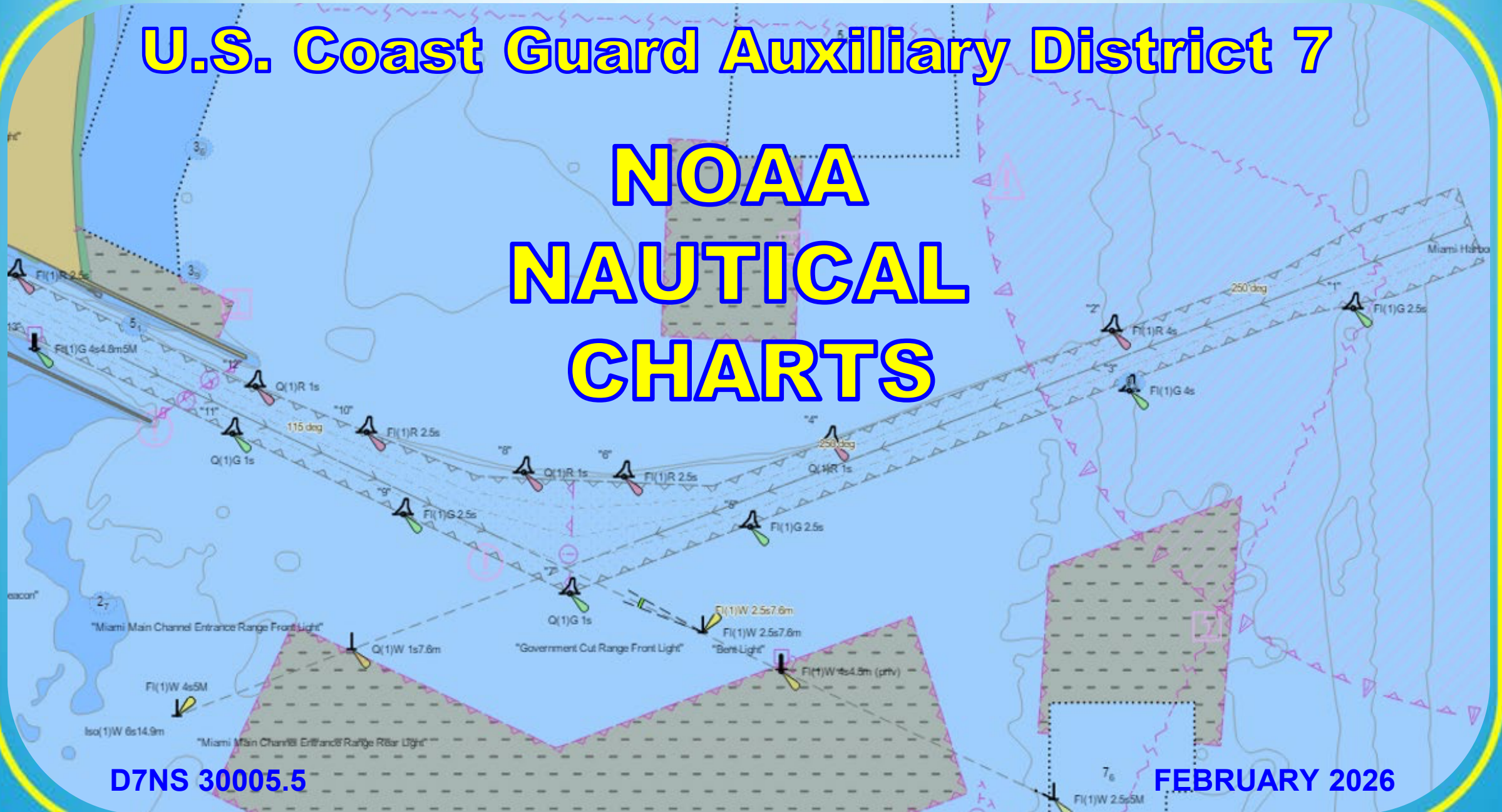


# U.S. Coast Guard Auxiliary District 7

# NOAA NAUTICAL CHARTS



D7NS 30005.5

FEBRUARY 2026

# GOOD OLD PAPER CHART

Paper Chart  
100 – 2024

Rest in Peace

## UNITED STATES FLORIDA - GULF COAST TAMPA BAY ENTRANCE ST PETERSBURG

Mercator Projection  
Scale 1:40,000 at Lat 27°37'

North American Datum of 1983  
(World Geodetic System 1984)

PLANE COORDINATE GRID  
(based on NAD 1927)

The Florida State Plane Coordinate Grid  
(West Zone) is indicated on this chart  
at 20,000 foot intervals. True  
The last three digits are omitted.

SOUNDINGS IN FEET  
AT MEAN LOWER LOW WATER

Additional information can be obtained at [nauticalcharts.noaa.gov](http://nauticalcharts.noaa.gov)

### NOTE B PINELLAS BAYWAY BRIDGES

- A - FIXED BRIDGE  
HOR CL 40 FT  
VERT CL 16 FT  
O&D PAR CAB  
AUTH CL 40 FT
- B - FIXED BRIDGE  
HOR CL 47 FT  
VERT CL 11 FT  
O&D PAR CAB  
AUTH CL 40 FT
- C - FIXED BRIDGE  
HOR CL 100 FT  
VERT CL 66 FT
- D - FIXED BRIDGE  
HOR CL 100 FT  
VERT CL 66 FT
- E - Bridge under construction  
(see note A)
- F - FIXED BRIDGE  
HOR CL 60 FT  
VERT CL 30 FT

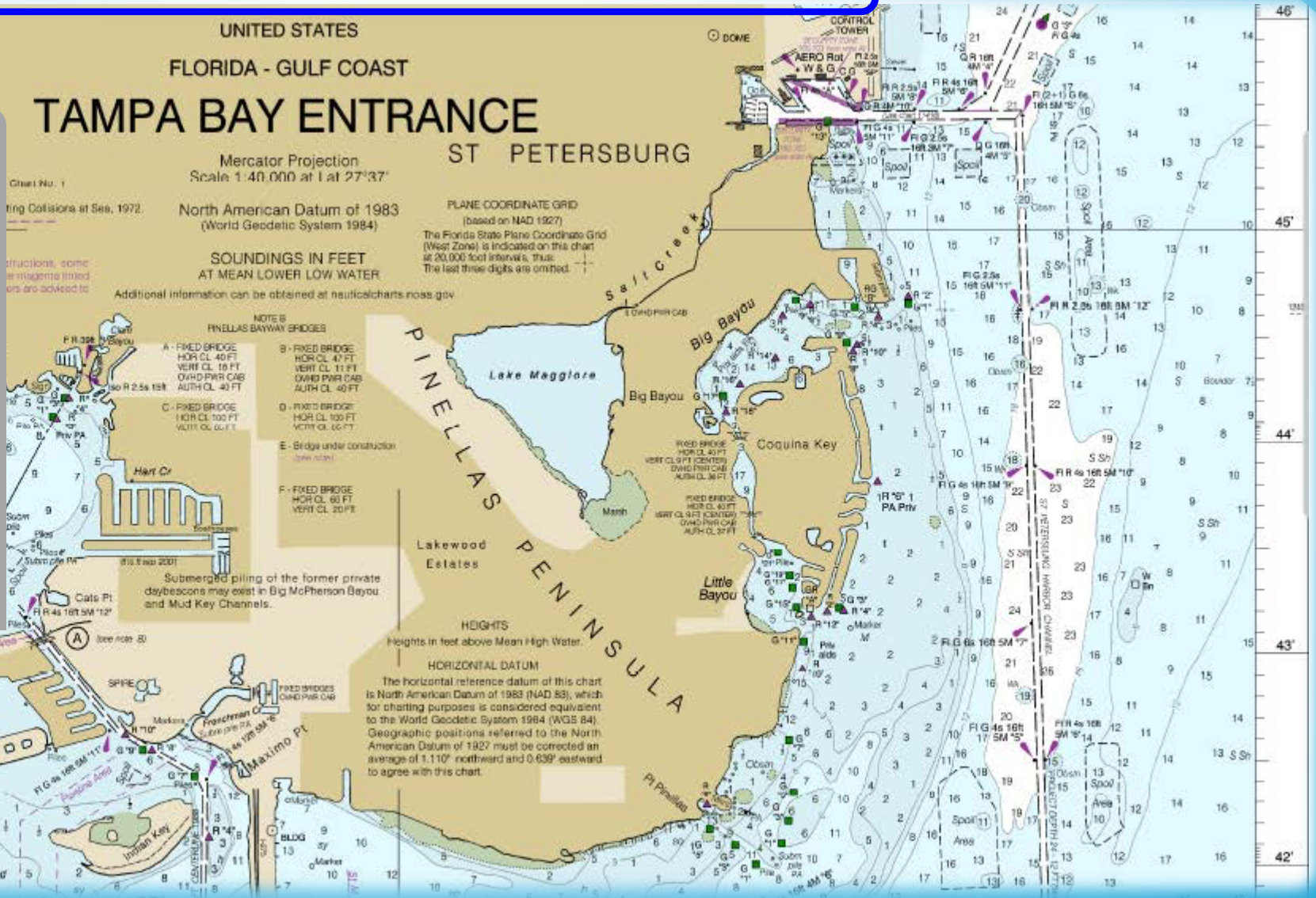
Submerged piling of the former private  
day/beacons may exist in Big McPherson Bayou  
and Mud Key Channels.

### HEIGHTS

Heights in feet above Mean High Water.

### HORIZONTAL DATUM

The horizontal reference datum of this chart  
is North American Datum of 1983 (NAD 83), which  
for charting purposes is considered equivalent to  
the World Geodetic System 1984 (WGS 84).  
Geographic positions referred to the North  
American Datum of 1927 must be corrected an  
average of 1.110" northward and 0.639" eastward  
to agree with this chart.



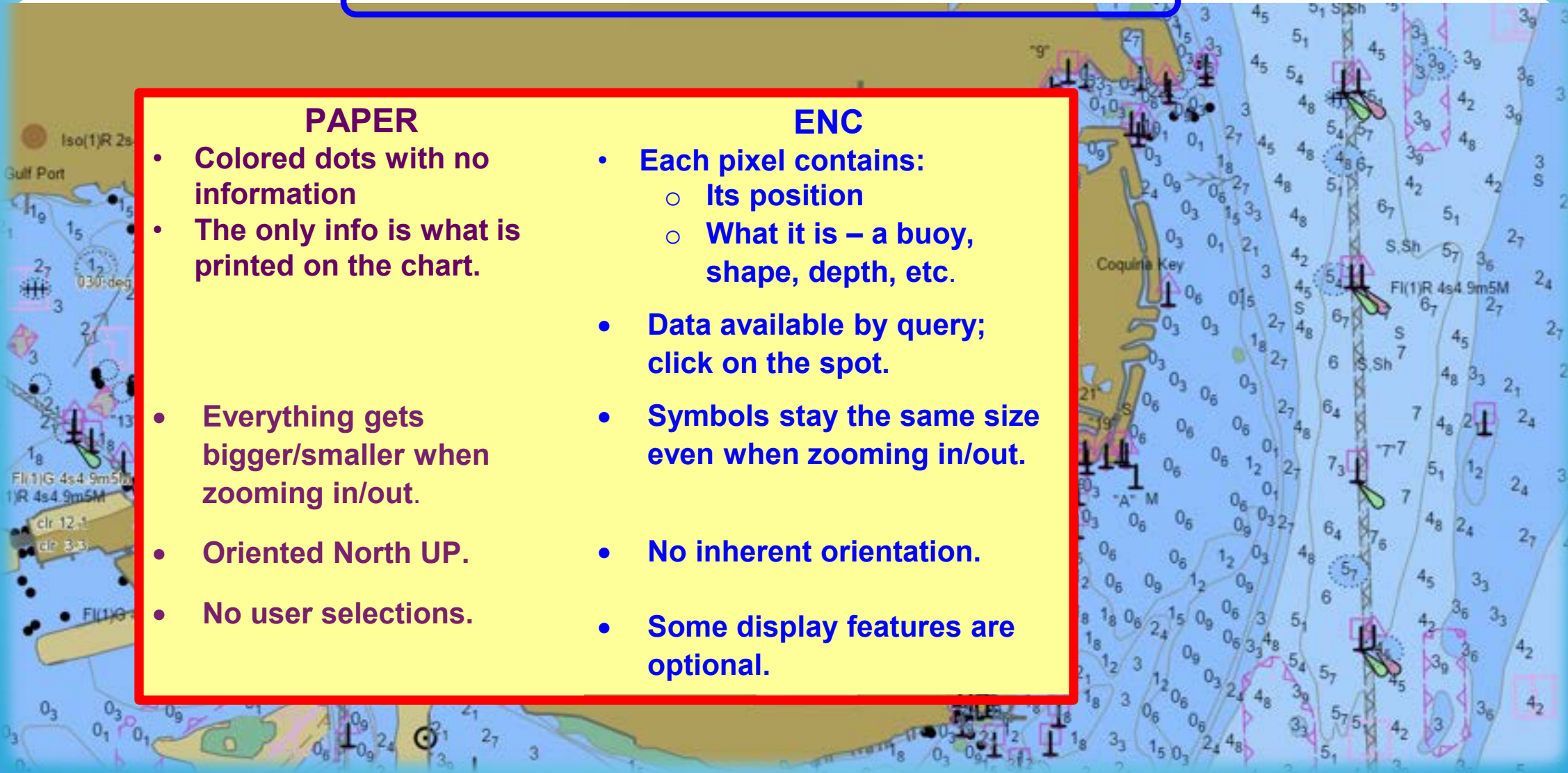
# ENC CHART

## PAPER

- Colored dots with no information
- The only info is what is printed on the chart.
- Everything gets bigger/smaller when zooming in/out.
- Oriented North UP.
- No user selections.

## ENC

- Each pixel contains:
  - Its position
  - What it is – a buoy, shape, depth, etc.
- Data available by query; click on the spot.
- Symbols stay the same size even when zooming in/out.
- No inherent orientation.
- Some display features are optional.



## NOAA ENC CHARTS

**Electronic Navigational Charts (ENC) are vector data sets that support Marine navigation.**

**Each ENC, also known as a cell, is a digital database that stores the location and shape of charted features as pairs of latitude and longitude coordinates.**

**ENC database records hold detailed information about every feature on the chart, - its location, color, shape, height or depth, purpose, quality of position, etc.**

**Electronic navigation systems use this information to portray the chart content on a map display.**

**NOAA ENCs comply with standards set forth by the International Hydrographic Organization.**

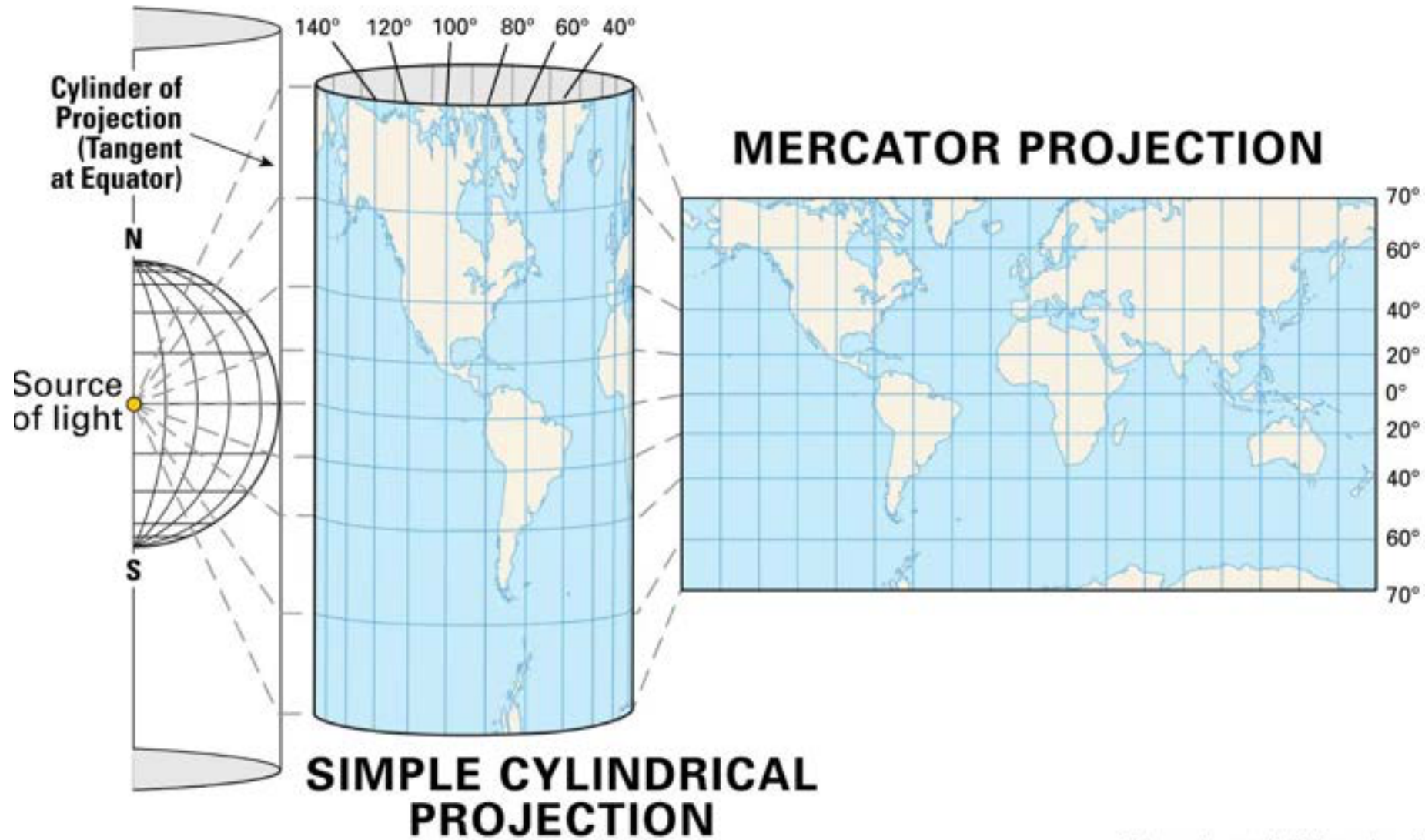
## NOAA ENC CHARTS

### Updates for ENCs

NOAA continually updates ENCs with data from a **variety of sources** and new ENC update cells are uploaded every weekday evening. Updates include critical changes, such as changes to aids to navigation (buoys, beacons and lights) or newly discovered shoals; as well as the routine addition of newly compiled data, such as hydrographic or shoreline surveys. The **NOAA Navigation Updates** page shows where changes have occurred.



# CHART PROJECTION



## CHART HORIZONTAL DATUM



**A horizontal geodetic datum is a coordinate system used as the reference point for all coordinates (latitude & longitude) on the chart.**

**ENC Charts and GPS use WGS84**

## CHART POSITION

**Latitude:** distance (0 - 90°) north (+) or south (-) of the equator

**Longitude:** distance east (+) or west (-) of the prime (Greenwich) meridian

### 3 WAYS TO EXPRESS POSITION

**DD.DDDD**

**27.7573 N 082.6307 W ±36ft**

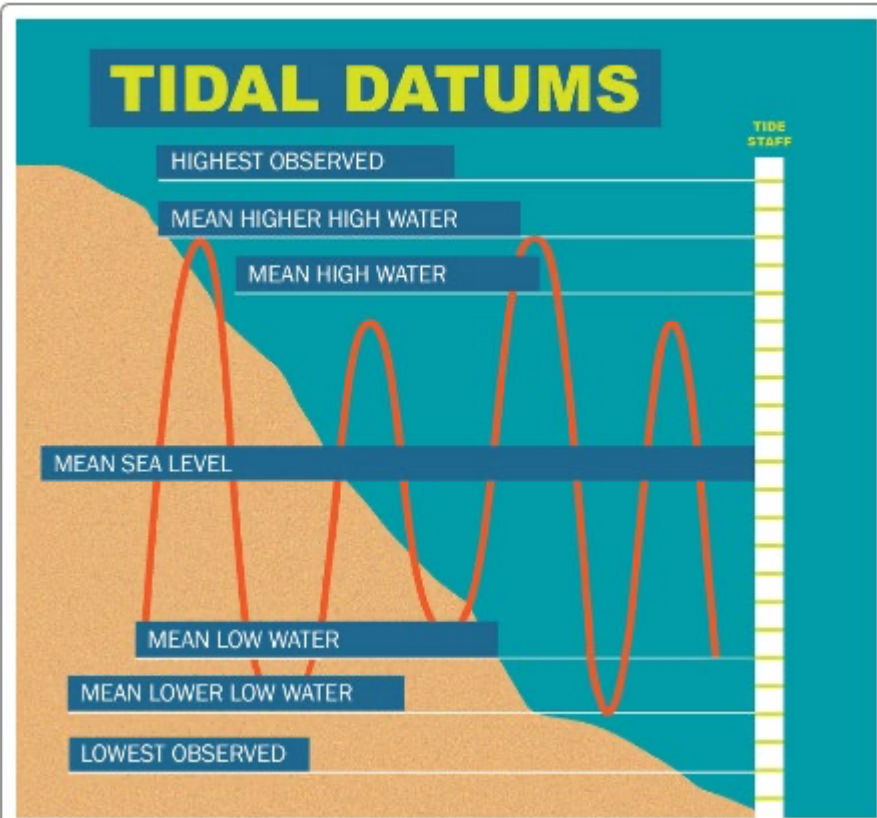
**DD-MM.MMM**

**27-45.438 N 082-37.841 W ±6ft**

**DD-MM-SS.SSS**

**27-45-26.251 N 082-37-50.459 W ±1in**

## CHART VERTICAL DATUM



A reference point for water levels :

**For depth:**

**MLLW (Mean Low Lower Water)**  
Average of lowest daily tide

**For bridge clearance:**

**MHW (Mean High Water)**  
Average of all high tides.

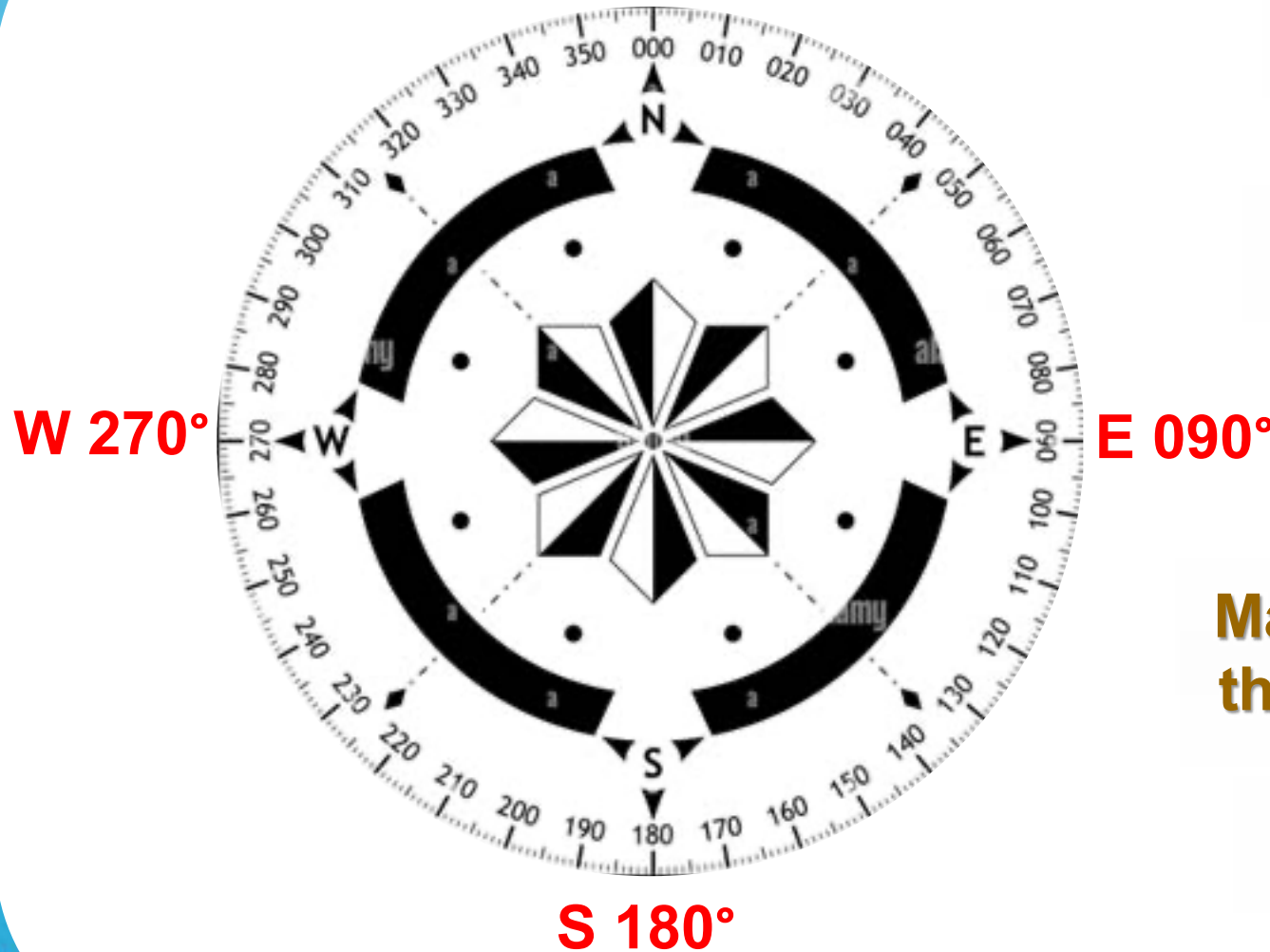
For most of the United States, the current reference is the National Tidal Epoch 1983 - 2001.

This will be replaced in 2026 by the 2002 – 2020 epoch.

Alaska & the Gulf of America, due to anomalous sea level change, use a modified 5-year epoch.

## CHART DIRECTION

**N 000/360°**




**Directions are expressed in degrees from 0 – 360.**

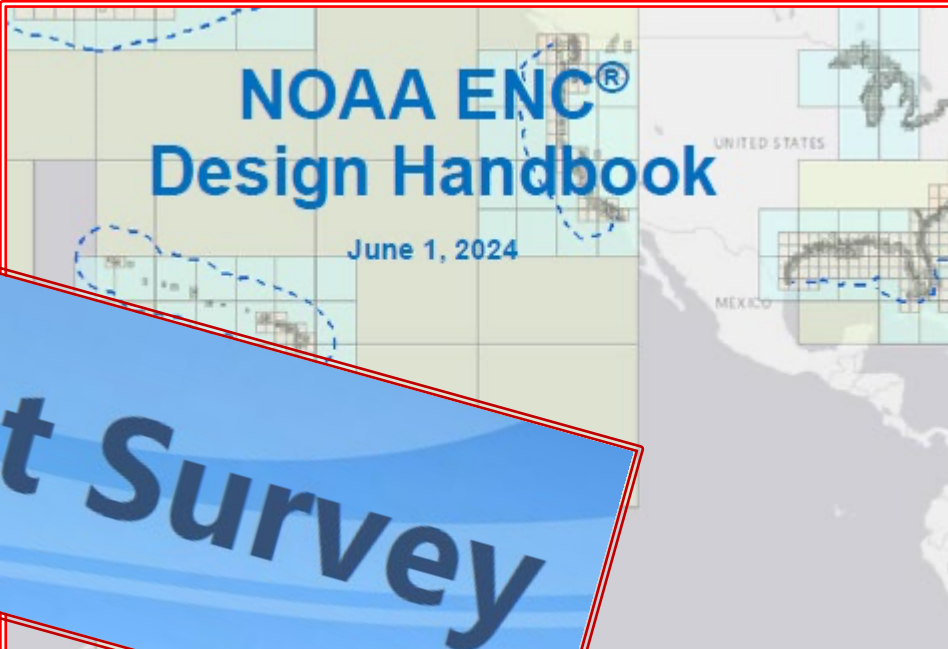
**True degrees are geographic. North/South aligns with the earth's axis of rotation (points towards the poles).**

**Magnetic degrees are aligned with the local magnetic field, and differ from true by the amount of *VARIANCE*, which is local and continually changing**

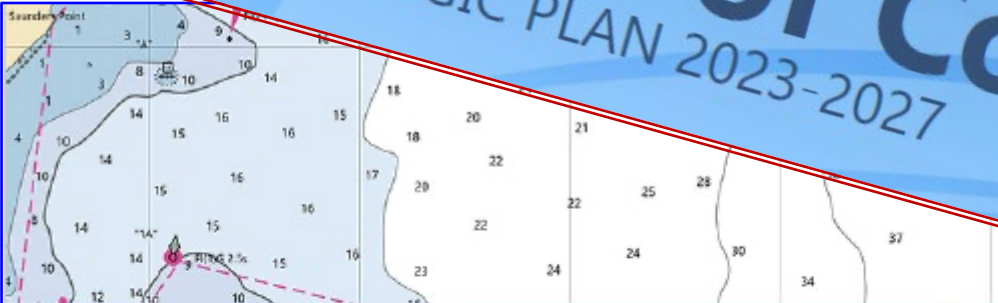
# NOAA ENC CHART PLAN & DESIGN



**Office of Coast Survey**  
STRATEGIC PLAN 2023-2027



**NOAA ENC<sup>®</sup> Design Handbook**  
June 1, 2024



**Nautical Charting Plan**  
Office of Coast Survey | Marine Chart Division  
June 2024

Mapping U.S. Marine and Great Lakes Waters:  
Office of Coast Survey Contributions  
to a National Ocean Mapping Strategy  
July 2020

## CHART SCALE

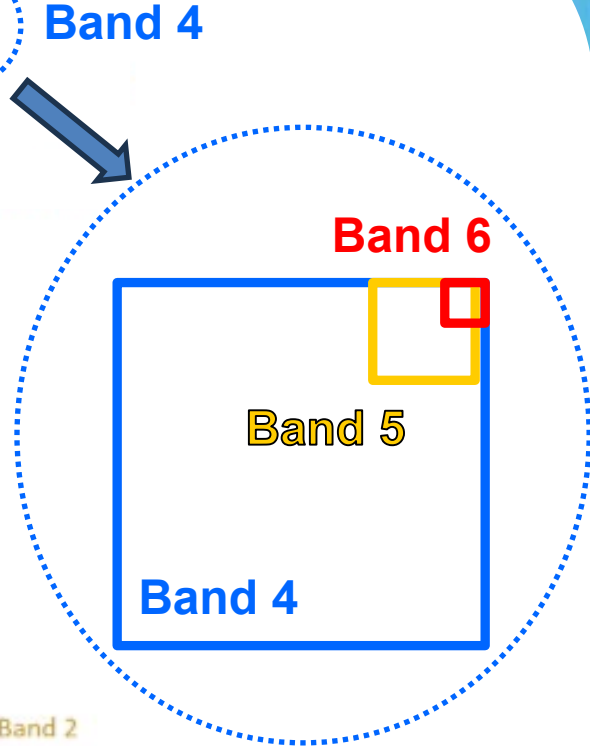
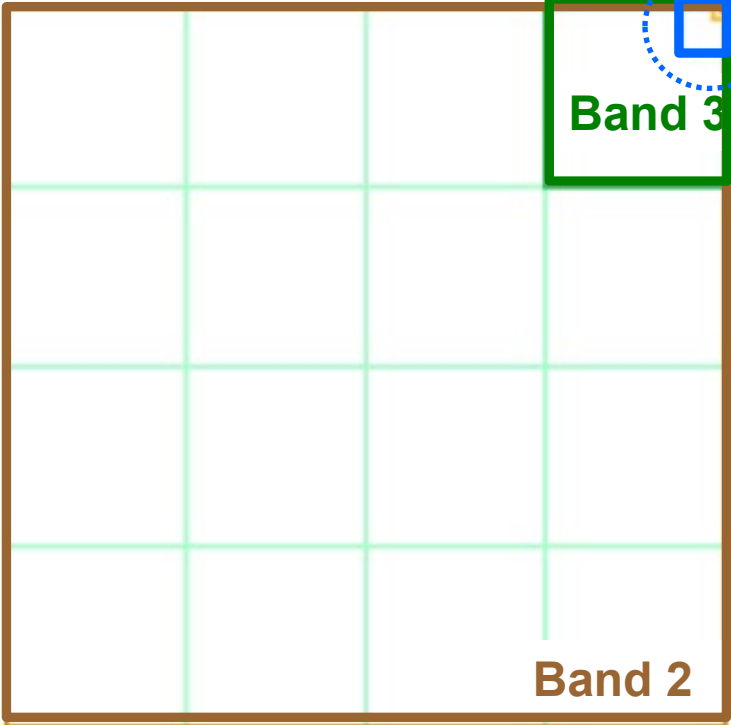
Band Number	ENC Usage Band Name	Reschemed ENC Scale
1	Overview	1:10,000,000 1:3,500,000
2	General	1:1,500,000 1:700,000
3	Coastal	1:350,000 1:180,000
4	Approach	1:90,000 1:45,000
5	Harbor	1:22,000 1:12,000
6	Berthing	1:4,000 1:2,000

IHO S-101 Standard Scales from NOAA ENC Design Handbook June 1, 2024

# ENC CHART CELLS

Standard ENC cell shape and size

Band Number	Usage	Scale
<b>1</b>	Overview	1:10,000,000 1:3,500,000
<b>2</b>	General	1:1,500,000 1:700,000
<b>3</b>	Coastal	1:350,000 1:180,000
<b>4</b>	Approach	1:90,000 1:45,000
<b>5</b>	Harbor	1:22,000 1:12,000
<b>6</b>	Berthing	1:4,000 1:2,000

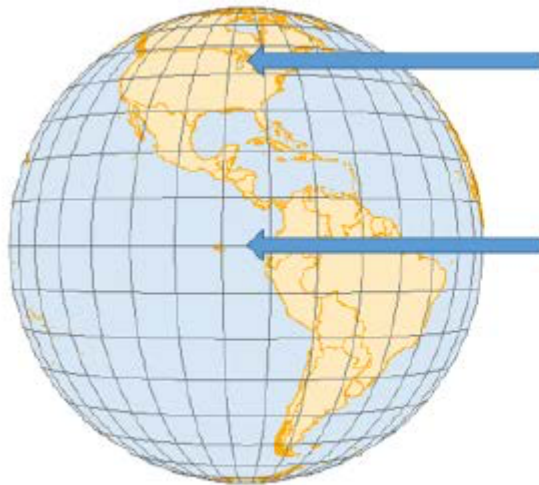


**Cell boundaries follow lines of lat/long.**

**Sixteen cells fit into one cell of the next scale band (16 Band 4 in 1 Band 3).**

# NOAA ENC CELL WIDTH

## Latitude-based ENC cell width



Meridians are bending toward each other.  
 1° of Longitude is only 49 miles long at 45° N.

1° of Latitude and 1° of Longitude each stretch about 69 miles at the Equator.

Figure 4. Distance between meridians decreases as they converge at the poles.

Ratio of ENC Cell Width to Height	
Latitude	Undefined
80° 00'	
<b>Zone III</b>	<b>4 x Height</b>
60° 12'	
<b>Zone II</b>	<b>2 x Height</b>
40° 12'	
<b>Zone I</b>	<b>1 x Height</b>

## ENC CELLS & COMPILATION SCALES

Band Number	Usage	Scales	Height	Zone 1 Width = H	Zone 2 Width = 2H	Zone 3 Width = 4H
<b>1</b>	<b>Overview</b>	1:10,000,000 1:3,500,000	<b>19.2°</b>	<b>19.2°</b>	<b>38.4°</b>	<b>76.8°</b>
<b>2</b>	<b>General</b>	1:1,500,000 1:700,000	<b>4.8°</b>	<b>4.8°</b>	<b>9.6°</b>	<b>19.2°</b>
<b>3</b>	<b>Coastal</b>	1:350,000 1:180,000	<b>1.2°</b>	<b>1.2°</b>	<b>2.4°</b>	<b>4.8°</b>
<b>4</b>	<b>Approach</b>	1:90,000 1:45,000	<b>0.3°</b>	<b>0.3°</b>	<b>0.6°</b>	<b>1.2°</b>
<b>5</b>	<b>Harbor</b>	1:22,000 1:12,000	<b>0.075°</b>	<b>0.075°</b>	<b>0.15°</b>	<b>0.3°</b>
<b>6</b>	<b>Berthing</b>	1:4,000 1:2,000	<b>0.375°</b>	<b>0.375°</b>	<b>0.075°</b>	<b>0.15°</b>

# CHART NUMBERING – ENC FILE NAMES

1 2	3	4 5 6	7 8
Producer Code	ENC Usage Band	US Regional Reference Code	Cell Matrix Position
US	3	GCO	6M
US	4	FL1	PQ
US	5	TPA	EG

**Chart: US3GC06M**

Title: Tampa Bay to Cape San Blas  
 Scale: 1 : 350,000  
 Edition: 45  
 Update: 0  
 Published: 2024-11-21



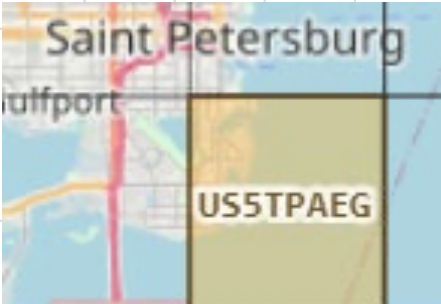
**Chart: US4FL1PQ**

Title: Tampa Bay  
 Scale: 1 : 40,000  
 Edition: 19  
 Update: 0  
 Published: 2025-01-08



**Chart: US5TPAEG**

Title: Tampa Bay  
 Scale: 1 : 20,000  
 Edition: 1  
 Update: 0  
 Published: 2023-08-24



# NOAA ENC CELL MATRIX POSITION

The final two characters of the ENC file name indicate a cell's position within its region's matrix of cells.

Each region can hold a maximum of 676 cells in the 26 x 26 matrix

						N						
	ZA	ZB	ZC	ZD	ZE	•	•	ZV	ZW	ZX	ZY	ZZ
	YA	YB	YC	YD	YE	•	•	YV	YW	YX	YY	YZ
	XA	XB	XC	XD	XE	•	•	XV	XW	XX	XY	XZ
	WA	WB	WC	WD	WE	•	•	WV	WW	WX	WY	WZ
	VA	VB	VC	VD	VE	•	•	VV	VW	VX	VY	VZ
W	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•
	EA	EB	EC	ED	EE	•	•	EV	EW	EX	EY	EZ
	DA	DB	DC	DD	DE	•	•	DV	DW	DX	DY	DZ
	CA	CB	CC	CD	CE	•	•	CV	CW	CX	CY	CZ
	BA	BB	BC	BD	BE	•	•	BV	BW	BX	BY	BZ
	AA	AB	AC	AD	AE	•	•	AV	AW	AX	AY	AZ
						S						
												E

## CHART NUMBERING – ENC FILE NAMES

A full list of NOAA ENC file codes is available:

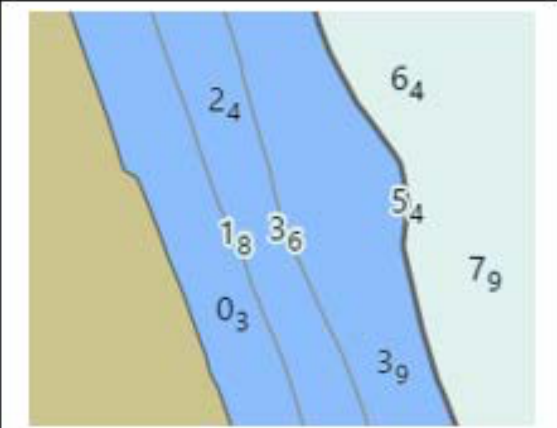
- NOAA ENC Design Handbook June 1, 2024 – Office of Coast Survey



- Addendum to this presentation

## NOAA ENC CHART DEPTHS

The first digitized paper charts used to create the first NOAA ENCs had depth values in fathoms and feet. These were converted to meters to create the ENCs, but with fractional meter values. To comply with IHO standards, new ENC charts store depth in meters with standard intervals.

	Legacy Depth in Feet	Depth Displayed in Meters
6	1.8	
12	3.6	
18	5.4	
24	7.3	

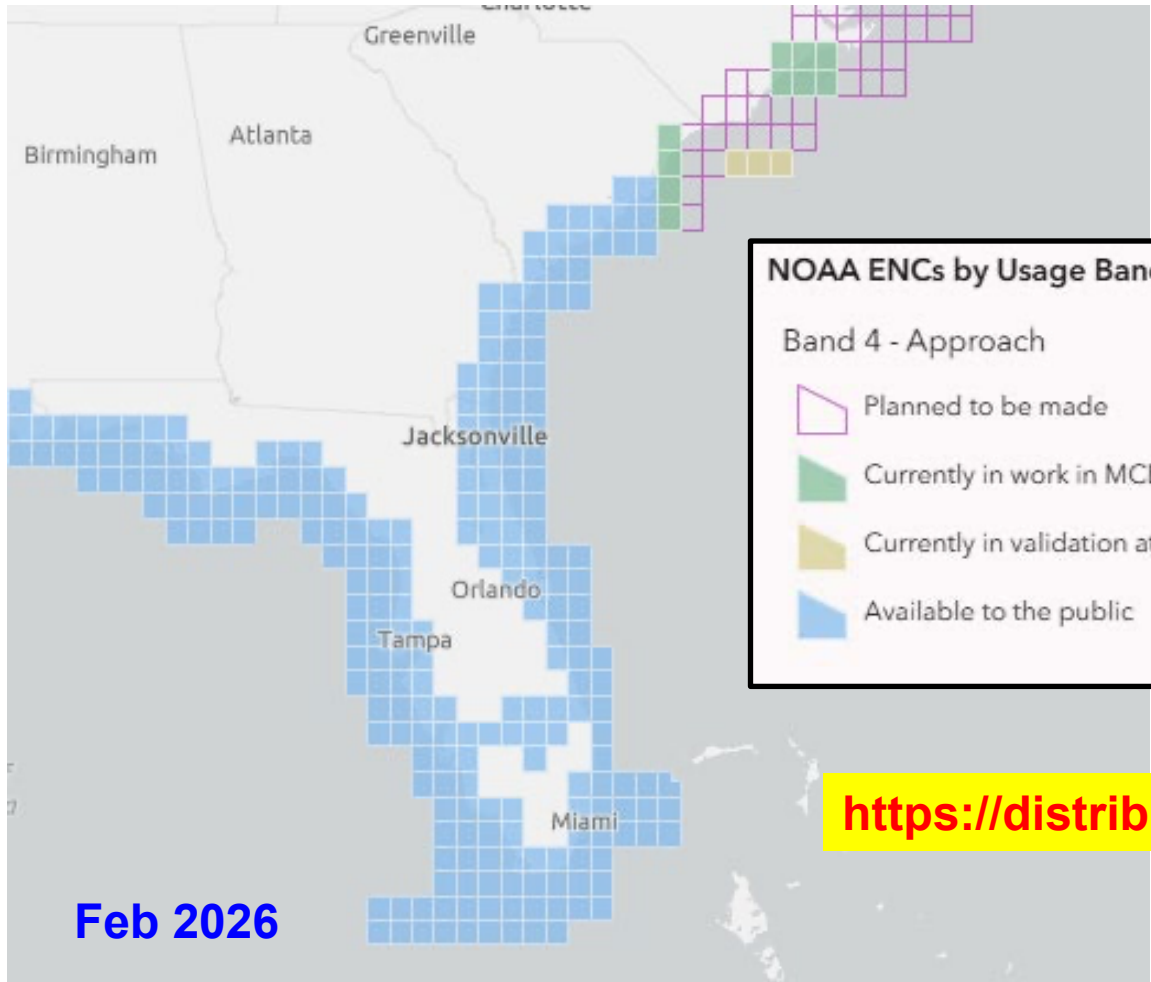
# NOAA ENC CHART DEPTHS

Table 3. Standard Metric Depth Contour Intervals. Optional values are shown in gray.

Usage Band	Navigational Purpose	Compilation Scale	Depth Contours (meters)																		
1	Overview	1:10,000,000	100 200 300 400 500 ...																		
		1:3,500,000	50	100	150	200	300	400	500	...											
2	General	1:1,500,000	50 100 150 200 300 400 500 ...																		
		1:700,000	20	50	100	150	200	300	400	500	...										
3	Coastal	1:350,000	20 30 50 100 150 200 300 400 500 ...																		
		1:180,000	10	20	30	50	100	150	200	300	400	500	...								
4	Approach	1:90,000	5	10	15	20	30	50	100	150	200	300	400	500	...						
		1:45,000	2	5	10	15	20	30	50	100	150	200	300	400	500	...					
5	Harbor	1:22,000	2	5	10	15	20	30	50	100	150	200	300	400	500	...					
		1:12,000	2	3	4	5	6	7	8	10	15	20	30	50	100	150	200	300	400	500	...
6	Berthing	1:4,000	2	3	4	5	6	7	8	10	15	20	30	50	100	150	200	300	400	500	...
		1:2,000	2	3	4	5	6	7	8	10	15	20	30	50	100	150	200	300	400	500	...

# NOAA ENC RESCHEMING STATUS

## Status of New NOAA Electronic Navigational Charts



**NOAA ENCs by Usage Band**

Band 4 - Approach

- Planned to be made
- Currently in work in MCD
- Currently in validation at IC-ENC
- Available to the public

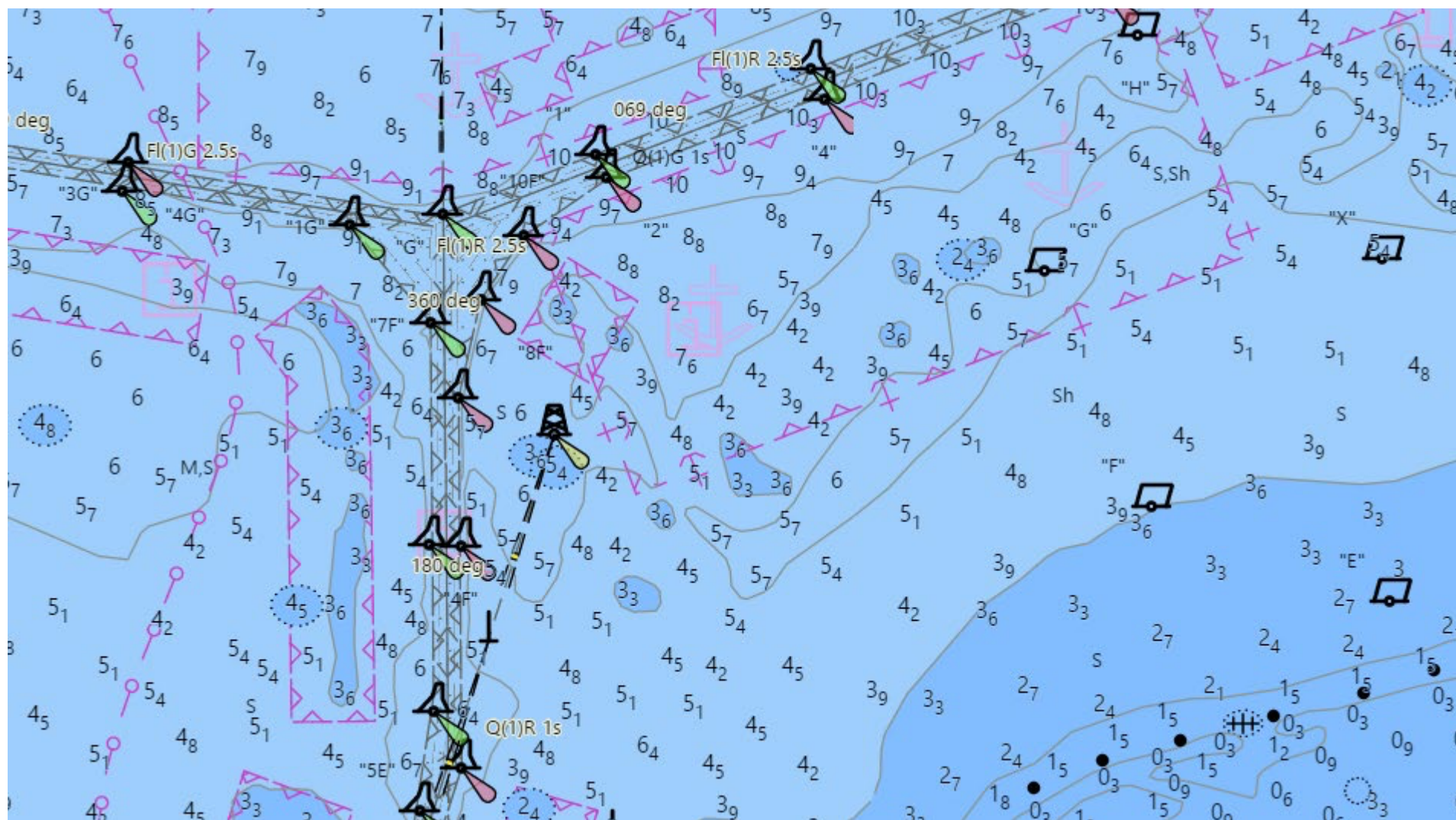
NOAA ENCs by Usage Band

- Band 1 - Overview
- Band 2 - General
- Band 3 - Coastal
- Band 4 - Approach
- Band 5 - Harbor
- Band 6 - Berthing

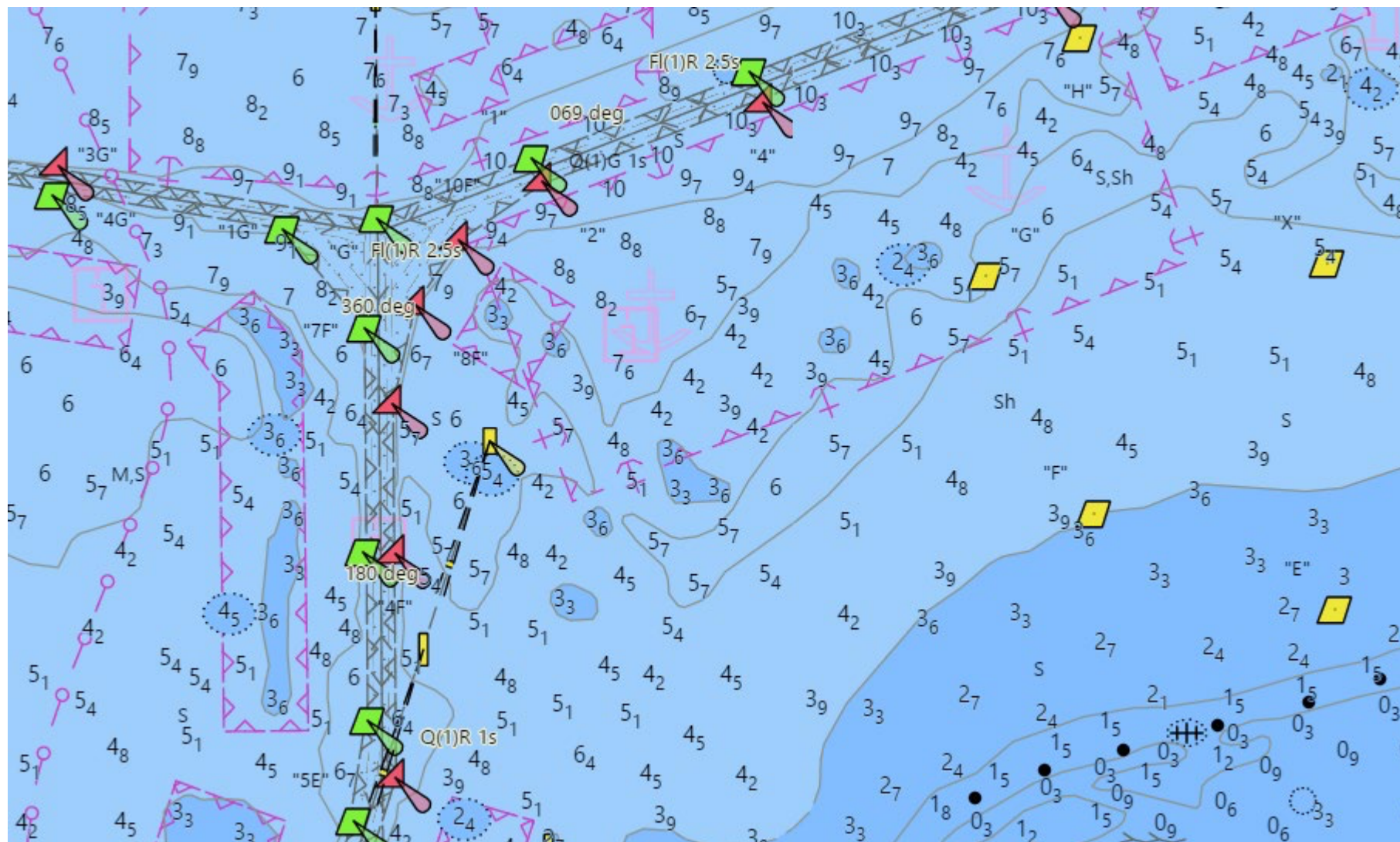
<https://distribution.charts.noaa.gov/ENC/rescheme/>

Feb 2026


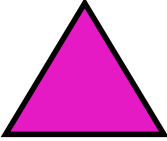
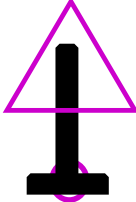

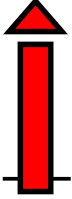
# ENC CHART "PAPER" SYMBOLS



# ENC CHART "SIMPLIFIED" SYMBOLS




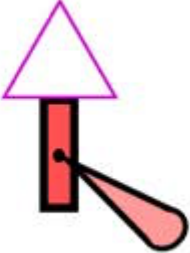
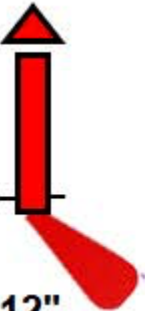


## STARBOARD LATERAL AID - FIXED

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
RED BEACON		 R "4"	 "4"		 "4"








# STARBOARD LATERAL AID - LIGHT

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED RED BEACON		 <p>"12" FI R 6s</p>	 <p>"12" FI R 6s</p>		 <p>"12"</p>




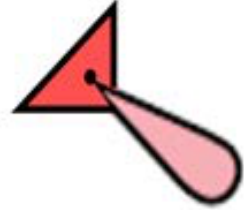
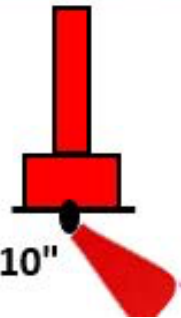


## STARBOARD LATERAL AID – NUN BUOY

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
NUN BUOY		 RN "4"	 "4"		 "4"



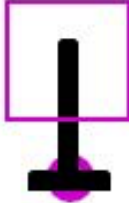
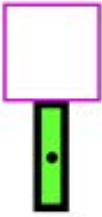
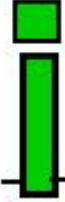


# STARBOARD LATERAL AID – LIGHTED RED BUOY

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED RED BUOY		 <i>R "10" Fl R 4s</i>	 "10" Fl R 4s		 "10"



## PORT LATERAL AID – FIXED

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
GREEN BEACON		 G "3"	 "3"	 "3"	 "3"

**The rest of this catalog of symbols is an addendum at the end of this presentation**



# U.S. CHART NO. 1

## U.S. Chart No. 1

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



13<sup>th</sup> Edition  
April 15, 2019

Prepared Jointly by

Department of Commerce  
National Oceanic and Atmospheric Administration

Department of Defense  
National Geospatial-Intelligence Agency

**Guide to chart symbols,  
abbreviations and Terms**  
*Free pdf download*

***This shows the components of  
ENC symbols but not the  
composite symbol  
as it appears on the chart.***



# ENC VIEWER



Office of Coast Survey  
National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

The interface shows a map of the United States and parts of Mexico and the Caribbean. A search bar at the top left contains the text "Find address or place" and a magnifying glass icon. Below the search bar are several icons: a plus sign, a minus sign, a house, a grid, and a pencil. A vertical sidebar on the left contains icons for home, layers, a clock, settings, information, and search. The map displays a grid of red lines representing ENC data, with labels for cities like Chicago, Detroit, Toronto, Ottawa, Boston, New York, Washington, St. Louis, Atlanta, and Santo Domingo. The text "UNITED STATES" and "MEXICO" are visible on the map.

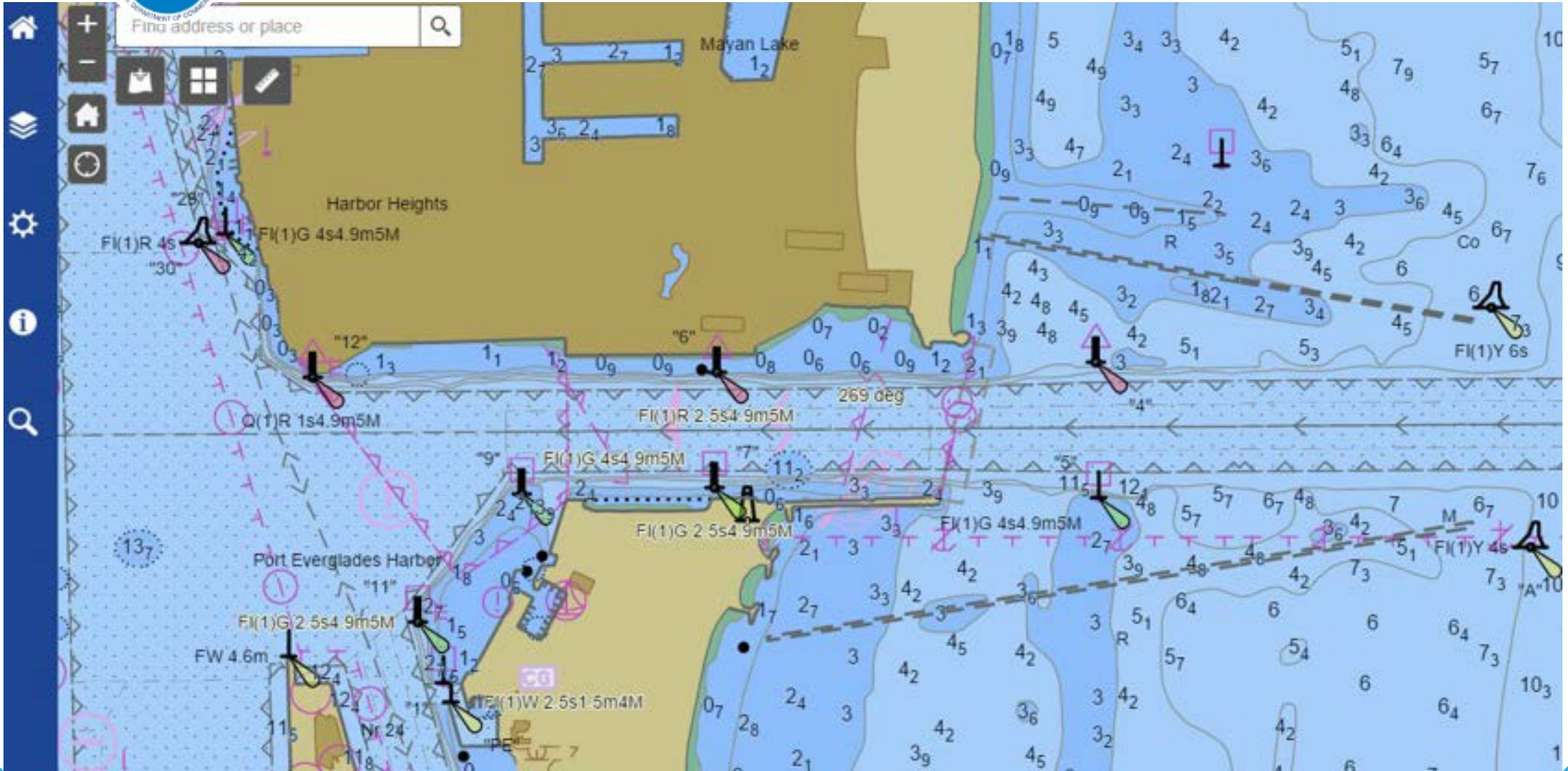


# ENC VIEWER

The screenshot displays the ENC Viewer application interface. At the top, there is a search bar with the text "Find address or place" and a magnifying glass icon. Below the search bar is a navigation toolbar with several icons: a home icon, a zoom in (+) and zoom out (-) icon, a map layers icon, a compass icon, a settings gear icon, an information 'i' icon, and a search magnifying glass icon. The main area shows a map of the Miami region, including Boca Raton, Fort Lauderdale, Port Everglades, AIWG, Opa-Locka Airport Light, Miami, Miami International Airport Light, "Fowey Rocks Light", Biscayne Bay, and Pavilion Key. The map features various navigational symbols such as lights (A, M, N), depth soundings (e.g., 312, 277, 382, 287, 415, 3.5 kn, 228, 256, 362, 50, 259, 252, 270, 60, 369, 382, 272, 354, 3.3, 400), and other markers. The map is overlaid with a grid of latitude and longitude lines.



# ENC VIEWER





# ENC VIEWER



## Maritime Display Properties

### Intended Usage:

- All Datasets
- Overview
- General
- Coastal
- Approach
- Harbor
- Berthing

### Isolated dangers in shallow water:

On  Off

### Label contours:

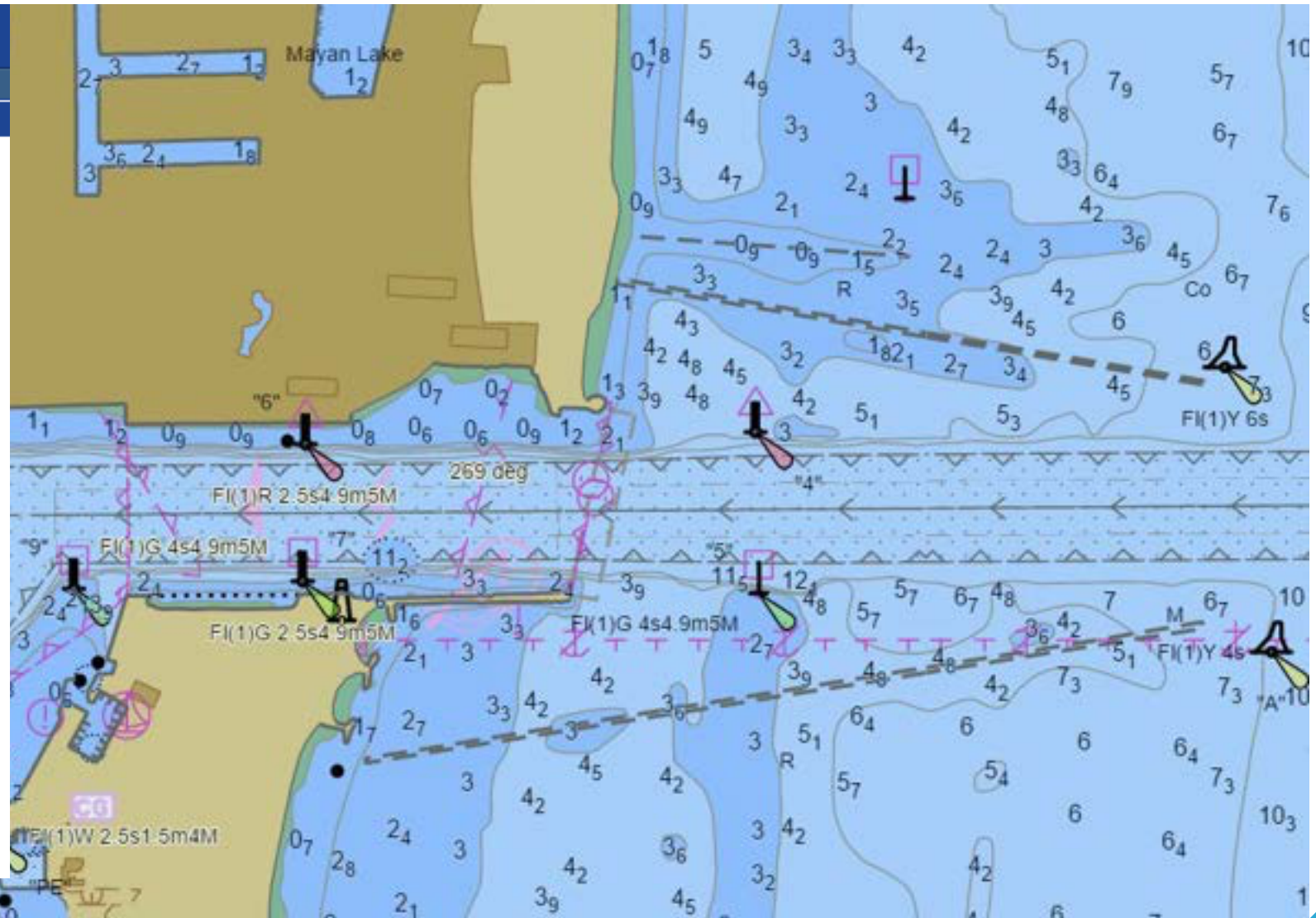
On  Off

### Label safety contours:

On  Off

### National names when available:

On  Off

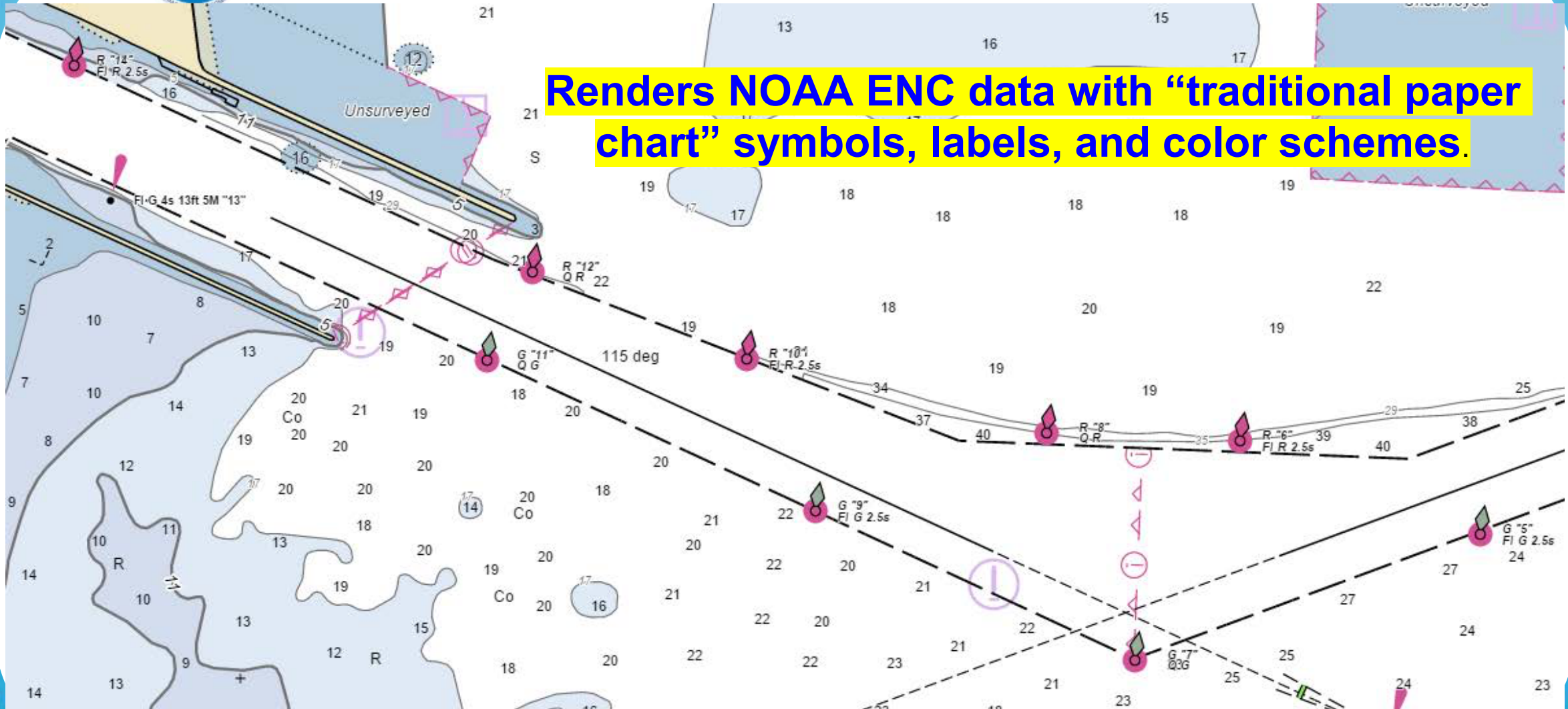






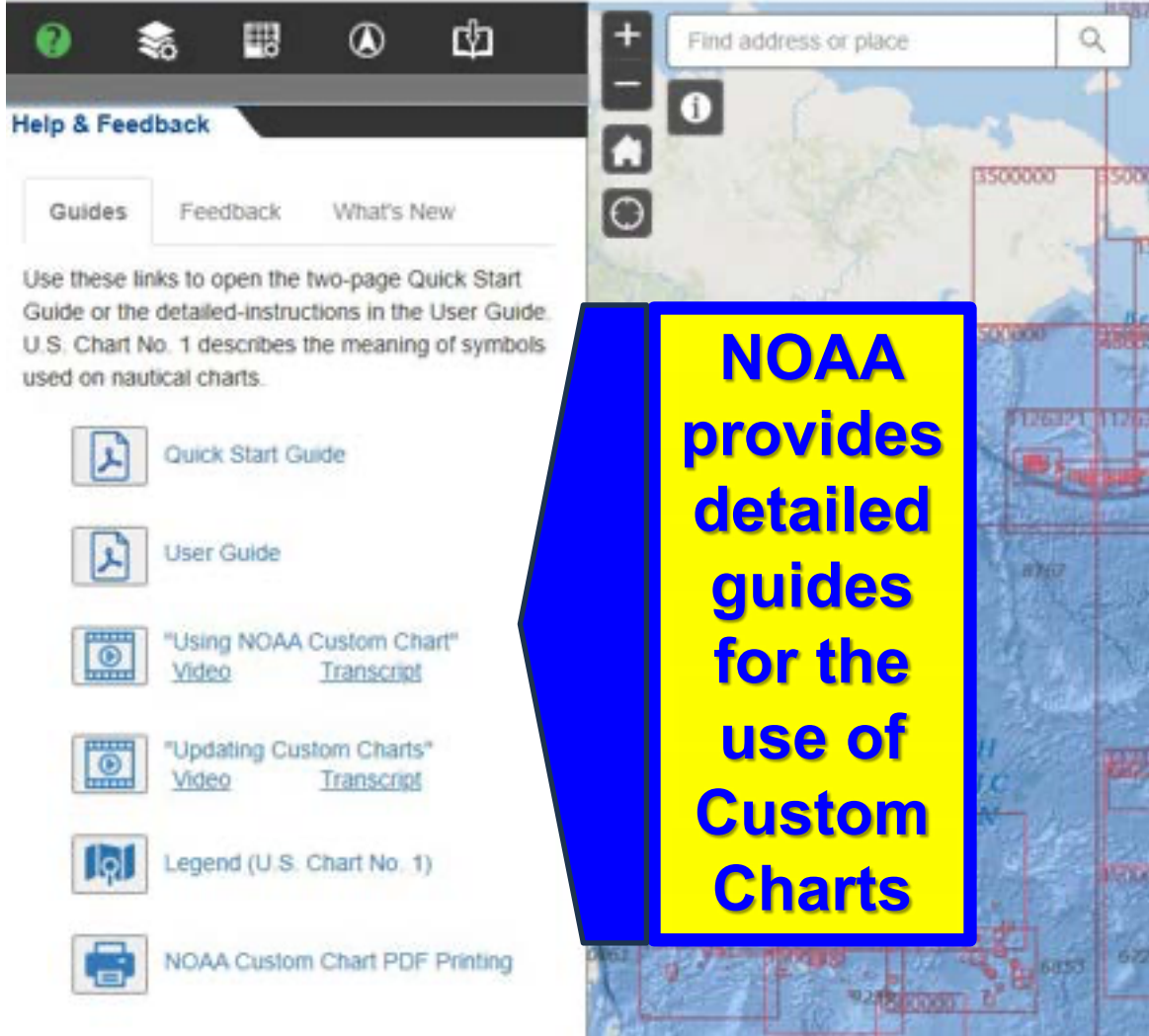
# NOAA NCDS PROTOTYPE VIEWER

Renders NOAA ENC data with “traditional paper chart” symbols, labels, and color schemes.



# NOAA CUSTOM CHART

 **Office of Coast Survey**  
National Oceanic and Atmospheric Administration  
U.S. Department of Commerce









Find address or place

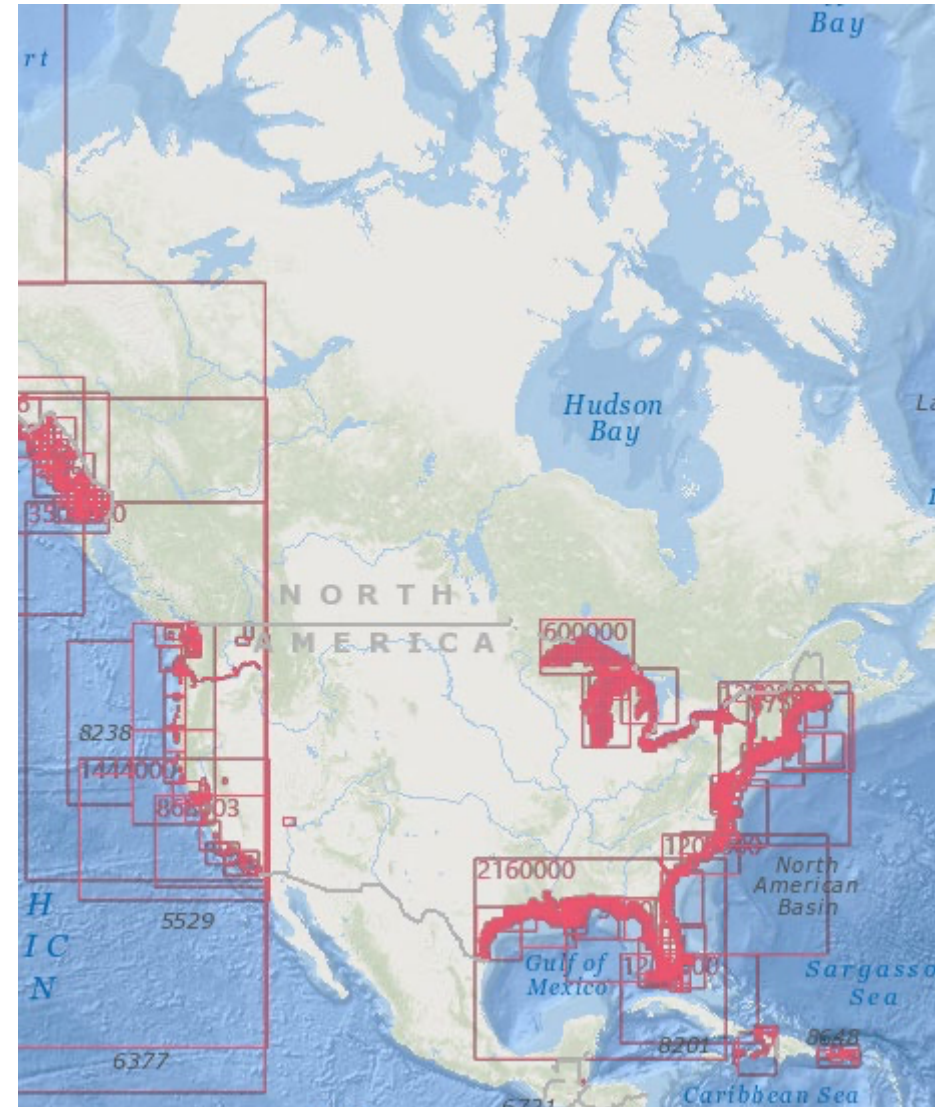
**Help & Feedback**

Guides Feedback What's New

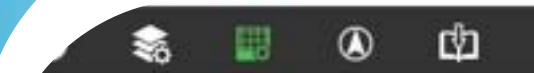
Use these links to open the two-page Quick Start Guide or the detailed-instructions in the User Guide. U.S. Chart No. 1 describes the meaning of symbols used on nautical charts.

-  Quick Start Guide
-  User Guide
-  "Using NOAA Custom Chart" [Video](#) [Transcript](#)
-  "Updating Custom Charts" [Video](#) [Transcript](#)
-  Legend (U.S. Chart No. 1)
-  NOAA Custom Chart PDF Printing

**NOAA provides detailed guides for the use of Custom Charts**



# NOAA CUSTOM CHART



## Chart Settings

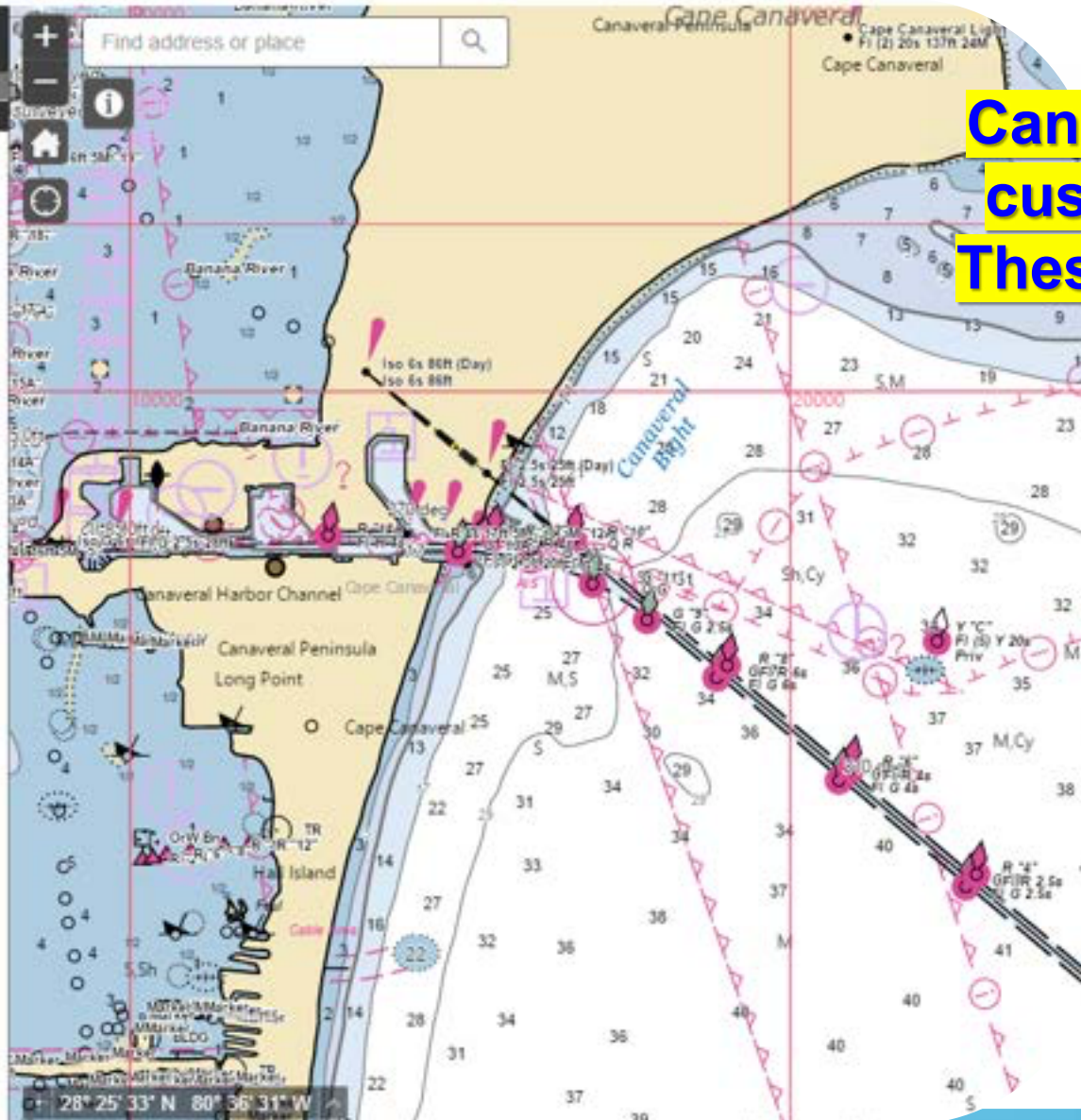
Use these settings to enter your chart parameters. More information about chart scale, depth zone shades and other settings is in the [User Guide](#).

Name:	<input type="text" value="Custom Chart"/>
Scale:	<input type="text" value="22000"/>
Page size:	<input type="text" value="ANSI D (22in x 34in)"/>
Orientation:	<input type="text" value="Portrait"/>

Chart units:	<input type="text" value="Feet"/>
Depth zones:	<input type="text" value="Four"/>
Depth zone shades:	Shallow: <input type="text" value="5"/> Safety: <input type="text" value="11"/> Deep: <input type="text" value="17"/>

Depth zones shallower than the entered values are tinted in the shade of blue shown. If no contour for the value exists in the ENC data, the next deeper contour is used. Depth zones deeper than the "Deep" value are displayed as white.

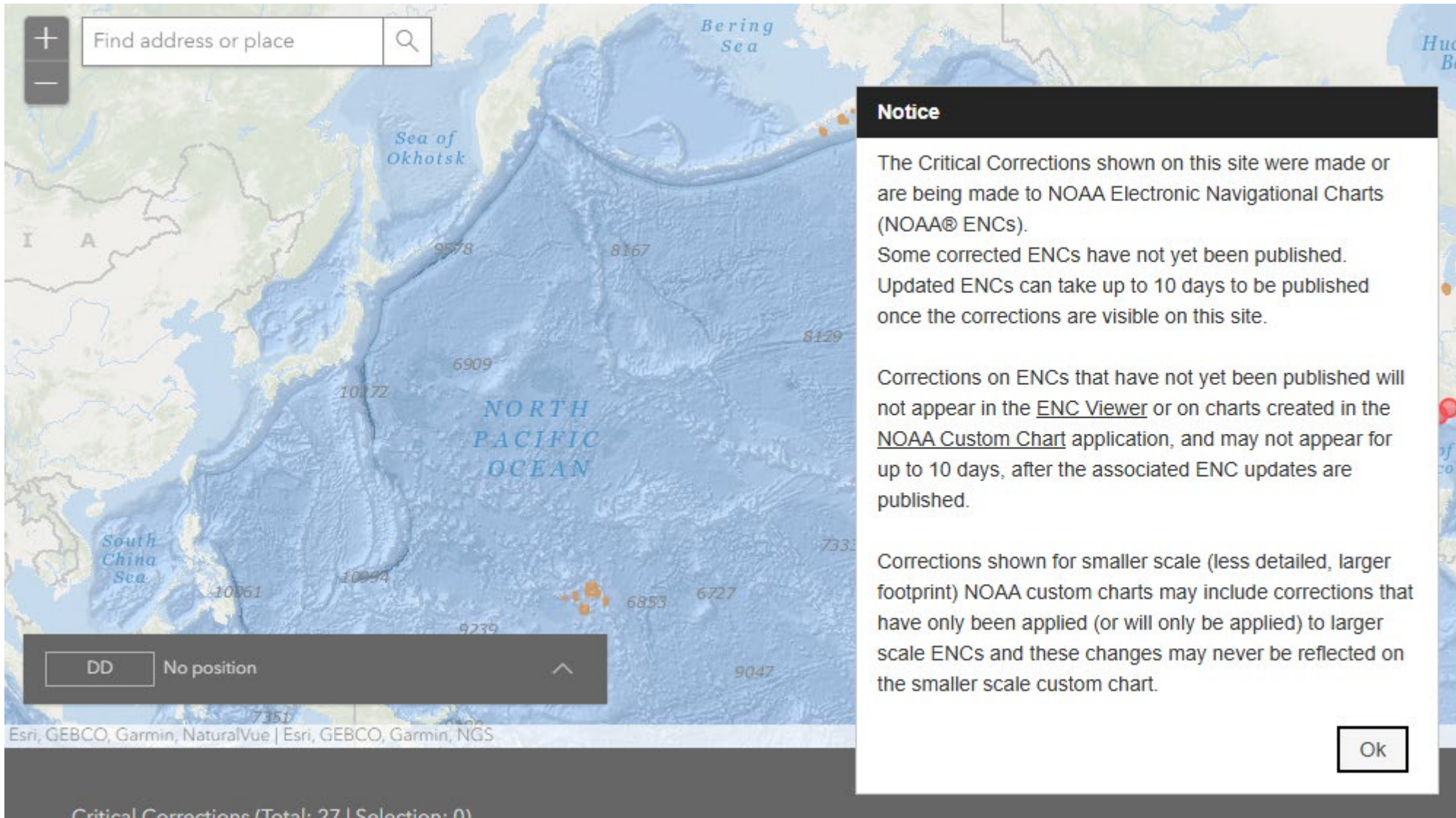
After populating all fields, click Create New Chart, then click the map once at the center of your chart. Click Move Chart, then click and drag the chart outline to refine its position.



**Can create and save customized charts. These charts update.**

***These charts can only be printed by commercial services..***

# NOAA NAVIGATION UPDATES APP



The screenshot displays the NOAA Navigation Updates App interface. At the top, there is a search bar with the placeholder text "Find address or place" and a magnifying glass icon. Below the search bar is a map of the North Pacific Ocean region, showing the Sea of Okhotsk, Bering Sea, and South China Sea. The map includes depth contours and various numerical values. A "Notice" dialog box is overlaid on the right side of the map. The dialog box has a black header with the word "Notice" in white. The main text of the notice is in black on a white background. At the bottom right of the dialog box is an "Ok" button. At the bottom of the app interface, there is a status bar that reads "Critical Corrections (Total: 27 | Selection: 0)".

Find address or place

**Notice**

The Critical Corrections shown on this site were made or are being made to NOAA Electronic Navigational Charts (NOAA® ENC's). Some corrected ENC's have not yet been published. Updated ENC's can take up to 10 days to be published once the corrections are visible on this site.

Corrections on ENC's that have not yet been published will not appear in the [ENC Viewer](#) or on charts created in the [NOAA Custom Chart](#) application, and may not appear for up to 10 days, after the associated ENC updates are published.

Corrections shown for smaller scale (less detailed, larger footprint) NOAA custom charts may include corrections that have only been applied (or will only be applied) to larger scale ENC's and these changes may never be reflected on the smaller scale custom chart.

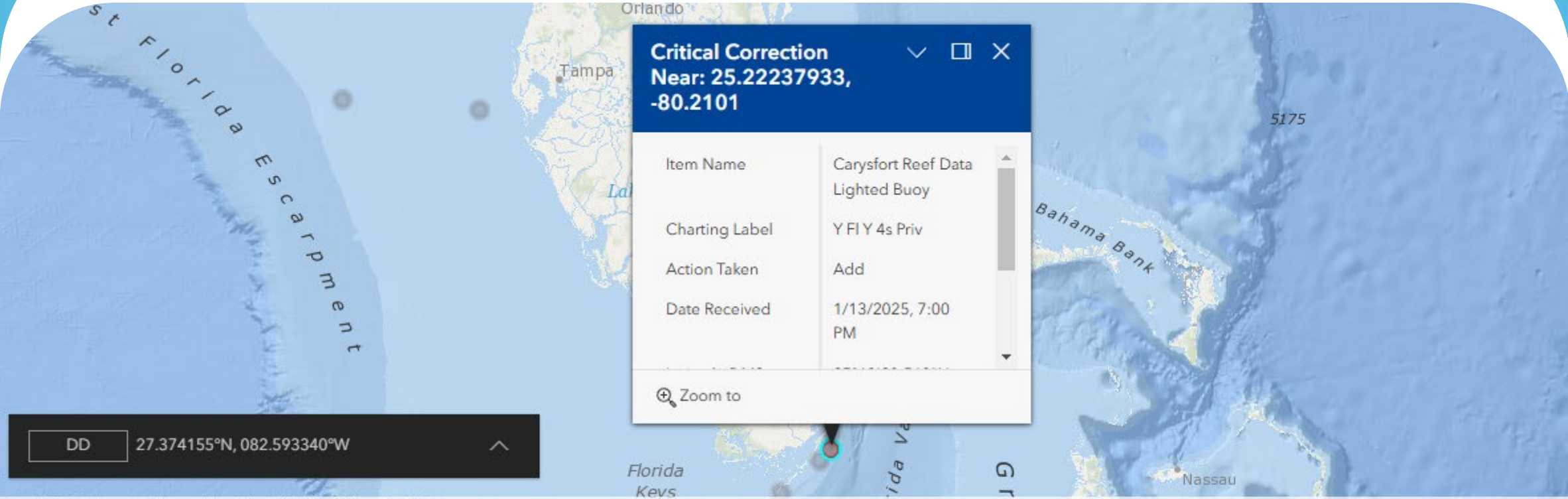
Ok

DD No position

Esri, GEBCO, Garmin, NaturalVue | Esri, GEBCO, Garmin, NGS

Critical Corrections (Total: 27 | Selection: 0)

# NOAA CRITICAL CORRECTIONS UPDATES



Esri, GEBCO, Garmin, NaturalVue | Esri, GEBCO, Garmin, NGS

Critical Corrections

Critical Corrections (Total: 27 | Selection: 1)

Item Name	Charting Label	Action Taken	Date Received	Latitude DMS	Longitude DMS
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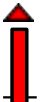


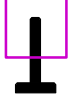


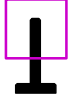

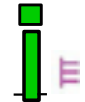




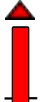


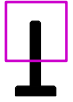
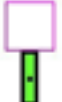










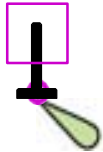
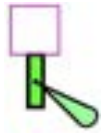
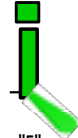







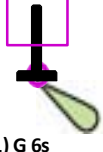

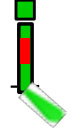



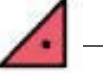

















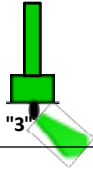

















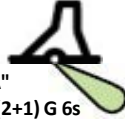

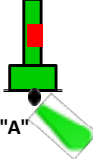





## ADDENDUM





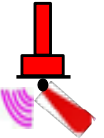







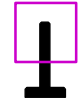
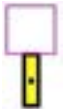









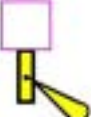



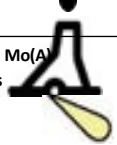


- **NOAA ENC CHART SYMBOLS**
- **KEY REFERENCES FOR ENC CHARTS**
- **NOAA ENC CHART CODES**



















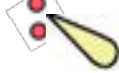











U.S.C.G AUXILIARY D7 GUIDE TO NOAA NAUTICAL CHARTS





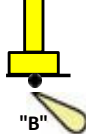


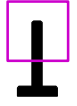
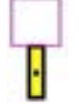




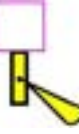
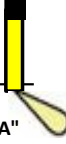


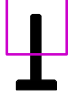
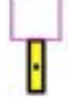








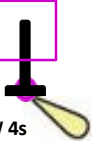


AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
RED BEACON		 R "4"	 "4"		 "4"
GREEN BEACON		 G "3"	 "3"		 "3"
RETRO-REFLECTOR BEACON			 "3"		
RED OVER GREEN PREFERRED CHANNEL / JUNCTION BEACON		 RG "G"	 "G"		 "G"
GREEN OVER RED PREFERRED CHANNEL / JUNCTION BEACON		 GR "U"	 "U"		 "U"
LIGHTED RED BEACON		 "12" Fl(2+1) R 6s	 12" Fl(2+1) R 6s		 "12"









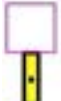








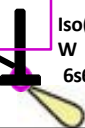




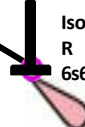





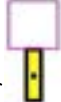

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED GREEN BEACON		 "5" Fl G 4s	 "5" Fl(1)G 4s		 "5"
LIGHTED RG PREFERRED CHANNEL / JUNCTION BEACON		 RG "G" Fl(2+1) R 6s	 "G" Fl(2+1)R6s		 "G"
LIGHTED GR PREFERRED CHANNEL / JUNCTION BEACON		 GR "U" Fl(2+1) G 6s	 "U" Fl(2+1) G 6s		 "U"
NUN BUOY					
CAN BUOY					
LIGHTED RED BUOY		 R "10" Fl R 4s	 "10" Fl R 4s		 "10"




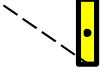








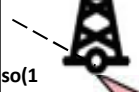

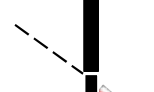


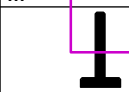

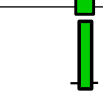

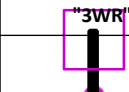
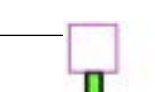





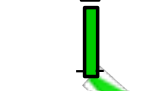

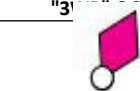

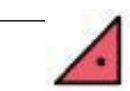

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED GREEN BUOY		 G "3" FI G 4s	 "3" FI G 4s		 "3"
PREFERRED CHANNEL / BIFURCATON / JUNCTION BUOY		 RG N "C"	 "C"		 "C"
PREFERRED CHANNEL / BIFURCATON / JUNCTION BUOY		 GR C "S"	 "S"		 "S"
LIGHTED PREFERRED CHANNEL / BIFURCATON / JUNCTION BUOY		 RG "B" F(2+1) R 6s	 "B" F(2+1) R 6s		 "B"
LIGHTED PREFERRED CHANNEL / BIFURCATON / JUNCTION BUOY		 GR "A" F(2+1) G 6s	 "A" F(2+1) G 6s		 "A"
LIGHTED WHISTLE BUOY (May be G or R)		 R "2V" FIR	 "2V" FI R 2.5s WHIS		 "2V"














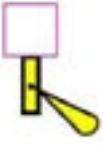















AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED BELL BUOY (May be G or R)		 <i>R "8"</i> <i>FI R 2.5s BELL</i>	 "8" FI R 2.5s BELL		 "8"
LIGHTED GONGBUOY (May be G or R)		 <i>G "29"</i> <i>FI G 2.5s GONG</i>	 "29" FI G 2.5s GONG		 "29"
SAFE WATER MARK BEACON		 RW "N"	 "N"		 "N"
SAFE WATER MARK / MID- CHANNEL / FAIRWAY BUOY		 RW "E"	 "E"		 "E"
LIGHTED SAFEWATER MARK BEACON		 RW "LM" Mo (A) 16ft 5M	 "LM" Mo(A) W 8s 16ft 5M		 "LM"
LIGHTED SAFEWATER MARK BUOY		 RW "PE" Mo (A) 18ft 5M	 "PE" Mo(A) W 8s 18ft 5M		 "PE"

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
ISOLATED DANGER MARK BUOY		 BR "C"	 "C"		 "C"
LIGHTED ISOLATED DANGER MARK BUOY		 BR "DP" FI (2) 5s	 "DP" FI(2)W 5s		 "DP"
ISOLATED DANGER MARK BEACON		 BR			
LIGHTED ISOLATED DANGER MARK BEACON		 BR FI (2) 5s	 FI(2)W5s		
SPECIAL PURPOSE CANBUOY		 Y C "A"	 "A"		 "A"
SPECIAL PURPOSE NUNBUOY		 Y N "C"	 "C"		 "C"

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED SPECIAL PURPOSE BUOY		 Y "B" Fl Y	 B" Fl(1) Y 6s		 "B"
SPECIAL PURPOSE BEACON		 Y "A" Bn	 "A"		 "A"
LIGHTED SPECIAL PURPOSE BEACON		 Y "A" Fl Y W Or	 "A" Fl Y		 "A"
REGULATORY / DANGER BEACON		 W Bn	 "A"		
REGULATORY / DANGER BUOY					
LIGHTED REGULATORY / DANGER BEACON		 Fl 4s	 Fl W 4s		

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED REGULATORY / DANGER BUOY		 Fl 4s	 Fl W 4s		
RANGE MARK On Pile With Board Narrow Light		 Fl W 2.5s 20ft	 Fl(1)W 2.5s6m		
RANGE MARK On Pile No Board Narrow Light		 Fl W 2.5s 20ft	 Fl(1)W 2.5s6m		
RANGE MARK On Pile No Board 360° White Light		 Iso W 6s 20ft	 Iso(1) W 6s6m		
RANGE MARK On Pile No Board 360° Red Light		 Iso R 6s 20ft	 Iso(1) R 6s6m		
RANGE MARK Skeleton Tower With Board Narrow Light		 Fl W 2.5s 20ft	 Fl(1)W 2.5s6m		

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
RANGE MARK Skeleton Tower No Board Narrow Light		 FI W 2.5s 20ft	 FI(1)W 2.5s6m		
RANGE MARK Skeleton TowerNo Board 360° White Light		 Iso W 6s 20ft	 Iso(1)W 6s6m		
RANGE MARK Skeleton TowerNo Board 360° Red Light		 Iso R 6s 20ft	 Iso(1)R 6s6m		
WRECK MARK BEACON (May be G or R)					
		G "3WR"			
LIGHTED WRECK MARKBEACON (May be G or R)					
WRECK MARKBUOY (May be G or R)		 "WR"	 "WR"	 "WR"	 "WR"

AID TYPE	IMAGE	NOAA RNC CHART	ENC "Paper"	ENC "Simplified"	Navionics
LIGHTED WRECK MARK (May be G or R)		 R "WR" G/R	 "WR" Q(1)R 1s		 "WR"
LOCATION MARK		 RW Bn			
LIGHTED LOCATION MARK		 Fl (1) W 4s	 Fl (1) W 4		
PIER LIGHT					
MAJOR LIGHT		 Fl 15s 85ft 24M			
AIS or RACON		 RACON (-)			

### **Key References for ENC Chart**

- NOAA Office of Coast Survey – Marine Chart Division
  - Nautical Charting Plan August 2023
  - NOAA ENC Design Handbook August 2023
- NOAA Office of Coast Survey – Hydrographic Survey Division
  - Hydrographic Survey Specifications and Deliverables
  - Field Procedures Manual
- IHO S-4 Regulations for International Charts and Chart Specifications of the IHO
- IHO S-11 Guidance for the Preparation and Maintenance of International Chart and ENC Schemes and Catalog of International Charts.
- IHO S-12 Standardization of List of Lights and Fog Signals
- IHO S-44 IHO Standards for Hydrographic Surveys
- IHO S-52 Specifications for Chart Content and Display Aspects of ECDIS
  - Annex A IHO ECDIS Presentation Library
  - Annex A Addendum Symbol Library for Use on ECDIS
- IHO S-57 IHO Standard for Digital Hydrographic Data
- IHO S-58 ENC Validation Checks
- IHO S-60 User's Handbook on Datum Transformations involving WGS84
- IHO S-61 Product Specifications for Raster Navigational Charts
- IHO S-65 ENC's: Production, Maintenance and Distribution Guidance
- IHO S-101 Electronic Navigational Chart (ENC)

### **Annex A: Regional ENC Chart Codes from NOAA ENC Design Scheme June 2024**

Some codes, especially in band 6, are not currently used.

Region	Code	Band
Global	GLB	1
Region	Code	Band
Arctic	ARC	2
Antarctic	ANT	2
Atlantic	ATL	2
Great Lakes	GRL	2
Gulf of Mexico	GOM	2
Pacific	PAC	2
Region	Code	Band
Alaska	AK1	3
Alabama	AL1	3
American Samoa	AS1	3
California	CA1	3
Connecticut	CT1	3
Cuba	CU1	3
Florida	FL1	3
Georgia	GA1	3
Guam	GU1	3
Hawaii	HI1	3
Illinois	IL1	3
Indiana	IN1	3
Louisiana	LA1	3
Massachusetts	MA1	3
Maryland	MD1	3
Maine	ME1	3
Michigan	MI1	3
Minnesota	MN1	3
Mississippi	MS1	3
North Carolina	NC1	3
New Hampshire	NH1	3
New Jersey	NJ1	3
New York	NY1	3
Ohio	OH1	3
Oregon	OR1	3
Pennsylvania	PA1	3
Puerto Rico	PR1	3
Rhode Island	RI1	3
South Carolina	SC1	3
Texas	TX1	3
US Minor 1	UM1	3
US Minor 2	UM2	3
Virginia	VA1	3
Washington	WA1	3
Wisconsin	WI1	3

Region	Code	Band
Alaska 1	AK1	4
Alaska 2	AK2	4
Alaska 3	AK3	4
Alaska 4	AK4	4
Alaska 5	AK5	4
Alaska 6	AK6	4
Alaska 7	AK7	4
Alabama	AL1	4
American Samoa	AS1	4
Antarctic Treaty 1	AQ1	4
Antarctic Treaty 2	AQ2	4
California 1	CA1	4
California 2	CA2	4
Connecticut	CT1	4
Delaware	DE1	4
Florida 1	FL1	4
Florida 2	FL2	4
Georgia	GA1	4
Guam 1	GU1	4
Guam 2	GU2	4
Hawaii 1	HI1	4
Hawaii 2	HI2	4
Hawaii 3	HI3	4
Hawaii 4	HI4	4
Idaho	ID1	4
Illinois	IL1	4
Indiana	IN1	4
Louisiana	LA1	4
Massachusetts	MA1	4
Maryland	MD1	4
Maine	ME1	4
Michigan 1	MI1	4
Michigan 2	MI2	4
Minnesota	MN1	4
Mississippi	MS1	4
North Carolina	NC1	4
New Hampshire	NH1	4
New Jersey	NJ1	4
Nevada 1	NV1	4
Nevada 2	NV2	4
New York 1	NY1	4
New York 2	NY2	4
Ohio	OH1	4
Oregon	OR1	4
Pennsylvania	PA1	4
Puerto Rico	PR1	4

Region	Code	Band
Rhode Island	RI1	4
South Carolina	SC1	4
Texas	TX1	4
US Minor 1	UM1	4
US Minor 2	UM2	4
US Minor 3	UM3	4
US Minor 4	UM4	4
US Minor 5	UM5	4
US Minor 6	UM6	4
Virginia	VA1	4
Virgin Islands	VI1	4
Washington	WA1	4
Wisconsin	WI1	4
Region	Code	Band
Alaska 11	A1K	5
Alaska 12	A2K	5
Alaska 13	A3K	5
Alaska 14	A4K	5
Alaska 10	AK0	5
Alaska 1	AK1	5
Alaska 2	AK2	5
Alaska 3	AK3	5
Alaska 4	AK4	5
Alaska 5	AK5	5
Alaska 6	AK6	5
Alaska 7	AK7	5
Alaska 8	AK8	5
Alaska 9	AK9	5
Alabama	AL1	5
Anchorage, AK	ANC	5
Alpena, MI	APN	5
New Iberia, LA	ARA	5
American Samoa 1	AS1	5
American Samoa 2	AS2	5
American Samoa 3	AS3	5
Antarctic Treaty	AQ1	5
Baltimore, MD	BAL	5
Bridgeport, CT	BDR	5
Bangor, ME	BGR	5
Biloxi, MS	BIX	5
Boston, MA	BOS	5
Baton Rouge, LA	BPG	5
Beaumont, TX	BPT	5
Brownsville, TX	BRO	5
Buffalo, NY	BUF	5
California 1	CA1	5
California 2	CA2	5
California 3	CA3	5

## D7NS 1100.A

Region	Code	Band
California 4	CA4	5
California 5	CA5	5
California 6	CA6	5
Conneaut, OH	CDY	5
Chicago, IL	CHI	5
Charleston, SC	CHS	5
Cleveland, OH	CLE	5
Port Angeles, WA	CLM	5
Coos Bay, OR	COB	5
Corpus Christi, TX	CRP	5
Connecticut	CT1	5
District of Columbia	DC1	5
Delaware	DE1	5
Detroit, MI	DET	5
Duluth, MN	DLH	5
Drummond Island, MI	DRE	5
Escanaba, MI	ESC	5
Fall River, MA	FAV	5
Florida 1	FL1	5
Florida 2	FL2	5
Florida 3	FL3	5
Florida 4	FL4	5
Florida 5	FL5	5
Florida 6	FL6	5
Florida 7	FL7	5
Florida 8	FL8	5
Fond du Lac, WI	FLD	5
Flemington, NJ	FLE	5
Flatrock, MI	FLF	5
Foley, FL	FLS	5
Flat, AK	FLT	5
Franklin, WI	FLW	5
Fort Bragg, CA	FOB	5
Fourchon, LA	FOC	5
Freeport, TX	FPO	5
Fairport Harbor, OH	FPT	5
Georgia 1	GA1	5
Georgia 2	GA2	5
Grays Harbor, WA	GHC	5
Gulfport, MS	GPT	5
Green Bay, WI	GRB	5
Guam 1	GU1	5
Guam 2	GU2	5
Guam 3	GU3	5
Guam 4	GU4	5
Gulliver, MI	GUV	5
Hempstead, NY	HEP	5
Hingham, MT	HGG	5
Hawaii 1	HI1	5

## GUIDE TO NOAA NAUTICAL CHARTS

Region	Code	Band
Hawaii 2	HI2	5
Hawaii 3	HI3	5
Hawaii 4	HI4	5
Hawaii 5	HI5	5
Hawaii 6	HI6	5
Hawaii 7	HI7	5
Hawaii 8	HI8	5
Honolulu, HI	HNL	5
Houston, TX	HOU	5
Hopewell, VA	HPW	5
Houma, LA	HUM	5
New Haven, CT	HVN	5
Illinois	IL1	5
Wilmington, DE	ILG	5
Wilmington, NC	ILM	5
Ithaca, NY	ITH	5
Hilo, HI	ITO	5
Jacksonville, FL	JAX	5
Juneau, AK	JNU	5
Lakeside Marblehead, OH	KDB	5
Kinsman, IL	KFM	5
Kawaihae, HI	KHW	5
Ketchikan, AK	KTN	5
Kivalina, AK	KVL	5
Louisiana 1	LA1	5
Louisiana 2	LA2	5
Louisiana 3	LA3	5
Laguna Beach, CA	LAX	5
Lancaster, NY	LAC	5
La Mesa, CA	LAE	5
Lake Charles, LA	LCH	5
Long Beach, CA	LGB	5
Morgan City, LA	LMO	5
Lorain, OH	LOR	5
Port of South Louisiana, LA	LU8	5
Massachusetts	MA1	5
Maryland	MD1	5
Maine 1	ME1	5
Maine 2	ME2	5
Maine 3	ME3	5
Manatee, FL	MEE	5
Moffett Field, CA	MEF	5
Mehoopany, PA	MEH	5
Matagorda Island, TX	MGI	5
Michigan 1	MI1	5
Michigan 2	MI2	5
Michigan 3	MI3	5
Michigan 4	MI4	5
Michigan 5	MI5	5

Region	Code	Band
Michigan 6	MI6	5
Michigan 7	MI7	5
Miami, FL	MIA	5
Milwaukee, WI	MKE	5
Muskegon, MI	MKG	5
Minnesota	MN1	5
Mobile, AL	MOB	5
Morehead City, NC	MRH	5
Mississippi	MS1	5
New Orleans, LA	MSY	5
North Carolina 1	NC1	5
North Carolina 2	NC2	5
New Hampshire	NH1	5
Nawiliwili, HI	NIJ	5
New Jersey	NJ1	5
Nikishka, AK	NQK	5
Port Hueneme, CA	NTD	5
New York 1	NY1	5
New York 2	NY2	5
New York 3	NY3	5
New York 4	NY4	5
New York 5	NY5	5
New York 6	NY6	5
New York 9	NY9	5
New York City, NY	NYC	5
Oakland, CA	OAK	5
Kahului, HI	OGG	5
Olympia, WA	OLM	5
Oregon 1	OR1	5
Oregon 2	OR2	5
Norfolk, VA	ORF	5
Orange, TX	ORG	5
Pennsylvania	PA1	5
Palm Beach, FL	PAB	5
Pittsburg, CA	PBG	5
Port Canaveral, FL	PCV	5
Portland, OR	PDX	5
Port Everglades, FL	PEF	5
Panama City, FL	PFN	5
Pascagoula, MS	PGL	5
Philadelphia, PA	PHL	5
Plaquemine, LA	PLQ	5
Port Lavaca, TX	PLV	5
Pensacola, FL	PNS	5
Port Arthur, TX	POA	5
Puerto Rico 1	PR1	5
Puerto Rico 2	PR2	5
Ponce, PR	PSE	5
Portsmouth, NH	PSM	5

Region	Code	Band
Kawaihae, HI	KHW	6
Ketchikan, AK	KTN	6
Kivalina, AK	KVL	6
Laguna Beach, CA	LAX	6
Lake Charles, LA	LCN	6
Long Beach, CA	LGB	6
Longview, WA	LOG	6
Lorain, OH	LOR	6
Port of South Louisiana, LA	LU8	6
Marcus Hook, PA	MAH	6
Manatee, FL	MEE	6
Matagorda Island, TX	MGI	6
Calcite, MI	MI3	6
Miami, FL	MIA	6
Milwaukee, WI	MKE	6
Muskegon, MI	MKG	6
Mobile, AL	MOB	6
Monroe, MI	MOI	6
Marquette, MI	MQT	6
Morehead City, NC	MRH	6
New Orleans, LA	MSY	6
Barbers Point, Oahu, HI	NAX	6
New Castle, DE	NCD	6
Nawiliwili, HI	NIJ	6
Nikishka, AK	NQK	6
Port Hueneme, CA	NTD	6
New York City, NY	NYC	6
Oakland, CA	OAK	6
Kahului, HI	OGG	6
Olympia, WA	OLM	6
Norfolk, VA	ORF	6
Palm Beach, FL	PAB	6
Everett, WA	PAE	6
Paulsboro, NJ	PAU	6
Port Canaveral, FL	PCV	6

## GUIDE TO NOAA NAUTICAL CHARTS

Region	Code	Band
Bangor, ME	BGR	6
Biloxi, MS	BIX	6
Burns Harbor, IN	BNB	6
Boston, MA	BOS	6
Baton Rouge, LA	BPG	6
Beaumont, TX	BPT	6
Brownsville, TX	BRO	6
Buffalo, NY	BUF	6
Camden-Gloucester, NJ	CDE	6
Conneaut, OH	CDY	6
Chicago, IL	CHI	6
Charleston, SC	CHS	6
Chester, PA	CHT	6
Cleveland, OH	CLE	6
Port Angeles, WA	CLM	6
Coos Bay, OR	COB	6
Corpus Christi, TX	CRP	6
Detroit, MI	DET	6
Duluth, MN	DLH	6
Drummond Island, MI	DRE	6
East Chicago, IN	ECH	6
Escanaba, MI	ESC	6
Fall River, MA	FAV	6
Fort Bragg, CA	FOB	6
Fourchon, LA	FOC	6
Freeport, TX	FPO	6
Fairport Harbor, OH	FPT	6
Grays Harbor, WA	GHC	6
Grand Haven, MI	GHN	6
Galveston, TX	GLS	6
Gulfport, MS	GPT	6
Green Bay, WI	GRB	6
Gulliver, MI	GUV	6
Gary, IN	GYG	6
Hempstead, NY	HEP	6
Honolulu, HI	HNL	6
Houston, TX	HOU	6
Hopewell, VA	HPW	6
New Haven, CT	HVN	6
Brunswick, GA	IDC	6
Wilmington, DE	ILG	6
Wilmington, NC	ILM	6
Ithaca, NY	ITH	6
Hilo, HI	ITO	6
Jacksonville, FL	JAX	6
Juneau, AK	JNU	6
Kalama, WA	KAM	6
Lakeside Marblehead, OH	KDB	6
Kinsman, IL	KFM	6

Region	Code	Band
Presque Isle, MI	PSS	5
Port Jefferson, NY	PTJ	5
Providence, RI	PVD	5
Portland, ME	PWM	5
Rhode Island	RI1	5
San Diego, CA	SAN	5
Savannah, GA	SAV	5
South Carolina 1	SC1	5
South Carolina 2	SC2	5
Seattle, WA	SEA	5
San Juan, PR	SJU	5
Brunswick, GA	SSI	5
Toledo, OH	TOL	5
Tampa, FL	TPA	5
Texas 1	TX1	5
Texas 2	TX2	5
Texas 3	TX3	5
Texas City, TX	TXT	5
Unalaska Island, AK	UAA	5
US Minor 1	UM1	5
US Minor 2	UM2	5
US Minor 3	UM3	5
US Minor 4	UM4	5
US Minor 5	UM5	5
US Minor 6	UM6	5
Virginia	VA1	5
Victoria, TX	VCT	5
Valdez, AK	VDZ	5
Virgin Islands	V11	5
Vermont	VT1	5
Washington 1	WA1	5
Washington 2	WA2	5
Washington 3	WA3	5
Washington 4	WA4	5
Washington 5	WA5	5
Wisconsin 1	WI1	5
Wisconsin 2	WI2	5
Watkins Glen, NY	WKG	5
Yakutat, AK	YAK	5
Region	Code	Band
Marine City, MI	2TT	6
Albany, NY	ALB	6
Anchorage, AK	ANC	6
Alpena, MI	APN	6
New Iberia, LA	ARA	6
Ashtabula, OH	ASF	6
Baltimore, MD	BAL	6
Bridgeport, CT	BDR	6