U.S. Chart No. 1

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

13th Edition
April 15, 2019

Prepared Jointly by

Department of Commerce
National Oceanic and Atmospheric Administration

Department of Defense
National Geospatial-Intelligence Agency

ECDIS Symbols and Other ECDIS Information

Symbology for displaying Electronic Navigational Charts (ENCs) on Electronic Chart Display and Information Systems (ECDIS) has been added to U.S. Chart No. 1. 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.

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. Please let us know what additional information you would like to see in the next edition.

Corrections, comments, or questions regarding U.S. Chart No. 1 may be submitted through ASSIST, the NOAA Coast Survey stakeholder engagement and feedback website

at *www.nauticalcharts.noaa.gov/customerservice/assist*,

or mailed to:

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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INTRODUCTION

Two Symbology Types Comprising Four Symbology Sets

U.S. Chart No. 1 presents two types of symbology used for marine navigation – the symbols used on paper nautical charts (and their digital raster image equivalents) and the corresponding symbols used to portray Electronic Navigational Chart (ENC) data on Electronic Chart Display and Information Systems (ECDIS).

Within these two types, four separate symbology sets are shown. These are described below:

Paper Chart Symbols

INT — The international or "INT" symbols specified in the *Regulations for International (INT) Charts and Chart Specifications of the IHO* (International Hydrographic Organization). These symbols are used by many countries around the world, including the United States.

NOAA — Symbols used on charts produced by the National Oceanic and Atmospheric Administration (NOAA) when an INT symbol is not used. NOAA produces nautical charts for all U.S. waters, including the Great Lakes and U.S. Territories.

NGA — Symbols used on charts produced by the National Geospatial-Intelligence Agency (NGA) when an INT symbol is not used. NGA produces nautical charts for the U.S. military and for areas outside of U.S. waters.

ECDIS Symbols

ECDIS — Symbols used to portray ENCs on ECDIS navigation systems. Use of ECDIS is required for large commercial ships on international voyages. These symbols are specified in *IHO Specifications for Chart Content and Display Aspects of ECDIS*.

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 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.

U.S. Chart No. 1 and Typical Chart Layouts

A brief description of the columns on each symbol description page is provided here. A detailed schematic layout of U.S. Chart No. 1 is on page 8. Section A, on pages 10 and 11 presents schematics showing typical layouts of the major elements of NOAA and NGA charts.

Col 1 — Symbol number. The number together with the section letter which appears at the top of each page constitutes a unique identifier for each symbol, such as C1 for the "Coastline, surveyed" symbol.

Col 2 — INT symbol example.

Col 3 — Description of the feature or real world phenomenon being portrayed.

Col 4 — NOAA symbol example. This column will be blank if NOAA uses the INT symbol shown in column 2.

Col 5 — NGA symbol example. This column will be blank if NGA uses the INT symbol shown in column 2.

If columns 4 and 5 are combined, then NOAA and NGA both use the same symbol, which is different from the INT symbol.

Col 6 — Other NGA symbol examples. NGA produces facsimiles of some foreign charts. If the depiction on the chart is different than the INT or NGA symbols (shown in Cols 2 and 5, respectively) then the additional foreign symbols are shown here.

Col 7 — ECDIS symbol example in the day color palettes. (See page 9 for a description of ECDIS color palettes.)

Col 8 — 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.

The schematic layout on page 7 shows a typical symbol table page and provides more details about the table headers and the types of information presented in each of the columns.

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, Fl 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, Fl 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.

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 Routeing.* 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 https://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 https://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 https//www.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 https://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 https://nauticalcharts.noaa.gov/publications/coast-pilot/index.html and NGA *Sailing Directions,* available through the “Publications” link on the NGA Maritime Safety Information portal at https://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 https://msi.nga.mil/NGAPortal/MSI.portal.

NOAA catalogs are available at the NOAA Chart Locator at

www.charts.noaa.gov/InteractiveCatalog/nrnc.shtml and the NOAA Nautical Chart Catalog and Chart Viewer at www.charts.noaa.gov/ChartCatalog/MapSelect.html.

A list of the dates of the latest editions of NOAA charts is at https://nauticalcharts.noaa.gov/charts/list-of-latest-editions.html.

CORRECTIONS AND COMMENTS

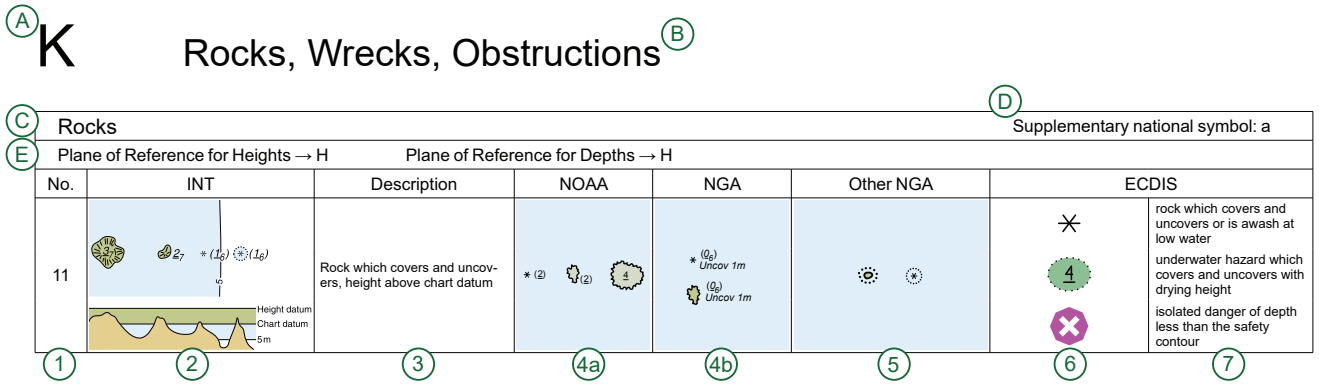
Corrections to U.S. Chart No. 1 will appear in the weekly U.S. Notice to Mariners, available through the “Notice to Mariners” link on the NGA Maritime Safety Information portal at https://msi.nga.mil/NGAPortal/MSI.portal.

Corrections, comments, or questions regarding U.S. Chart No. 1 may be submitted through ASSIST, the NOAA Coast Survey stakeholder engagement and feedback website at www.nauticalcharts.noaa.gov/customer-service/assist.

or 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	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

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

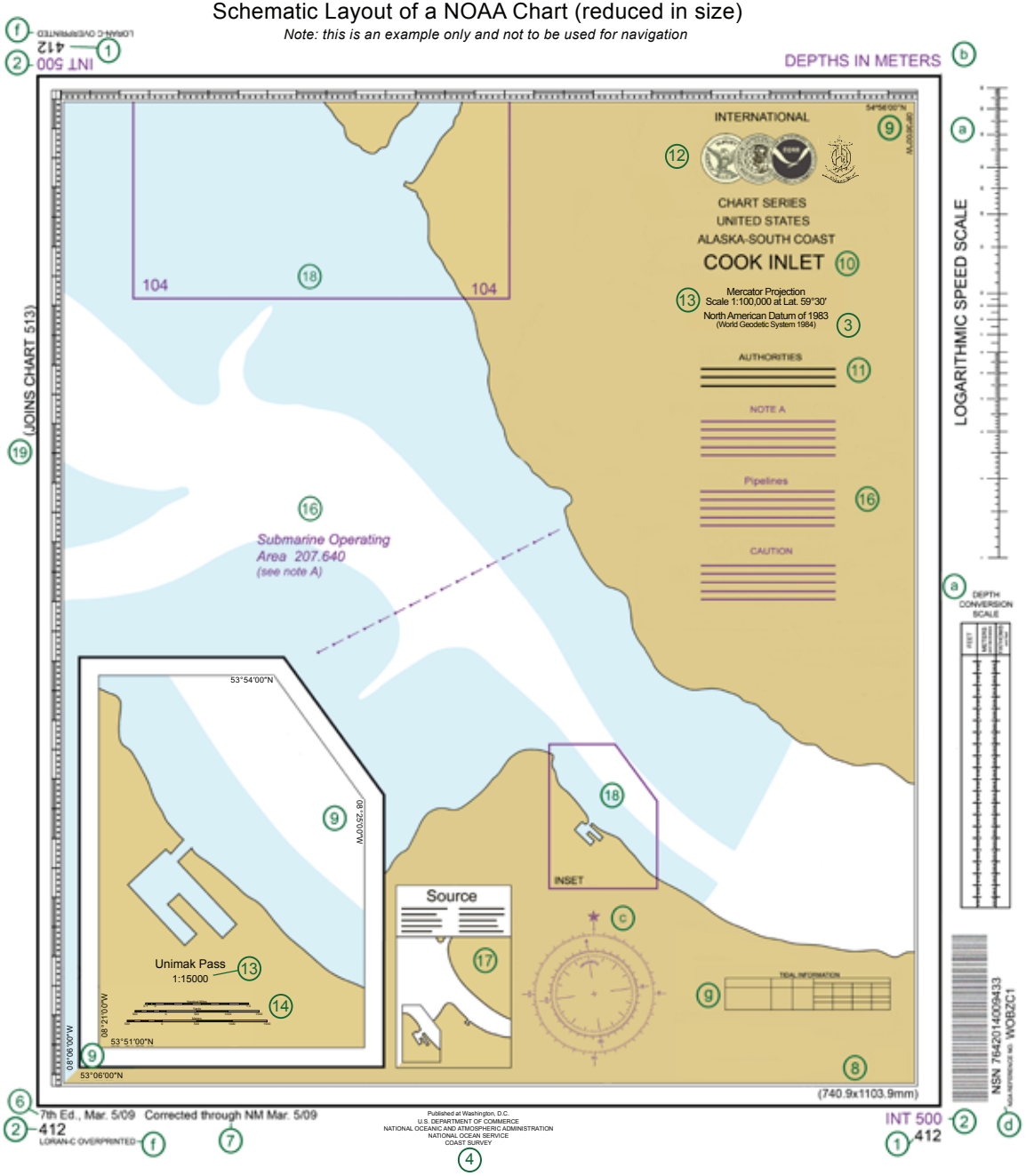
DUSK

NIGHT

A Chart Number, Title, Marginal Notes

Schematic Layout of a NOAA Chart (reduced in size)

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

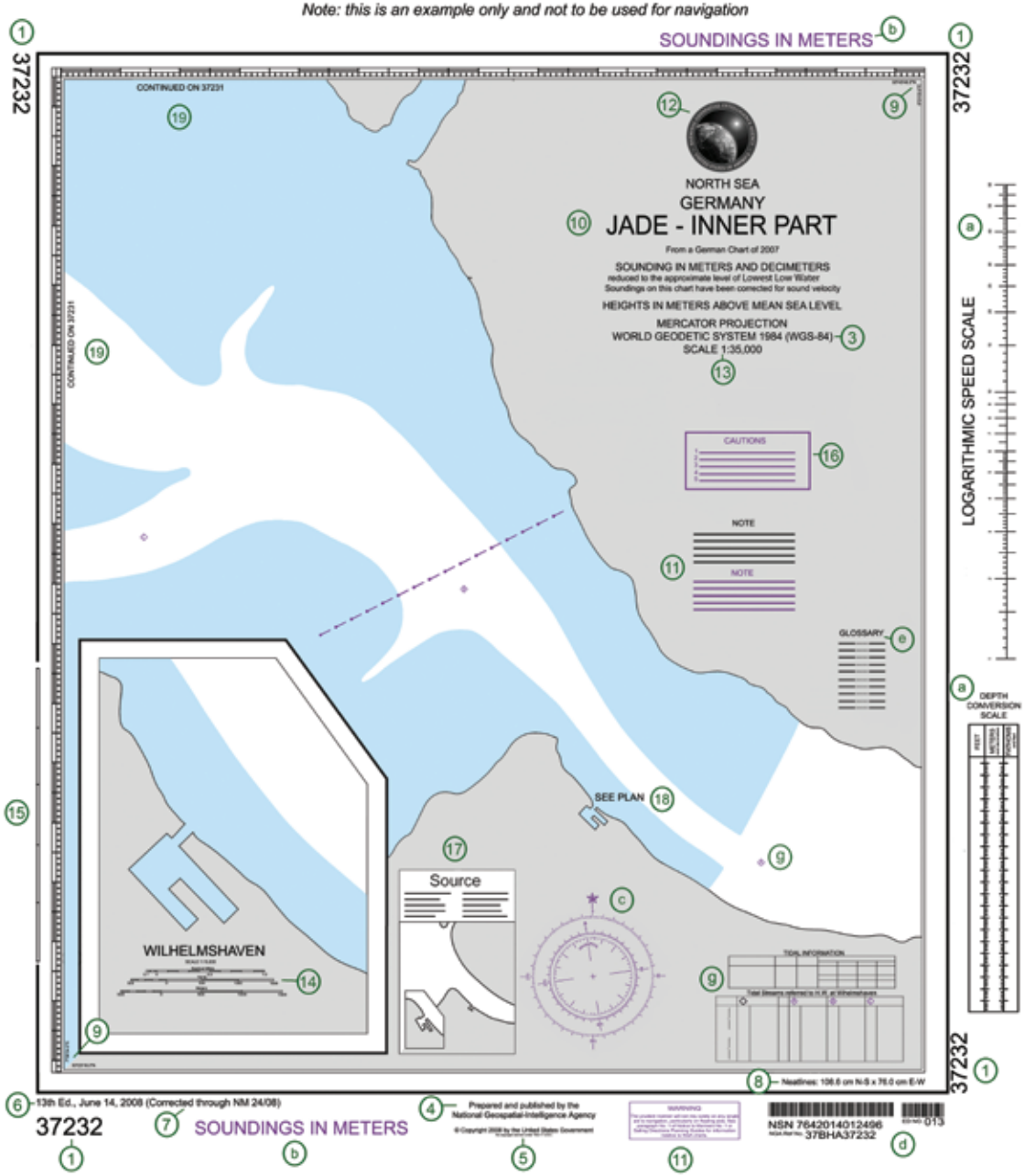


Magnetic Features → B Tidal Data → H	
1	Chart number in national chart series
2	Chart number in international (INT) series (if any)
3	Reference ellipsoid of the chart
4	Publication note (imprint)
5	Copyright note
6	Date of current edition
7	Notice to Mariners corrections
8	Dimensions of inner borders
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

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
g	Tidal and Tidal Stream information within the chart coverage

Schematic Layout of an NGA Chart (reduced in size)

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



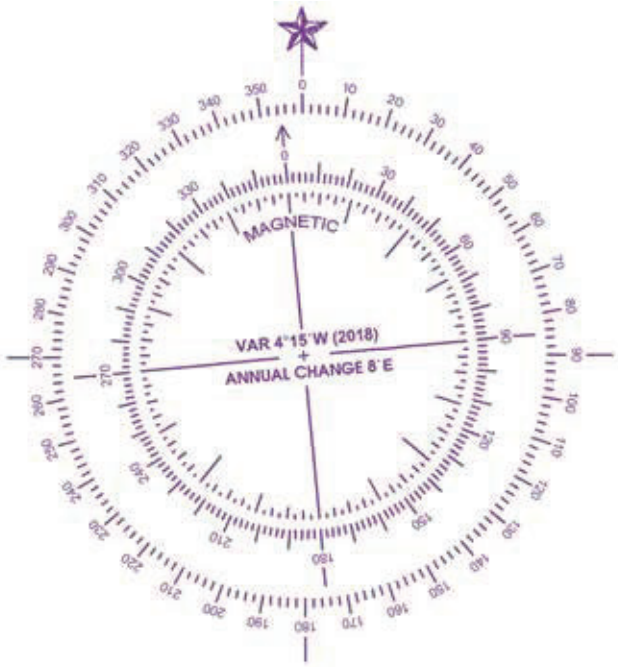
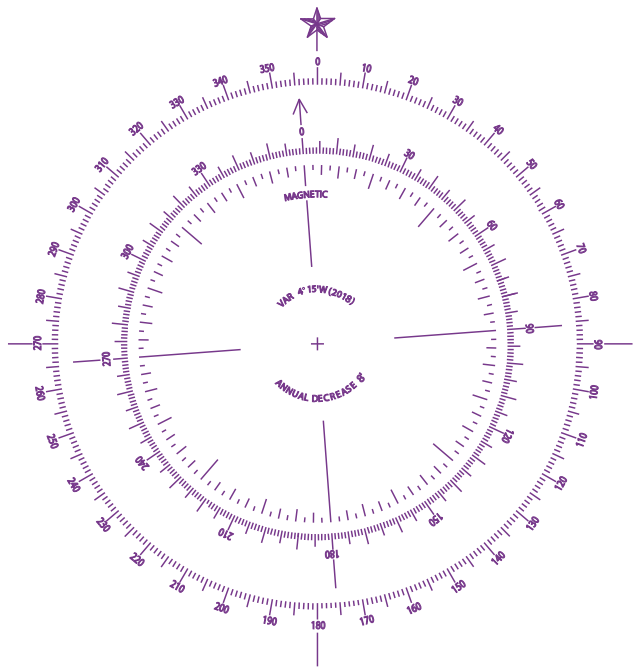
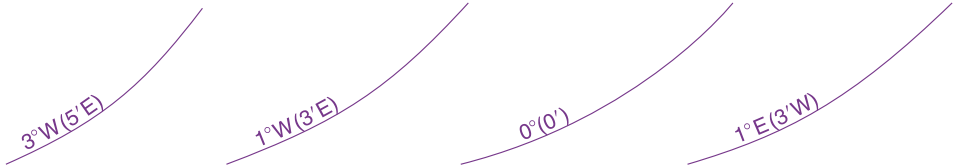
B Positions, Distances, Directions, Compass

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Geographical Positions						
1	Lat	Latitude				
2	Long	Longitude				
4		Degree(s)	deg			
5		Minute(s) of arc				
6		Second(s) of arc				
7	*PA*	Position approximate (not accurately determined or does not remain fixed)	PA	(PA)		PA Position approximate Point feature or area of low accuracy 21 Sounding of low accuracy
8	*PD*	Position doubtful (reported in various positions)	PD	(PD)		Point feature or area of low accuracy 21 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				

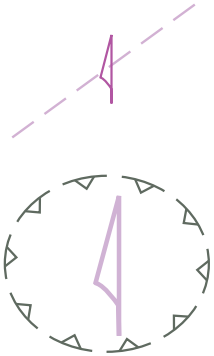
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Control Points							
20		Triangulation Point					
21	†	Observation spot	⊕ Obs Spot				Position of an elevation or control point
22		Fixed point					
25.1	km 32	Distance along waterway, no visible marker	St M 32			km 7	Canal and distance point with no mark
25.2	km 46	Distance along waterway with visible marker	Y Bn (46)			km 7	Canal and distance point
	Note: ECDIS uses a magenta "km" symbol to represent distance marks. However, the distances shown along waterways on NOAA-produced ENCs are displayed in statute miles.						
Symbolized Positions (Examples)							
30	# Wk	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 plan—position is at bottom of symbol					
32	Mast MAST ☆	Point symbols	MAST				Position of a point feature
33	† Mast PA	Point symbols—approximate positions	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				
47	ft	Foot / Feet					
48	fm, fms	Fathom(s)					

B Positions, Distances, Directions, Compass

No.	INT		Description	NOAA	NGA	Other NGA	ECDIS
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*
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				

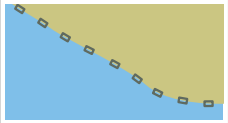
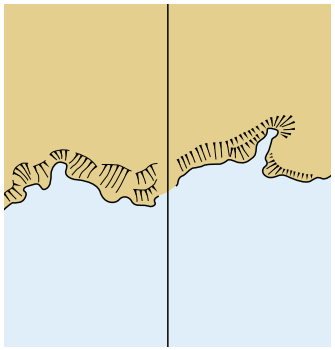
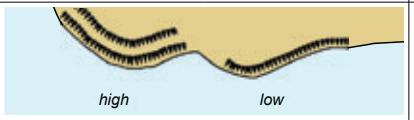
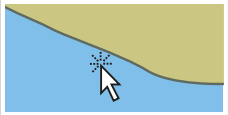
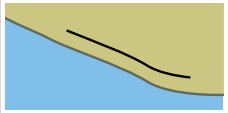
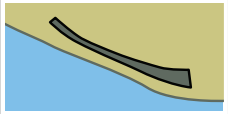
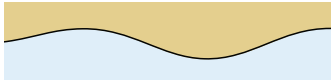
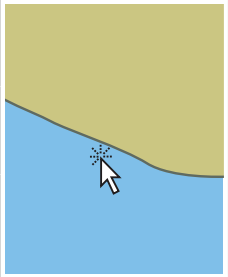
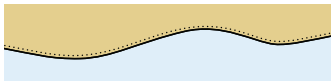
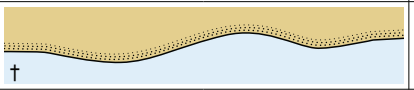
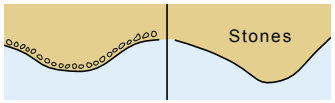
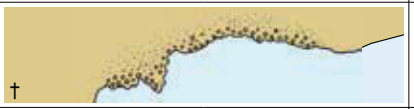
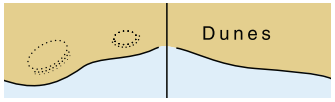
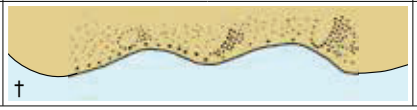
No.	NOAA / NGA	ECDIS
70	Compass rose, normal pattern (smaller patterns of compass rose may be used) Magnetic variation (example): VAR 4°15'W (2018) means magnetic variation was 4°15'W in 2018 ANNUAL DECREASE 8' means annual change is 8'E or decreasing 8' annually For 2019 the magnetic variation is 4°7'W  	Cursor pick site for magnetic variation at a point
71	Isogonic lines, Isogonals MAGNETIC VARIATION LINES ARE FOR 2018 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. 	Cursor pick site for magnetic variation along a line

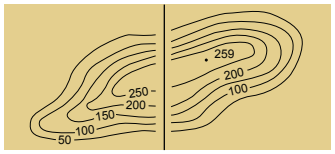
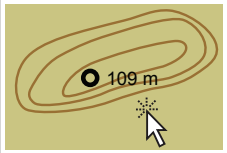
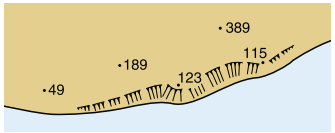
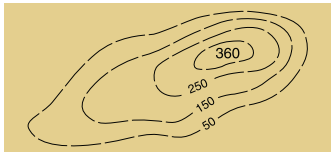
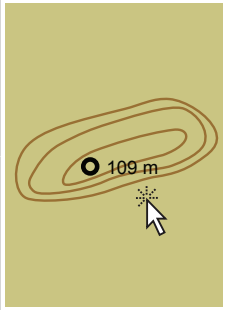
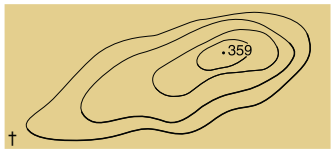
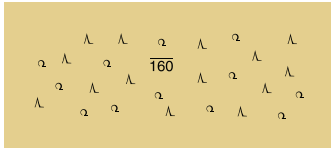
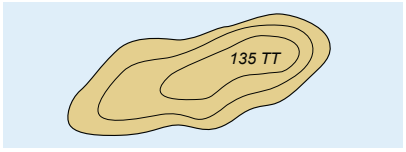
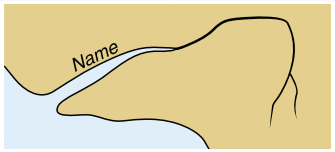
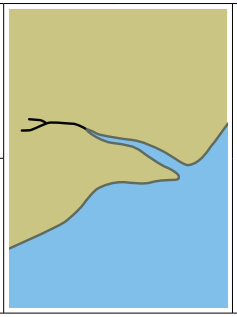
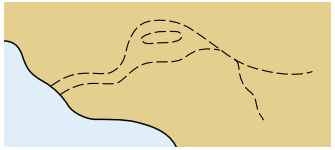
B Positions, Distances, Directions, Compass

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
82.1	±15°	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				
o		Benchmark	BM				
p		Variation	var	VAR		Varn	Magnetic variation

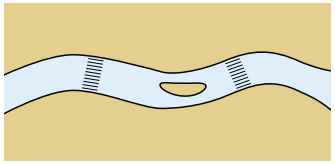
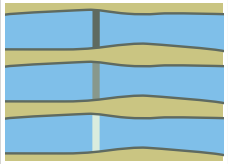
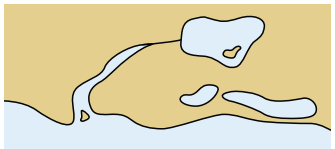
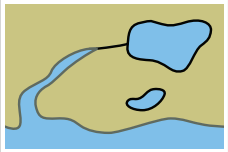
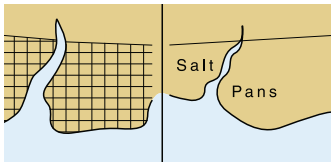
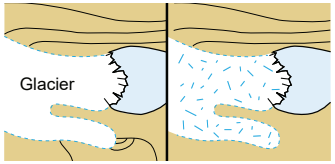
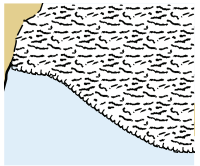
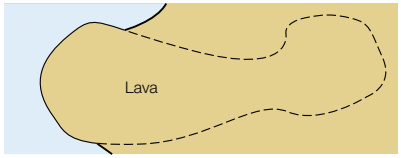
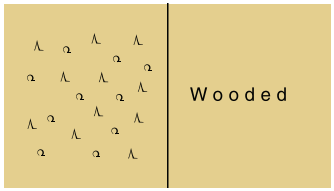
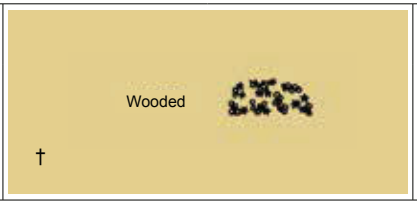
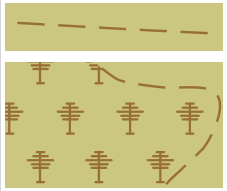
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
q		Magnetic	mag			
r		Bearing	brg			
s		True	T			

C Natural Features

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

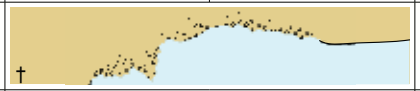
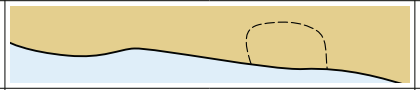
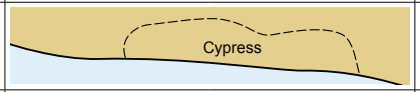
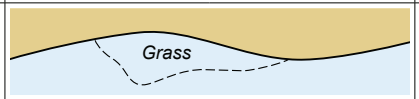
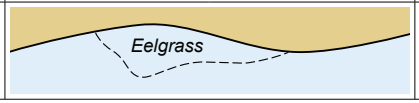
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Relief						Supplementary national symbols: e–g	
Plane of reference for heights → H							
10		Contour lines with values and spot height					Elevation contour with spot height, contour value is obtained by cursor pick
11		Spot heights				119 m	Position of 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					
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, intermittent lake					

C Natural Features

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

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
31	Prominent trees (isolated or in groups)						
31.1		Unspecified tree					Tree
31.2		Evergreen (except conifer)					
31.3		Conifer, Casuarina					Vegetation, line of trees
31.4		Palm					
31.5		Nipa Palm					Wooded area
31.6		Casuarina					
31.7		Filao					
31.8		Eucalypt					
32		Mangrove, Nipa palm	Mangrove (used in small areas)				Mangrove with coastline or shoreline construction of low accuracy in position
33	Marsh	Marsh, Swamp, Reed beds	Marsh (used in small areas)	Swamp			Marsh with coastline or shoreline construction of low accuracy in position
Supplementary National Symbols							
a		Chart sounding datum line surveyed)	Uncovers				
b		Approximate sounding datum line (inadequately surveyed)					
c		Foreshore; Strand (in general); Stones; Shingle; Gravel; Mud; Sand	Mud				
d		Breakers along a shore	Breakers Breakers (if extensive)				

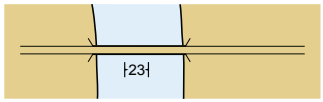
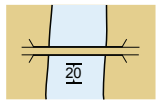
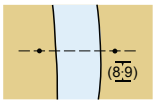
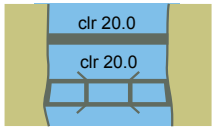
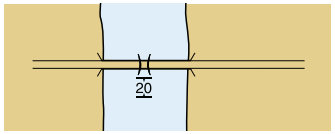
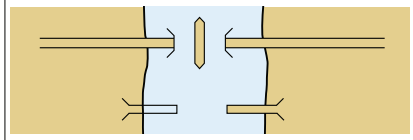
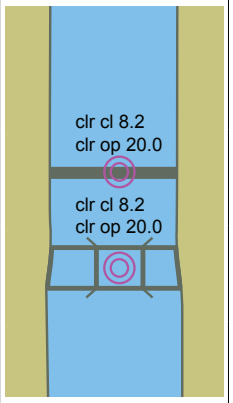
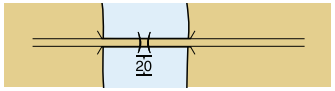
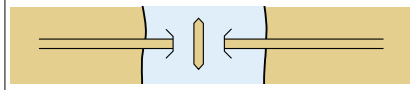
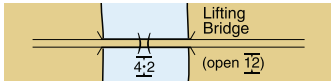
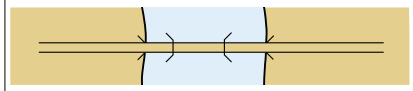
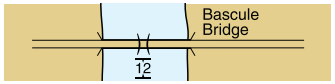
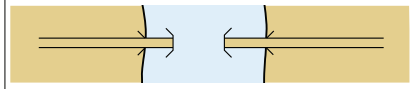
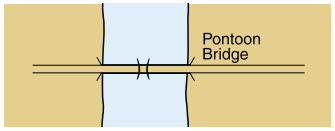
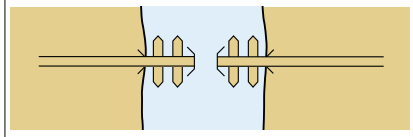
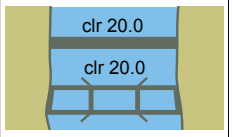
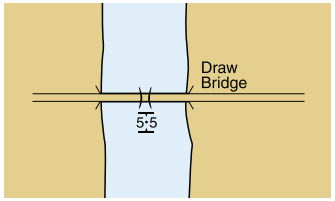
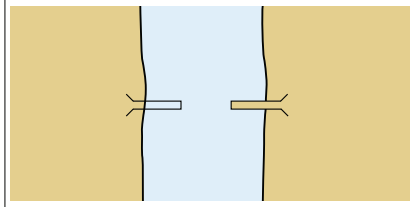
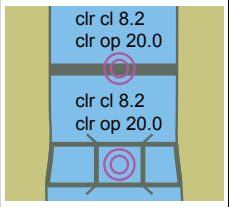
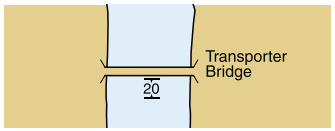
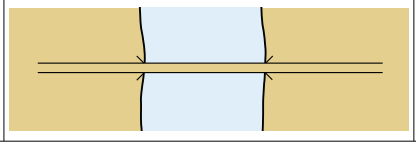
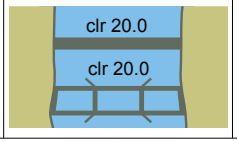
C Natural Features

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				

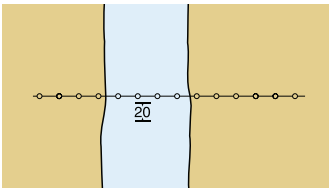
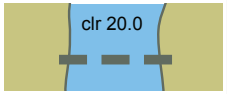
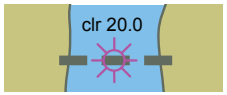
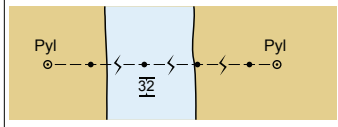
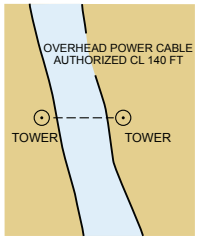
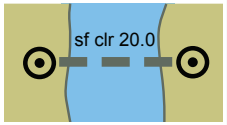
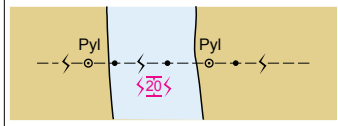
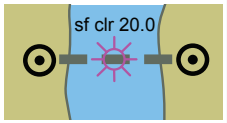
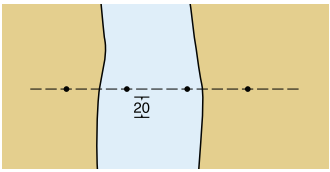
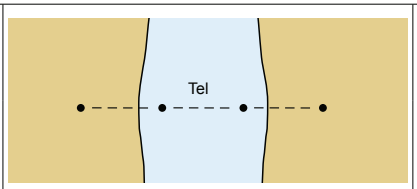
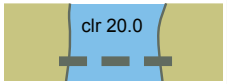
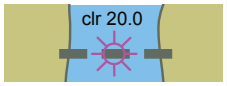
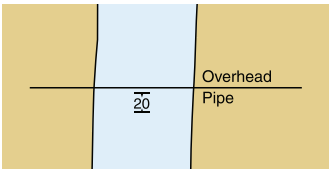
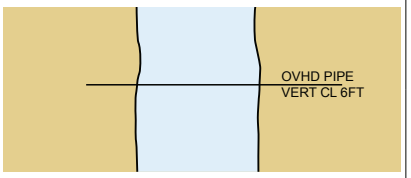
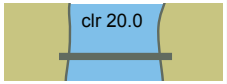
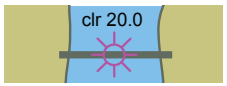
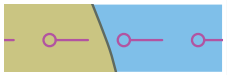
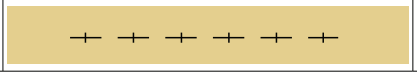
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Settlements, Buildings							
Height of objects → E	Landmarks → E						
1		Urban area					Built-up area
2		Settlement with scattered buildings					
3	○ Name ▭ Name	Settlement (on medium and small scale charts)				Name	Built-up area as a point
4	Name Name HOTEL	Village	Vil				
5		Buildings					Conspicuous single building
6	Hotel Hotel	Important building in built-up area					Conspicuous single building in built-up area
7	NAME	Street name, Road name				Street name is obtained by cursor pick	
8	Ru Ru	Ruin, Ruined landmark	Ruins ○ Ru			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)					Road as an area
12		Track, Path (loose or unsurfaced)					

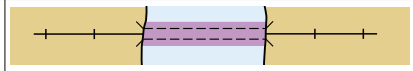
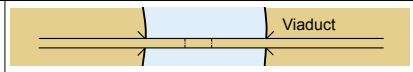
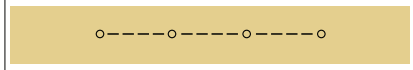
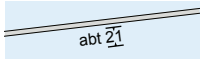
D Cultural Features

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	Air- field	Airport, Airfield	Airport				Airport as a point
							Runway as a line
							Airport area, with runway area and visually conspicuous runway area
18	H	Heliport, Helipad					
Other Cultural Features						Supplementary National Symbols: d–i	
20.1		Fixed bridge					
20.2		Footbridge, fixed bridge on smaller scale charts					

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
21		Horizontal clearance	FIXED BRIDGE HOR CL 25 FT VERT CL 20 FT	HOR CL 8 M 8		Horizontal clearance is obtained by cursor pick	
22	 	Vertical clearance (see introduction)		VERT CL 6 M 6			Bridge
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

D Cultural Features

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
25		Overhead transporter, Aerial cableway with vertical clearance					Aerial cableway
							Aerial cableway, radar conspicuous
26.1		Overhead power cable with pylons and physical vertical clearance					Transmission line
26.2		Overhead power cable with pylons and safe vertical clearance					Transmission line, radar conspicuous
	Note D26.2: The safe vertical clearance defined by the responsible authority, to avoid risk of electrical discharge, has been obtained by applying a reduction to the physical vertical clearance of the cable. The reduction is variable and depends upon the transmission voltage. See H20.						
27		Overhead cable, Telephone line, with vertical clearance					Overhead cable
							Overhead cable, radar conspicuous
28		Overhead pipe with vertical clearance					Overhead pipeline
							Overhead pipeline, radar conspicuous
29		Pipeline on land					Oil, gas pipeline, submerged or on land
Supplementary National Symbols							
a		Highway markers					
c		Abandoned railroad					

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
d		Bridge under construction					
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 is not. Only conspicuous landmarks are depicted on NOAA paper charts and ENCs. 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 HOTEL WATER TR	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	(30)	Height of top of a structure above height datum				Height is obtained by cursor pick	
5	(30)	Height of structure above ground level					
Landmarks							
10.1	Ch	Church					Church as a point Church as an area
10.2	Tr Tr	Church tower					Church tower, spire, or dome
10.3	Sp Sp	Church spire	SPIRE Spire				
10.4	Cup Cup	Church cupola (dome)	CUPOLA Cup				
13		Temple, Pagoda, Shrine, Marabout, Joss house					Religious building, non-Christian

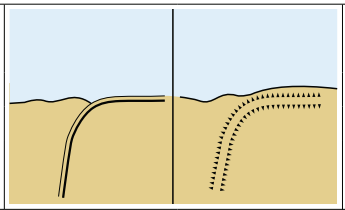
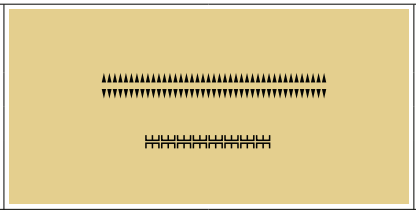
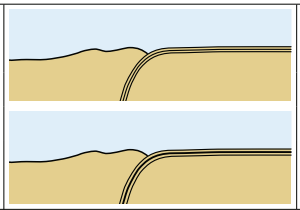
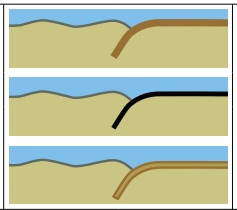
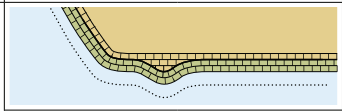
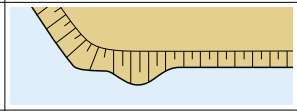
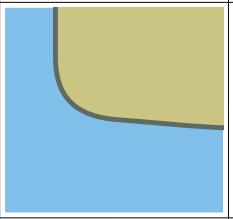
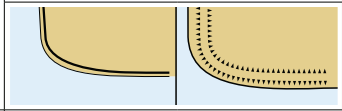
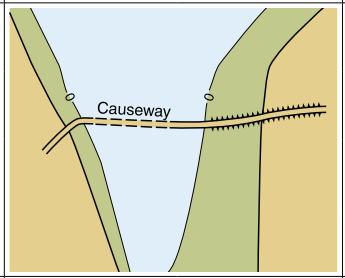
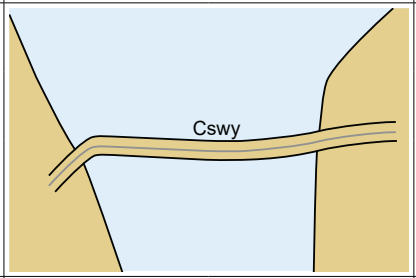
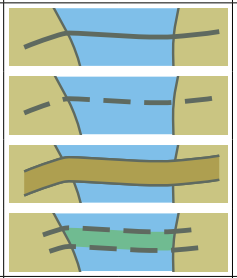
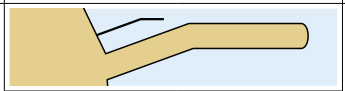
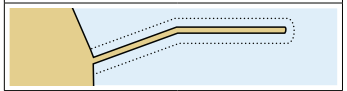
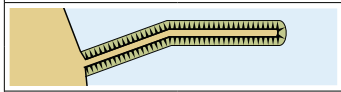
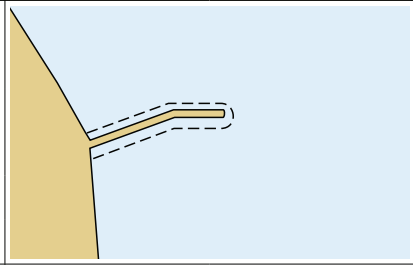
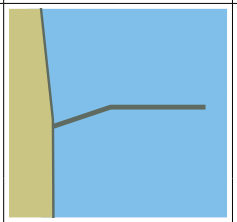
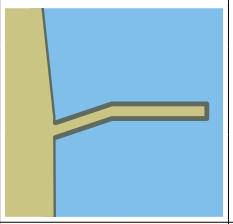
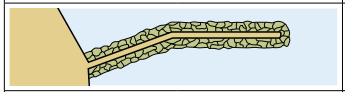
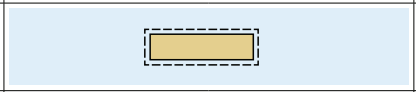
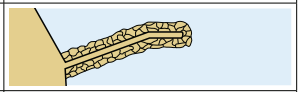
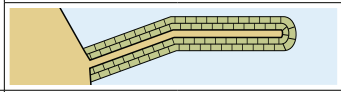
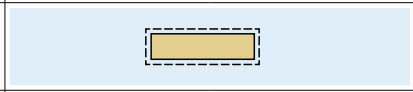
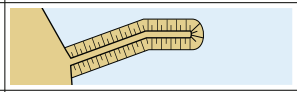
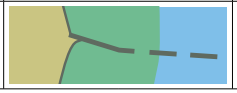
E Landmarks

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
17		Mosque, Minaret					Mosque or minaret
19		Cemetery	Cem				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			Chimney
23		Flare stack (on land)	FLARE	Flare			Flare stack
24	Mon	Monument (including column, pillar, obelisk, statue, calvary cross)	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		Onshore wind farm	WIND FARM	Wind Farm			Wind generator farm
27	FS	Flagstaff, Flagpole	FS FP	FS FP			Flagstaff, flagpole
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	Radar mast	RADAR MAST	Radar Mast			Mast
30.2	Radar Tr / Radar	Radar tower	RADAR TR	Radar Tr			Radar tower

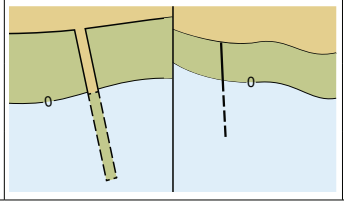
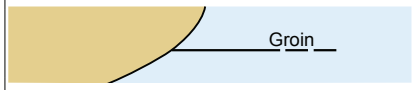
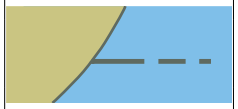
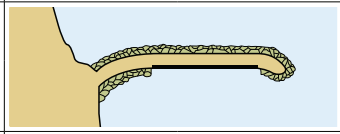
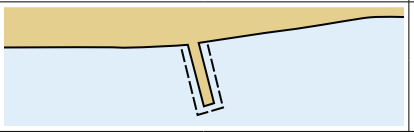
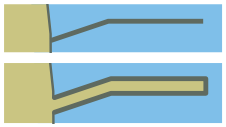
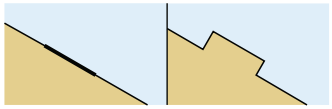
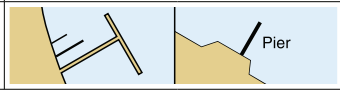
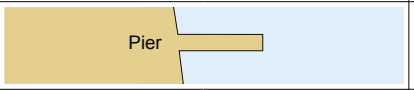
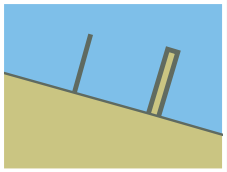
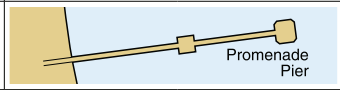
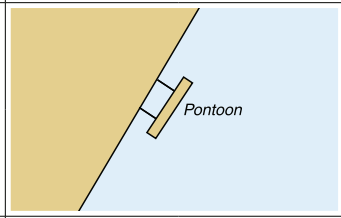
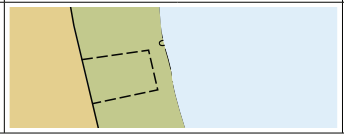
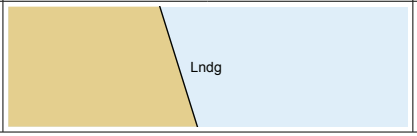
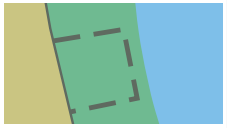
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
30.3	Radar Sc	Radar scanner					Radar scanner
30.4	Radome	Radome	DOME (RADAR) Dome (Radar)	RADOME Radome			Dome
31		Dish aerial	ANT (RADAR) Ant (Radar)				Dish aerial
32	Tanks	Tanks	TANK Tk				Tank Tank farm
33	Silo Silo	Silo	SILO Silo ELEVATOR Elevator				Silo
34.1		Fortified structure (on large scale charts)					Fortified structure
34.2		Castle, Fort, Blockhouse (on small scale charts)					Fortified structure
34.3		Battery, Small fort (on small scale charts)					
35.1		Quarry (on large scale charts)					Quarry area
35.2		Quarry (on small scale charts)					Quarry
36		Mine					
37.1		Recreational vehicle site					
37.2		Camping site (including recreational vehicles)					
Supplementary National Symbols							
a		Muslim shrine	†				
b		Tomb	†				
c		Watermill	†				

E Landmarks

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
d		Factory	Facty				
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 Breakwater as an area
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

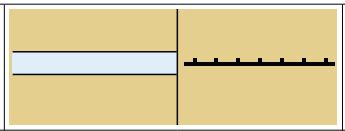
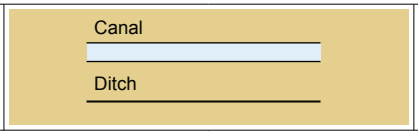
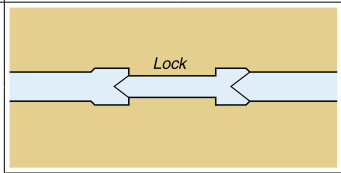
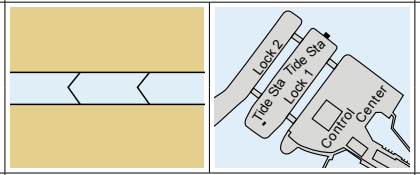
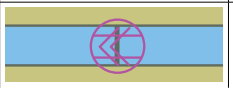
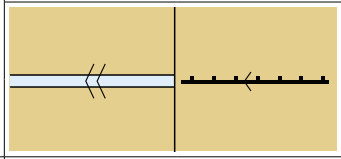
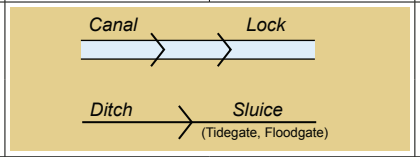
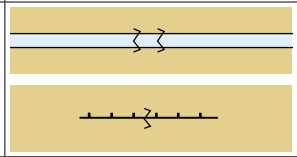
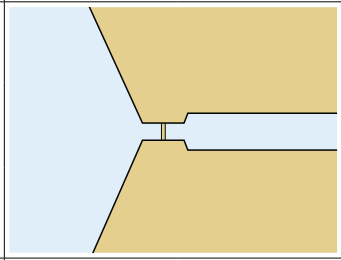
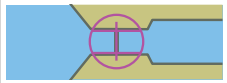
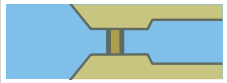
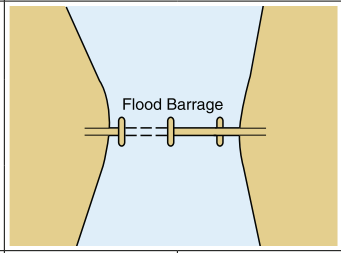
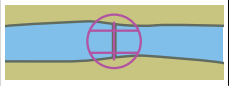
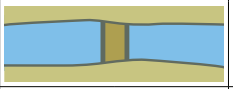
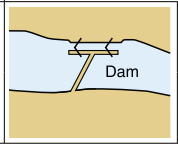
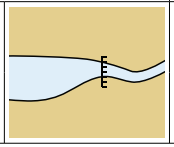
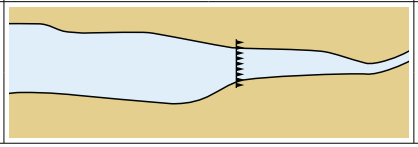
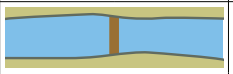
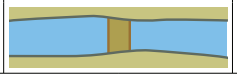
F Ports

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
6		Groin (partly submerged at high water)					Groin (intertidal)
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					Wharf (quay)
14		Pier, Jetty					Pier (jetty), promenade pier
15		Promenade pier					
16		Pontoon				 	Pontoon as a line Pontoon as an area
17		Landing for boats					Landing

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
18		Steps, Landing stairs			Steps		Landing steps
19.1	4 B A 54	Designation of berth	3 A 3			Nr 3	Berth number
19.2	V	Visitors' berth					Yacht harbor, marina
19.3		Dangerous cargo berth					
20	Dn Dns	Dolphin	Dol † Dol (Great Lakes)	Dn Dol			Mooring dolphin
21		Deviation dolphin					Deviation mooring dolphin
22		Minor post or pile	Pile † Pile (Great Lakes)				Pile or bollard
23	Slip Ramp Patent slip	Slipway, Patent slip, Ramp					Slipway, ramp
24		Gridiron, Scrubbing grid, Careening grid					Gridiron
25		Dry dock, Graving dock					Dry dock
26	Floating Dock	Floating dock					Floating dock as a line Floating dock as an area
27	7.6m	Non-tidal basin, Wet dock					Wet dock and gate

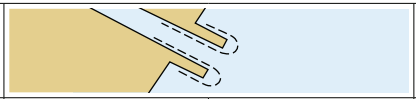
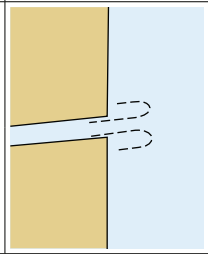
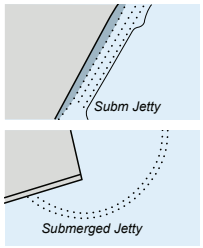
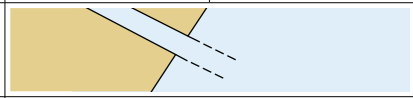
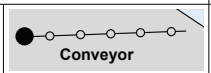
F Ports

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
28		Tidal basin, Tidal harbor					Dock
							Dock, under construc-tion or ruined
29.1	Log Pond	Floating barrier, e.g. security, containment booms (ice, logs, oil), shark nets: - with supports - without supports					Floating hazard Boom Floating oil barrier, oil retention (high pressure pipe) Boom, floating obstruction
	Floating Barrier						
29.2	Bubble Curtain	Bubble curtain (bubbler, pneumatic pipe)					Floating oil barrier, oil retention (high pressure pipe)
30	Dock under construction (2011)	Works on land, with year date					Ruin or works under construction Year and condition of under construction or ruin is obtained by cursor pick
31	Area under reclamation (2011)	Works at sea, Area under reclamation, with year date	Under construction (2011)	Under constr			
32	Under construction (2011) Works in progress (2011)	Works under construction, with year date	Under constr (2011)				
33.1	Ru	Ruin	Ruins				
33.2	Pier (ru)	Ruined pier, partly submerged at high water	Pier				Pier, ruined and partly submerged
34	Hulk / *Hulk*	Hulk	Hk / *Hk*				Hulk

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

F Ports

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Transhipment Facilities						Supplementary national symbols: e–f	
Roads → D	Railways → D	Tanks → E					
50	RoRo	Roll-on, Roll-off Ferry Terminal (RoRo Terminal)				RoRo	RoRo terminal
51	2 3 2 3	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	(3t)	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	(50 t)	Container crane (with lifting capacity)	†	Crane Crane			Crane, visually conspicuous as an area
Public Buildings						Supplementary national symbol: g	
60		Harbormaster's office	Hbr Mr				Conspicuous single building
61		Custom office	■ Cus Ho				Conspicuous single building
							Customs
62.1		Health office, Quarantine building	† Health Office				Conspicuous single building
62.2	Hospital	Hospital	■ Hosp				
63	†	Post office	■ PO				

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				
g		Conveyor				

H Tides, Currents

Terms Relating to Tide Levels

INT Terms		
No.	**Term**	**Description**
1	CD	Chart Datum, Datum for sounding reduction
2	LAT	Lowest Astronomical Tide
3	HAT	Highest Astronomical Tide
4	MLW	Mean Low Water
5	MHW	Mean High Water
6	MSL	Mean Sea Level
8	MLWS	Mean Low Water Springs
9	MHWS	Mean High Water Springs
10	MLWN	Mean Low Water Neaps
11	MHWN	Mean High Water Neaps
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

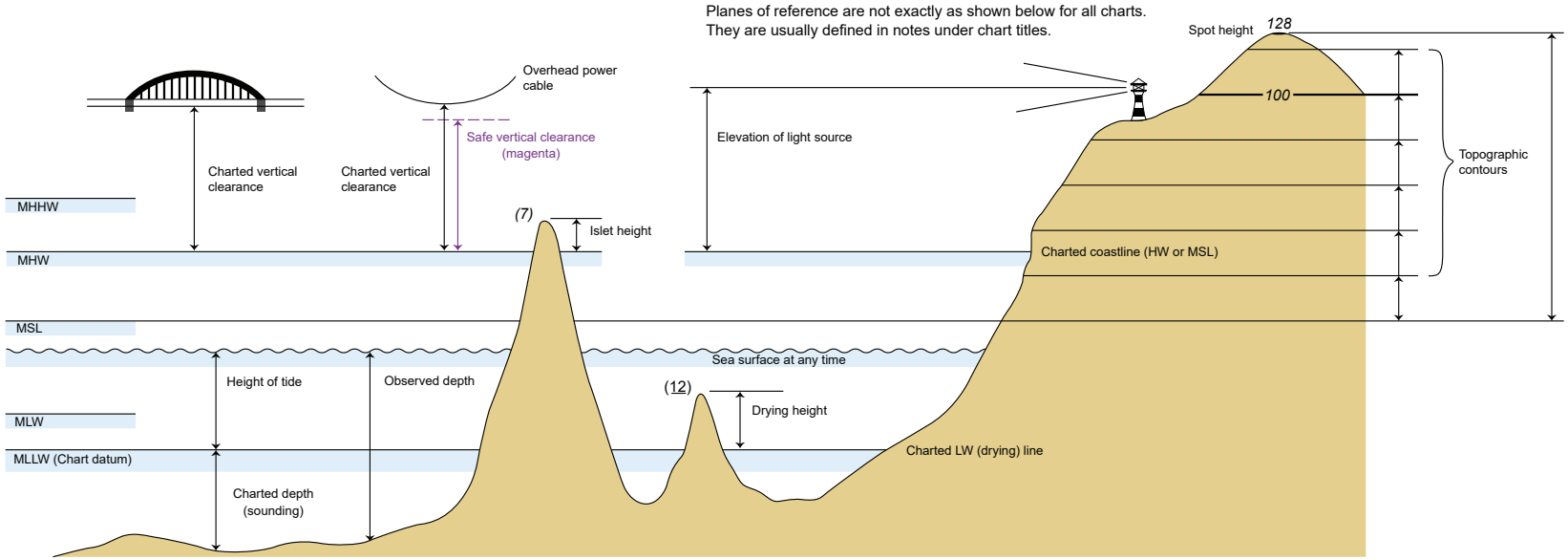
Supplementary National Terms (see l–t for other terms and symbols)		
No.	Term	Description
a	HW	High Water
b	HHW	Higher High Water
c	LW	Low Water
d	LWD	Low Water Datum
e	LLW	Lower Low Water
f	MTL	Mean Tide Level
g	ISLW	Indian Spring Low Water
h	HWF&C	High Water Full and Change (Vulgar establishment of the port)
i	LWF&C	Low Water Full and Change
j	CRD	Columbia River Datum
k	GCLWD	Gulf Coast Low Water Datum

No.

Tidal Levels and Charted Data

Tide Gauge → T

20



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. 30

INT

Tidal Levels referred to datum of soundings

Place	Lat N	Long E	Heights in metres above datum			
			MHWS	MHWN	MLWN	MLWS
Norderney, Riffgat	53°42′	7°09′	3.2	2.8	0.9	0.4
Langeoog	53°43′	7°30′	3.4	3.0	0.9	0.4
			MHHW	MLHW	MHLW	MLLW

Description

Tabular statement of semi-diurnal or diurnal tides

Note: The order of the columns of levels will be the same as that used in national tables of tidal predictions.

NOAA

TIDAL INFORMATION

PLACE		Height referred to datum of soundings (MLLW)		
NAME	(LAT/LONG)	Mean Higher High Water	Mean High Water	Mean Low Water
		feet	feet	feet
Baltimore, Ft. McHenry	39°16'N/76°35'W)	1.7	1.4	0.2
Annapolis, U.S. Naval Academy	38°59'N/76°29'W)	1.4	1.2	0.2
Washington D.C., Washington Channel	38°52'N/77°01'W)	3.2	2.9	0.1

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.	INT	ECDIS	
31	Tidal stream table Tidal streams referred to . . .		Point or area for which a tidal stream table is available Boundary of an area for which there is tidal information

Hours		Geographical Position	
Before High Water	6	Directions of streams (degrees)	Rates at spring tides (knots) / Rates at neap tides (knots)
	5		
	4		
	3		
	2		
	1		
High Water			
After High Water	1		
	2		
	3		
	4		
	5		
	6		

	A 53°51.2′N 7°17.8′E		
−6	261	0.8	0.7
−5	170	0.2	0.1
−4	097	1.1	0.8
−3	095	1.5	1.2
−2	094	1.3	1.1
−1	092	1.0	0.9
0	081	0.7	0.6
+1	038	0.3	0.2
+2	291	0.6	0.4
+3	277	1.0	0.8
+4	270	1.2	1.0
+5	267	1.1	1.0
+6	264	1.0	0.9

Tidal Streams and Currents

Supplementary national symbols: m–t

Breakers → K Tide Gauge → T

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
40	3.0 kn	Flood tide stream with mean spring rate				2.5 kn ? ? 	Flood stream, rate at spring tides Current or tidal stream whose direction is not known Boundary of an area for which there is tidal information
41	2.8 kn	Ebb tide stream with mean spring rate				2.5 kn ? ? 	Ebb stream, rate at spring tides Current or tidal stream whose direction is not known Boundary of an area for which there is tidal information

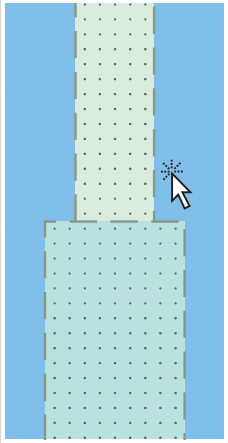
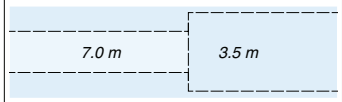
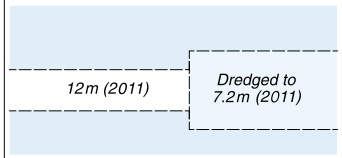
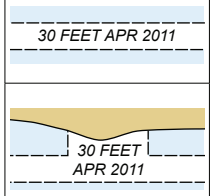
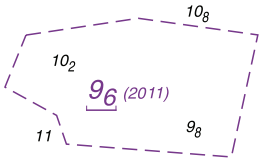
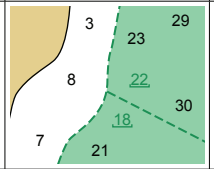
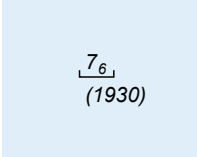
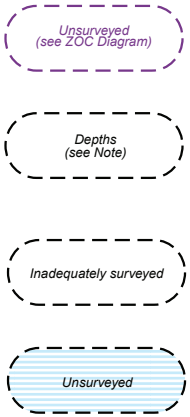
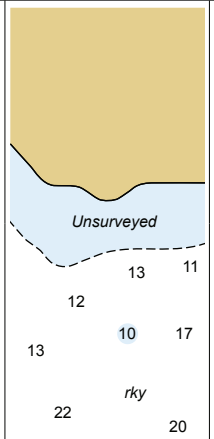
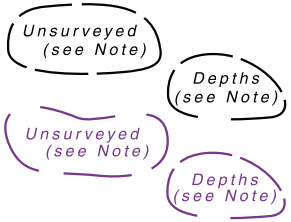
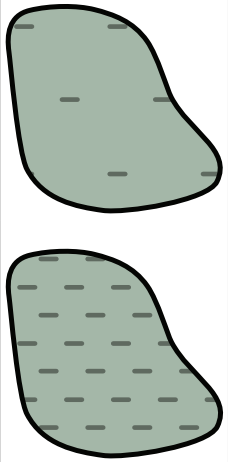
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
42		Current in restricted waters				2.5 kn	Non-tidal current
43	2.5 – 4.5 kn Jan – Mar (see Note)	Ocean current with rates and seasons			(see Note)		
44		Overfalls, tide rips, races	Tide rips symbol used only in small areas				Overfalls, tide rips; eddies; breakers as point, line, and area
45		Eddies	Eddies symbol used only in small areas				
46	A	Position of tabulated tidal stream data with designation					Point for which a tidal stream table is available
47	a	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	2 kn				
n		Velocity, Rate	vel				
o		Knots	kn				
p		Height	ht				
q		Flood	fl				
u		Gulf Stream Limits	Approximate location of Axis of Gulf Stream				

I Depths

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
General							
1	*ED*	Existence doubtful				25	Sounding of low accuracy
2	*SD*	Sounding of doubtful depth				25 212 ✕	Sounding of low accuracy Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour
3.1	*Rep*	Reported, but not confirmed				25 ? - - - - -	Sounding of low accuracy Point feature or area of low accuracy Low accuracy line demarking area wreck or obstruction
3.2	*Rep (2011)*	Reported (with year of report), but not confirmed				- - - - -	Low accuracy line demarking foul area
4	*184* *212*	Reported, but not confirmed sounding or danger (on small scale charts only)				● 25 5 212 ✕ ?	Obstruction, depth not stated Sounding of low accuracy 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 Point feature or area of low accuracy

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	12 9_7	Sounding in true position (NOAA shows fathoms and feet with vertical numbers and meters with sloping numbers)	12 3_2 $2\frac{1}{2}$			9_7 30	Sounding shoaler than or equal to safety depth Sounding deeper than safety depth
11	(4_8) +(12) 3375	Sounding out of position	(23) 3375			Depths are always shown in their true position in ECDIS	
12	(4_7)	Least depth in narrow channel	(4_7)				
13	$\overline{200}$	No bottom found at depth shown				200	Status of no bottom found is obtained by cursor pick
14	12 9_7	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)				12	Sounding of low accuracy
15		Drying heights and contours above chart datum				4	Drying height, less than or equal to safety depth
16		Natural watercourse (in intertidal area)					Tideway

I 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 minimum depth regularly maintained					
22		Dredged channel or area with depth and year of the latest control survey					
24		Area swept by wire drag. The depth is shown at chart datum. (The latest date of sweeping is shown in parentheses.)					Swept area
25		Unsurveyed or inadequately surveyed area; area with inadequate depth information					Incompletely surveyed area Unsurveyed area

ECDIS Portrayal of Depths

ECDIS

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

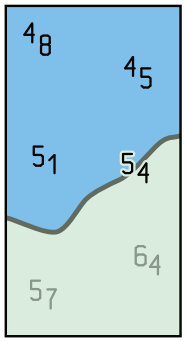
Soundings

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



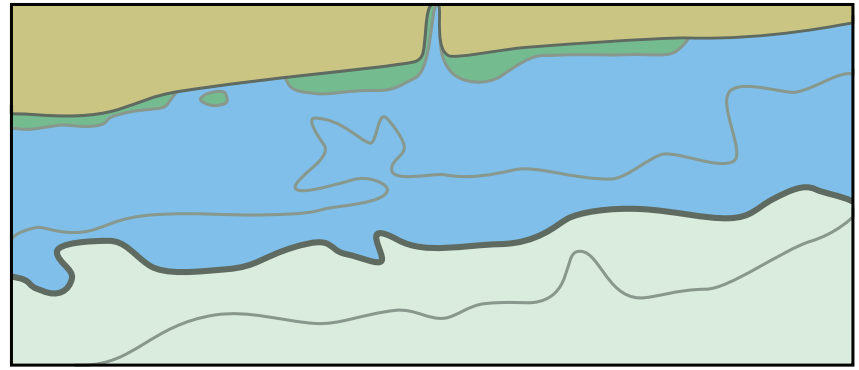
ECDIS depth contour labels are not centered and oriented along isolines as they appear on paper charts. They are displayed upright and may appear either on or next to the contour lines that they describe. The labels are black and the same size as soundings, but the labels have a light "halo" to set them 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.

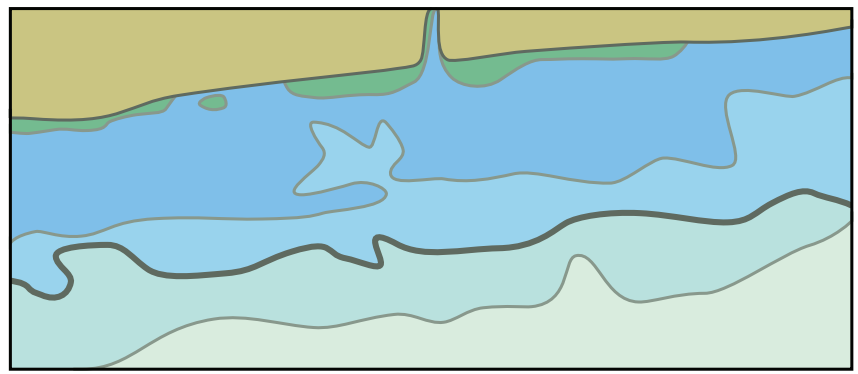
Two or Four Tints for Shading Depth Areas

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.

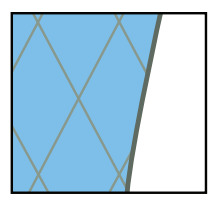


Portrayal of Depth Areas with 2 Color Settings

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.

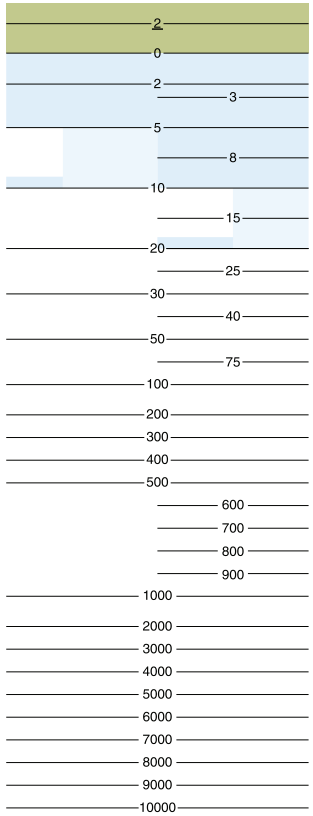
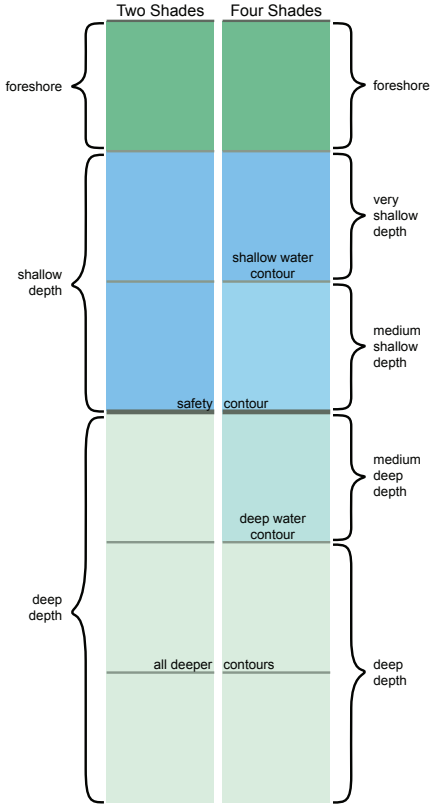
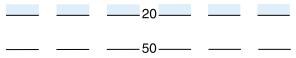
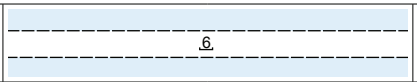
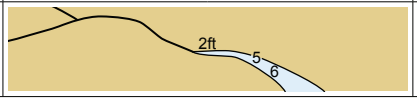


Portrayal of Depth Areas with 4 Color Setting



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.

I Depths

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Depth Contours							
30		Drying contour Low water line 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. On some charts, contours and values are printed in blue.					
31		Approximate depth contours					Approximate depth contour Approximate safety depth contour
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
13.3	Sg	Seagrass					

J Nature of the Seabed

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
14		Sandwaves	*Sandwaves*				Sand waves as a point Sand waves as a line Sand waves as an area
15		Spring in seabed	*Spring*				Spring
Types of Seabed, Intertidal Areas							
20	G St	Area with stones and gravel	*Gravel*			gravel stone	Areas of gravel and stone
21	1_2 S $*(4_2)$	Rocky area, which covers and uncovers		*Rock*			Rocky ledges or coral reef
22	S $*(1_6)$ (4_2)	Coral reef, which covers and uncovers	*Coral*				
Qualifying Terms						Supplementary national symbols: ah–bf	
30	*f*	Fine (only used in relation to sand)					
31	*m*	Medium (only used in relation to sand)					
32	*c*	Coarse (only used in relation to sand)					
33	*bk*	Broken					
34	*sy*	Sticky					
35	*so*	Soft					
36	*sf*	Stiff					
37	*v*	Volcanic	*vol*				
38	*ca*	Calcareous	*Ca*				Rocky ledges or coral reef
39	*h*	Hard					

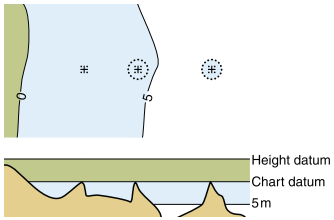
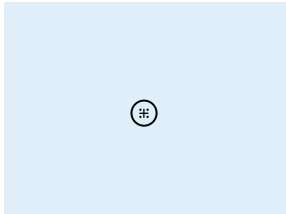
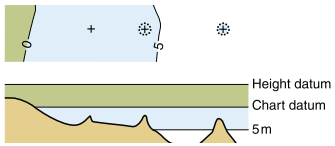
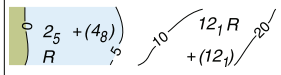
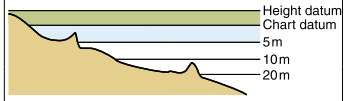
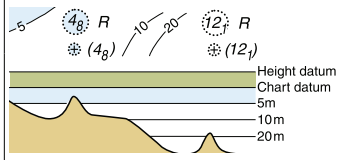
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Supplementary National Abbreviations						
a		Ground	*Grd*			
b		Ooze	*Oz*			
c		Marl	*Ml*			
d		Shingle	*Sn*			
f		Chalk	*Ck*			
g		Quartz	*Qz*			
h		Schist	*Sch*			
i		Coral head	*Co Hd*			
j		Madrepores	*Mds*			
k		Volcanic ash	*Vol Ash*			
l		Lava	*La*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

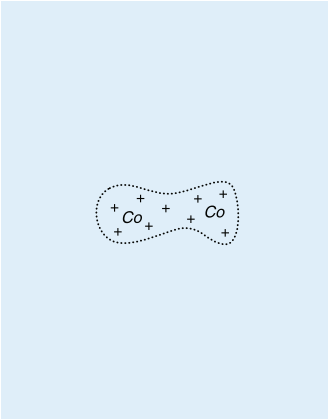
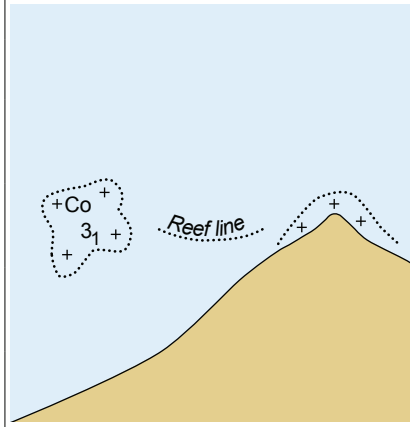
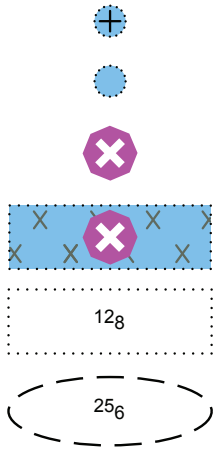
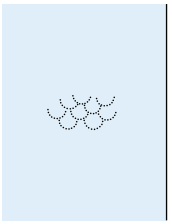
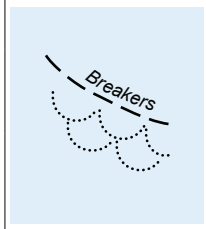
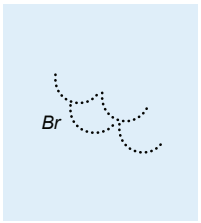
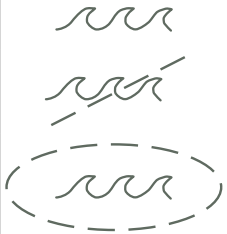
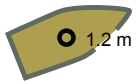
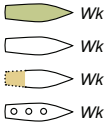
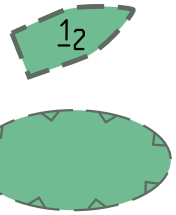
J Nature of the Seabed

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

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	$\underline{7_5}$	Depth swept by wire drag or confirmed by diver (This symbol may be combined with other symbols, e.g. wrecks, obstructions, wells.)	$\underline{21}$ Rk $\underline{35}$ Rk $\underline{4_6}$ Obstn $\underline{4_6}$ Wk $\underline{4_6}$ Wk (1937)	$\underline{\#}$ (15_7)		4 21	Swept sounding, less than or equal to safety depth Swept sounding, greater than safety depth
3	$\overline{20}$	Safe clearance depth. The exact depth is unknown, but is estimated to have a safe clearance at the depth shown	$\overline{4_6}$ Wk $\overline{35}$ Rk $\overline{4_6}$ 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	4,1 (3,1) (1,7) Height datum Chart datum	Rock (islet) which does not cover, height above height datum	25 (21)		(4 m)	8 m	Land as a point at small scale Land as an area, with an elevation or control point
11	$\underline{3_7}$ $\underline{2_7}$ $(\underline{1_6})$ $(\underline{1_6})$ Height datum Chart datum 5m	Rock which covers and uncovers, height above chart datum	(2) (2) 4	(0_6) Uncov 1m (0_6) Uncov 1m		4	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

K Rocks, Wrecks Obstructions and Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
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
13		Underwater rock of unknown depth, dangerous to surface navigation				 	Dangerous underwater rock of uncertain depth Isolated danger of depth less than the safety contour
14		Underwater rock of known depth					
14.1		inside the corresponding depth area	12 *Rk*	*27 Rk* *21* *R*		 	Underwater hazard with a depth of 20 meters or less Underwater hazard with depth greater than 20 meters
14.2		outside the corresponding depth area, dangerous to surface navigation	5 *Rk*	4_2 *Rk* 5_R		 	Underwater hazard with depth greater than 20 meters Isolated danger of depth less than the safety contour
15	*35* *R*	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 Underwater hazard with depth greater than 20 meters

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
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
Wrecks and Fouls							
Plane of Reference for Depths → H							
20		Wreck, hull never covers, on large scale charts, height above height datum					Wreck, always dry, with height shown
21		Wreck, covers and uncovers, on large scale charts, height above chart datum					Wreck, covers and uncovers Distributed remains of wreck

K Rocks, Wrecks Obstructions and Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
22	5 2 Wk 6 5 Wk	Submerged wreck, depth known, on large scale charts			9 Wk	5 2 25 	Submerged wreck with depth of 20 meters or less Submerged wreck with depth greater than 20 meters Distributed remains of wreck
23	Wk	Submerged wreck, depth unknown, on large scale charts		Hk	Wk Wk Wk		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			Wk Wk Wk Wk		Wreck showing any portion of hull or superstructure at level of chart datum
25	Masts	Wreck of which the mast(s) only are visible at chart datum	Masts	Mast (10ft) Funnel			
26	4 6 Wk 25 Wk	Wreck, least depth known by sounding only			(11)	5 25 	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
27	4 6 Wk 25 Wk	Wreck, depth swept by wire drag or confirmed by diver	25 Wk			4 6 25 	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

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
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	25 Wk	Wreck over which the exact depth is unknown, but which is estimated to have a safe clearance at the depth shown.			4 Wk	5 25	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	#	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	Obstn Obstn	Obstruction, depth unknown					Obstruction, depth not stated Isolated danger of depth less than the safety contour Safe clearance shoaler than safety contour

K Rocks, Wrecks Obstructions and Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
41	4 Obstn 16 Obstn	Obstruction, least depth known by sounding only				5 25 	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	4 Obstn 16 Obstn	Obstruction, depth swept by wire drag or confirmed by diver				4 21 swept depth Method of depth measurement is obtained by cursor pick 5 25 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	Obstn	Stumps of posts or piles, wholly submerged		Piles			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)					
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

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
45	Fish traps Tunny nets	Fish trap area, Tunny nets area					Fish trap, fish weir, tunny net as an area
46.1		Fish haven	Obstn Fish Haven	(actual shape)			Isolated danger of depth less than the safety contour Safe clearance shoaler than safety contour
46.2	2_4 (2_4)	Fish haven with minimum depth	Obstn Fish Haven (auth min 42ft)			5 25 12_8 25_6	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 Safe clearance shoaler than safety contour Safe clearance deeper than safety contour Safe clearance deeper than 20 meters
47		Shellfish beds					Marine farm as a point
48.1		Marine farm (on large scale charts), area of marine farms		Marine Farm			Marine farm as an area
48.2		Marine farm (on small scale charts)		Obstn (Marine Farm) Marine Farm			
Supplementary National Symbols							
a		Rock which covers and uncovers, (height unknown)	*				

K Rocks, Wrecks Obstructions and Aquaculture

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
b		Shoal sounding on isolated rock or rocks	5 Rk 21 Rks		9 R 2 r 2 P (8)		
c		Sunken wreck covered 20 to 30 meters					
d		Submarine volcano	Sub vol				
e		Discolored water	Discol water				
f		Sunken danger, least depth cleared by wire drag	21 Rk 4 6 35 Rk 4 6 Obstn				
g		Reef of unknown extent	Reef				
h		Coral reef, detached (uncovers at sounding datum)	Co	Co Coral Co Co			
i		Submerged crib	Subm Crib	Crib			
j		Crib, duck blind (above water)	Duck Blind Crib				
k		Submerged duck blind	Duck Blind				
l		Submerged platform	Subm platform	Platform			
m		Coral reef which covers and uncovers		Hay Reef 2			
n		Sinkers		Sinkers 13 14 15			
o		Foul area, foul with rocks or wreckage, dangerous to navigation	Foul Wks Wreckage				
p		Unexploded ordnance	Unexploded Ordnance	Unexploded Ordnance			
q		Float	Float				
r		Stumps of posts or piles, which cover and uncover	Subm piles				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
General							
Areas, Limits → N							
1	*Ekofisk Oilfield*	Name of oilfield or gasfield		CORRIB GAS FIELD Well 348 Well 346 Well 334 334 Well			Area to be navigated with caution, name is obtained by cursor pick
2	Z-44	Platform with designation/name		"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	18	Wind turbine, floating wind turbine, vertical clearance under blade			Fl.Y		Wind motor visually conspicuous
5.2		Offshore wind farm					Wind farm (offshore)
		Offshore wind farm (floating)					
6		Wave farm, Renewable energy device					Wave farm
Platforms and Moorings							
Mooring Buoys → Q							
10		Production platform, Platform, Oil derrick					Offshore platform
11	Fla	Flare stack (at sea)					Conspicuous flare stack on offshore platform

L Offshore Installations

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
12	SPM	Single Point Mooring (SPM), including Single Anchor Leg Mooring (SALM), Articulated Loading Column (ALC)		"Name"			Offshore platform, name and status of disused is obtained by cursor pick
14	Ru Z-44 (ru)	Disused platform with superstructure removed			(disused)		
16		Single Buoy Mooring (SBM), Oil or gas installation buoy including Catenary Anchor Leg Mooring CALM)					Installation buoy and mooring buoy, simplified Installation buoy, paper chart
17		Moored storage tanker, Accommodation vessel		*Tanker*			Offshore platform
18		Mooring ground tackle					Ground tackle
Underwater Installations						Supplementary national symbol: a	
Plane of Reference for Depths → H		Obstructions → K					
20	*Well*	Submerged production well	*Well (cov 21ft)* *Well (cov 83ft)*	*Well*	15 *Prod Well* *Prod Well*	5 25	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	*Well*	Suspended well, depth over wellhead unknown	*Pipe*				Isolated danger of depth less than the safety contour
21.2	4 *Well* 15 *Well*	Suspended well, with depth over wellhead	*Pipe (cov 24ft)* *Pipe (cov 92ft)*			5 25	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

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; Pipe (1₈)	Above-water wellhead (lit or unlit)	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	† Cable Area				Submarine cable area
31.1		Submarine power cable					
31.2		Submarine power cable area					
32		Disused submarine cable					Status of disused is obtained by cursor pick
Submarine Pipelines							
40.1	Oil; Gas (see Note); Chem; Water	Supply pipeline: unspecified, oil, gas, chemicals, water					Oil, gas pipeline, submerged or on land
40.2	Oil; Gas (see Note); Chem; Water	Supply pipeline area: unspecified, oil, gas, chemicals, water	† Pipeline Area				Submarine pipeline area with potentially dangerous contents

L Offshore Installations

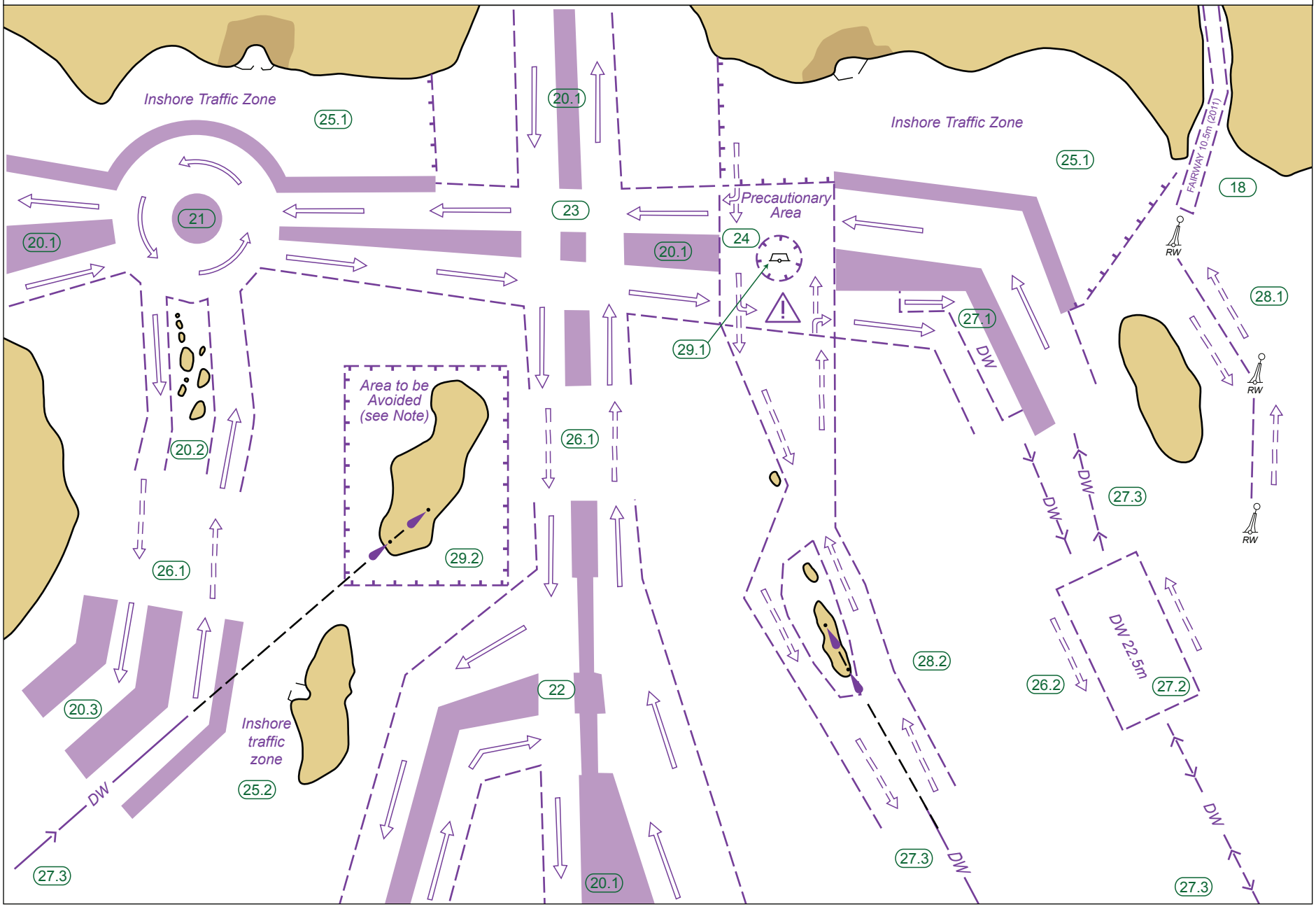
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
41.1	Water Sewer Outfall Intake	Outfall and intake: unspecified, water, sewer, outfall, intake					Water pipeline, sewer, etc.
41.2	Water Sewer Outfall Intake	Outfall and intake area: unspecified, water, sewer, outfall, intake	Pipeline Area				Submarine pipeline area with generally non-dangerous contents
42.1	Buried 1.6m	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	Obstn	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)	Well Well	Well			
b		Potable water intake	PWI Depth over Crib 17 ft	Crib			

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Tracks						Supplementary national symbols: a–c
Tracks Marked by Lights → P		Leading Beacons → Q				
1	270.5° 2 Bns ≠ 270.5°	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 270 deg One-way 270 deg Two-way
2	270.5° Island open of Headland 270.5°	Transit (other than leading line), clearing line		Beacons in line 090°	Bns in line 270.5°	270 deg Clearing line; transit line
3	090.5°– 270.5°	Recommended track based on a system of fixed marks		Lights in line 090°		Non-regulated, recommended track based on fixed marks Direction not encoded 90 deg One-way 270 deg Two-way
4	090.5°– 270.5°	Recommended track not based on a system of fixed marks				Non-regulated, recommended track not based on fixed marks Direction not encoded 90 deg One-way 270 deg Two-way
5.1	DW (see Note)	One-way track and DW track based on a system of fixed marks				Based on fixed marks, one-way 90 deg Non-regulated recommended track DW Deep water route
5.2	270° DW	One-way track and DW track not based on a system of fixed marks				Not based on fixed marks, one-way 90 deg Non-regulated recommended track DW Deep water route centerline
6	7.0m 7.3m	Recommended track with maximum authorized (or recommended) draft stated		7 m 7_3 m		If encoded, the shoalest depth range value along the track is obtained by cursor pick

M Tracks, Routes

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))	*RESTRICTED AREA*				
15		Limit of routing measure					Traffic separation scheme boundary
16	*Precautionary Area*	Precautionary area					Traffic precautionary area as a point Traffic precautionary area as an area
17	*ASL (see Note)*	Archipelagic Sea Lane (ASL); axis line and limit beyond which vessels shall not navigate					Axis and boundary of archipelagic sea lane
18	*FAIRWAY 7.3m* *FAIRWAY <7.3m>*	Fairway designated by regulatory authority: with minimum depth with maximum authorized draft (may be highlighted by gray tint)	*SAFETY FAIRWAY 166.200 (see note A)*				Fairway, depth is obtained by cursor pick

Examples of Routing Measures on Paper/Raster Charts



M Tracks, Routes

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

Examples of Routing Measures in ECDIS

M Tracks, Routes

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Radar Surveillance Systems							
30	Radar Surveillance Station	Radar surveillance station	Ra				Radar station
31	Ra Cuxhaven	Radar range					Radar range
32.1	Ra	Radar reference line			Ra Ra	270 deg	Radar line
						Non-regulated recommended track based on fixed marks	
32.2	Ra 090°–270°	Radar reference line coinciding with a leading line				?	Direction not encoded
						90 deg	One-way
						270 deg	Two-way
Radio Reporting Points							
40.1	B 7 VHF 80	Radio reporting (calling-in or way) points showing direction(s) of vessel movement with designation (if any) and VHF-channel				Nr 13 ch 74	Radio calling-in point for traffic in one direction only
						Nr 13 ch 74	Radio calling-in point for traffic in both directions
						? Nr 13 ch 74 ?	Radio calling-in point, direction not encoded
40.2		Radio reporting line				Nr 13 ch 74	Radio calling-in point for traffic in one direction only
						Nr 13 ch 74	Radio calling-in point for traffic in both directions
						? Nr 13 ch 74 ?	Radio calling-in point, direction not encoded

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Ferries						
50		Ferry	Ferry Ferry			Ferry route
51	Cable Ferry	Cable Ferry	Cable Ferry			Cable ferry route
Supplementary National Symbols						
a		Recommended track for deep draft vessels (track not defined by fixed marks)	DW			
b		Depth is shown where it has been obtained by the cognizant authority	DW 83ft DW 76ft			
c		Alternate course				

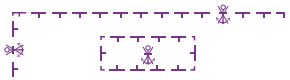
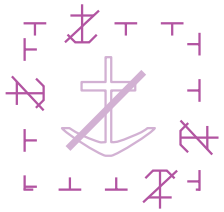
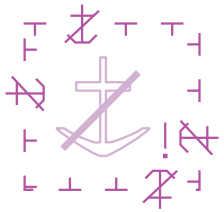
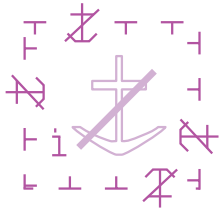
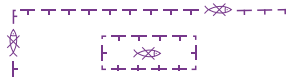
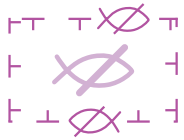
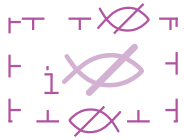
N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
General *							
Dredged and Swept Areas → I		Submarine Cables, Submarine Pipelines → L		Tracks, Routes → M			
On multi-colored charts, symbols in Section N may be in green when associated with environmental areas.							
1.1	Tint band may vary in width between 1–5 mm	Maritime limit in general usually implying permanent physical obstructions tint band for emphasis)				Caution area, a specific caution note applies	
1.2		usually implying no permanent physical obstructions tint band for emphasis)					
2.1		Limit of restricted area tint band for emphasis)	RESTRICTED AREA			Area where entry is prohibited or restricted or to be avoided	
2.2	Entry Prohibited	Limit of area into which entry is prohibited	PROHIBITED AREA PROHIBITED AREA			Area where entry is prohibited or restricted or to be avoided, with other cautions Area where entry is prohibited or restricted or to be avoided, with other information	
Anchorages, Anchorage Areas							
10		Reported anchorage (no defined limits)					Anchorage area as a point at small scale, or anchor points of mooring trot at large scale
11.1	A E 53 14	Anchor berths	14		6 No 1	Nr 6	Anchor berth
11.2	A E 53 14	Anchor berths with swinging circle	D-17	D17		Radius of swing circle is obtained by cursor pick	

* 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.

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
12.1		Anchorage area in general		Anchorage			Type of anchorage area is obtained by cursor pick
12.2	No 1	Numbered anchorage area	ANCH NO 1 110.000 (see note A)	Anchorage No. 1			
12.3	Name	Named anchorage area	SOUTH ANCH 110.000 (see note A)	Neufeld Anchorage			
12.4	DW	Deep water anchorage area, Anchorage area for deep draft vessels		DW Anchorage			
12.5	Tanker	Tanker anchorage area		Tanker Anchorage			
12.6	24 h	Anchorage area for periods up to 24 hours					
12.7		Dangerous cargo anchorage area	EXPLOSIVES ANCHORAGE				
12.8		Quarantine anchorage area	QUAR ANCH QUARANTINE ANCHORAGE	Quarantine Anchorage			
12.9	Reserved (see Note)	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				Seaplane landing area
14		Anchorage for seaplanes					Type of anchorage area is obtained by cursor pick

N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Restricted Areas						Supplementary national symbols: d, e, g	
On multi-colored charts, the magenta symbols may be in green when associated with environmental areas.							
20		Anchoring prohibited	*ANCH PROHIBITED*	ANCH PROHIB			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	*FISH PROHIBITED*	*FISH PROHIB*			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

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
21.2		Diving prohibited					Area where diving is prohibited
22		Environmentally Sensitive Sea Areas Bird sanctuary				ESSA	Environmentally Sensitive Sea Area ESSA)
		Seal sanctuary					Area with minor restrictions or information notices
	Note: Other animal silhouettes (e.g. seahorses, penguin, petrel) may be used, as appropriate.						
	MR	Non-specific nature reserve, National parks, Marine Reserves MR)		MR			
	PSSA Tint band may vary in width between 1–5 mm	Particularly Sensitive Sea Area PSSA)		PSSA		PSSA	PSSA

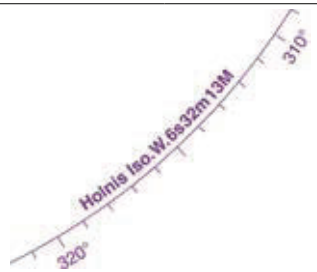
N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
23.1	Explosives Dumping Ground	Explosives dumping ground, individual mine or explosive	EXPLOSIVES DUMPING AREA				Explosives or chemical dumping ground as a point
23.2	Explosives Dumping Ground (disused)	Explosives dumping ground disused), Foul (explosives)	EXPLOSIVES DUMPING AREA DISUSED				Explosives or chemical dumping ground as an area
24	Dumping Ground for Chemicals	Dumping ground for chemical waste	Dump Site	Dumping Ground			
25	Degaussing Range	Degaussing range (DG range)	DEGAUSSING RANGE	DEGAUSSING RANGE			Degaussing area
27	5kn	Maximum speed				If a speed restriction exists, the speed limit is obtained by cursor pick	
Military Practice Areas							
30		Firing practice area					Restricted area
31	Entry Prohibited	Military restricted area, entry prohibited	PROHIBITED AREA	Prohibited Area			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			SUBMARINE EXERCISE AREA		
34	Minefield (see note)	Minefield					Minefield
International Boundaries and National Limits						Supplementary national symbols: a, f, h	
40	CANADA UNITED STATES	International boundary on land					Jurisdiction boundary

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
41	CANADA UNITED STATES	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		Territorial sea
44		Seaward limit of contiguous zone					Contiguous zone
45		Limits of fishery zones					Limits of fishery zone
46	Continental Shelf	Limit of continental shelf					Continental shelf area
47	EEZ	Limit of Exclusive Economic Zone (EEZ)					Exclusive economic zone
48		Customs limit					Custom regulations zone
49	Harbor Limit	Harbor limit		Harbor Limit			Harbor area, symbolized
Various Limits						Supplementary national symbols: a, b	
60.1	(2012)	Limit of fast ice, Ice front (with date)					Continuous pattern for an ice area (glacier, etc.)
60.2	(2012)	Limit of sea ice (pack ice) seasonal (with date)					
62.1	Spoil Ground	Spoil ground	Spoil Area				HO information note
62.2	Spoil Ground (disused)	Spoil ground (disused)	Spoil Area Discontinued				
63	Extraction Area	Extraction (dredging) area					Dredging area
64	Cargo Transhipment Area	Cargo transhipment area					HO information note
65	Incineration Area †	Incineration area					

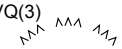
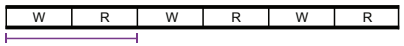
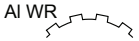
N Areas, Limits

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Supplementary National Symbols						
a		COLREGS demarcation line				
b		Limit of fishing area (fish trap areas)				
c		Dumping ground	Dumping Ground			
d		Dumping area (Dump site)	Disposal Area 92 Depths from survey of 2010 85			
f		Reservation line (Options)				
g		Dump site	Dump Site			
h		Three Nautical Mile Line	THREE NAUTICAL MILE LINE			
i		No Discharge Zone	NO-DISCHARGE ZONE			

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Light Structures and Major Floating Lights							
Minor Light Floats → Q30, 31							
1.1	☆ ★ Lt LtHo	Position of navigation light (size and style of "star" may vary) light, lighthouse	•		☆ ✧ • •		Light, lighthouse, paper chart
1.2	☆	Light on standard charts					
1.3	☆	Significant all-round light, generally for offshore navigation on multicolored charts					
2.1		Lighted offshore platform on standard charts	■ PLATFORM (lighted)				Lighted offshore platform, paper chart
2.2		Lighted offshore platform on multicolored charts					
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*				
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					

P Lights

No.	Abbreviaton INT	Abbreviaton NOAA	Class of Light	Illustration	Period Shown		ECDIS
Light Characters							
Light Characters on Light Buoys → Q							
10.1	F	F	Fixed			F	When text for lights is displayed, ECDIS uses INT abbreviations.
	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)	
10.3	Isophase (duration of light and darkness equal)						
	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	

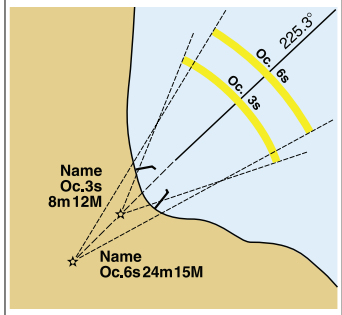
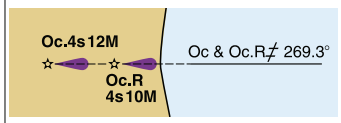
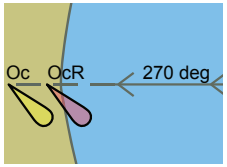
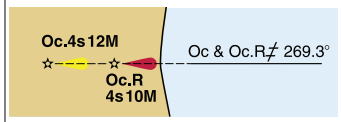
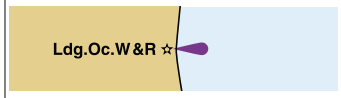
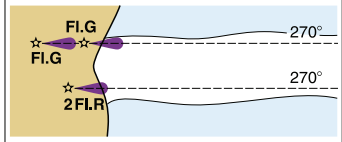
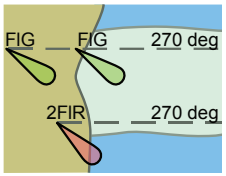
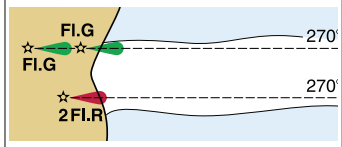
No.	Abbreviaton INT	Abbreviaton NOAA	Class of Light	Illustration / Period Shown		ECDIS
	Very quick (repetition rate of 80 to 159 - usually either 100 or 120 - flashes per minute)					When text for lights is displayed, ECDIS uses INT abbreviations.
10.7	VQ	VQ	Continuous very quick		VQ	
	VQ(3) Example	VQ (3)	Group very quick		VQ(3) 	
	IVQ	IVQ	Interrupted very quick			
	Ultra quick (repetition rate of 160 or more - usually 240 to 300 - flashes per minute)					
10.8	UQ	UQ	Continuous ultra quick			
	IUQ	IUQ	Interrupted ultra quick			
10.9	Mo(K) Example	Mo (K)	Morse code		Mo (K)	
10.10	FFI	F FI	Fixed and flashing		F FI	
10.11	Al.WR	AlWR	Alternating		Al WR 	

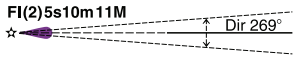
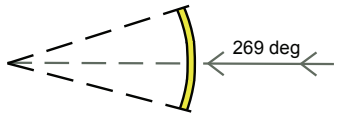
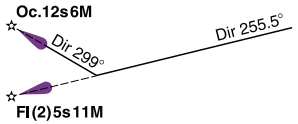
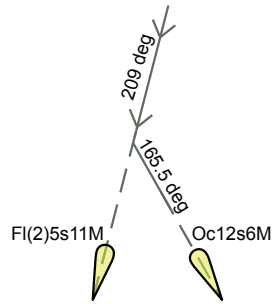
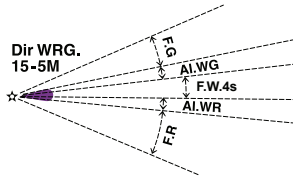
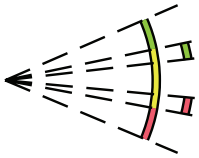
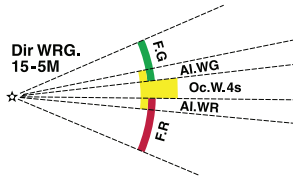
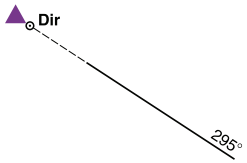
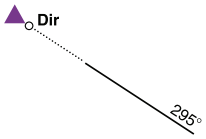
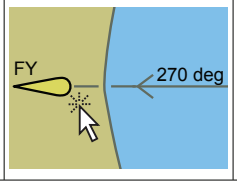
P Lights

No.	INT		Description	NOAA	NGA	Other NGA	ECDIS
Colors of Lights							
11.1	W		White (for lights, only on sector and alternating lights)	Colors of lights shown on standard charts on multicolored charts on multicolored charts at sector lights			Default light symbol if no color is encoded or color is other than red, green, white, yellow, amber, or orange
11.2	R		Red				Red
11.3	G		Green				Green
11.4	Bu		Blue				
11.5	Vi		Violet				
11.6	Y		Yellow				White, yellow, amber or orange
11.7	Y	Or	Orange				Sector lights
11.8	Y	Am	Amber				
Period							When text for lights is displayed, ECDIS uses INT abbreviations.
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 *only lesser of two ranges is charted*		15/10M	
	15-7M		Light with three or more ranges	7M *only least of three ranges is charted*			
Note: Charted ranges are nominal ranges given in Nautical Miles.							
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				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
Example of a Full Light Description						
16	INT Example Name ☆ FI(3)WRG.15s 21m 15-11M		NOAA Example Name • FI (3) WRG 15s 21ft 11M		NGA Example Name • FI (3) WRG 15s 21m 15-11M	FIR15s21m11M
	FI(3)	Class of light: group flashing repeating a group of three flashes	FI(3)	Class of light: group flashing repeating a group of three flashes		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.)
	WRG	Colors: white, red, green, exhibiting the different colors in defined sections	WRG	Colors: white, red, green, exhibiting the different colors in defined sections		
	15s	Period: the time taken to exhibit one full sequence of three flashes and eclipses: 15 seconds	15s	Period: the time taken to exhibit one full sequence of three flashes and eclipses: 15 seconds		Sector lights (as described in the INT, NOAA and NGA examples at left) are depicted graphically in ECDIS, as shown below and in P40.
	21m	Elevation of focal plane above datum: 21 meters	21ft 21m	Elevation of light: 21 feet 21 meters		The description of a sector light or any other type of light may always be obtained by cursor pick.
	15-11M	Nominal range: white 15M, green 11M, red between 15 and 11M	11M 15-11M	Nominal range: shortest range of all the lights is 11M white 15M, green 11M, red between 15 and 11M		
Lights Marking Fairways						
Leading Lights and Lights in Line						
20.1	Name Oc.3s 8m 12M Name Oc.6s 24m 15M 225.3° Oc. 6s Oc. 3s	Leading lights with leading line (solid line is the track to be followed) and arcs of visibility on standard charts Bearing given in degrees and tenths of a degree		205°		Leading lights with sectors 225.3 deg

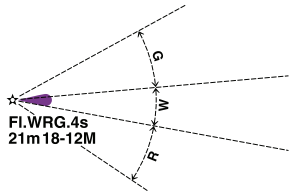
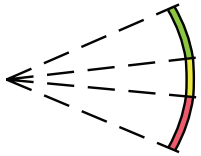
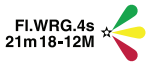
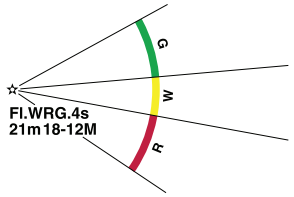
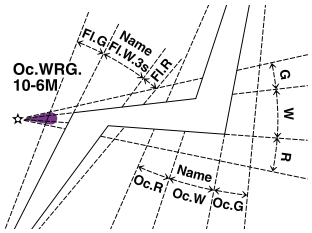
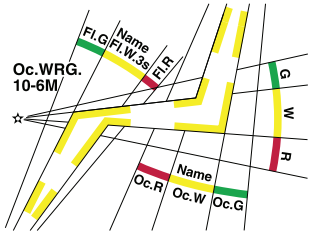
P Lights

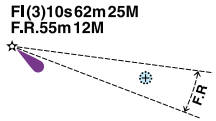
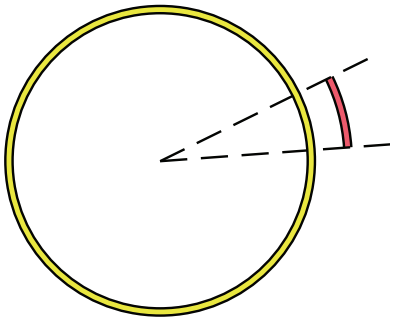
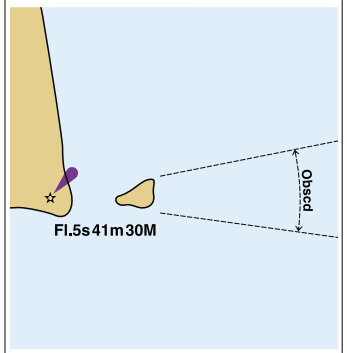
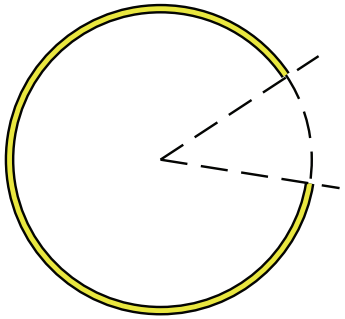
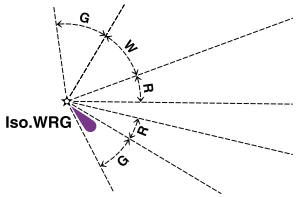
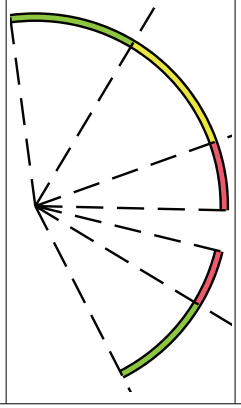
No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
20.2		Leading lights with leading line (solid line is the track to be followed) and arcs of visibility on multi-colored charts Bearing given in degrees and tenths of a degree					
20.3		Leading lights (≠ means lights in line) on standard charts Bearing given in degrees and tenths of a degree					Leading lights
20.4		Leading lights (≠ means lights in line) on multi-colored charts Bearing given in degrees and tenths of a degree					
20.5		Leading lights on small scale standard charts					
20.6		Leading lights on small scale multi-colored charts					
21.1		Lights in line, marking the sides of a channel on standard charts					Lights in line, marking the sides of a channel
21.2		Lights in line, marking the sides of a channel on multi-colored charts					
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		Direction light with narrow sector and course to be followed, flanked by darkness or unintensified light				Directional light with sector 	
30.2		Direction light on standard charts with course to be followed, sector(s) uncharted				Directional light without sector 	
30.3		Direction light with narrow fairway sector flanked by light sectors of different character on standard charts					Light, directional
30.4		Direction light with narrow fairway sector flanked by light sectors of different character on multicolored charts					
31		Moiré effect light (day and night), arrows show when course alteration needed					Category of light as moiré effect is obtained by cursor pick

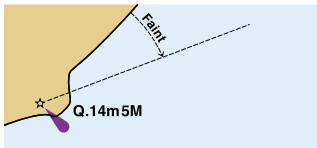
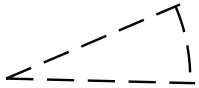
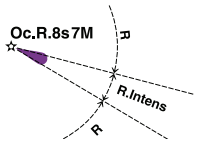
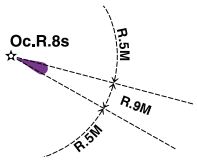
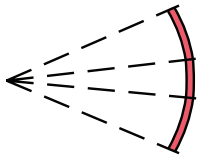
Quoted bearings are always from seaward.

P Lights

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Sector Lights							
40.1		Sector light on standard charts					Light, sector
		Sector light on multicolored charts					
40.2							
40.3		Sector light on standard charts. Sectors not charted					
40.4		Sector lights on multicolored charts. Sectors not charted					
41.1		Sector lights on standard 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					

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
42.1		Main light visible all-round with red subsidiary light seen over danger				Light, danger 
43.1		All-round light with obscured sector				Light, obscured 
44.1		Light with arc of visibility deliberately restricted				 Light, restricted

P Lights

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
45.1		Light with faint sector				 Light, faint
46.1	 	Light with intensified sector				Intensified light visibility is obtained by cursor pick  Light, intensified
Lights with Limited Times of Exhibition						
50	F.R.(occas)	Lights exhibited only when specially needed (for fishing vessels, ferries) and some private lights	Occas	F R (occas)		Status and condition of light is obtained by cursor pick
51	Fl.10s40m27M (F.37m11M Day)	Daytime light (charted only where the character shown by day differs from that shown at night)		F Bu 9m 6M (F by day)		
52	Name Q.WRG.5m10-3M (Fl.5s Fog)	Fog light (exhibited only in fog, or character changes in fog)				
53	† Fl.5s (U)	Unwatched (unmanned) light with no standby or emergency arrangements				
54	(temp)	Temporary				
55	exting)	Extinguished				
56	(man)	Manually activated				
Special Lights						
Flare Stack (as sea) → L	Flare Stack (on land) → E	Signal Stations → T				
60	Aero Al.Fl.WG.7.5s11M	Aero light (may be unreliable)	AERO	AERO Al WG 7.5s 108m 13M	AERO	AeroAlFlWG7.5s11M Light

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
61.1	† Aero F.R.313m11M RADIO MAST (353)	Air obstruction light of high intensity (e.g. on radio mast)		AERO F R 77m 11M		AeroFR313m11M	Conspicuous mast with light
61.2	(89) (R Lts)	Air obstruction light of low intensity (e.g. on radio mast)		TR (RLts)			
62	Fog Det Lt	Fog detector light				Category of light is obtained by cursor pick	
63	Illuminated)	Floodlit, floodlighting of a structure				Floodlight	
64		Strip light				Strip light	
On multicolored charts, P63 and P64 may be any appropriate color.							
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 Fl		
c		Group-Short Flashing			G-S Fl		
d		Fixed and Group Flashing			F Gp Fl		
e		Unmanned light-vessel; light float			*FLOAT*		
f		LANBY, superbuoy as navigational aid					

ECDIS

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 symbol for buoy, simplified
		Default beacon symbol if no other defining attribution is provided				?	Default symbol for a beacon, paper chart
						?	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	G B G G G	Green and black (symbols filled black)	G				
3	R R Y Y R	Single color other than green and black	R				
4	BY GRG BRB	Multiple colors in horizontal bands, the color sequence is from top to bottom	RG				
5	RW RW RW	Multiple colors in vertical or diagonal stripes, the darker color is given first	RW				
6		Retroreflecting material					
Lighted Marks						Supplementary national symbols: p	
Marks with Fog Signals → R						Supplementary national symbols: p	
7	Fl.G G Fl.R R	Lighted marks on standard charts	Fl G	Fl R	Fl R R		
8	Fl.R R Iso RW Fl.G G	Lighted marks on multicolored charts					

Note: On standard charts, the light flares of buoys and beacons are shown in magenta. On multicolored charts, the light flares are shown in the colors of the appropriate light

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)				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.		
								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-shape
								Flag or other shape
								Board, horizontal rectangle
								Cube point up
								Upright cross over a circle
								T-shape
10	No2	Beacon with topmark, color, radar reflector and designation	G "3" Ra Ref			bn No 2		Beacon in general with topmark, paper chart

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
11	No3	Buoy with topmark, color, radar reflector and designation	G N "3"	No 3		by No 3	Conical buoy with topmark, paper chart
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.							
Buoys							
Shapes of Buoys							
Features Common to Buoys and Beacons → Q 1–11							
						Paper Chart / Simplified	
20		Conical buoy, nun buoy, ogival buoy	N				Conical buoy
21		Can buoy or cylindrical buoy	C				Can buoy
22		Spherical buoy	SP				Spherical buoy
23		Pillar buoy; Buoy with no distinctive shape	P				Pillar buoy
24		Spar buoy, spindle buoy	S				Spar buoy
25		Barrel buoy, tun buoy					Barrel buoy
26		Superbuoy					Super-buoy Lanby, super-buoy Super-buoy odas & lanby
Light Vessels and Minor Light Floats							
30.1	Fl.G.3s Name	Light float on standard charts					Light float
30.2	Fl.G.3s Name	Light float on multi-colored charts					
31	† Fl.10s	Light float not part of IALA System					Light float
32		Light vessel					Light vessel, paper chart

Q Buoys, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Mooring Buoys							
Oil or Gas Installation Buoy → L							
40		Mooring buoys					Mooring buoy, can shape, paper chart Mooring buoy, barrel shape, paper chart Istallation buoy and mooring buoy, simplified
41.1	Fl.Y.2.5s	Lighted mooring buoy (example) on standard charts		Fl Y 2s			Mooring buoy with light flare, barrel shape, paper chart
41.2	Fl.Y.2,5s	Lighted mooring buoy (example) on multi-colored charts					
42	1 2	Trot, mooring buoys with ground tackle and berth numbers				Nr 1	Trot, mooring buoys with ground tackle and berth numbers
43		Mooring buoy with telephonic communication		Tel Tel Tel = telegraphic T T T = telephonic			Mooring buoy, can shape, paper chart Mooring buoy, barrel shape, paper chart Installation buoy and mooring buoy, simplified
44	Small Craft Moorings	Numerous moorings (example)	Numerous mooring buoys	(5 buoys) Moorings			Small-craft mooring area
45		Visitors' mooring					Availability of visitor mooring at marina is obtained by cursor pick

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	
Purpose of buoy may be shown by label.							
50	DZ	Firing danger area (Danger Zone) buoy					Conical buoy with topmark, paper chart
54	DG	Degaussing Range buoy					Special purpose buoy, spherical or barrel shaped, or default symbol for special purpose buoy, simplified
58	ODAS ODAS	ODAS buoy (Ocean Data Acquisition System), data collecting buoy	ODAS	ODAS			Super-buoy, paper chart Super-buoy odas & lanby, simplified Spherical buoy, paper chart Spherical buoy, simplified

Q Buoys, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS
70	(priv)	Buoy privately maintained example)	Priv		(occas) (01.04.–31.10.)	Status as private is obtained by cursor pick
71	(Apr–Oct)	Seasonal buoy (example)				Status as periodic and period start and stop dates are obtained by cursor pick
Beacons						
Lighted Beacons → P		Features Common to Beacons and Buoys → Q1–11				
80	Bn	Beacon in general, characteristics unknown or chart scale too small to show	Bn	Bn G Bn R		Default symbol for a beacon, paper chart Default symbol for a beacon, simplified Beacon in general, paper chart
81	BW	Beacon with color, no distinctive topmark	R G RW Bn			Beacon color is obtained by cursor pick
82	R BY BRB	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

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
83	BRB	Beacon on submerged rock with colors (topmark as appropriate)		BRB			Beacon in general with topmark, paper chart Isolated danger beacon, simplified
Minor Impermanent Marks Usually in Drying Areas (Lateral Marks of Minor Channels)							
Minor Pile → F							
90		Stake, pole	† ○ Stake ● Stake † ○ Pole ● Pole	R			Minor, stake or pole beacon, paper chart
91	Port Hand / Starboard Hand	Perch, withy		R			Minor, stake or pole beacon, paper chart Minor red lateral beacon, simplified
92	† / †	Withy					Minor green lateral beacon, simplified
Minor Marks, Usually on Land							
Landmarks → E							
100		Cairn	○ Cairn	⊙ CAIRN			Conspicuous cairn
101	Mk	Colored or white mark					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

Q Buoys, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
102.1	W RW †	Colored topmark (color known or unknown) with function of a beacon					
102.2	RW RW †	Painted boards with function of leading beacons					
Beacon Towers							
110	R G R G BY BRB	Beacon towers without and with topmarks and colors (examples)	RW Bn				Beacon tower, paper chart Beacon tower with topmarks, paper chart Major red lateral beacon, simplified Major green lateral beacon, simplified
111		Lattice beacon					Lattice beacon, paper chart
Special Purpose Beacons							
Leading Lines, Clearing Lines → M							
Note: Topmarks and colors shown where scale permits.							
120		Leading beacons		Bns in line 270°		270 deg	Leading beacons
121		Beacons marking a clearing line		Bns in line 270°		270 deg	Beacons marking a clearing line or transit
122	Measured Distance 1852 m 090°–270°	Beacons marking measured distance with quoted bearings	MARKERS MARKERS COURSE 270°00' TRUE			270 deg 270 deg	Beacons marking measured distance
123	Y	Cable landing beacon (example)		W			Cable landing beacon example)

IALA Maritime Buoyage System

IALA International Association of Marine Aids to Navigation and Lighthouse Authorities

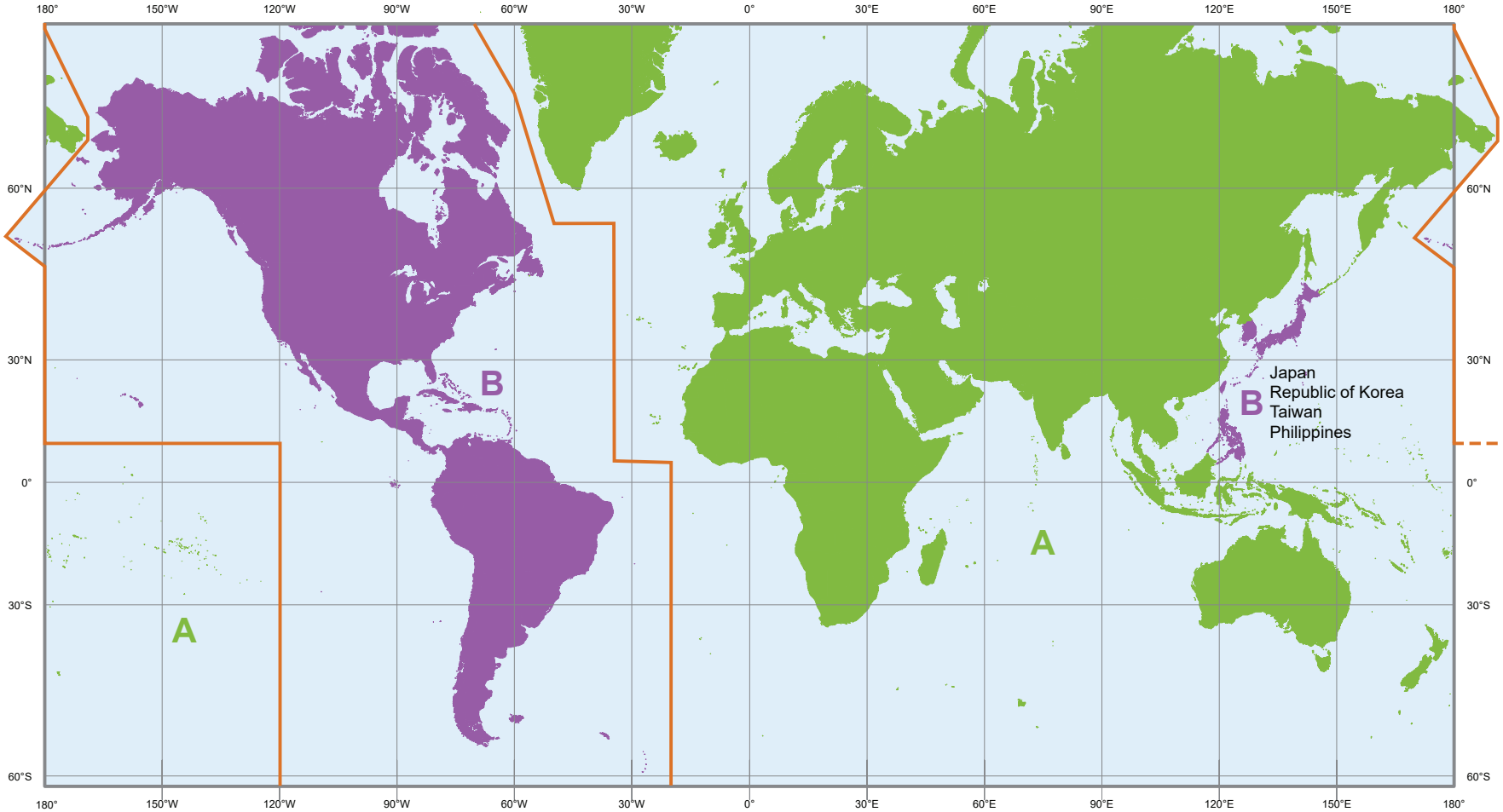
130 Where in force, the IALA System applies to all fixed and floating marks except landfall lights, leading lights and marks, sectored lights and major floating lights. The standard buoy shapes are: cylindrical (can), conical, spherical, pillar, and spar, but variations may occur, for example: minor light floats.

There are two international buoyage regions where lateral marks differ. Each region is primarily comprised of the waters surrounding the areas shown below.

- **Region A**: Greenland, Africa, Europe, Australia and Asia (except for Japan, the Republic of Korea, Taiwan and the Philippines).
- **Region B**: North and South America, Japan, the Republic of Korea, Taiwan and the Philippines.

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

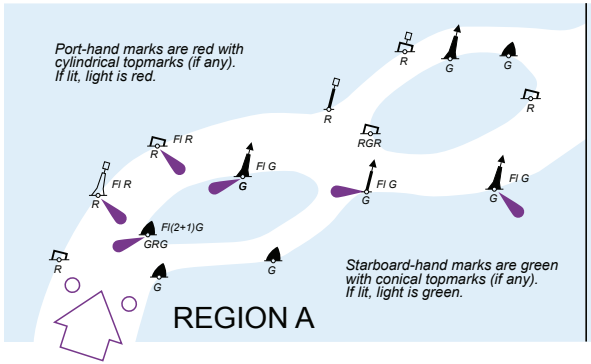
130.1

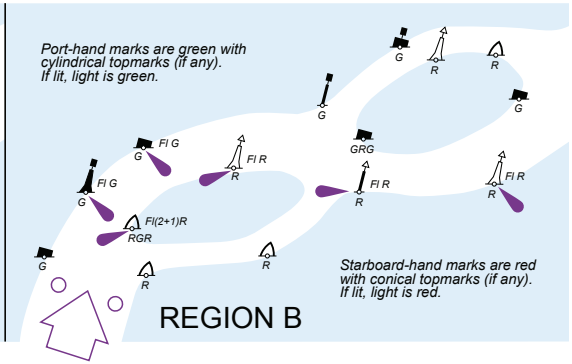


Lateral Marks are generally for well-defined channels. There are two international buoyage regions—A and B—where lateral marks differ by color, but not by shape or topmark.

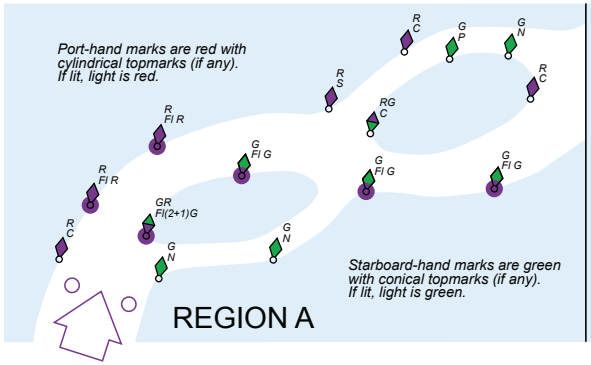
130.1

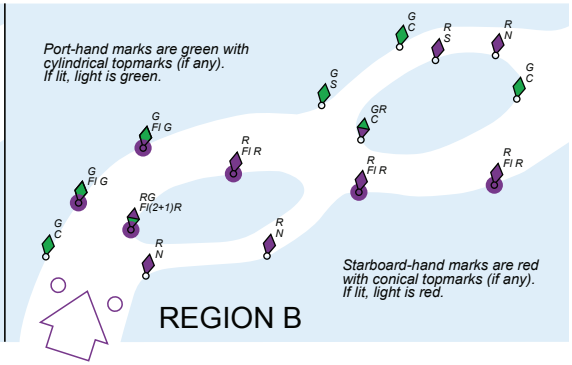
INT





NOAA





Buoy shape may be cylindrical or conical (to indicate port or starboard) but may be another shape with appropriate topmark. Marks which indicate a junction with a side channel have three horizontal color bands and, if lit, the rhythm will be Fl(2+1).

Buoys in U.S. waters generally do not have topmarks.

130.2

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.

Symbols showing direction of buoyage where it is not obvious

INT

General symbol for direction of buoyage

IALA Region A
on multicolored charts

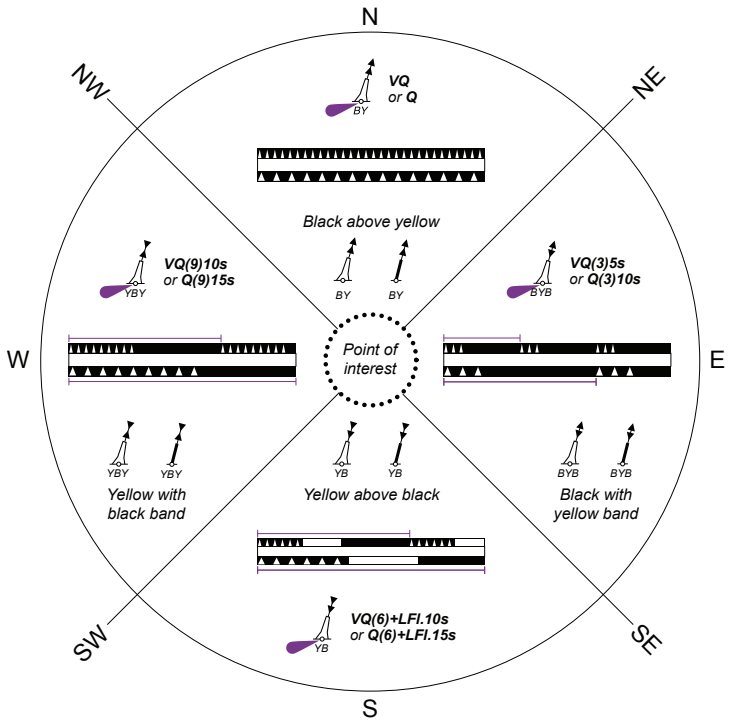
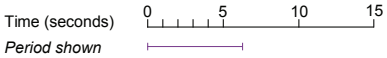
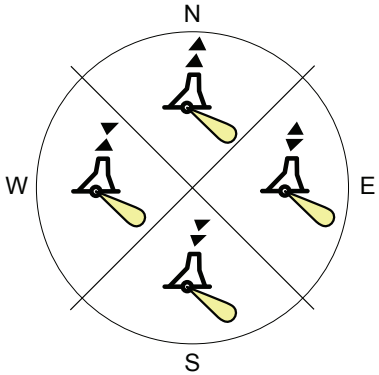
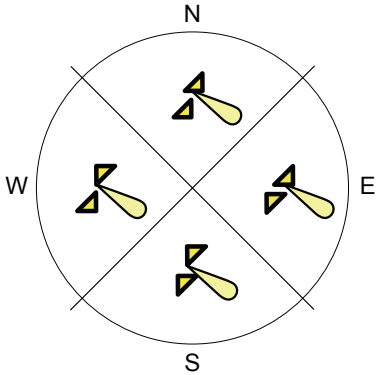
IALA Region B
on multicolored charts

ECDIS

General symbol for direction of buoyage

IALA Region A

IALA Region B

No.	INT	ECDIS
	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.	
130.3	 Topmark: 2 black cones Light: White The same abbreviations are used for lights on spar buoys and beacons. The periods 5s, 10s, and 15s may not always be charted.  Cardinal marks are seldom used in U.S. waters and do not appear on NOAA charts, except for charts that also depict Canadian waters.	 Paper chart symbology  Simplified symbology

Q Buoys, Beacons

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
124	Ref / Ref	Refuge beacon				Purpose as refuge or firing danger area beacon is obtained by cursor pick	
126		Notice board					Notice board
130.4	**Isolated Danger Marks** stationed over dangers with navigable water around them. Body: black with red horizontal band(s) Topmark: two black spheres Light: white						
	BRB BRB	Unlit Marks					Pillar buoy with 2 spheres topmark
	BRB BRB Fl (2)	Lighted Marks on standard charts	BR				Spar buoy with 2 spheres topmark
	BRB BRB Fl (2)	Unlit Marks on multicolored charts					Isolated danger buoy, simplified
130.5	**Safe Water Marks**, including mid-channel and landfall marks. Body: red and white vertical stripes Topmark (if any): red sphere Light: white						
	RW RW RW	Unlit marks					Spherical buoy, paper chart
	RW RW RW *Iso or Oc or LFl.10s or Mo (A)*	Lighted Marks on standard charts	RW				Pillar buoy with sphere topmark
	RW RW RW *Iso or Oc or LFl.10s or Mo (A)*	Lighted Marks on multicolored charts					Spar buoy with sphere topmark
							Safe water buoy, simplified
130.6	**Special Marks** not primarily to assist navigation but to indicate special features. Body (shape optional): yellow* Topmark (if any): yellow *X* or upright cross Light: yellow, rhythm optional*						
	Y Y Y	Unlit Marks					Spherical buoy, paper chart
	Y Y Y Fl Y	Lighted Marks on standard charts	Y				Can buoy
	Y Y Y Fl Y	Lighted Marks on multicolored charts					Conical buoy
							Spar buoy with x-shape topmark
							Special purpose buoy, simplified
	* In special cases, yellow may be used in conjunction with another color						

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
130.7	**New Danger Marks**. Body (shape optional): yellow and blue Topmark: yellow cross						
	BuY BuY BuY BuY BuY BuY	Unlit marks Lighted Marks on standard charts Lighted Marks on multicolored charts					Pillar buoy with upright cross topmark Spar buoy with upright cross topmark
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	AIS	Position of fog signal, type of fog signal not stated	Fog Sig				Position of a conspicuous point feature with fog signal Lighted pillar buoy, paper chart with fog signal Lighted super-buoy, paper chart with fog signal
2	(man)	Manually activated					
Types of Fog Signals, with Abbreviations						Supplementary national symbol: a	
10	Explos	Explosive	*GUN*			Type of fog signal and its characteristics are obtained by cursor pick	
11	Dia	Diaphone	*DIA*				
12	Siren	Siren	*SIREN*				
13	Horn	Horn (nautophone, reed, tyfon)	*HORN*				
14	Bell	Bell	*BELL*				
15	Whis	Whistle	*WHISTLE*				
16	Gong	Gong	*GONG*				
Examples of Fog Signal Descriptions							
Note: The fog signal symbol will usually be omitted when a description of the signal is given.							
20	Fl.3s70m29M 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* *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	*Mo*				

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				Radar transponder beacon
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 Obscd Racon(Z)	Radar transponder beacon with sector of obscured reception					
3.4	Racon(Z) Racon(Z)	Radar transponder beacon with sector of reception					
3.5	Racons ≠ 270° Racon Racon	Leading radar transponder beacons (‡: objects in line)					
3.5	Lts ≠ 270° Racons ≠ 270° Racon Racon	Leading radar transponder beacons coincident with leading lights					
3.6	Racon Racon	Radar transponder beacons on floating marks	RACON (–) R "2" Fl R 4s	Racon		Paper Chart / Simplified	Radar transponder on floating mark
4		Radar reflector					Symbol indicating this object is radar conspicuous
Radar reflectors are not charted on buoys in regions where they are fitted to nearly all buoys							
5		Radar conspicuous feature					

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		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.	
11	† RD 269.5° RD	Directional radiobeacon with bearing line	† RD RD 270°				
	† Lts ≠ 270° RD 270° 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 AIS	Automatic Identification System transmitter on floating marks (examples)					
18.1	V-AIS	Virtual AIS (with unknown IALA-defined function)					
18.2	V-AIS V-AIS V-AIS V-AIS V-AIS	Virtual AIS (with known IALA-defined function)				V-AIS V-AIS V-AIS V-AIS	North cardinal virtual aid East cardinal virtual aid South cardinal virtual aid West cardinal virtual aid

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
18.3	V-AIS V-AIS	Virtual AIS with lateral mark function				V-AIS V-AIS	Port Lateral (IALA B) virtual aid Starboard Lateral (IALA B) virtual aid
18.4	V-AIS	Virtual AIS with isolated danger mark function				V-AIS	Isolated Danger virtual aid
18.5	V-AIS	Virtual AIS with safe water mark function				V-AIS	Safe Water virtual aid
18.6	V-AIS	Virtual AIS with special purpose mark function				V-AIS	Special Purpose virtual aid
18.7	V-AIS	Virtual AIS with new danger mark function				V-AIS	Emergency Wreck 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	DGPS reference station

T Services

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
Pilotage							
1.1		Boarding place, position of a pilot cruising vessel	*Pilots*				Pilot boarding place
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)			Pilot boarding area
1.4	*H*	Pilots transferred by helicopter					
2	† Pilot Lookout	Pilot office with pilot lookout, Pilot lookout station					
3	Pilots	Pilot office	PIL STA	Pilots			
4	Port name (Pilots)	Port with pilotage service (boarding place not shown)					
Coast Guard, Rescue							
10	CG CG CG	Coast Guard station	CG R TR CG WALLIS SANDS			CG	Coast guard station
11	CG CG CG	Coast Guard station with Rescue station				CG	Coast guard station Rescue station
12		Rescue station, Lifeboat station, Rocket station	LS S				Rescue station
13		Lifeboat lying at a mooring					
14	Ref *Ref*	Refuge for shipwrecked mariners					
Signal Stations							
20	SS	Signal station in general	SS		Sig Sta		
21	SS (INT)	Signal station, showing international port traffic signals				SS	Signal station
22	SS (Traffic)	Traffic signal station, Port entry and departure signals					
23	SS (Port Control)	Port control signal station	HECP				

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
24	SS (Lock)	Lock signal station					
25.1	SS (Bridge)	Bridge passage signal station					
25.2	† F Traffic-Sig	Bridge lights including traffic signals					
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				SS	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					

U Small Craft (Leisure) Facilities

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

a Marina facilities

		TIDES		DEPTH		SERVICES											SUPPLIES					
NO	LOCATION			APPROACH-FEET (REPORTED)	ALONGSIDE-FEET (REPORTED)	ELECTRICITY-MOORINGS-BERTHS TRANSIENTS	RAMP SURFACED-NATURAL	REPAIRS HULL-MOTOR-RADIO	MARINE RAILWAY-FEET	LIFT CAPACITY-TONS	BOAT RENTAL CANOE-ROW-MOTOR	BOAT RENTAL CHARTER-HOUSE-SAIL	FOOD-LODGING-CAMPING	TOILETS-SHOWERS-LAUNDRY	PUMP-OUT STATION	WINTER STORAGE WET-DRY	NAUTICAL CHART SALES	WATER-ICE	GROCERIES-HARDWARE	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

(+) 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	D i
Accom	**Accommodation vessel**	L 17
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
Al	**Alternating**	P 10.11
ALC	**Articulated Load 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	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	L 40.1–40.2
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	L 21.2
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
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

Index of Abbreviations

Note—INT abbreviations are in bold type

Entr	Entrance	
ESSA	Environmentally Sensitive Sea Area	N 22
Est	Estuary	
exper	Experimental	
Explos	**Explosive**	R 10
Exting, **exting**	**Extinguished**	P 55
F		
f	**Fine**	J 30
F Fl	**Fixed and flashing**	P 10.10
F Gp Fl	**Fixed and Group Flashing**	P d
Facty	Factory	E d
FAD	**Fish Aggregating Device**	
Fd	Fjord	
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	F 34, K 20–21
Ho	House	
hor	**Horizontally disposed**	P 15
Hor CL	Horizontal clearance	D 21
Hosp	Hospital	E g, F 62.2
hr	Hour	B 49
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**	Pf
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	**Liquified Natural Gas**	

*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.

Index of Abbreviations

Note—INT abbreviations are in bold type

LoLo	Load-on, Load-off	
Long	Longitude	B 2
LPG	Liquified Petroleum Gas	
Lrg	Large	J a
LS S	Life saving station	T 12
lt	Light	J bc
Lt Ho	Light house	P1
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
man	**Manually activated**	P 56, R 2
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	H9
Mi	Nautical mile(s)	B 45
min	Minimum	K 46.2
min	**Minute(s) of time**	B 50
Mk	**Mark**	Q 101
Ml	Marl	J c
MLHW	Mean Lower High Water	H 15
MLLW	Mean Lower Low Water	H 12
MLW	Mean Low Water	H 4
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 1
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 mile(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**	K41
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	T3
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 producing DF signals	S 15
Quar	Quarantine	F e
Qz	Quartz	J g
R		
R	**Coast radio station providing QTC service**	S 15
R	Radio Station	S 15
R	**Red**	P 11.2
R, r	**Rock, Rocky**	J 9.1, K b

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Note—INT abbreviations are in bold type

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 point	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
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, F 33
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
Sg	**Seagrass**	J 13.3
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
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	D 20, 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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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

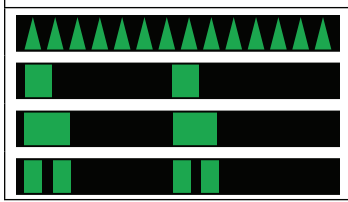
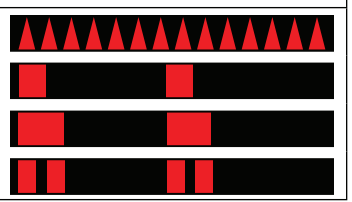
Lights (if any) are composite group flashing		
	Fl (2+1)	

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

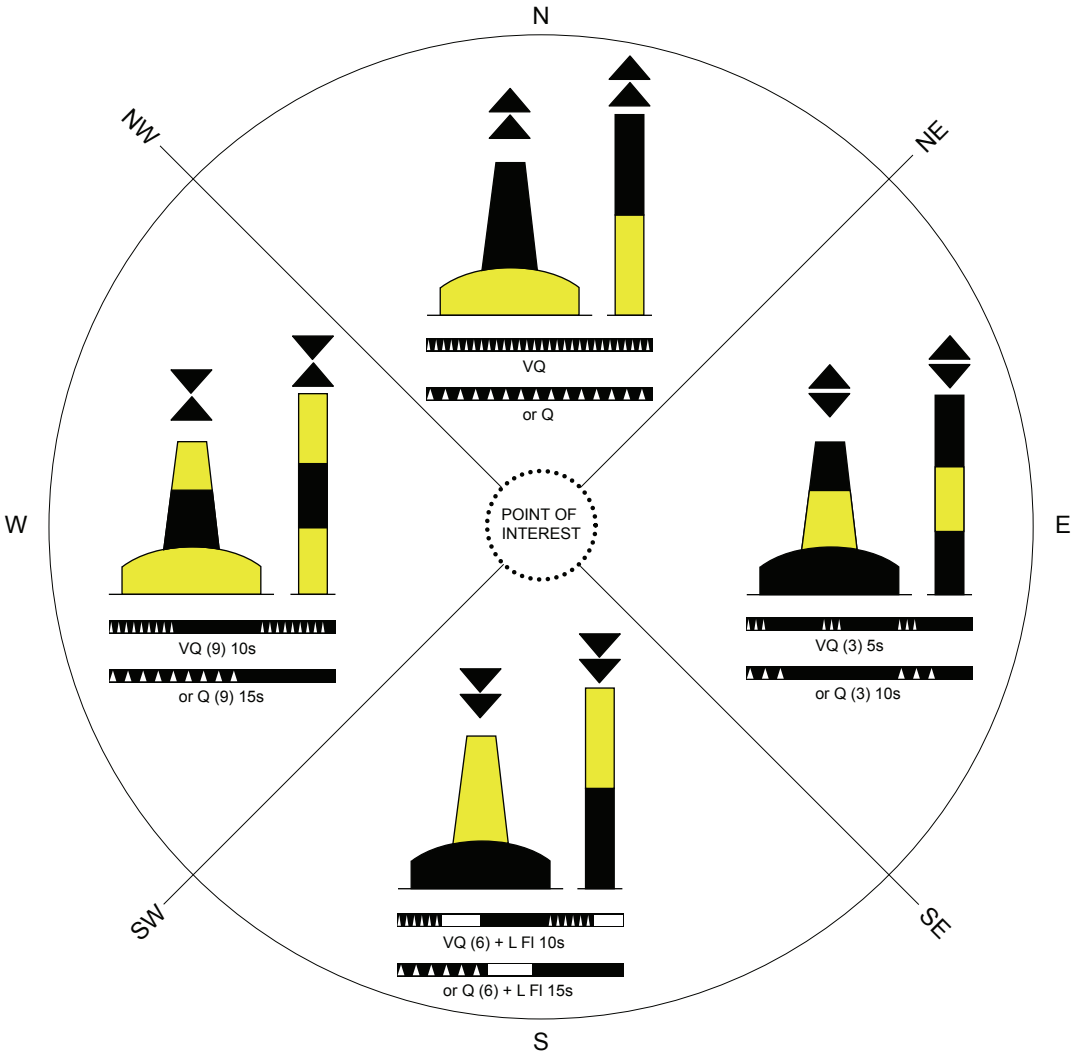
green with one red horizontal band	Color	red with one green horizontal band
cylindrical (can), pillar, spar	Buoy	conical (nun), pillar, spar
single green cylinder (can)	Topmark (if any)	single red cone, point upward

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

Appendix 1 IALA Maritime Buoyage System

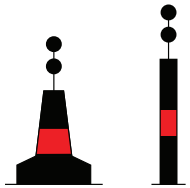
Cardinal Marks in Regions A and B

Lights, when fitted, are white



Regions A and B

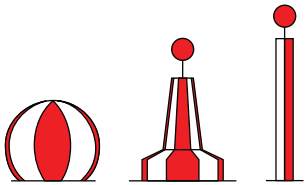
Isolated Danger Marks



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	

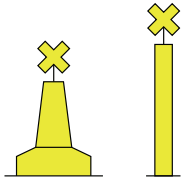
Safe Water Marks



red and white vertical stripes	
spherical, pillar or spar	
single red sphere	

white	
ISO	
Oc	
L Fl 10s	
Morse “A”	

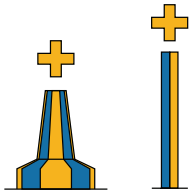
Special Marks



yellow	
optional, but not conflicting with lateral marks	
single yellow “X” shape	

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

New Danger Marks



blue and yellow vertical stripes	
pillar or spar	
vertical/perpendicular yellow cross	

alternating blue and yellow	
Al Oc Bu Y 3s	

Record of Corrections

Notice No.	Corrected on	Corrected by

Notice No.	Corrected on	Corrected by

Notice No.	Corrected on	Corrected by

Section Key

A	Chart Number, Title and Marginal Notes	INT 500 412 · Mercator Projection Scale 1:100,000 at Lat. 59°30' · 53rd Ed., Feb. 2019 · 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	359 · Marsh · 49 · 123
D	Cultural Features	Tel · 12 · Name · Ru · FIXED BRIDGE HOR CL 25 FT VERT CL 20 FT
E	Landmarks	TANK · (202)
F	Ports	1 · Dn
H	Tides and Currents	2.5 kn · (see Note) · Tide rips · A
I	Depths	30 FEET APR 2011 · 9 7 · (4 7) · 15 89 10 119 · 212 · 3375 · Unsurveyed · 10 2 10 8 9 6 (2011) 9 8 · 13 12 10 13 17 11
J	Nature of the Seabed	(4 2) · * (1 6) · Gravel · Rock
K	Rocks, Wrecks and Obstructions	4 6 Wk · 35 Rk · 4 6 Obstn · Wk · Masts · 16 8 Obstn · Crib
L	Offshore Installations	Z-44 · Fl.Y · Prod Well · Pipe (cov 24ft) · Crib · Well
M	Tracks and Routes	DW · Ra · FAIRWAY 10.5m · Ra · 7 VHF 80 · 270.5° · 7.0m
N	Areas and Limits	PSSA · Log boom · Disposal Area 92 Depths from survey of 2010 85
P	Lights	(89) (R Lts) · Fl.WRG.4s 21m 18-12M · Fl.G Fl.G · 270°
Q	Buoys and Beacons	RG · Bn · Bn R
R	Fog Signals	BELL · Q(6)+LFl 15s HORN(1) 15s WHIS · Fl 3s 70m 29M SIREN Mo(N) 60s
S	Radar, Radio and Satellite Navigation Systems	Racon · AIS · CONSOL Bn 190 kHz MMF · RD 269.5° RD
T	Services	NWS SIG STA · SS · CG · F Traffic-Sig
U	Small Craft (Leisure) Facilities	

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