buoy, simplified
17		Moored storage tanker					Offshore platform
18		Mooring ground tackle					Ground tackle
Underwater Installations						Supplementary national symbol: a	
Plane of Reference for Depths → H		Obstructions → K					
20		Submerged production well	 			 	Underwater hazard with depth of 20 meters or less Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour
21.1		Suspended well, depth over wellhead unknown					Isolated danger of depth less than the safety contour
21.2		Suspended well, with depth over wellhead	 			 	Underwater hazard with depth of 20 meters or less Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour
21.3		Wellhead with height above the sea floor					Isolated danger of depth less than the safety contour



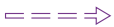







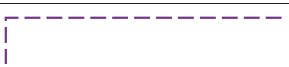





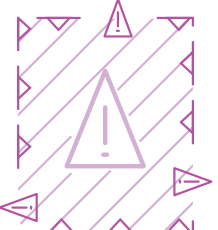
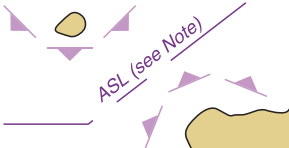





L Offshore Installations

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
22	#	Site of cleared platform				#	Foul area of seabed safe for navigation but not for anchoring
23	 Pipe  (1g)	Above-water wellhead (lit or unlit)	o Pipe		 Pipe (24)		Obstruction in the water which is always above water level
24	 Turbine  FI(2) Underwater Turbine	Underwater turbine				 	Underwater turbine or subsurface ODAS
25	 ODAS	Subsurface Ocean(ographic) Data Acquisition System (ODAS)				 	
Submarine Cables							
30.1		Submarine cable					Submarine cable
30.2		Submarine cable area					
31.1		Submarine power cable					Submarine cable area
31.2		Submarine power cable area					
32		Disused submarine cable					Status of disused is obtained by cursor pick
Submarine Pipelines							
40.1		Supply pipeline: unspecified, oil, gas, chemicals, water					Oil, gas pipeline, submerged or on land
40.2		Supply pipeline area: unspecified, oil, gas, chemicals, water					Submarine pipeline area with potentially dangerous contents

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
41.1		Outfall and intake: unspecified, water, sewer, outfall, intake					Water pipeline, sewer, etc.
		Outfall and intake area: unspecified, water, sewer, outfall, intake					Submarine pipeline area with generally non-dangerous contents
42.1		Buried pipeline/pipe (with nominal depth to which buried)					Nominal depth of buried pipeline is obtained by cursor pick
42.2		Pipeline tunnel					Pipeline tunnel
43		Diffuser, Crib					Underwater hazard with depth of 20 meters or less
							Isolated danger of depth less than the safety contour
44		Disused pipeline/pipe					Status of disused is obtained by cursor pick
Supplementary National Symbols							
a		Submerged well (buoyed)					
b		Potable water intake					

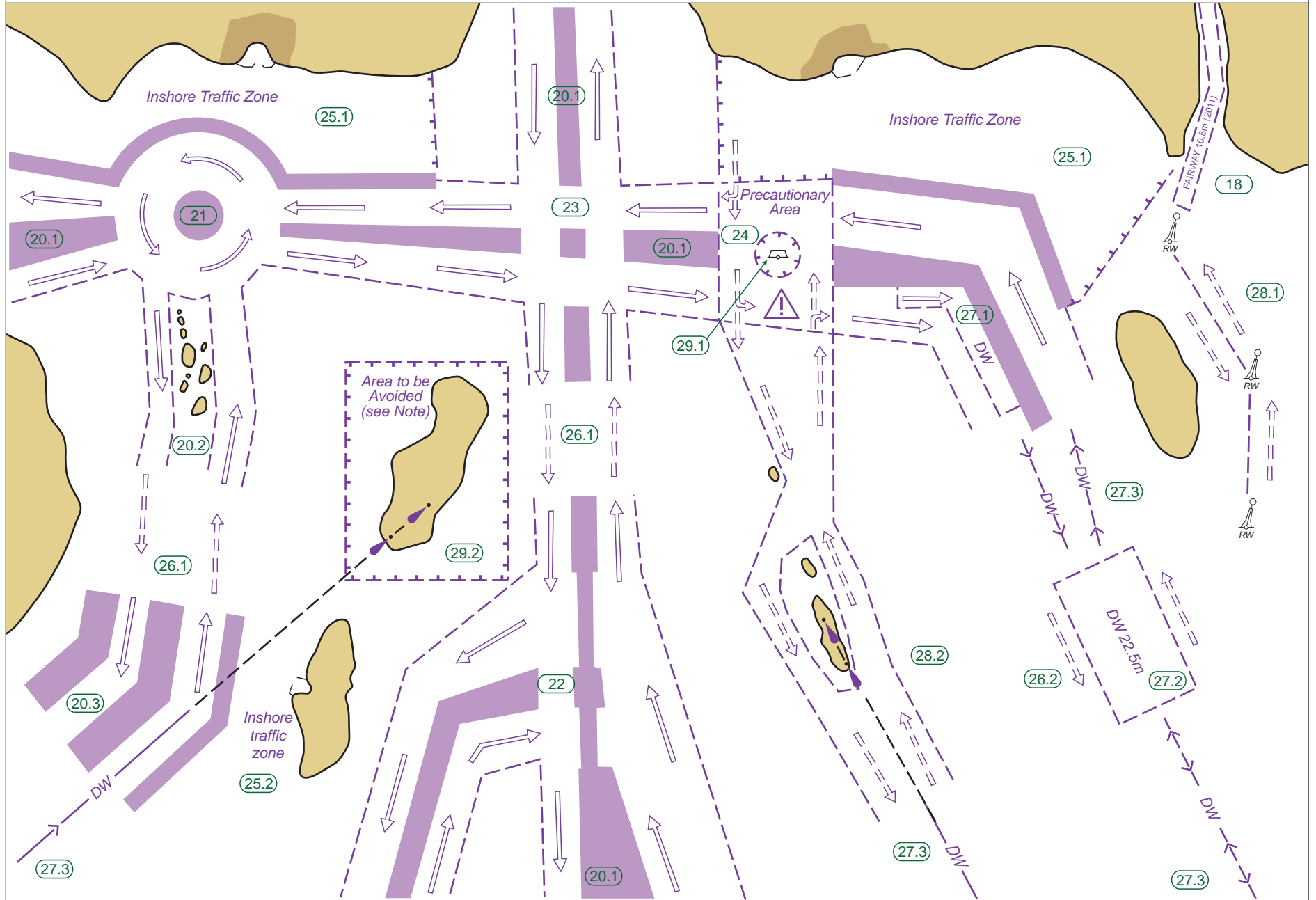
M Tracks, Routes

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Tracks						Supplementary national symbols: a-c
Tracks Marked by Lights → P			Leading Beacons → Q			
1		Leading line (solid line is the track to be followed, ≠ means "in line")		Lights in line 090°		Leading line bearing a non-regulated, recommended track Direction not encoded One-way Two-way
2		Transit (other than leading line), clearing line		Beacons in line 090°		 Clearing line; transit line
3		Recommended track based on a system of fixed marks		Lights in line 090°		Non-regulated, recommended track based on fixed marks Direction not encoded One-way Two-way
4		Recommended track not based on a system of fixed marks				Non-regulated, recommended track not based on fixed marks Direction not encoded One-way Two-way
5.1		One-way track and DW track based on a system of fixed marks				Based on fixed marks, one-way Non-regulated recommended track Deep water route
5.2		One-way track and DW track not based on a system of fixed marks				Not based on fixed marks, one-way Non-regulated recommended track Deep water route centerline
6		Recommended track with maximum authorized (or recommended) draft stated				 If encoded, the shoalest depth range value along the track is obtained by cursor pick

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Routing Measures						Supplementary national symbols: d–e
Basic Symbols						
10		Established (mandatory) direction of traffic flow				 Traffic direction in a one-way lane of a traffic separation scheme
11		Recommended direction of traffic flow				 Single traffic direction in a two-way route part of a traffic-separation scheme
12		Separation line (large scale, small scale)				 Traffic separation line
13		Separation zone				 Traffic separation zone
14		Limit of restricted routing measure (e.g. Inshore Traffic Zone (ITZ), Area to be Avoided (ATBA))				
15		Limit of routing measure				 Traffic separation scheme boundary
16		Precautionary area				 Traffic precautionary area as a point
						 Traffic precautionary area as an area
17		Archipelagic Sea Lane (ASL); axis line and limit beyond which vessels shall not navigate				 Axis and boundary of archipelagic sea lane
18		Fairway designated by regulatory authority with minimum depth				 Fairway, depth is obtained by cursor pick
		Fairway designated by regulatory authority with maximum authorized draft				

M Tracks, Routes

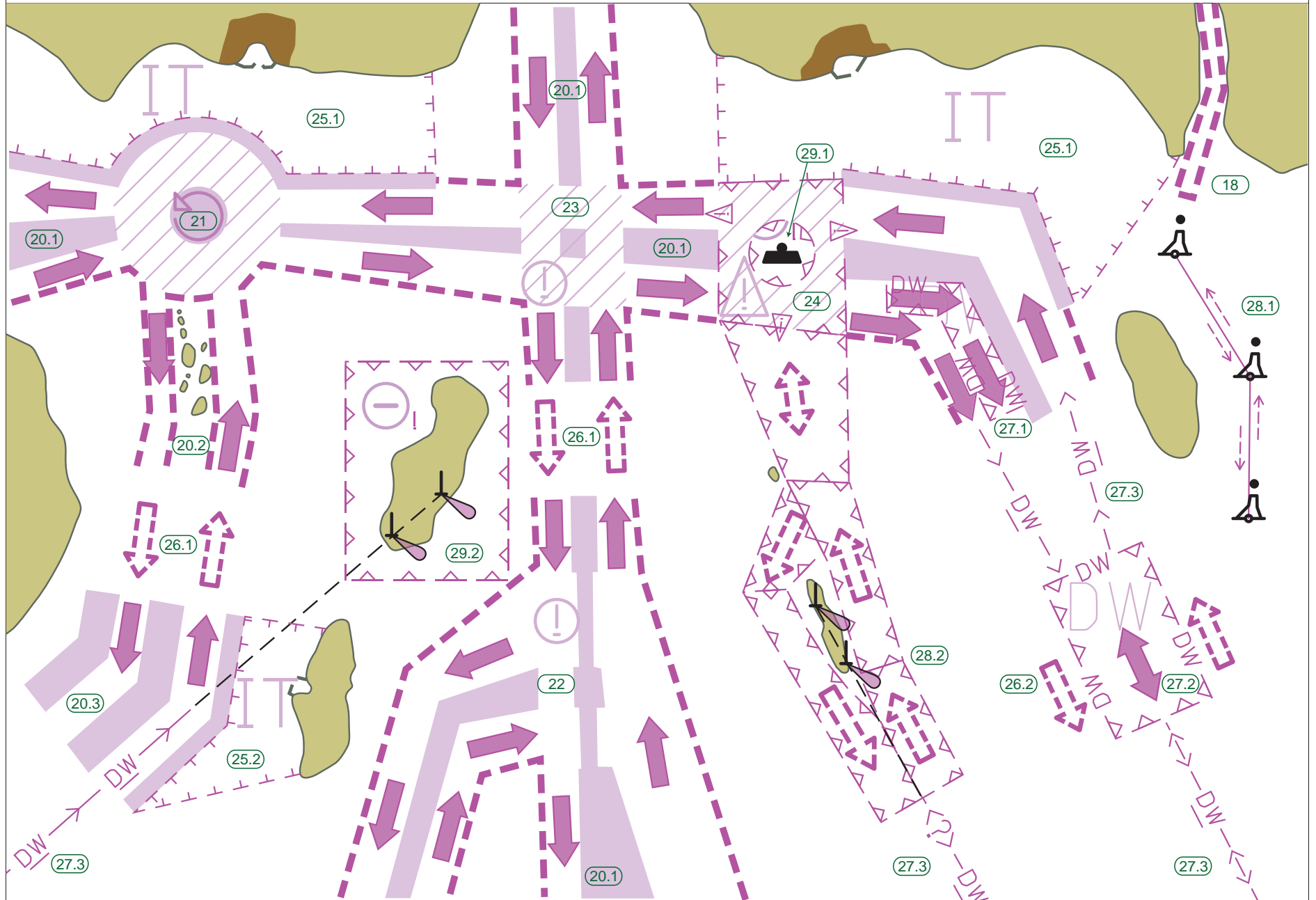
Examples of Routing Measures on Paper/Raster Charts





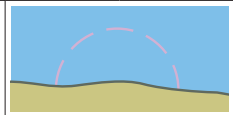




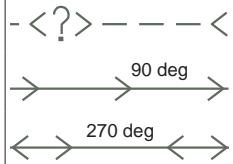

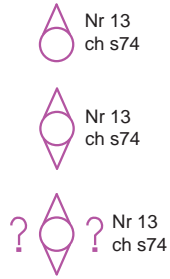

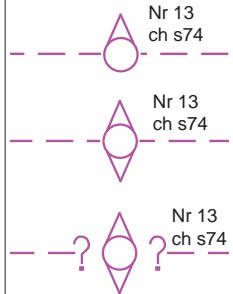


No.	
Examples of Routing Measures	
18	Safety fairway
20.1	Traffic Separation Scheme (TSS), traffic separated by separation zone
20.2	Traffic Separation Scheme, traffic separated by natural obstructions
20.3	Traffic Separation Scheme, with outer separation zone separating traffic using scheme from traffic not using it
21	Traffic Separation Scheme, roundabout with separation zone
22	Traffic Separation Scheme, with "crossing gates"
23	Traffic Separation Scheme crossing, without designated precautionary area
24	Precautionary area
25.1	Inshore Traffic Zone (ITZ), with defined end limits
25.2	Inshore Traffic Zone, without defined end limits
26.1	Recommended direction of traffic flow, between traffic separation schemes
26.2	Recommended direction of traffic flow, for ships not needing a deep water route
27.1	Deep water route (DW), as part of one-way traffic lane
27.2	Two-way deep water route, with minimum depth stated
27.3	Deep water route, centerline as recommended one-way or two-way track
28.1	Recommended route, one-way and two-way (often marked by centerline buoys)
28.2	Two-way route, with one-way sections
29.1	Area to be Avoided (ATBA), around navigational aid
29.2	Area to be Avoided, e.g. because of danger of stranding


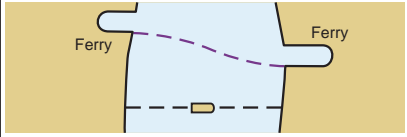


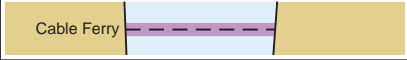
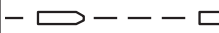



M Tracks, Routes

Examples of Routing Measures in ECDIS



No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Radar Surveillance Systems							
30	 Radar Surveillance Station	Radar surveillance station	 Ra				Radar station
31		Radar range					Radar range
32.1		Radar reference line					Radar line
32.2		Radar reference line coinciding with a leading line				<p style="text-align: center;">Non-regulated recommended track based on fixed marks</p> 	Direction not encoded One-way Two-way
Radio Reporting Points							
40.1		Radio reporting (calling-in or way) points showing direction(s) of vessel movement with designation (if any) and VHF-channel					Radio calling-in point for traffic in one direction only Radio calling-in point for traffic in both directions Radio calling-in point, direction not encoded
40.2		Radio reporting line					Radio calling-in point for traffic in one direction only Radio calling-in point for traffic in both directions Radio calling-in point, direction not encoded

M Tracks, Routes

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Ferries						
50		Ferry				 Ferry route
51		Cable Ferry				 Cable ferry route
Supplementary National Symbols						
a		Recommended track for deep draft vessels (track not defined by fixed marks)				
b		Depth is shown where it has been obtained by the cognizant authority				
c		Alternate course				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
General *						
Dredged and Swept Areas → I		Submarine Cables, Submarine Pipelines → L		Tracks, Routes → M		
1.1		Maritime limit in general, usually implying permanent physical obstructions (tint band for emphasis)				
1.2		Maritime limit in general, usually implying no permanent physical obstructions (tint band for emphasis)				
2.1		Limit of restricted area				
		Limit of restricted area, with tint band for emphasis				
2.2		Limit of area into which entry is prohibited				
Anchorage, Anchorage Areas						
10		Reported anchorage (no defined limits)				
11.1		Anchor berths				
		Anchor berths with swinging circle				

* ECDIS represents many types of area limits with just a few different symbols. Information about the type of area and its associated restrictions or prohibitions may be obtained by cursor pick.








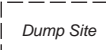



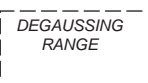

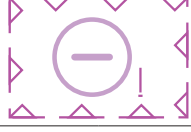




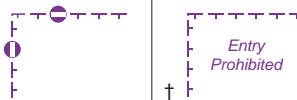


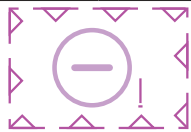








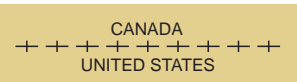
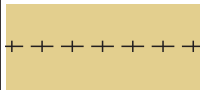


N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
12.1		Anchorage area in general					Type of anchorage area is obtained by cursor pick
12.2		Numbered anchorage area					
12.3		Named anchorage area					
12.4		Deep water anchorage area, Anchorage area for deep draft vessels					
12.5		Tanker anchorage area					
12.6		Anchorage area for periods up to 24 hours					
12.7		Explosives anchorage area					
12.8		Quarantine anchorage area					
12.9		Reserved anchorage area					
Note: Anchors as part of the limit symbol are not shown for small areas. Other types of anchorage areas may be shown.							
13		Seaplane operating area					Seaplane landing area
14		Anchorage for seaplanes					Type of anchorage area is obtained by cursor pick

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Restricted Areas						Supplementary national symbols: d, e, g	
20		Anchoring prohibited					Area where anchoring is prohibited or restricted
							Area where anchoring is prohibited or restricted, with other cautions
							Area where anchoring is prohibited or restricted, with other information
21.1		Fishing prohibited					Area where fishing or trawling is prohibited or restricted
							Area where fishing or trawling is prohibited or restricted, with other cautions
							Area where fishing or trawling is prohibited or restricted, with other information









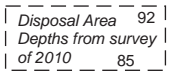
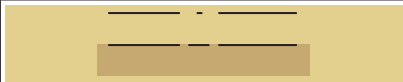
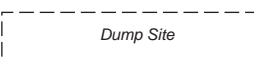


N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
21.2		Diving prohibited					Area where diving is prohibited
22.1		Bird sanctuary					Environmentally Sensitive Sea Area (ESSA)
22.2		Seal sanctuary					Area with minor restrictions or information notices
22.3		Non-specific nature reserve, National parks, Marine Reserves (MR)					
22.4		Particularly Sensitive Sea Area (PSSA)					PSSA

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
23.1		Explosives dumping ground, individual mine or explosive				 Explosives or chemical dumping ground as a point
23.2		Explosives dumping ground (disused), Foul (explosives)				 Explosives or chemical dumping ground as an area
24		Dumping ground for chemical waste				 Degaussing area
25		Degaussing range (DG range)				 If a speed restriction exists, the speed limit is obtained by cursor pick
27		Maximum speed				
Military Practice Areas						
30		Firing practice area				 Restricted area
31		Military restricted area, entry prohibited				 Area where entry is prohibited or restricted or to be avoided, with other cautions
32		Mine-laying (and counter-measures) practice area				 Restricted area
33		Submarine transit lane and exercise area				 Minefield
34		Minefield				
International Boundaries and National Limits						Supplementary national symbols: a, f, h
40		International boundary on land				 Jurisdiction boundary

N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
41		International maritime boundary				Jurisdiction boundary
42		Straight territorial sea baseline with base point				Straight territorial sea baseline
43		Seaward limit of territorial sea				Territorial sea
44		Seaward limit of contiguous zone				Contiguous zone
45		Limits of fishery zones				Limits of fishery zone
46		Limit of continental shelf				Continental shelf area
47		Limit of Exclusive Economic Zone (EEZ)				Exclusive economic zone
48		Customs limit				Custom regulations zone
49		Harbor limit				Harbor area, symbolized
Various Limits						Supplementary national symbols: a, b
60.1		Limit of fast ice, Ice front (with date)				Continuous pattern for an ice area (glacier, etc.)
60.2		Limit of sea ice (pack ice) seasonal (with date)				
61		Floating barrier, including log ponds, security barriers, ice booms, shark nets				Floating hazard Boom, ice boom Boom, ice boom, floating obstruction, log pond
62.1		Spoil ground				HO information note
62.2		Spoil ground (disused)				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
63		Extraction (dredging) area					Dredging area
64		Cargo transhipment area					HO information note
65		Incineration area					
Supplementary National Symbols							
a		COLREGS demarcation line					
b		Limit of fishing area (fish trap areas)					
c		Dumping ground					
d		Dumping area (Dump site)					
f		Reservation line (Options)					
g		Dump site					
h		Three Nautical Mile Line					
i		No Discharge Zone					

P Lights

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Light Structures and Major Floating Lights						
Minor Light Floats → Q30, 31						
1		Lt LtHo Major light, minor light, light, lighthouse				 Light, lighthouse, paper chart
2		Lighted offshore platform	 PLATFORM (lighted)			 Lighted offshore platform, paper chart
3	 BY BnTr	Lighted beacon tower	 Marker (lighted)			 Lighted beacon tower, paper chart
4	 R BRB Bn	Lighted beacon				 Lighted beacon, paper chart
5	 R Bn	Articulated light, buoyant beacon, resilient beacon	 Art			
6		Major floating light (light vessel, major light float, LANBY)				 Light vessel, paper chart
Note: Minor lights, fixed and floating, usually conform to IALA Maritime Buoyage System characteristics.						
7		Navigational lights on landmarks or other structures				
8		Important light off chart limits				

No.	Abbreviation		Class of light	Illustration	Period shown	ECDIS
	INT	NOAA				
Light Characters						
Light Characters on Light Buoys → Q						
10.1	F	F	Fixed			F
Occulting (total duration of light longer than total duration of darkness)						
10.2	Oc	Oc	Single-occulting			Oc
	Oc(2) Example	Oc (2)	Group-occulting			Oc (2)
	Oc(2+3) Example	Oc (2+3)	Composite group-occulting			Oc (2+3)
Isophase (duration of light and darkness equal)						
10.3	Iso	Iso	Isophase			Iso
Flashing (total duration of light shorter than total duration of darkness)						
10.4	Fl	Fl	Single-flashing			Fl
	Fl(3) Example	Fl (3)	Group-flashing			Fl (3)
	Fl(2+1) Example	Fl (2+1)	Composite group-flashing			Fl (2+1)
10.5	LFl	L Fl	Long-flashing (flash 2s or longer)			L Fl
Quick (repetition rate of 50 to 79 - usually either 50 or 60 - flashes per minute)						
10.6	Q	Q	Continuous quick			Q
	Q(3) Example	Q (3)	Group quick			Q(3)
	IQ	IQ	Interrupted quick			IQ
Very quick (repetition rate of 80 to 159 - usually either 100 or 120 - flashes per minute)						
10.7	VQ	VQ	Continuous very quick			VQ
	VQ(3) Example	VQ (3)	Group very quick			VQ(3)
	IVQ	IVQ	Interrupted very quick			IVQ
Ultra quick (repetition rate of 160 or more - usually 240 to 300 - flashes per minute)						
10.8	UQ	UQ	Continuous ultra quick			UQ
	IUQ	IUQ	Interrupted ultra quick			IUQ

When text for lights is displayed, ECDIS uses INT abbreviations.


P Lights

No.	Abbreviation		Class of light	Illustration	Period shown	ECDIS
	INT	NOAA				
10.9	Mo(K) Example	Mo (K)	Morse Code			When text for lights is displayed, ECDIS uses INT abbreviations.
10.10	FFI	F FI	Fixed and flashing			
10.11	AI.WR	AIWR	Alternating			


No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
11.1	W	White (only on sector and alternating lights)				
11.2	R	Red				
11.3	G	Green				
11.4	Bu	Blue				
11.5	Vi	Violet				
11.6	Y	Yellow				
11.7	Y	Or				
11.8	Y	Am				

Colors of lights shown


on standard charts



on multicolored charts



on multicolored charts at sector lights



Period						
12	2.5s	90s	Period in seconds and tenths of a second			
Elevation						
Plane of reference for Heights → H			Tidal Levels → H			
13	12m		Elevation of light given in meters or feet	36ft		
Range						
14	15M		Light with single range			
	15/10M		Light with two different ranges	10M <i>only lesser of two ranges is charted</i>		15/10M
	15-7M		Light with three or more ranges	7M <i>only least of three ranges is charted</i>		

Note: Charted ranges are nominal ranges given in Nautical Miles.

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Disposition							
15	(hor)	Horizontally disposed				Disposition of light is obtained by cursor pick	
	(vert)	Vertically disposed					
	(Δ) (▽)	3 lights disposed in the shape of a triangle					
Example of a Full Light Description							
16	INT Example Name ☆ FI(3)WRG.15s 21m15-11M		NOAA Example Name • FI (3) WRG 15s 21ft 11M		NGA Example Name • FI (3) WRG 15s 21m 15-11M		FIR15s21m11M
	FI(3) WRG 15s 21m 15-11M	Class of light: group flashing repeating a group of three flashes Colors: white, red, green, exhibiting the different colors in defined sections Period: the time taken to exhibit one full sequence of three flashes and eclipses: 15 seconds Elevation of focal plane above datum: 21 meters Nominal range: white 15M, green 11M, red between 15 and 11M	FI(3) WRG 15s 21ft 21m 11M 15-11M	Class of light: group flashing repeating a group of three flashes Colors: white, red, green, exhibiting the different colors in defined sections Period: the time taken to exhibit one full sequence of three flashes and eclipses: 15 seconds Elevation of light: 21 feet 21 meters Nominal range: shortest range of all the lights is 11M white 15M, green 11M, red between 15 and 11M	The descriptions of non-sector lights are shown in ECDIS when the display of text is turned on, as shown above. (The aid to navigation or other structure that is always shown attached to a light flare in ECDIS is not depicted here.) Sector lights (as described in the INT, NOAA and NGA examples at left) are depicted graphically in ECDIS, as shown below and in P40. The description of a sector light or any other type of light may always be obtained by cursor pick. 		

P Lights

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Lights Marking Fairways						
Leading Lights and Lights in Line						
20.1		<p>Leading lights with leading line (solid line is the track to be followed) and arcs of visibility</p> <p>Bearing given in degrees and tenths of a degree</p>				<p>Leading lights with sectors</p>
20.2		<p>Leading lights (≠ means lights in line)</p> <p>Bearing given in degrees and tenths of a degree</p>				<p>Leading lights</p>
20.3		<p>Leading lights on small scale charts</p>				
21		<p>Lights in line, marking the sides of a channel</p>				<p>Lights in line, marking the sides of a channel</p>
22	Rear Lt or Upper Lt	Rear or upper light				
23	Front Lt or Lower Lt	Front or lower light				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Direction Lights						
30.1	<p>FI(2)5s10m11M Dir 269°</p>	Direction light with narrow sector and course to be followed, flanked by darkness or unintensified light				<p>Directional light with sector 269 deg</p>
30.2	<p>Oc.12s6M Dir 299° Dir 255.5° FI(2)5s11M</p>	Direction light with course to be followed, sector(s) uncharted				<p>Directional light without sector 209 deg 165.5 deg FI(2)5s11M Oc12s6M</p>
30.3	<p>Dir WRG. 15-5M ALWG Oc.W.4s ALWR F.R.</p>	Direction light with narrow fairway sector flanked by light sectors of different character on standard charts				<p>Light, directional</p>
30.4	<p>Dir WRG. 15-5M ALWG Oc.W.4s ALWR F.R.</p>	Direction light with narrow fairway sector flanked by light sectors of different character on multicolored charts				
31	<p>Dir 295°</p>	Moiré effect light (day and night), arrows show when course alteration needed			<p>Dir 295°</p>	<p>FY 270 deg</p> <p>Category of light as moiré effect is obtained by cursor pick</p>
Note: Quoted bearings are always from seaward.						

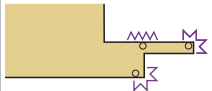






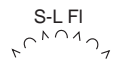





P Lights

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Sector Lights						
40.1		Sector light on standard charts				
		Sector light on multicolored charts				
40.2		Sector light on multicolored charts				<p>Light, sector</p>
		Sector light on standard charts				
41.1		Sector lights on standard charts, the white sector limits marking the sides of the fairway				
		Sector lights on multicolored charts, the white sector limits marking the sides of the fairway				
41.2		Sector lights on multicolored charts, the white sector limits marking the sides of the fairway				
		Sector lights on standard charts, the white sector limits marking the sides of the fairway				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
42	<p>FI(3)10s62m25M F.R.55m12M</p>	Main light visible all-round with red subsidiary light seen over danger				<p>Light, danger</p>
43	<p>FI.5s41m30M</p>	All-round light with obscured sector				<p>Light, obscured</p>
44	<p>Iso.WRG</p>	Light with arc of visibility deliberately restricted				<p>Light, restricted</p>
45	<p>Q.14m5M</p>	Light with faint sector				<p>Light, faint</p>

P Lights






































No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
46		Light with intensified sector					Intensified light visibility is obtained by cursor pick
							Light, intensified
Lights with Limited Times of Exhibition							
50		Lights exhibited only when specially needed (for fishing vessels, ferries) and some private lights	Occas				Status and condition of light is obtained by cursor pick
51		Daytime light (charted only where the character shown by day differs from that shown at night)					
52		Fog light (exhibited only in fog, or character changes in fog)					
53		Unwatched (unmanned) light with no standby or emergency arrangements					
54	(temp)	Temporary					
55	(exting)	Extinguished					
Special Lights							
Flare Stack (as sea) → L		Flare Stack (on land) → E		Signal Stations → T			
60		Aero light (may be unreliable)					Light
61.1		Air obstruction light of high intensity (e.g. on radio mast)					Conspicuous mast with light
61.2		Air obstruction light of low intensity (e.g. on radio mast)					
62	Fog Det Lt	Fog detector light					Category of light is obtained by cursor pick
63		Floodlit, floodlighting of a structure					Floodlight

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
64		Strip light				 Strip light
65	(priv)	Private light other than one exhibited occasionally	 Priv	 F R (priv)	 Priv maintd	 Status of private is obtained by cursor pick
66	(sync)	Synchronized light				
Supplementary National Symbols						
a		Riprap surrounding light				
b		Short-Long Flashing			 S-L FI	
c		Group-Short Flashing			 G-S FI	
d		Fixed and Group Flashing			 F Gp FI	
e		Unmanned light-vessel; light float			 FLOAT	
f		LANBY, superbuoy as navigational aid				



























Simplified and Traditional “Paper Chart” Symbols

ECDIS can be set to display aids to navigation with either traditional “paper chart” or simplified symbols. The two symbol sets are shown below. Some ECDIS color fill the paper chart buoy shapes, but this is not required by IHO ECDIS portrayal specifications.

Floating Marks

Paper Chart	Simplified	Simplified Symbol Name
		Cardinal buoy, north
		Cardinal buoy, east
		Cardinal buoy, south
		Cardinal buoy, west
		Default symbol for buoy (used when no defining attributes have been encoded in the ENC)
		Isolated danger buoy
		Conical lateral buoy, green
		Conical lateral buoy, red
		Can shape lateral buoy, green
		Can shape lateral buoy, red
		Installation buoy and mooring buoy
**		Safe water buoy
		Special purpose buoy, spherical or barrel shaped, or default symbol for special purpose buoy
		Special purpose TSS buoy marking the starboard side of the traffic lane
		Special purpose TSS buoy marking the port side of the traffic lane
		Special purpose ice buoy or spar or pillar shaped buoy
		Super-buoy ODAS & LANBY
		Light float
		Light vessel









Fixed Marks

Paper Chart	Simplified	Simplified Symbol Name
		Cardinal beacon, north
		Cardinal beacon, east
		Cardinal beacon, south
		Cardinal beacon, west
		Default symbol for a beacon (used when no defining attributes have been encoded in the ENC)
		Isolated danger beacon
		Major lateral beacon, red
		Major lateral beacon, green
		Minor lateral beacon, green
		Major safe water beacon
		Minor safe water beacon
		Major special purpose beacon
		Minor special purpose beacon

* Paper chart symbols display various buoy or beacon shape symbols in conjunction with the topmark. Simplified portrayal only displays the topmark.

** Several different paper chart symbols correspond to this simplified symbol.

Day Marks

Paper Chart	Simplified	Simplified Symbol Name
		Square or rectangular daymark
		Triangular daymark, point up
		Triangular daymark, point down
		Retro reflector

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Buoys and Beacons							
IALA Maritime Buoyage System, which includes Beacons → Q 130							
		Default buoy symbol if no other defining attribution is provided					Default symbol for buoy, paper chart
		Default buoy symbol if no other defining attribution is provided					Default symbol for buoy, simplified
		Default beacon symbol if no other defining attribution is provided					Default symbol for a beacon, paper chart
		Default beacon symbol if no other defining attribution is provided					Default symbol for a beacon, simplified
1		Position of buoy or beacon					ECDIS shows the position of buoys and beacons with a circle at the bottom of paper chart symbols. For simplified symbols, the position of the aid corresponds with the center of the symbol.
Colors of Buoys and Beacon Topmarks						Supplementary national symbols: p	
Abbreviations for Colors → P							
2		Green and black (symbols filled black)					
3		Single color other than green and black					
4		Multiple colors in horizontal bands, the color sequence is from top to bottom					
5		Multiple colors in vertical or diagonal stripes, the darker color is given first					
6		Retroreflecting material					Retro reflector
Note: Retroreflecting material may be fitted to some unlit marks. Charts do not usually show it. Under IALA Recommendations, black bands will appear blue under a spotlight.							
Lighted Marks							
Marks with Fog Signals → R							
7		Lighted marks on standard charts					
8		Lighted marks on multicolored charts					

















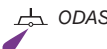















Q Buoys, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Topmarks and Radar Reflectors							
For Application of Topmarks within the IALA System → Q 130			For other topmarks (special purpose buoys and beacons) → Q				
9		IALA System buoy topmarks (beacon topmarks shown upright)				<p>Paper chart symbols for topmarks (on the left, below) are always displayed above a buoy or beacon shape symbol, as in Q 10 and Q 11. Simplified symbols (on the right, below) for cardinal marks, isolated dangers and safe water consist of only the topmark without the buoy shape symbol. Simplified symbology for marks with any other type of topmark will display only the simplified buoy or beacon shape symbol without a topmark.</p> <ul style="list-style-type: none"> ▲ ▲ 2 cones point upward ▼ ▼ 2 cones point downward ◄ ► 2 cones base to base ▲ ▼ 2 cones point to point ● ● 2 spheres ● Sphere ▲ Cone point up ▼ Cone point down ▭ Cylinder, square, vertical rectangle X X-shape / Flag or other shape ▭ Board, horizontal rectangle ◇ Cube point up + Upright cross over a circle T T-shape 	
10		Beacon with topmark, color, radar reflector and designation					Beacon in general with topmark, paper chart
11		Buoy with topmark, color, radar reflector and designation					Conical buoy with topmark, paper chart
<p>Note: Radar reflectors on floating marks usually are not charted. ECDIS does not display radar reflectors on fixed or floating aids; this information is obtained by cursor pick.</p>							






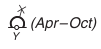




























No.	INT	Description	NOAA	NGA	Other NGA	ECDIS		
Buoys								
Shapes of Buoys								
Features Common to Buoys and Beacons → Q 1–11								
						Paper Chart	Simplified	
20		Conical buoy, nun buoy, ogival buoy						Conical buoy
21		Can buoy or cylindrical buoy						Can buoy
22		Spherical buoy						Spherical buoy
23		Pillar buoy						Pillar buoy
24		Spar buoy, spindle buoy						Spar buoy
25		Barrel buoy, tun buoy						Barrel buoy
26		Superbuoy						Super-buoy Lanby, super-buoy Super-buoy odas & lanby
Minor Light Floats								
30		Light float as part of IALA System						Light float
31		Light float not part of IALA System						Light float














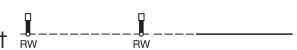
Q Buoy, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Mooring Buoys						Supplementary national symbols: m, n
Oil or Gas Installation Buoy → L						
40		Mooring buoys				
41		Lighted mooring buoy (example)				
42		Trot, mooring buoys with ground tackle and berth numbers				
43		Mooring buoy with telegraphic or telephonic communication		 Tel = telegraphic T = telephonic		
44		Numerous moorings (example)				
45		Visitors' mooring				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Special Purpose Buoys						
Note: Shapes of buoys are variable. Lateral or Cardinal buoys may be used in some situations.						
						 Purpose of buoy and other information is obtained by cursor pick
50		Firing danger area (Danger Zone) buoy				 Conical buoy with topmark, paper chart  Special purpose buoy, spherical or barrel shaped, or default symbol for special purpose buoy, simplified
51		Target				
52		Marker Ship				
53		Barge				
54		Degaussing Range buoy				
55		Cable buoy				
56		Spoil ground buoy				
57		Buoy marking outfall				
58	 	ODAS buoy (Ocean Data Acquisition System), data collecting buoy	 			 Super-buoy, paper chart  Super-buoy odas & lanby, simplified  Spherical buoy, paper chart  Spherical buoy, simplified
59		Buoy marking wave recorder or current meter				 Conical buoy with topmark, paper chart  Special purpose buoy, spherical or barrel shaped, or default symbol for special purpose buoy, simplified
60		Seaplane anchorage buoy				 Conical buoy, paper chart
61		Buoy marking traffic separation scheme				
62		Buoy marking recreation zone				 Conical buoy with topmark, paper chart
63	  <i>Al. Oc. BuY. 3s</i>	Emergency wreck marking buoy (EWMB)				

Q Buoys, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Seasonal Buoys						
70		Buoy privately maintained (example)			 	 Status as private is obtained by cursor pick
71		Seasonal buoy (example)				 Status as periodic and period start and stop dates are obtained by cursor pick
Beacons						
Supplementary national symbols: o						
Lighted Beacons → P		Features Common to Beacons and Buoys → Q1–11				
80	 	Beacon in general, characteristics unknown or chart scale too small to show		 		   Default symbol for a beacon, paper chart Default symbol for a beacon, simplified Beacon in general, paper chart
81		Beacon with color, no distinctive topmark	  			 Beacon color is obtained by cursor pick
82	  	Beacons with colors and topmarks (examples)				 Beacon color is obtained by cursor pick See note at Q 9 for information about topmarks and ECDIS simplified symbology       Beacon in general with topmark, paper chart Major red lateral beacon, simplified Beacon in general with topmark, paper chart Cardinal beacon, north, simplified Beacon in general with topmark, paper chart Isolated danger beacon, simplified
83		Beacon on submerged rock with colors (topmark as appropriate)				  Beacon in general with topmark, paper chart Isolated danger beacon, simplified







No.	INT	Description	NOAA	NGA	Other NGA	ECDIS		
Minor Impermanent Marks Usually in Drying Areas (Lateral Marks of Minor Channels)								
Minor Pile → F								
90		Stake, pole	† ○ Stake ● Stake † ○ Pole ● Pole				Minor, stake or pole beacon, paper chart	
91	Port Hand Y	Starboard Hand ↑					Minor, stake or pole beacon, paper chart	
							Minor red lateral beacon, simplified Minor green lateral beacon, simplified	
92	† ‡	† ‡						
Minor Marks, Usually on Land								
Landmarks → E								
100	⊕	Cairn		○ Cairn ⊙ CAIRN			Conspicuous cairn	
101	□ Mk							Square or rectangular day mark, paper chart
								Square or rectangular day mark, simplified
								Triangular day mark, point up, paper chart
								Triangular day mark, point up, simplified
								Triangular day mark, point down, paper chart
	Triangular day mark, point down, simplified							
102.1	† 	Colored topmark (color known or unknown) with function of a beacon						
102.2	† 	Painted boards with function of leading beacons						

Q Buoy, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Beacon Towers						
110		Beacon towers without and with topmarks and colors (examples)				<p>Beacon tower, paper chart Beacon tower with topmarks, paper chart Major red lateral beacon, simplified Major green lateral beacon, simplified</p>
111		Lattice beacon				<p>Lattice beacon, paper chart</p>
Special Purpose Beacons						
Leading Lines, Clearing Lines → M						
Note: Topmarks and colors shown where scale permits.						
120		Leading beacons				<p>Leading beacons</p>
121		Beacons marking a clearing line				<p>Beacons marking a clearing line or transit</p>
122		Beacons marking measured distance with quoted bearings				<p>Beacons marking measured distance</p>
123		Cable landing beacon (example)				<p>Cable landing beacon (example)</p>
124		Refuge beacon				<p>Purpose as refuge or firing danger area beacon is obtained by cursor pick</p>
125		Firing danger area beacons				
126		Notice board				<p>Notice board</p>

IALA Maritime Buoyage System

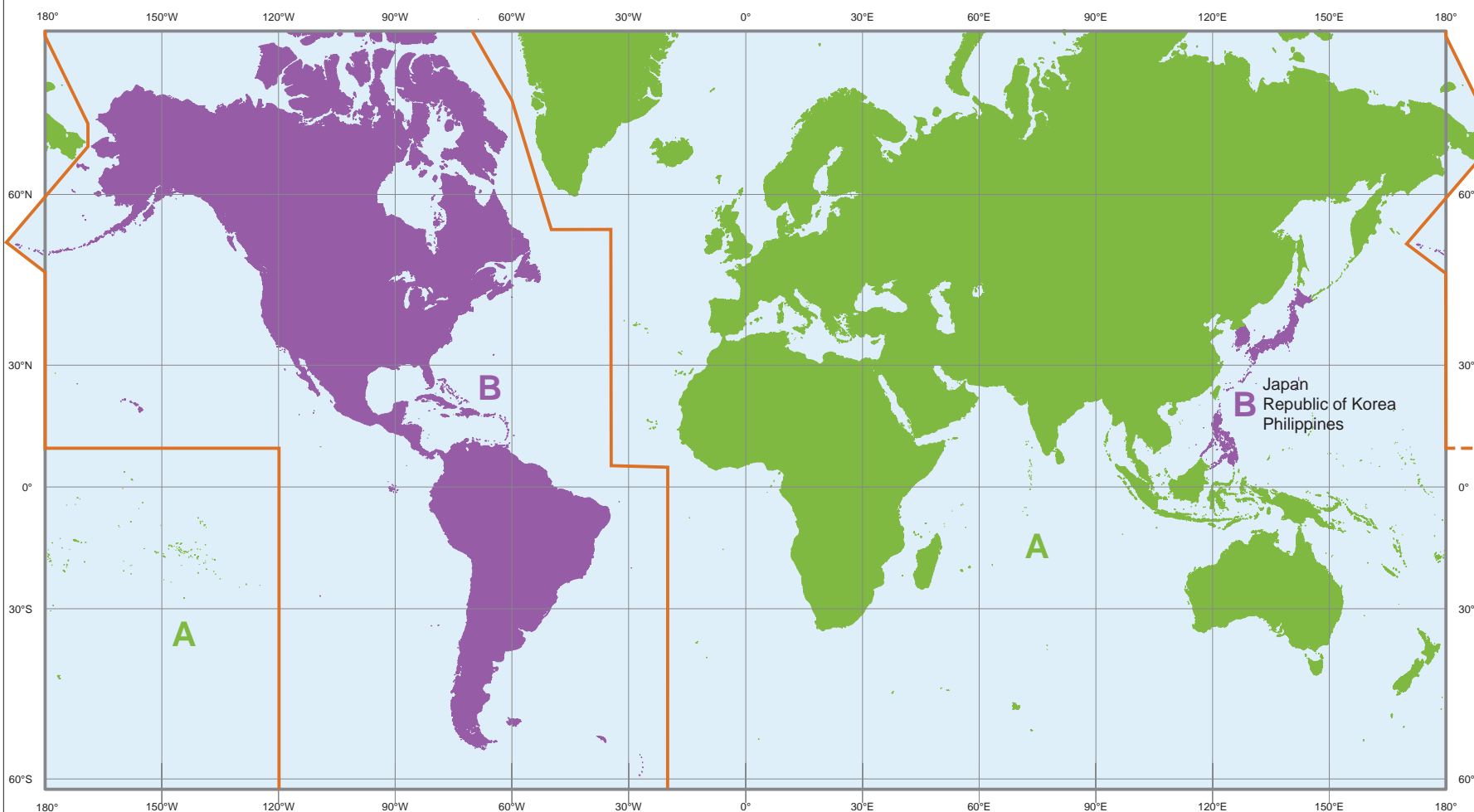
IALA International Association of Marine Aids to Navigation and Lighthouse Authorities

Where in force, the IALA System applies to all fixed and floating marks except landfall lights, leading lights and marks, sectored lights and major floating lights. The standard buoy shapes are cylindrical (can) , conical , spherical , pillar , and spar , but variations may occur, for example: light floats . In the illustrations in Q 130.1, only the standard buoy shapes are used. In the case of fixed beacons (lit or unlit), only the shape of the topmark is of navigational significance. Lateral marks are generally for well-defined channels.

130 There are two international buoyage regions where lateral marks differ. Region A is primarily comprised of the waters surrounding Greenland, Africa, Europe, Australia and Asia (except for Japan, the Republic of Korea and the Philippines). Region B is primarily comprised of the waters surrounding North and South America, Japan, the Republic of Korea and the Philippines.

ECDIS marks the boundary between IALA regions A and B with this symbol: 

130.1

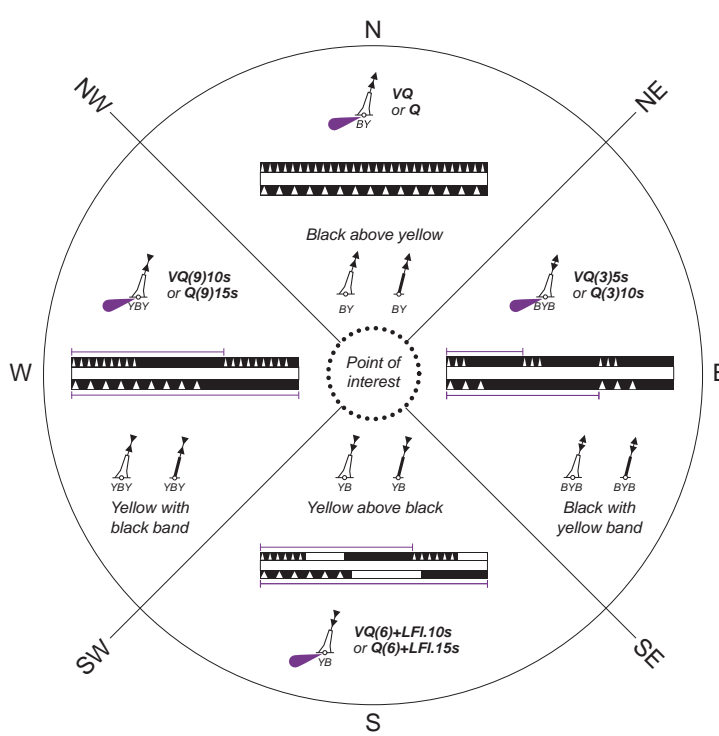
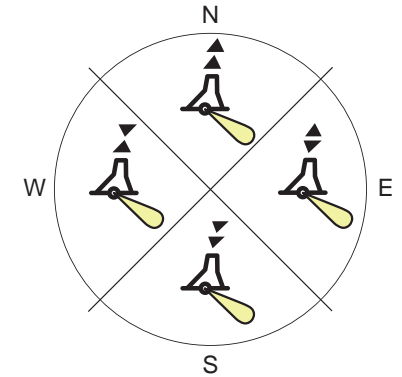
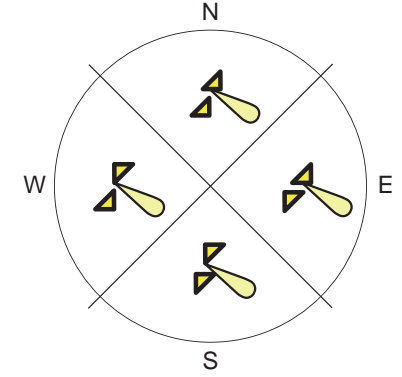


Q Buoy, Beacons

130.1	INT	<p>Port-hand marks are red with cylindrical topmarks (if any). If lit, light is red.</p> <p>Starboard-hand marks are green with conical topmarks (if any). If lit, light is green.</p> <p>REGION A</p>	<p>Port-hand marks are green with cylindrical topmarks (if any). If lit, light is green.</p> <p>Starboard-hand marks are red with conical topmarks (if any). If lit, light is red.</p> <p>REGION B</p>	<p>If lit, lights on port-hand and starboard-hand marks may have any rhythm specified except FI(2+1), which is used for preferred channel aids.</p> <p>All preferred channel marks have horizontal bands of color; the top color indicates the preferred channel.</p> <p>A preferred channel buoy may be a can or conical shape to indicate the preferred channel (in addition to the top color band), but may also have a pillar or spar shape.</p>
	NOAA	<p>Port-hand marks are red with cylindrical topmarks (if any). If lit, light is red.</p> <p>Starboard-hand marks are green with conical topmarks (if any). If lit, light is green.</p> <p>REGION A</p>	<p>Port-hand marks are green with cylindrical topmarks (if any). If lit, light is green.</p> <p>Starboard-hand marks are red with conical topmarks (if any). If lit, light is red.</p> <p>REGION B</p>	





















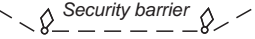

Direction of Buoyage: The direction of buoyage is that taken when approaching a harbor from seaward. Along coasts, the direction is determined by buoyage authorities, normally clockwise around land masses.

130.2	Symbols showing direction of buoyage where it is not obvious		
	INT	<p>General symbol for direction of buoyage</p>	<p>IALA Region A on multicolored charts</p>
ECDIS	<p>General symbol for direction of buoyage</p>	<p>IALA Region A</p>	<p>IALA Region B</p>

No.	INT	ECDIS
130.3	<p>Cardinal Marks: indicating navigable water to the named side of the marks. In the illustration below all marks are the same in Regions A and B.</p>  <p>Topmark: 2 black cones Light: White</p> <p>The same abbreviations are used for lights on spar buoys and beacons. The periods 5s, 10s, and 15s may not always be charted.</p> <p>Time (seconds) 0 5 10 15 Period</p> <p>Cardinal marks are seldom used in U.S. waters and do not appear on NOAA charts, except for charts that also depict Canadian waters.</p>	 <p>Paper chart symbology</p>  <p>Simplified symbology</p>











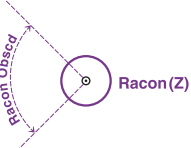

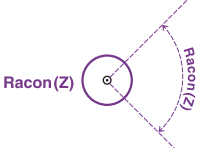
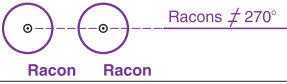













Q Buoy, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
130.4		<p>Isolated Danger Marks stationed over dangers with navigable water around them</p> <p>Body: black with red horizontal band(s) Topmark: 2 black spheres Light: white</p>					<p>Pillar buoy with 2 spheres topmark</p> <p>Spar buoy with 2 spheres topmark</p> <p>Isolated danger buoy, simplified</p>
		<p>Safe Water Marks such as mid-channel and landfall marks</p> <p>Body: red and white vertical stripes Topmark (if any): red sphere Light: white</p>					<p>Spherical buoy, paper chart</p> <p>Pillar buoy with sphere topmark</p> <p>Spar buoy with sphere topmark</p> <p>Safe water buoy, simplified</p>
		<p>Special Marks not primarily to assist navigation but to indicate special features</p> <p>Body (shape optional): yellow* Topmark (if any): yellow x or upright cross Lights: yellow, rhythm optional* *in special cases yellow may be in conjunction with another color</p>					<p>Spherical buoy, paper chart</p> <p>Can buoy</p> <p>Conical buoy</p> <p>Spar buoy with x-shape topmark</p> <p>Special purpose buoy, simplified</p>





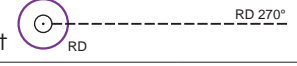
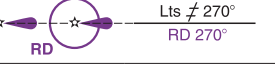



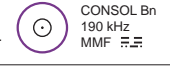















No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Supplementary National Symbols						
a		Bell buoy	 BELL	 BELL		
b		Gong buoy	 GONG	 GONG		
c		Whistle buoy	 WHIS	 WHIS		
d		Fairway buoy (red and white vertical stripe)	 RW			
e		Mid-channel buoy (red and white vertical stripe)	 RW			
f		Starboard-hand buoy (entering from seaward - US waters)	 R "2"			
g		Port-hand buoy (entering from seaward - US waters)	 G "1"  "1"			
h		Bifurcation/Junction buoys	 RG  GR			
		Isolated danger, Wreck or Obstruction buoy	 BR			
i		Fish trap (area) buoy	 Y			
j		Anchorage buoy (marks limits)	 Y			
l		Triangular shaped beacons	 R  ^{RG} _{Bn}			
		Square shaped beacons	 G  ^{GR} _{Bn}  ^W _{Bn}  ^B _{Bn}			
		Beacon, color unknown	 Bn			
o		Lighted beacon	 !	 !	 ! _{Bn}  !	
q		Security barrier	 Security barrier			
r		Scientific mooring buoy				
s		Float (unlighted)				
t		White and blue buoy		 WBuW		

R Fog Signals

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS		
General								
Fog Detector Light → P		Fog Light → P						
1		Position of fog signal, type of fog signal not stated	Fog Sig				<p>Position of a conspicuous point feature with fog signal</p> <p>Lighted pillar buoy, paper chart with fog signal</p> <p>Lighted super-buoy, paper chart with fog signal</p>	
Types of Fog Signals, with Abbreviations						Supplementary national symbol: a		
10	Explos	Explosive		<i>GUN</i>			Type of fog signal and its characteristics are obtained by cursor pick	
11	Dia	Diaphone		<i>DIA</i>				
12	Siren	Siren		<i>SIREN</i>				
13	Horn	Horn (nautophone, reed, tyfon)		<i>HORN</i>				
14	Bell	Bell		<i>BELL</i>				
15	Whis	Whistle		<i>WHISTLE</i>				
16	Gong	Gong		<i>GONG</i>				
Examples of Fog Signal Descriptions								
Note: The fog signal symbol will usually be omitted when a description of the signal is given.								
20	 Fl.3s 70m 29M Siren Mo(N) 60s	Siren at a lighthouse, giving a long blast followed by a short one (N), repeated every 60 seconds	 Fl 3s 70m 29M SIREN Mo(N) 60s	 Fl 3s 70m 29M SIREN			Light with fog signal	
21	 Bell	Wave-actuated bell buoy	 BELL	 BELL			Pillar buoy, paper chart with fog signal	
22	 Q(6)+LFl.15s Yb Horn(1)15sWhis	Light buoy, with horn giving a single blast every 15 seconds, in conjunction with a wave-actuated whistle	 Q(6)+LFl 15s HORN(1) 15s WHIS	 Q(6)+LFl 15s HORN WHIS		Paper Chart	Simplified	Lighted pillar buoy, paper chart with fog signal
Supplementary National Symbol								
a		Morse Code fog signal		<i>Mo</i>				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS		
Radar								
Radar Structures Forming Landmarks → E		Radar Surveillance Systems → M						
1	 Ra	Coast radar station, providing range and bearing service on request		 Ra			Radio station	
2	 Ramark	Ramark, radar beacon transmitting continuously		 Ramark				
3.1	 Racon(Z)(3cm)	Radar transponder beacon, with morse identification, responding within the 3 cm (X) band		 RACON				
3.2	 Racon(Z)(10cm)	Radar transponder beacon, with morse identification, responding within the 10 cm (S) band						
3.3	 Racon(Z)	Radar transponder beacon, with morse identification			 Racon(Z) (3 & 10 cm)			
3.4	 Racon(Z)	Radar transponder beacon with sector of obscured reception					Radar transponder beacon	
	 Racon(Z)	Radar transponder beacon with sector of reception						
3.5	 Racons ≠ 270°	Leading radar transponder beacons (‡: objects in line)						
	 Lts ≠ 270° Racons ≠ 270°	Leading radar transponder beacons coincident with leading lights						
3.6	 Racon	Radar transponder beacons on floating marks	 RACON (-) R "2" FIR 4s	 Racon		Paper Chart	Simplified	Radar transponder on floating mark
	 Racon							
4		Radar reflector	 Ra Ref				Symbol indicating this object is radar conspicuous	
5		Radar conspicuous feature	 Ra (conspic)					

S Radar, Radio, Satellite Navigation Systems

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Radio						
Radio Structures Forming Landmarks → E		Radio Reporting (Calling-in or Way) points → M				
10	 Name RC	Circular (non-directional) marine or aeromarine radiobeacon	 RC	 R Bn		
11	 RD	Directional radiobeacon with bearing line	 RD			
	 RD	Directional radiobeacon coincident with leading lights				
12	 RW	Rotating pattern radiobeacon		 RW		
13	 Consol	Consol beacon	 CONSOL Bn 190 kHz MMF	 CONSOL		
14	 RG	Radio direction-finding station		 RDF		
15	 R	Coast radio station providing QTG service	 R Sta	 R		
16	 Aero RC	Aeronautical radiobeacon		 AERO R Bn		
17.1	 AIS	Automatic Identification System transmitter				
17.2	 AIS	Automatic Identification System transmitter on floating marks (examples)				
18.1	 V-AIS	Virtual AIS (with unknown IALA-defined function)				
18.2	 V-AIS	Virtual AIS (with known IALA-defined function)			 V-AIS	North cardinal virtual aid
Satellite Navigation Systems						
50	WGS WGS72 WGS84	World Geodetic System, 1972 or 1984				
	Note: A note may be shown to indicate the shifts of latitude and longitude, to one, two or three decimal places of a minute, depending on the chart scale, which should be made to satellite-derived positions (which are referred to WGS 84) to relate them to the chart.					
51	 DGPS	Station providing DGPS corrections				 DGPS



























Radio station

Additional information regarding radio, such as category of radio station, signal frequency, communication channel, call sign, estimated signal range, periodicity and status may be included in the cursor pick.

The presence of an AIS transmitted signal intended for use as an aid to navigation associated with a physical aid, including the AIS MMSI Number, can be obtained by cursor pick on the physical aid.

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Pilotage						
1.1		Boarding place, position of a pilot cruising vessel	Pilots			 Pilot boarding place Pilot boarding area
1.2	Name	Boarding place, position of a pilot cruising vessel, with name (e.g. District, Port)		Name		
1.3	Note	Boarding place, position of a pilot cruising vessel, with note (e.g. Tanker, Disembarkation)		(see note)		
1.4	H	Pilots transferred by helicopter				
2		Pilot office with pilot lookout, Pilot lookout station				
3		Pilot office				
4	Port name (Pilots)	Port with pilotage service (boarding place not shown)				
Coast Guard, Rescue						
10		Coast Guard station				 Coast guard station Coast guard station Rescue station Rescue station Rescue station
11		Coast Guard station with Rescue station				
12		Rescue station, Lifeboat station, Rocket station				
13		Lifeboat lying at a mooring				
14		Refuge for shipwrecked mariners				
Signal Stations						
20		Signal station in general				 Signal station
21		Signal station, showing international port traffic signals				
22		Traffic signal station, Port entry and departure signals				
23		Port control signal station				

T Services

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
24	 SS (Lock)	Lock signal station				 Signal station	
25.1	 SS (Bridge)	Bridge passage signal station					
25.2	 ^F Traffic-Sig	Bridge lights including traffic signals					
26	 SS	Distress signal station					
27	 SS	Telegraph station					
28	 SS (Storm)	Storm signal station		S Sig Sta			
29	 SS (Weather)	Weather signal station, Wind signal station, National Weather Service (NWS) signal station	 NWS SIG STA				
30	 SS (Ice)	Ice signal station					
31	 SS (Time)	Time signal station					
32.1		Tide scale or gauge		 Tide Gauge			
32.2	 Tide Gauge	Automatically recording tide gauge					
33	 SS (Tide)	Tide signal station					
34	 SS (Stream)	Tidal stream signal station					
35	 SS (Danger)	Danger signal station					
36	 SS (Firing)	Firing practice signal station					
Supplementary National Symbols							
a		Bell (on land)	 BELL				
b		Marine police station	 MARINE POLICE				
c		Fireboat station	 FIREBOAT STATION				
d		Notice board					
e		Lookout station; Watch tower		 LOOK TR			
f		Semaphore		Sem			
g		Park Ranger station					

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS																																																																																																																																																																																																															
Small Craft (Leisure) Facilities																																																																																																																																																																																																																					
Traffic Features, Bridges → D			Public Buildings, Cranes → F				Pilots, Coast Guard, Rescue, Signal Stations → T																																																																																																																																																																																																														
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	<table border="1"> <thead> <tr> <th rowspan="2">NO</th> <th rowspan="2">LOCATION</th> <th rowspan="2">TIDES</th> <th rowspan="2">DEPTH</th> <th colspan="6">SERVICES</th> <th colspan="6">SUPPLIES</th> </tr> <tr> <th>APPROACH-FEET (REPORTED)</th> <th>ALONGSIDE-FEET (REPORTED)</th> <th>RAMP SURFACED-ELECTRICITY/MOORINGS (TRANSIENTS)</th> <th>REPAIRS HULL-NATURAL WOODINGS-BERTHS</th> <th>MARINE HULL-MOTOR-RADIO</th> <th>LIFT RAILWAY-BOAT RENTAL</th> <th>CANOE-ROW-MOTOR</th> <th>CHARTER-HOUSE-SAIL</th> <th>FOOD-LODGING-CAMPING</th> <th>TOILETS-SHOWERS-LAUNDRY</th> <th>PUMP-OUT STATION</th> <th>WINTER STORAGE</th> <th>NAUTICAL CHART SALES</th> <th>WATER-ICE</th> <th>GROCERIES-WET-DRY</th> <th>BAIT-TACKLE</th> <th>DIESEL OIL-GASOLINE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LAS VEGAS BOAT</td> <td></td> <td></td> <td>80</td> <td>20</td> <td></td> <td>S</td> <td>HM</td> <td></td> <td></td> <td></td> <td></td> <td>M</td> <td></td> <td></td> <td>F C</td> <td>T P</td> <td>WD</td> <td>C</td> <td>WI</td> <td>GH</td> <td>BT</td> <td>G</td> </tr> <tr> <td>2</td> <td>LAKE MEAD MAR</td> <td></td> <td></td> <td>80</td> <td>15</td> <td>B E</td> <td>S</td> <td>HM</td> <td></td> <td></td> <td></td> <td></td> <td>M</td> <td></td> <td></td> <td>FL</td> <td>T P</td> <td>WD</td> <td>C</td> <td>WI</td> <td></td> <td></td> <td>DG</td> </tr> <tr> <td>3</td> <td>HEMENWAY HARBOR</td> <td></td> <td></td> <td>80</td> <td></td> <td></td> <td></td> <td></td> <td>S</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>TEMPLE BAR HAR</td> <td></td> <td></td> <td>80</td> <td>15</td> <td></td> <td></td> <td>SN</td> <td></td> <td></td> <td></td> <td></td> <td>M</td> <td>H</td> <td>FLC</td> <td>TSL P</td> <td>WD</td> <td>C</td> <td>WI</td> <td>GH</td> <td>BT</td> <td>G</td> </tr> <tr> <td>5</td> <td>ECHO BAY RESORT</td> <td></td> <td></td> <td>35</td> <td>35</td> <td>BM</td> <td>S</td> <td>M</td> <td></td> <td></td> <td></td> <td></td> <td>M</td> <td>H</td> <td>FLC</td> <td>TSL P</td> <td>WD</td> <td>C</td> <td>WI</td> <td>GH</td> <td>BT</td> <td>G</td> </tr> <tr> <td>6</td> <td>OVERTON BEACH</td> <td></td> <td></td> <td>100</td> <td></td> <td></td> <td>S</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>M</td> <td></td> <td>F C</td> <td>TSL</td> <td>WD</td> <td></td> <td>WI</td> <td>G</td> <td>BT</td> <td>G</td> </tr> <tr> <td>7</td> <td>CALLVILLE BAY M</td> <td></td> <td></td> <td>100</td> <td>40</td> <td></td> <td>S</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>M</td> <td>H</td> <td>F C</td> <td>TS P</td> <td>WD</td> <td></td> <td>WI</td> <td>G</td> <td>B</td> <td>G</td> </tr> </tbody> </table>																NO	LOCATION	TIDES	DEPTH	SERVICES						SUPPLIES						APPROACH-FEET (REPORTED)	ALONGSIDE-FEET (REPORTED)	RAMP SURFACED-ELECTRICITY/MOORINGS (TRANSIENTS)	REPAIRS HULL-NATURAL WOODINGS-BERTHS	MARINE HULL-MOTOR-RADIO	LIFT RAILWAY-BOAT RENTAL	CANOE-ROW-MOTOR	CHARTER-HOUSE-SAIL	FOOD-LODGING-CAMPING	TOILETS-SHOWERS-LAUNDRY	PUMP-OUT STATION	WINTER STORAGE	NAUTICAL CHART SALES	WATER-ICE	GROCERIES-WET-DRY	BAIT-TACKLE	DIESEL OIL-GASOLINE	1	LAS VEGAS BOAT			80	20		S	HM					M			F C	T P	WD	C	WI	GH	BT	G	2	LAKE MEAD MAR			80	15	B E	S	HM					M			FL	T P	WD	C	WI			DG	3	HEMENWAY HARBOR			80					S															4	TEMPLE BAR HAR			80	15			SN					M	H	FLC	TSL P	WD	C	WI	GH	BT	G	5	ECHO BAY RESORT			35	35	BM	S	M					M	H	FLC	TSL P	WD	C	WI	GH	BT	G	6	OVERTON BEACH			100			S						M		F C	TSL	WD		WI	G	BT	G	7	CALLVILLE BAY M			100	40		S						M	H	F C	TS P	WD		WI	G	B	G
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† (+) DENOTES HOURS LATER (-) DENOTES HOURS EARLIER THE LOCATIONS OF THE ABOVE PUBLIC MARINE FACILITIES ARE SHOWN ON THE CHART BY LARGE PURPLE NUMBERS. THE TABULATED "APPROACH-FEET (REPORTED)" IS THE DEPTH AVAILABLE FROM THE NEAREST NATURAL OR DREDGED CHANNEL TO THE FACILITY. THE TABULATED "PUMPING STATION" IS DEFINED AS FACILITIES AVAILABLE FOR PUMPING OUT BOAT HOLDING TANKS. (H) APPROACH DEPTH FLUCTUATES WITH LAKE LEVELS.																																																																																																																																																																																																																					

Index of Abbreviations

Note: INT abbreviations are in bold type

A

abt.	About	Di
AERO, Aero	Aeronautical light	P 60-61.1
Aero R Bn	Aeronautical radiobeacon	S 16
Aero RC	Aeronautical radiobeacon	S 16
AIS	Automatic Identification System	S 17.1-17.2
AI	Alternating	P 10.11
ALC	Articulated Loading Column	L 12
Am	Amber	P 11.8
anc	Ancient	
ANCH, Anch	Anchorage	N 20
ANT, Ant	Antenna	E 31
approx.	Approximate	
Apprs	Approaches	
Apr	April	
Apt	Apartment	E s
Arch	Archipelago	
ASL	Archipelagic Sea Lane	M 17
ATBA	Area To Be Avoided	M 29.1
Aug	August	
auth.	Authorized	K 46.2
Ave	Avenue	

B

B	Bay, bayou	
B	Black	Q 2
Bdy Mon	Boundary mark (monument)	B 24
Bk	Bank	
bk	Black	J as
bk	Broken	J 33
Bkw	Breakwater	F 4.1
Bl	Blue	P 11.4
bl.	Black	J as
BM	Bench mark	B 23
Bn, Bns	Beacon(s)	M 2, P 4-5, Q 80-81
BnTr, BnTrs	Beacon tower(s)	P 3, Q 110
Bo	Boulder(s)	J 9.2
Bol	Bollard	
Br	Breakers	K 17
br	Brown	J az
brg	Bearing	B 62
brk.	Broken	J 33
Bu	Blue	P 11.4

C

C	Can, cylindrical	Q 21
C	Cape	
C	Cove	
c	Coarse	J 32
Ca, ca	Calcareous	J 38
CALM	Catenary Anchor Leg Mooring	L 16
Cap	Capitol	E t
Cas	Castle	E 34.2
Cb	Cobbles	J 8
cbl.	Cable	B 46
cd	Candela	B 54
Cem	Cemetery	E 19
CG	Coast Guard station	T 10
Ch	Chocolate	J ba
Ch	Church	E 10.1
Chan	Channel	
Chem	Chemical	L40.1-40.2
CHY, Chy, Chys	Chimney(s)	E 22
Cir	Cirripedia	J ae
Ck	Chalk	J f
CL	Clearance	D 20-21, 26, 28
Cl	Clay	J 3
cm	Centimeter(s)	B 43
Cn	Cinders	J p
Co	Company	E u
Co	Coralline Algae	J 10, K 16
Co Hd	Coral Head	J i
Co rf	Coral reef	
COLREGS	International Regulations for Preventing Collisions at Sea	N a
Consol	Consol Beacon	S 13
constr	Construction	F 32
Corp	Corporation	E v
cov	Covers	L21.2
cps	Cycles per second	B j
Cr	Creek	
CRD	Columbia River Datum	H j
crs.	Coarse	J 32
c/s	Cycles per second	B j
Cswy.	Causeway	F 3
Ct Ho	Courthouse	E o
Cup	Cupola	E 10.4
Cus Ho	Customs house	F 61
Cy	Clay	J 3

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Note: INT abbreviations are in bold type

D		
D	Destroyed	
dec	Decayed	J an
Dec	December	
Deg	Degree(s)	B n
Destr	Destroyed	
dev	Deviation	B 67
DF	Direction Finder	
DG	Degaussing Range	N 25, Q 54
DGPS	Differential Global Positioning System	S 51
Di	Diatoms	J aa
DIA, Dia	Diaphone	R 11
Dir	Direction light	P 30-31
Discol	Discolored	K e
dist	Distant	
dk	Dark	J bd
dm	Decimeter(s)	B 42
Dn, Dns	Dolphin(s)	F 20
Dol	Dolphin(s)	F 20
DW	Deep Water route	M 27.1, N 12.4
DZ	Danger Zone	Q 50
E		
E	East	B 10
ED	Existence Doubtful	I 1
EEZ	Exclusive Economic Zone	N 47
Entr	Entrance	
ESSA	Environmentally Sensitive Sea Area	N 22
Est	Estuary	
exper	Experimental	
Explos	Explosive	R 10
Exting, exting	Extinguished	P 55
F		
F	Fixed	P 10.1
f	Fine	J 30
F Fl	Fixed and flashing	P 10.10
F Gp Fl	Fixed and Group Flashing	P f
Facty	Factory	E d
FAD	Fish Aggregating Device	
Fd	Fjord	
Feb	February	
FISH	Fishing	N 21
Fl	Flashing	P 10.4
fl	Flood	H q
Fla	Flare stack	L 11

fly	Flinty	J ao
fm, fms	Fathom(s)	B 48
fne	Fine	J 30
Fog Det Lt	Fog detector light	P 62
Fog Sig	Fog Signal	R 1
FP	Flagpole	E 27
FPSO	Floating Production, Storage and Offloading Vessel	L 17
Fr	Foraminifera	J y
Fs, FS	Flagstaff	E 27
Fsh stks	Fishing stakes	K 44.1
FT, ft	Foot, Feet	B 47, D 20
Fu	Fucus	J af
G		
G	Gravel	J 6
G	Green	P 11.3, Q 2
G	Gulf	
GAB, Gab	Gable	E i
GCLWD	Gulf Coast Low Water Datum	H k
Gl	Globigerina	J z
glac	Glacial	J ap
gn	Green	J av
Govt Ho	Government House	E m
Gp Fl	Group flashing	P 10.4
Gp Oc	Group occulting	P 10.2
GPS	Global Positioning System	
Grd	Ground	J a
Grs	Grass	J v
grt	Gross Register Tonnage	
GT	Gross Tonnage	
gty	Gritty	J am
gy	Gray	J bb
H		
H	Helicopter	T 1.4
h	Hard	J 39
h	Hour	B 49
HAT	Highest Astronomical Tide	H 3
Hbr Mr	Harbormaster	F 60
HHW	Higher High Water	H b
Hk	Hulk	F34, K 21, 22
Ho	House	
hor	Horizontally disposed	P 15
Hor CL	Horizontal clearance	D 21
Hosp	Hospital	E g, F 62.2
hr	Hour	B 49

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Note: INT abbreviations are in bold type

hrd	Hard	J 39
ht	Height	H p
HW	High Water	H a
HWF&C	High Water Full & Change	H h
Hz	Hertz	B g
I		
IALA	International Association of Lighthouse Authorities*	Q 130
IHO	International Hydrographic Organization	
illum	Illuminated	P 63
IMO	International Maritime Organization	
In.	Inlet	
in, ins	Inch(es)	B c
Inst	Institute	E n
INT	International	A 2, T 21
Intens	Intensified	P 46
IQ	Interrupted quick	P 10.6
ISLW	Indian Spring Low Water	H g
Iso	Isophase	P 10.3
ITZ	Inshore Traffic Zone	M 25.1
IUQ	Interrupted ultra quick	P 10.8
IVQ	Interrupted very quick	P 10.7
J		
Jan	January	
Jul	July	
Jun	June	
K		
K	Kelp	J u
kc	Kilocycle	B k
kHz	Kilohertz	B h
km	Kilometer(s)	B 40
kn	Knot(s)	B 52
L		
L	Lake, loch, lough	
L Fl	Long-flashing	P 10.5
La	Lava	J l
Lag	Lagoon	
LANBY	Large Automatic Navigational Buoy	P 6
LASH	Lighter Aboard Ship	
LAT	Lowest Astronomical Tide	H 2
Lat	Latitude	B 1
Ldg	Landing	F 17
Ldg	Leading Lights	P 20.3

Le	Ledge	
LLW	Lower Low Water	H e
Lndg.	Landing for boats	F 17
LNG	Liquefied Natural Gas	
LoLo	Load-on, Load-off	
Long	Longitude	B 2
LPG	Liquefied Petroleum Gas	
Lrg	Large	J ai
LS S	Life saving station	T 12
lt	Light	J bc
Lt Ho	Light house	P 1
Lt, Lt(s)	Light(s)	P 1
Ltd.	Limited	E r
LW	Low Water	H c
LWD	Low Water Datum	H d
LWF&C	Low Water Full and Change	H i
M		
M.	Mud, muddy	J 2
M.	Nautical mile(s)	B 45
m	Medium (in relation to sand)	J 31
m	Meter(s)	B 41
m	Minute(s) of time	B 50
Ma	Mattes	J ag
mag	Magnetic	B 61
Magz.	Magazine	E l
Maintd.	Maintained	P 65
Mar	March	
Mc.	Megacycles	B l
Mds.	Madrepores	J j
MHHW	Mean Higher High Water	H 13
MHLW	Mean Higher Low Water	H 14
MHW	Mean High Water	H 5
MHWN	Mean High Water Neaps	H 11
MHWS	Mean High Water Springs	H 9
Mi	Nautical mile(s)	B 45
min	Minimum	K 46.2
min	Minute(s) of time	B 50
Mk.	Mark	Q 101
MI	Marl	J c
MLHW	Mean Lower High Water	H 15
MLLW	Mean Lower Low Water	H 12
MLW	Mean Low Water	H 4

*Now known as the International Association of Marine Aids to Navigation and Lighthouse Authorities, the organization formerly called the International Association of Lighthouse Authorities/Association Internationale de Signalisation Maritime (IALA/AISM) continues to use IALA as an abbreviation for its full name.

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Note: INT abbreviations are in bold type

MLWN	Mean Low Water Neaps	H 10
MLWS	Mean Low Water Springs	H 8
mm	Millimeter(s)	B 44
Mn	Manganese	J q
Mo	Morse Code	P 10.9, R 20
MON, Mon	Monument	E 24
MR	Marine Reserve	N 22
MRCC	Maritime Rescue and Coordination Center	
Ms	Mussels	J s
MSL	Mean Sea Level	H 6
Mt	Mountain, Mount	
Mth	Mouth	
MTL	Mean Tide Level	H f
N		
N	North	B 9
N	Nun	Q 20
NE	Northeast	B 13
NGA	National Geospatial-Intelligence Agency	
NM	Nautical miles(s)	B 45
NMi	Nautical miles(s)	B 45
No	Number	N 12.2
NOAA	National Oceanic and Atmospheric Administration	
NOS	National Ocean Service	
Nov	November	
Np	Neap tide	H 17
NT	Net Tonnage	
NTM	Notice to Mariners	
NW	Northwest	B 15
NWS SIG STA	National weather service signal station	T 29
O		
Obs Spot	Observation spot	B 21
OBSC, Obscd	Obscured	P 43
Obstn	Obstruction	K 41
Oc	Occulting	P 10.2
Occas	Occasional	P 50
Oct	October	
ODAS	Ocean Data Acquisition System	Q 58
Or	Orange	P 11.7
OVHD	Overhead	D 28
Oys	Oysters	J r
P		
P	Pebbles	J 7
P	Pillar	Q 23
(P)	Preliminary (NTM)	

PA	Position approximate	B 7
Pass	Passage, Pass	
Pav	Pavilion	E p
PD	Position doubtful	B 8
Pk	Peak	
PLT STA	Pilot station	T 3
Pm	Pumice	J m
PO	Post office	F 63
Po	Polyzoa	J ad
pos, posn	Position	
Post Off.	Post office	F 63
Priv, priv	Private	P 65, Q 70
Prod well	Production well	L 20
PROHIB	Prohibited	N 2.2
PSSA	Particularly Sensitive Sea Area	N 22
Pt	Pteropods	J ac
Pyl	Pylon	D 26
Q		
Q	Quick	P 10.6
QTG	Service providing DF signals	S 15
Quar	Quarantine	F e
Qz	Quartz	J g
R		
R	Coast radio station providing QTG service	S 15
R	Radio Station	S 15
R	Red	P 11.2
R, r	Rock, Rocky	J 9.1, K b
R Bn	Circular radiobeacon	S 10
R Lts	Air obstruction lights	P 61.2
R Mast	Radio mast	E 28
R Sta	Radio Station	S 15
R Tower	Radio tower	E 29
R TR, R Tr	Radio tower	E 29
Ra	Radar	M 31-32, S 1
Ra	Radar reference line	M 32.1
Ra (conspic)	Radar conspicuous object	S 5
Ra Ref	Radar reflector	S 4
Racon	Radar transponder beacon	S 3
Radar Sc	Radar scanner	E 30.3
Radar Tr, RADAR TR	Radar tower	E 30.2
Ramark	Radar marker beacon	S 2
RC	Circular radiobeacon	S 10
RD	Directional radiobeacon	S 11
Rd	Radiolaria	J ab

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Note: INT abbreviations are in bold type

Rd	Road, roadstead	
rd	Red	J ay
RDF	Radio direction finding station	S 14
Ref	Refuge	Q 124
Rep	Reported	I 3
Rf	Reef	
RG	Radio direction finding station	S 14
Rk	Rocks	J 9.1, K b
Rky	Rocky	J 9.1
RoRo	Roll-on, Roll-off Ferry (RoRo Terminal)	F 50
rt	Rotten	J aj
Ru, (ru)	Ruin, ruined	D 8, E 25.2, F33
RW	Rotating-pattern radiobeacon	S 12
S		
S	Sand	J 1
S	South	B 11
S	Spar, spindle	Q 24
s	Second(s) of time	B 51, P 12
SALM	Single Anchor Leg Mooring	L 12
SBM	Single Buoy Mooring	L 16
Sc	Scanner	E 30.3
Sc	Scoriae	J o
Sch	Schist	J h
Sch	School	E f
SD	Sailing Directions	
Sd	Sound	
SD	Sounding doubtful	I 2
SE	Southeast	B 14
sec	Seconds of time	B 51
Sep	September	
sf	Stiff	J 36
sft	Soft	J 35
Sh	Shells	J 11
Shl	Shoal	
Si	Silt	J 4
Sig	Signal	R 1, T 25.2
Sig Sta	Signal station	T 20
S-L Fl	Short-Long Flashing	P b
S/M	Sand over mud	J 12.1
sml	Small	J ah
SMt	Seamount	
Sn	Shingle	J d
so	Soft	J 35
Sp	Church spire	E 10.3

SP	Spherical	Q 22
Sp	spire	E 10.3
Sp	Spring tide	H 16
Spg	Sponge	J t
Spi	Spicules	J x
Spipe, S'pipe	Standpipe	E 21
spk	Speckled	J al
SPM	Single Point Mooring	L 12
SS	Signal station	T 20-36
St	Stones	J 5
St M, St Mi	Statute mile(s)	B e
STA, Sta	Station	F 41.1, S 15, T 3
stf	Stiff	J 36
Stg	Sea-tangle	J w
stk	Sticky	J 34
Str	Strait	
Str	Stream	H I
str	Streaky	J ak
sub	Submarine	K d
Subm	Submerged	K 43.1
SW	Southwest	B 16
sy	Sticky	J 34
T		
T	Short ton(s)	B m
T	Telephone	E q
T	TRUE	B 63
T	Tufa	J n
t	Ton(s), Tonnage (weight)	B 53, F 53
Tel	Telegraph	D 27
Tel off	Telegraph office	E k
Temp, temp	Temporary	P 54
ten	Tenacious	J aq
Tk	Tank	E 32
TR, Tr, Trs	Tower(s)	E 10.2, E 20
TSS	Traffic Separation Scheme	M 20.1
TT	Tree tops	C 14
TV Mast	Television mast	E 28
TV Tower	Television tower	E 29
U		
ULCC	Ultra Large Crude Carrier	
Uncov	Uncovers	K 11
unev	Uneven	J bf
Univ	University	E h
UQ	Ultra quick	P 10.8

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Note: INT abbreviations are in bold type

UTC	Coordinated Universal Time	
UTM	Universal Transverse Mercator	
V		
v	Volcanic	J 37
var, VAR	Variation	B 60
vard	Varied	J be
vel	Velocity	H n
vert	Vertically disposed	P 15
Vert CL	Vertical clearance	D20, 28
Vi	Violet	P 11.5
Vil	Village	D 4
VLCC	Very Large Crude Carrier	G 187
vol	Volcanic, Volcano	J 37
Vol Ash	Volcanic ash	J k
VQ	Very quick	P 10.7
VTS	Vessel Traffic Service	
W		
W	West	B 12
W	White	P 11.1
Wd	Weed	J 13.1
Well	Wellhead	L 21
WGS	World Geodetic System	S 50
Wh	White	J ar
Whf	Wharf	F 13
WHIS, Whis	Whistle	R 15
Wk, Wks	Wreck(s)	K 20
Wtr Tr, WTR TR	Water tower	E 21
Y		
Y	Yellow, Orange, Amber	P 11.6-11.8
yd, yds	Yard(s)	B d
yl	Yellow	J aw
μ		
μs, μsec	Microsecond(s)	B f

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 - Aerial
 - cableway D 25
 - dish E 31
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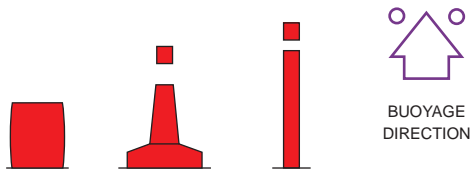
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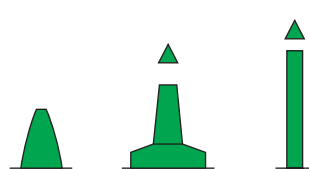
Appendix 1 IALA Maritime Buoyage System

Region A Lateral Marks









Port Hand



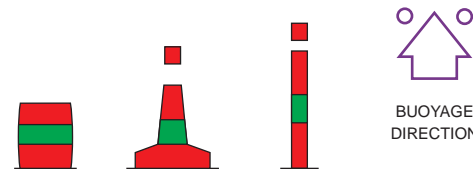
Starboard Hand



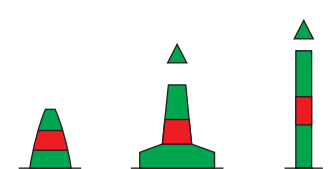
red	Color	green
cylindrical (can), pillar, spar	Buoy	conical (nun), pillar, spar
single red cylinder (can)	Topmark (if any)	single green cone, point upward

Lights (if any): may have any phase characteristic other than that used for preferred channels		
	Quick Flashing	
	Flashing	
	Long Flashing	
	Group Flashing	



Preferred Channel to Starboard



Preferred Channel to Port

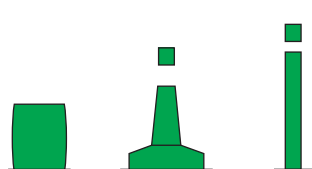


red with one green horizontal band	Color	green with one red horizontal band
cylindrical (can), pillar, spar	Buoy	conical (nun), pillar, spar
single red cylinder (can)	Topmark (if any)	single green cone, point upward

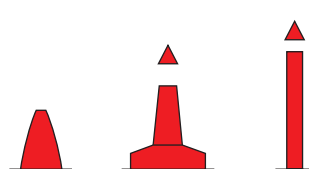
Lights (if any): are composite group flashing		
	FI (2+1)	

Region B Lateral Marks

Port Hand



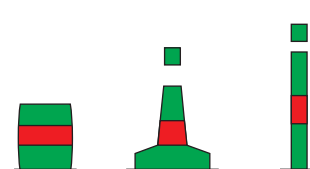
Starboard Hand



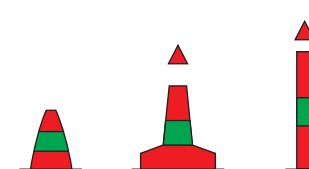
green	Color	red
cylindrical (can), pillar, spar	Buoy	conical (nun), pillar, spar
single green cylinder (can)	Topmark (if any)	single red cone, point upward

Lights (if any): may have any phase characteristic other than that used for preferred channels		
	Quick Flashing	
	Flashing	
	Long Flashing	
	Group Flashing	

Preferred Channel to Starboard



Preferred Channel to Port



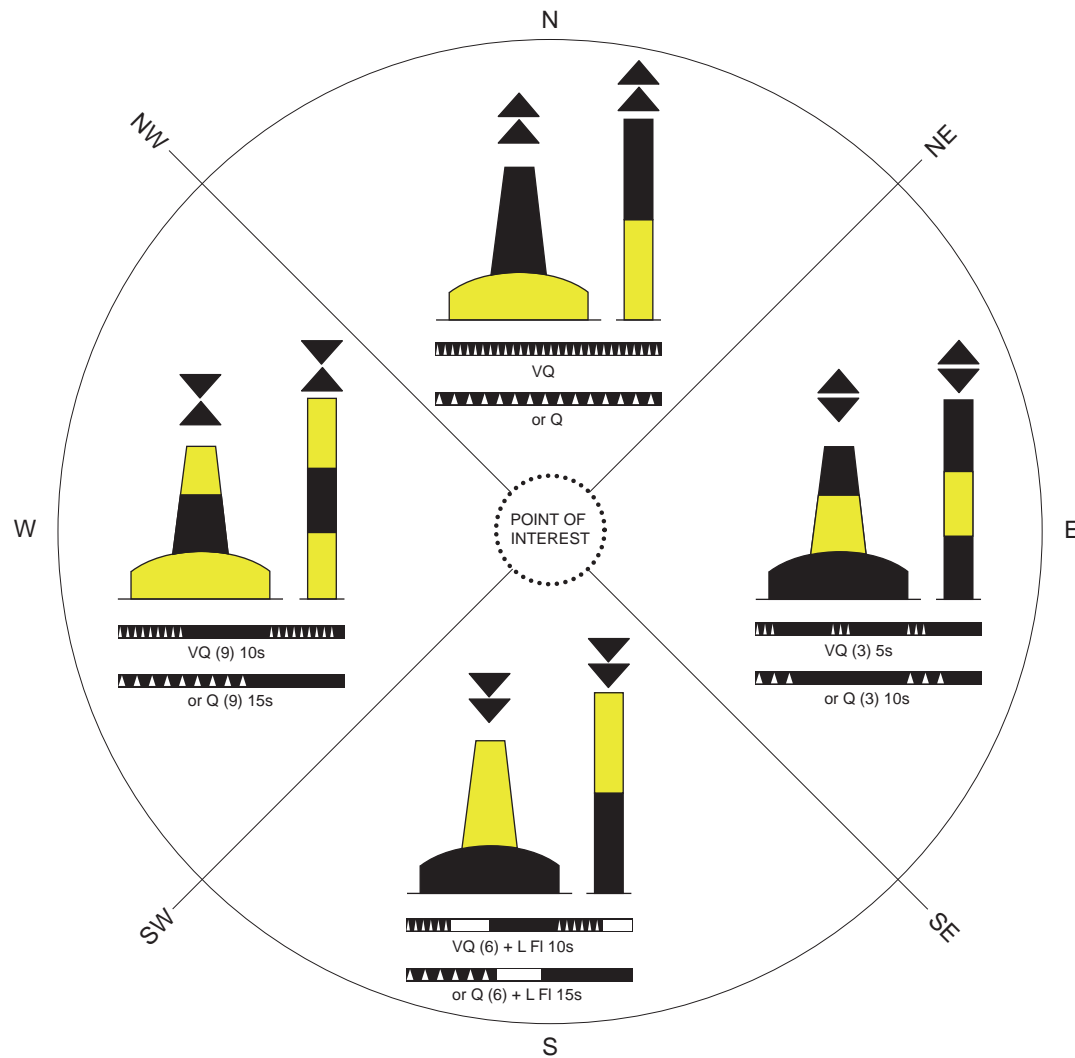
green with one red horizontal band	Color	red with one green horizontal band
cylindrical (can), pillar, spar	Buoy	conical (nun), pillar, spar
single green cylinder (can)	Topmark (if any)	single red cone, point upward

Lights (if any): are composite group flashing		
	Fl (2+1)	

Appendix 1 IALA Maritime Buoyage System

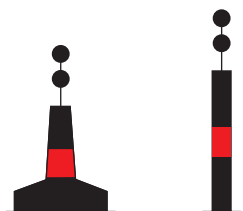
Cardinal Marks in Regions A and B

Lights, when fitted, are white.



Regions A and B

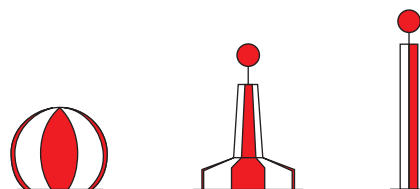
Isolated Danger Marks



Color	black with one or more red horizontal band(s)
Buoy	optional, but not conflicting with lateral marks; pillar or spar preferred
Topmark (if any)	always fitted with double spheres

Lights (if any)	
Color	white
Rhythm	group flashing

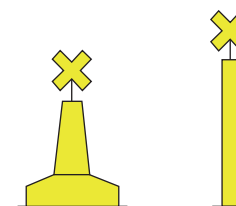
Safe Water Marks



Color	red and white vertical stripes
Buoy	spherical, pillar or spar
Topmark (if any)	single red sphere

Lights (if any)	
Color	white
Rhythm	Iso Oc L Fl 10s Morse "A"

Special Marks



Color	yellow
Buoy	optional, but not conflicting with lateral marks
Topmark (if any)	single yellow "X" shape

Lights (if any)	
Color	yellow
Rhythm	Fl Y Fl (4) Y May have any rhythm other than those used for white lights on cardinal, isolated danger or safe water marks.

Section Key

A		Chart Number, Title and Marginal Notes	INT 500 412 Mercator Projection Scale 1:100,000 at Lat. 59°30' 7th Ed., Mar. 5/09 DEPTHS IN METERS
B		Positions, Distances, Directions and Compass	±15° Magnetic Variation 4°30' W 2011 (8' E) LOCAL MAGNETIC ANOMALY (see note)
C		Natural Features	
D		Cultural Features	
E		Landmarks	
F		Ports	
H		Tides and Currents	
I		Depths	
J		Nature of the Seabed	
K		Rocks, Wrecks and Obstructions	
L		Offshore Installations	
M		Tracks and Routes	
N		Areas and Limits	
P		Lights	
Q		Buoys and Beacons	
R		Fog Signals	
S		Radar, Radio and Satellite Navigation Systems	
T		Services	
U		Small Craft (Leisure) Facilities	