



Navigation 1

Skipper/XO Training

2005



Navigation...



Why Such A Big Deal???

- Groundings on the bay
- Groundings in New England
- Congere's Three Bump Rule...
 - First bump - you know you're hosed
 - Second bump - the rig comes down
 - Third bump - The keel's in the cabin/boat sinks
- The Navy 44 (stout but not indestructible)



What We'll cover



- This course teaches the practice of navigation
 - Need to develop proficiency here, in the classroom, so that you can remember the details when at sea...
- It doesn't teach tides and currents
- It does not teach the analytical underpinnings
 - That's left to you
 - Read Hobbs, or US Sailing's Coastal Navigation Text



The Text Books...

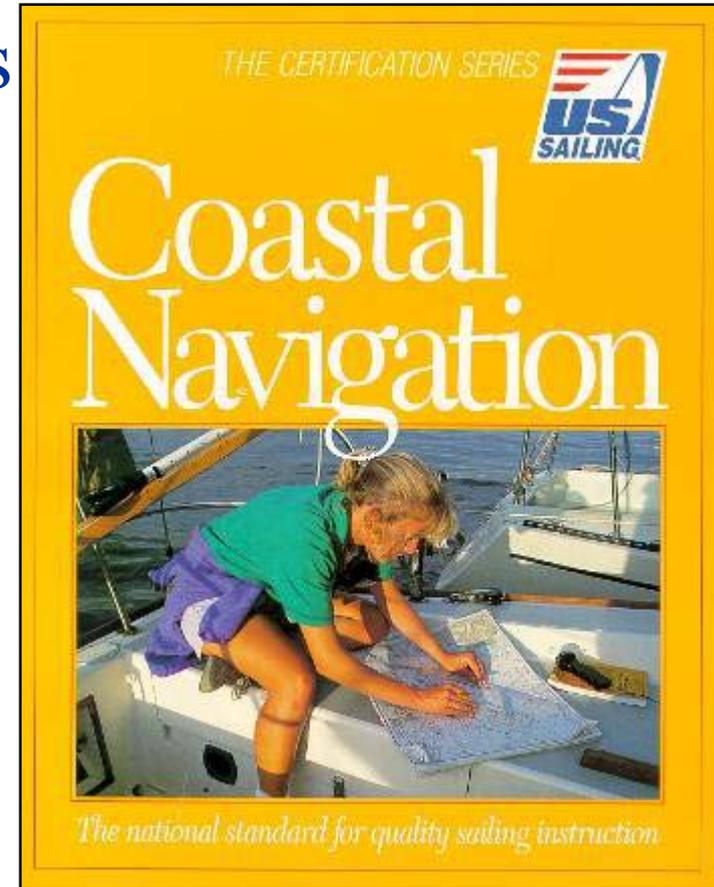


Particularly useful

- Teaches short-handed Nav Skills
- Teaches “seaman’s eye”
- Uses layman’s terminology

But...

- The Navy uses the “alternative plotting method”
- We use “Degrees Magnetic”





The Text Books...

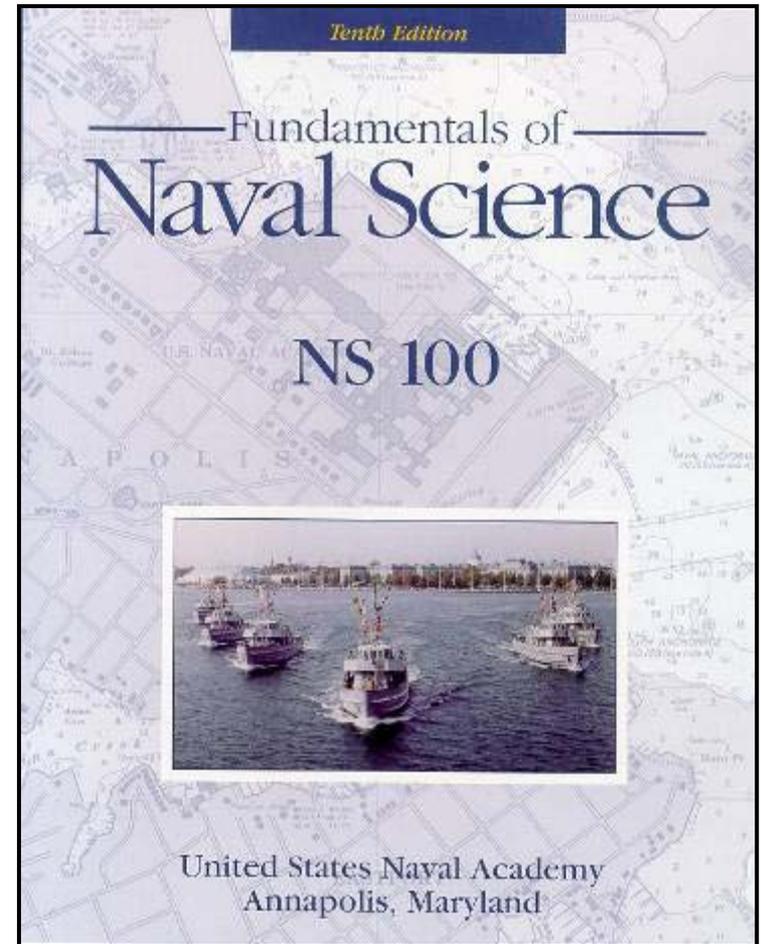


The Midshipmen's Text

We teach this to our prospective program participants

Why?

This is the standard that the 3/C will be taught to





Course Overview...



- The Chart
 - Primary emphasis on chart preparation
- The Fix
 - Visual & Electronic
 - Accuracy and errors
- The DR
 - The most important thing on the chart
- Making landfall
 - The Navigation Brief
- Navigation Party
 - Organization, procedures & philosophy
- Navigation Practical



Before We Talk About Charts...





What's In The Average Nav Table?



These may be the only navigation instruments you find...



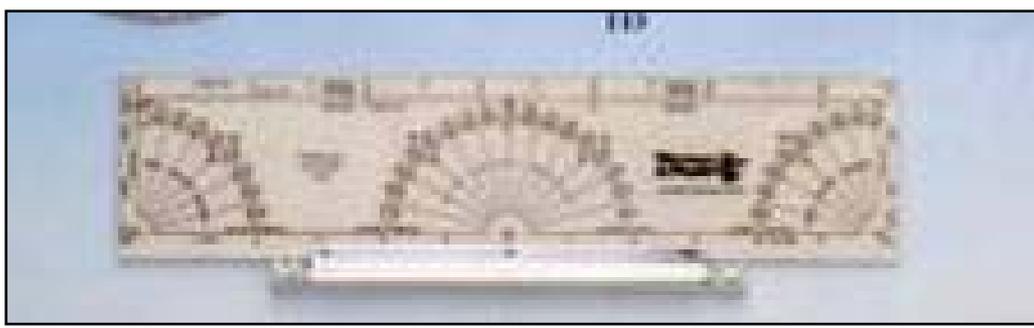
Dividers & Compass



The Other Tools of the Trade...



Nautical Slide Rule



Roller Plotter



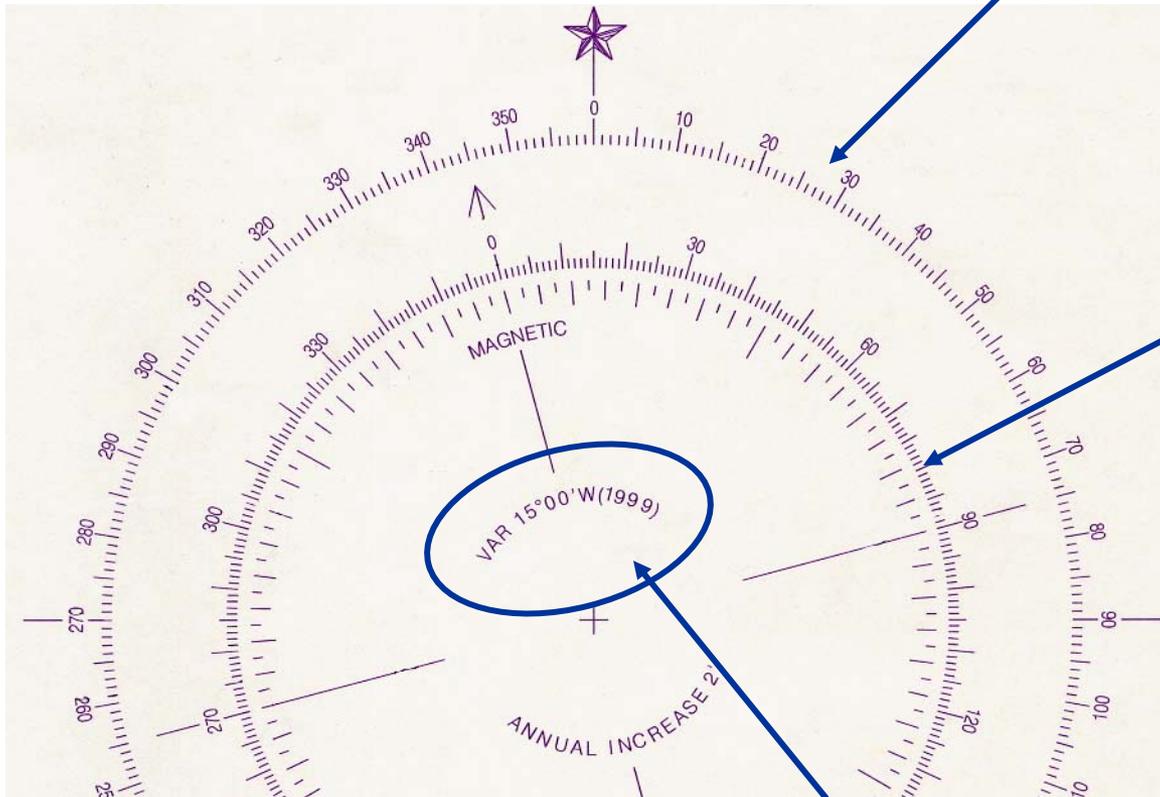


The Compass Rose...



Degrees True

- Don't use this one...



Degrees Magnetic
- Use this one!!!

Variation...

- What do you need to know?



The Steering Compass...



Key elements:

- Susceptible to deviation errors
- Mids ought to be able to steer within ten degrees of ordered course without looking at the compass
- Not Midshipman Proof





The Hand Bearing Compass...



Key elements:

- Almost Midshipman Proof
- Susceptible to deviation errors
- They come with a Lanyard – Use it!!!

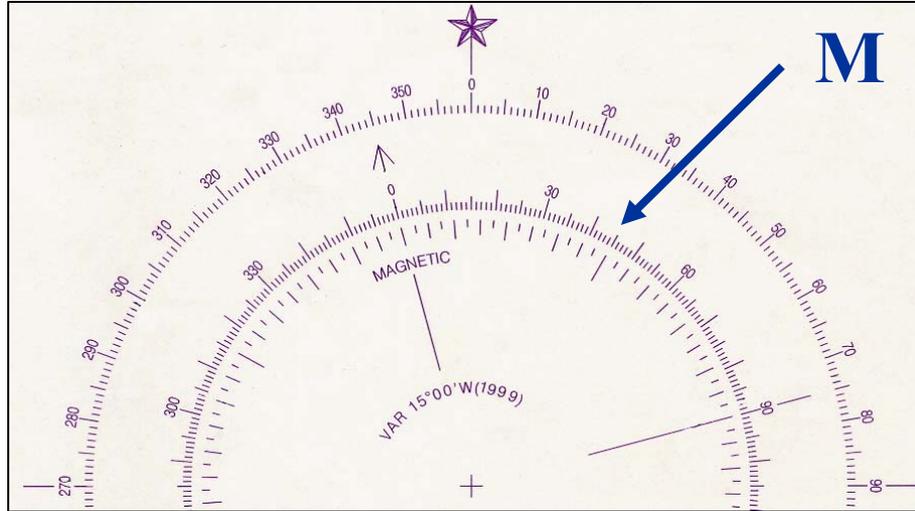




The Bottom Line...



A



B



C

We assume Deviation = 0

$$\underline{A = B = C}$$



Unless...





And Unless...





The Chart...



- What must you know?
 - Latitude & Longitude
 - Sounding datum
 - Nav Aids and Nav Hazards
 - Chart 1
 - Is it current?
 - Notice to Mariners



Latitude & Longitude...



- Two scales
 - Degrees, Minutes & Tenths
 - Degrees, Minutes & Seconds
- Make sure GPS readout is in same units

Note: Many errors occur on the chart shift!!!

- Use latitude for distance measurement



Sounding Datum...



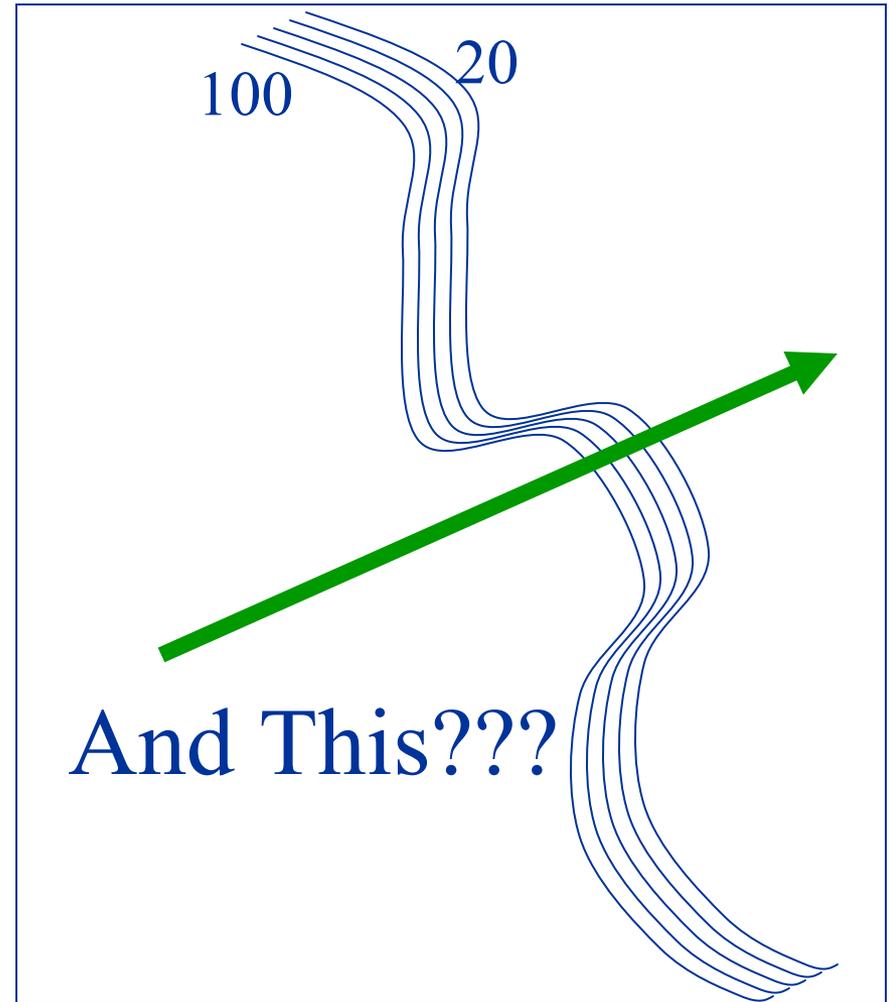
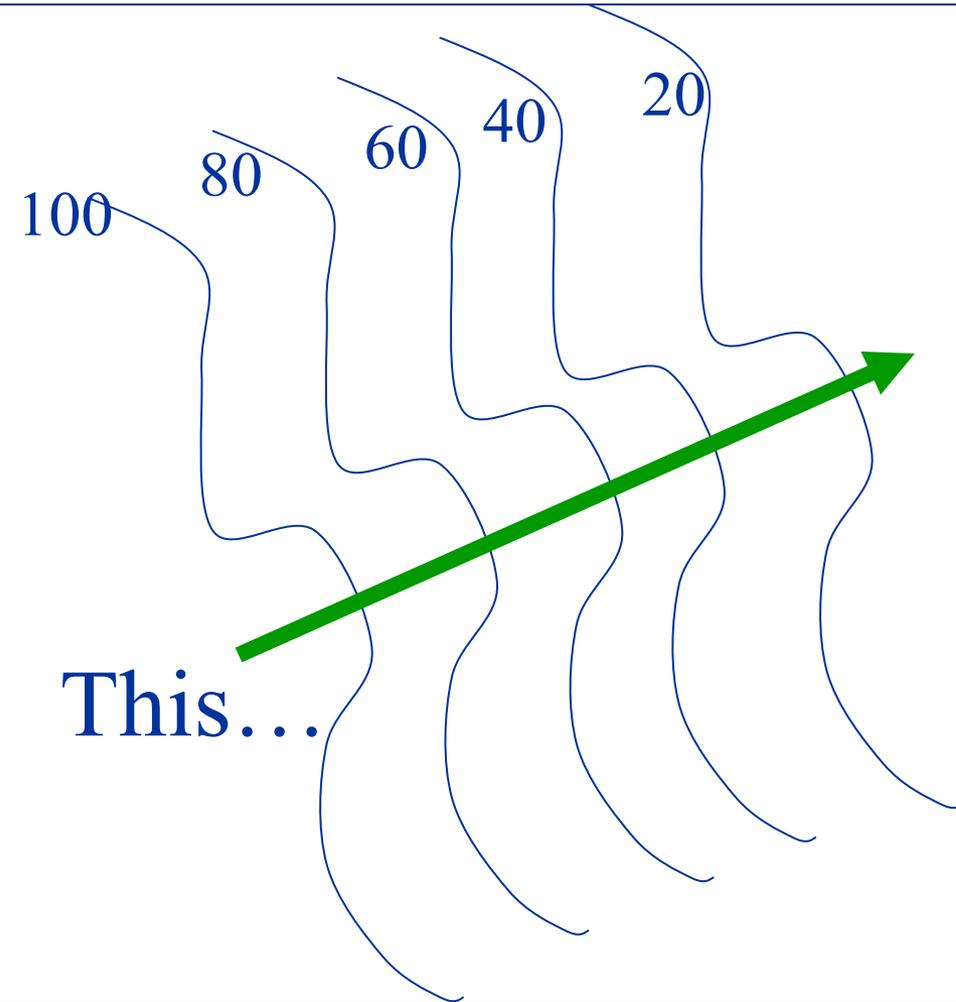
- Fathoms, Feet or Meters??? (make B&G match)



7' 6"



What's The Difference Between...

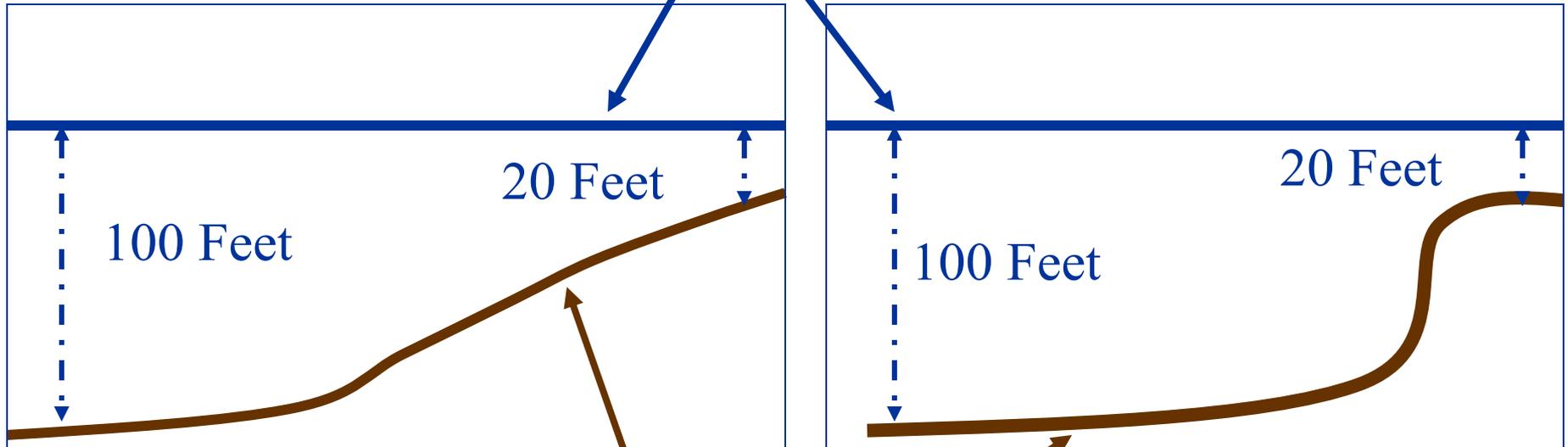




What's The Difference Between...

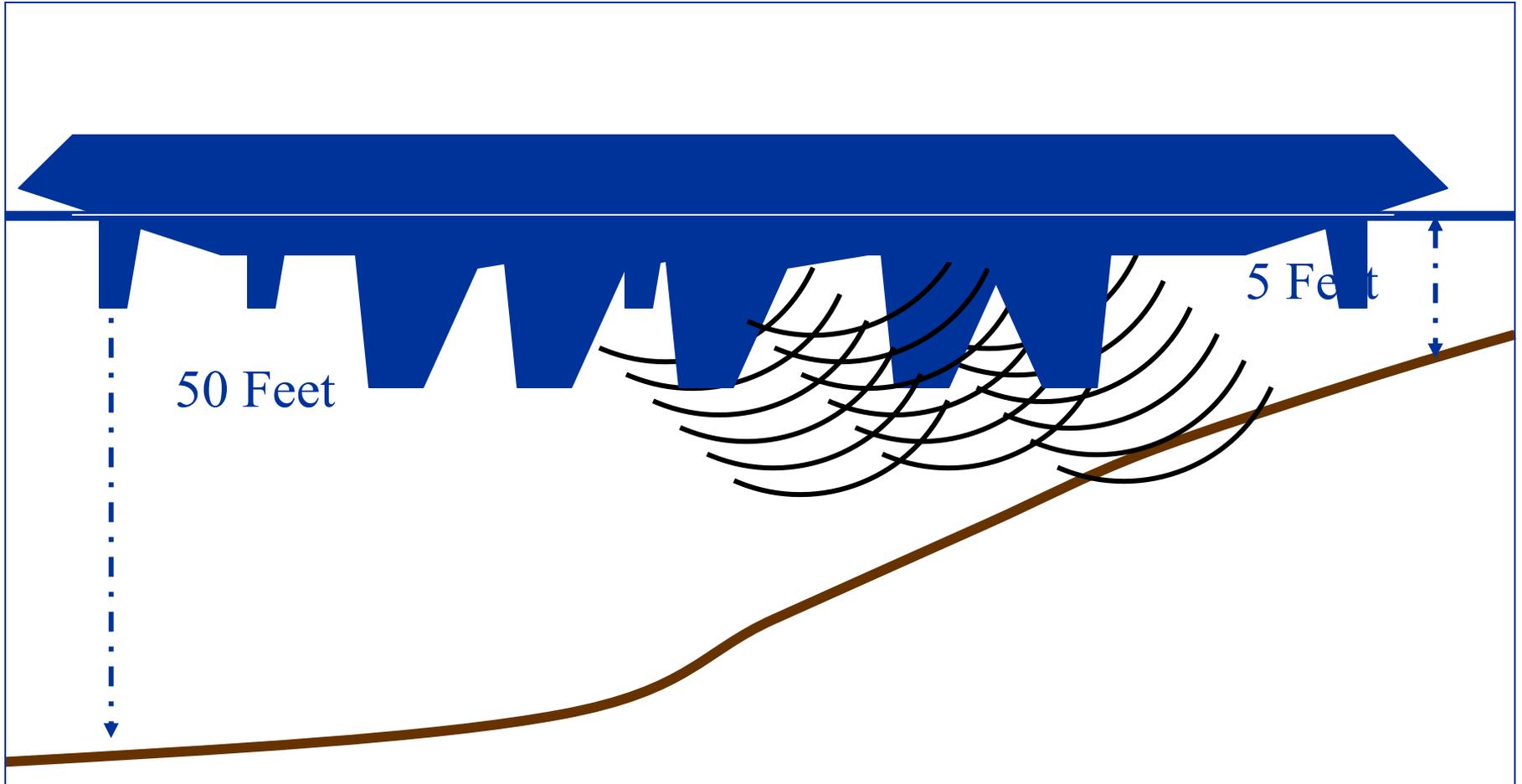


Water Surface



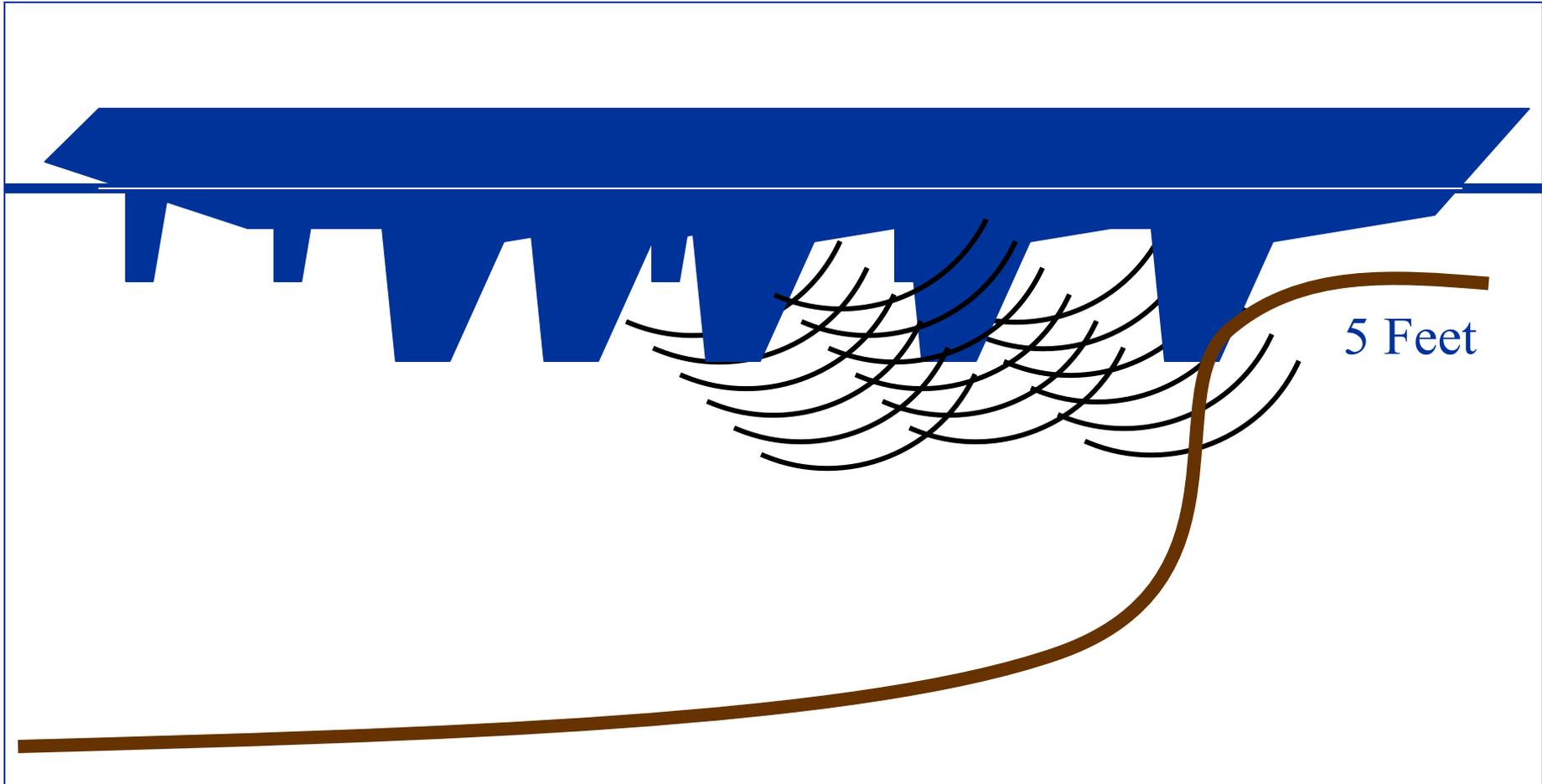
Bottom Contours

What's The Difference Between...



Time To React...

What's The Difference Between...



No Time To React...



The Chart...

And the Chart's Answer Key



Schematic layout of a chart (produced in size)

DEPTHS IN METERS Nautical Chart Catalog No.3 Panel 1.4

INTERNATIONAL

CHART SERIES
UNITED STATES
ALASKA—SOUTH COAST

COOK INLET
Mercator Projection
Scale 1:100,000 of Lat 54°00'

Authority

Note A

Pipeline

Caution

Source

Inset

Unimak Pass
1:100,000

INT 600
412

1 **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12** **13** **14** **15** **16** **17**

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CHART NO. 1
UNITED STATES OF AMERICA
NAUTICAL CHART
Symbols Abbreviations and Terms

TENTH EDITION **NOVEMBER 1997**



Chart Up To Date???



Notice to Mariners - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Netsite: http://pollux.nss.nima.mil/untm/untm_options.html?class_flag=N What's Related

Counties and Re Instant Message Members WebMail Connections BizJournal SmartUpdate Mktplace

UNITED STATES OF AMERICA

Notice to Mariners

Note

The US Notice to Mariners corrects NIMA and NOS charts using information collected from many sources, among them the US Coast Guard Local Notices published by the several Coast Guard districts. From all sources the US Notice to Mariners will contain only those chart corrections of interest to *ocean going vessels*.

View/Download the NTM

Notices to Mariners are available for online review or download, as well as the special paragraphs from the last released NTM 01. For a specific data set, [Query the NTM Database](#) below.

Notice Number	Notice Date
---------------	-------------

Document: Done

Start | Exploring... | Microsoft... | Notice... | Microsoft... | NetWare Br... | 11:23 PM



The Chart Prep Checklist...



Navy Sailing Chart Preparation Checklist

Chart Number _____

1. Note the chart's sounding datum (X the appropriate box).

Fathoms _____ Feet _____ Meters _____

2. Box the Sounding Datum. Highlight in orange and verify that it's visible after the chart is folded for use. If not, annotate it where it can best be seen.

3. Enter the vessel's draft (i.e., 7.5 feet) _____

- Use the same units as the chart's sounding datum

4. Round up _____

5. Define your Risk Factor: _____

- Knowledgeable Crew/Racing Risk Factor = 1
- Novice Crew/Training Risk Factor = 2 or 3

6. Calculate minimum sounding line as follows:

- Multiply the number from line 4 by the Risk Factor defined in line 5

_____ X _____ = _____

(i.e., For a CSNTS Cruise: 8 feet times 2 = 16 ft)

7. Review the chart for actual sounding datum line. Choose one based on line 6 above, rounding up if required (typical depth contour lines are at 12 or 18 feet): _____

8. Mark this sounding line with a dark blue marker. Pay particular attention to the rate of change of depth, and mark the chart accordingly.

9. Visual Navigation Aids: Carefully review the chart, and identify visual navaids:

- Circle, highlight in yellow, and label with an easily spoken, unmistakable short noun name ABC. (Thomas Point Light)

10. Navigation hazards: Carefully review the chart, and identify unlighted buoys and other nav hazards.

- Circle, highlight in pink, and label UNLIT (ABC) or NAVHAZ (ABC) or HAZ (ABC).

11. Radar Aids: Carefully review the chart, and identify radar nav aids (points of land, lighthouses, RACON buoys, etc.).

- Triangle, highlight in orange, and label ABC
- Pay particular attention for RACON buoys. These should have a circle and a triangle, and be labeled RACON ABC

12. Track: Draw and label the track.

- Label the track with proposed Course and Speed
- The track can be drawn down the center of the deep draft channel to alert the watchsection to the expected location of merchant traffic.

13. Shoal Water: Using the blue line defined in line 8 above, slash the shoal water areas in dark blue, and cross slash those areas where rapidly shoaling water, and thus rapidly changing soundings, will not provide adequate warning.

14. Fold and label: Fold and label the chart as follows:

- Fold the chart in fourths
- Label the bottom right corner with the noun name of the chart in large legible letters. Immediately above/below write the next chart along the north/southbound track

15. Verify Currency: Immediately prior to use, verify the chart has been corrected and is up to date by querying the NIMA Notice To Mariners Database at:

http://pollux.nss.nima.nitd.navy.mil/untm/untm_j_options.html?class_flag=N

Latest Chart Edition _____ On-hand Chart Edition _____

Latest Notice To Mariners _____

CHART UPDATED THROUGH NOTICE TO MARINERS _____ / _____
Number Date

Submitted: _____ Reviewed: _____
Midshipman Navigator AOIC/Navigator

Approved: _____
Officer In Charge



Chart Prep

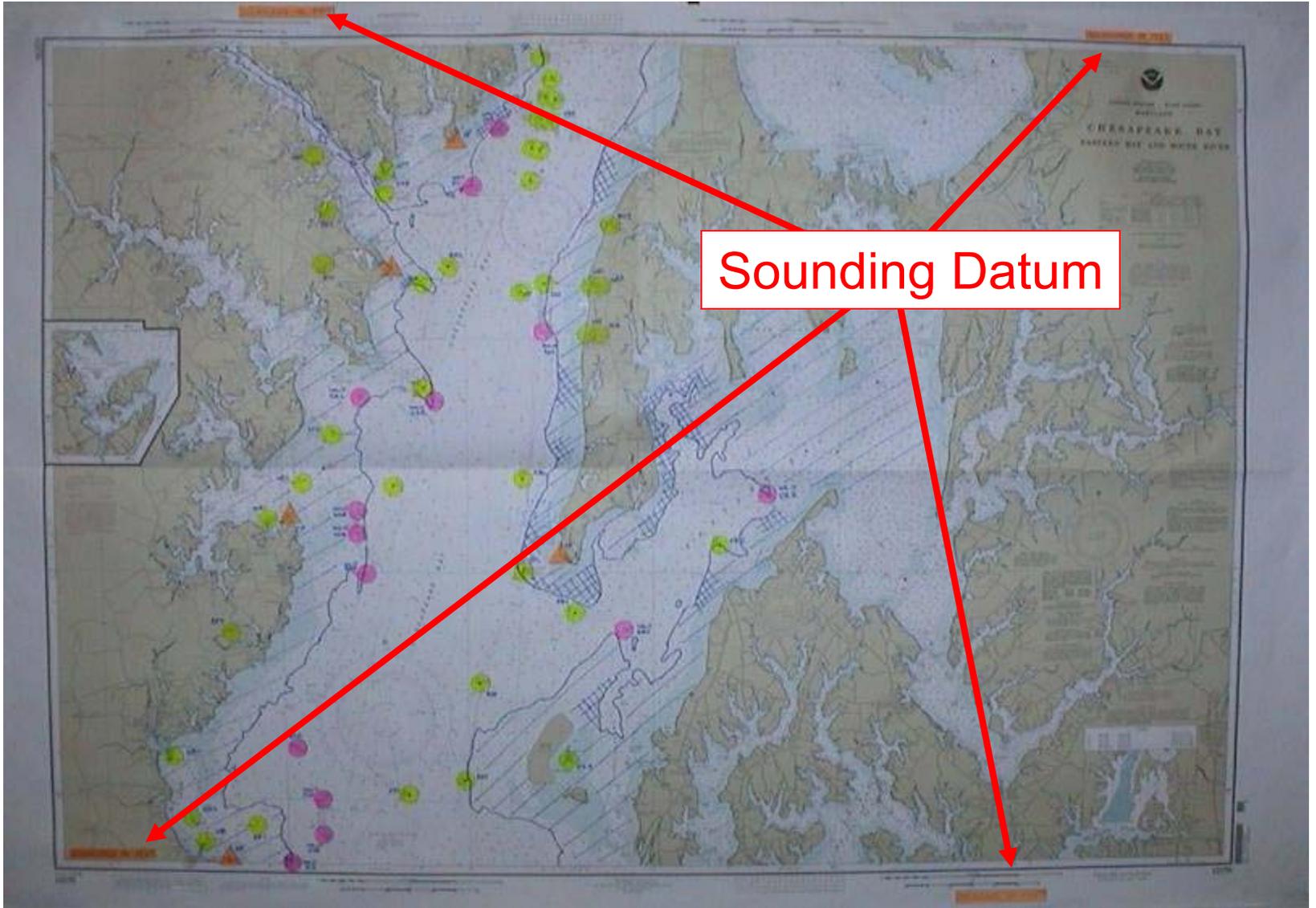
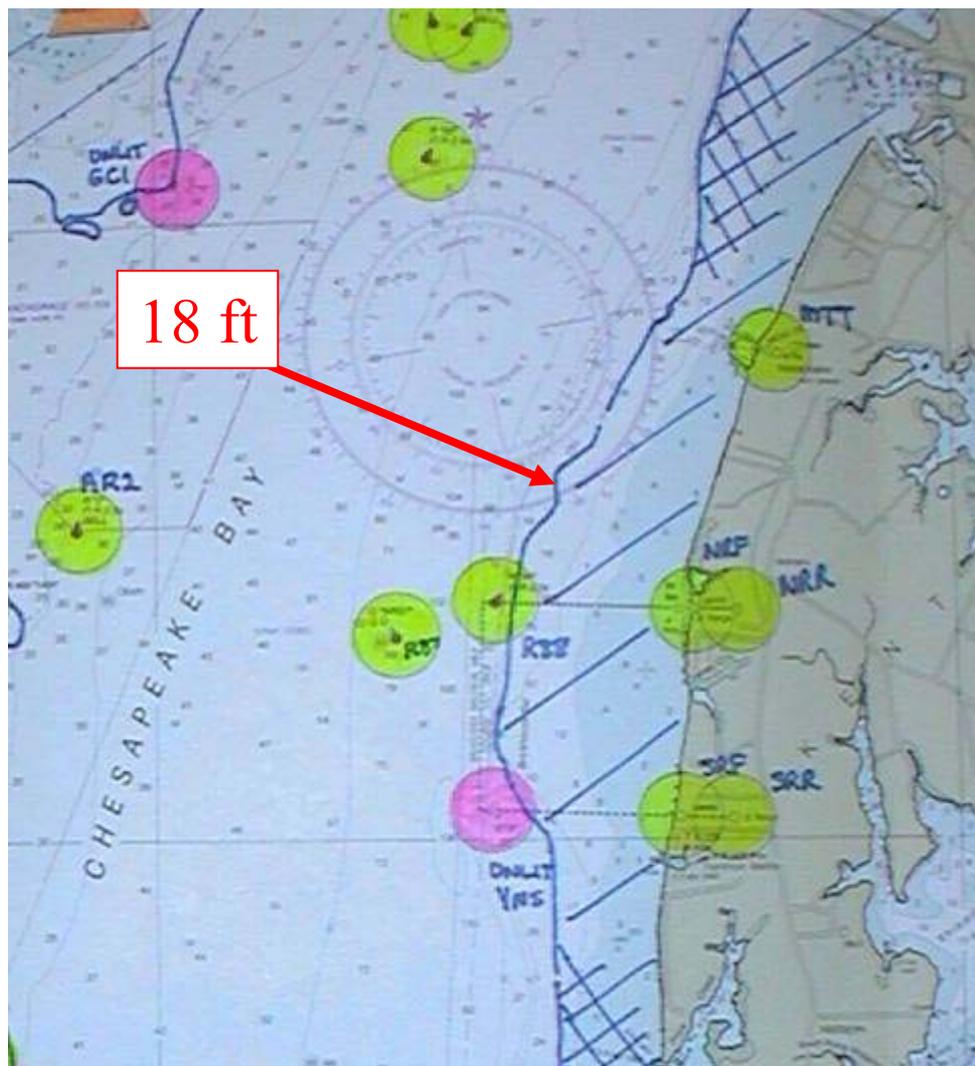
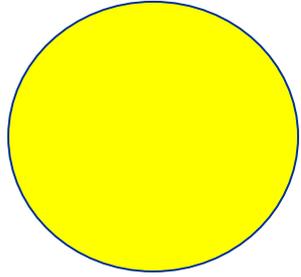




Chart Prep

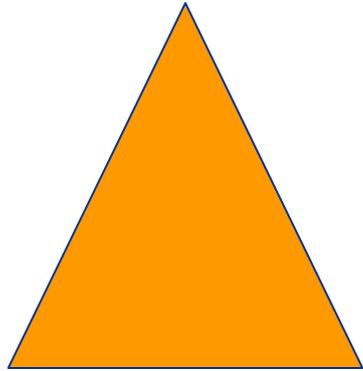


Identifying Nav Aids & Nav Hazards...



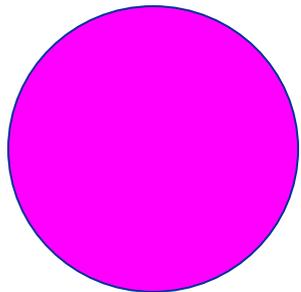
Visual Aids To Navigation

- Highly visible to naked eye, or binoculars
- Lighthouses, towers, etc



Electronic Aids To Navigation

- Highly visible on radar
- Jetty, Bridges, land masses



Hazards To Navigation

- Find these or they will find you!!!



Making The Chart Corrections...

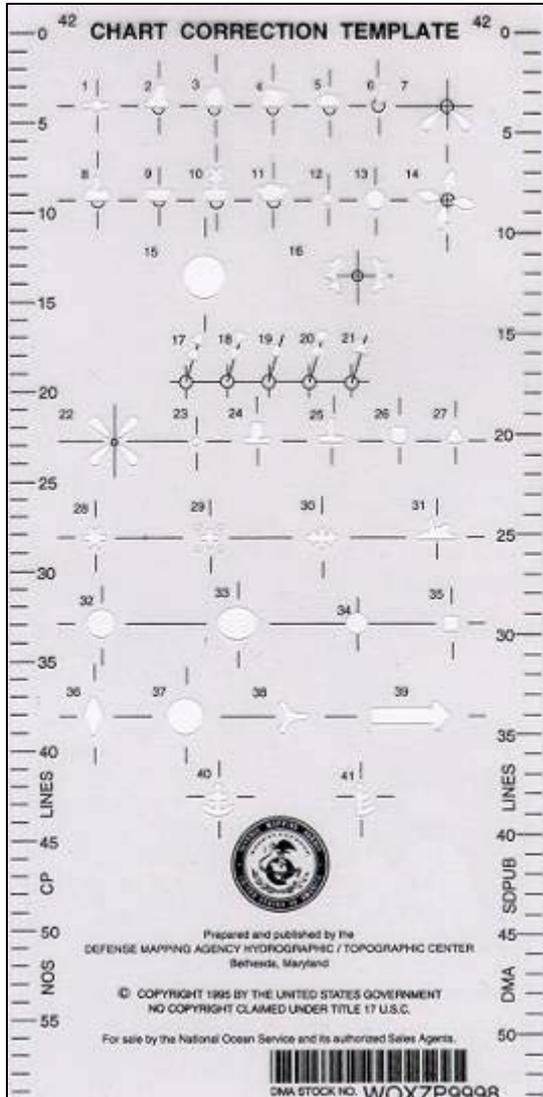
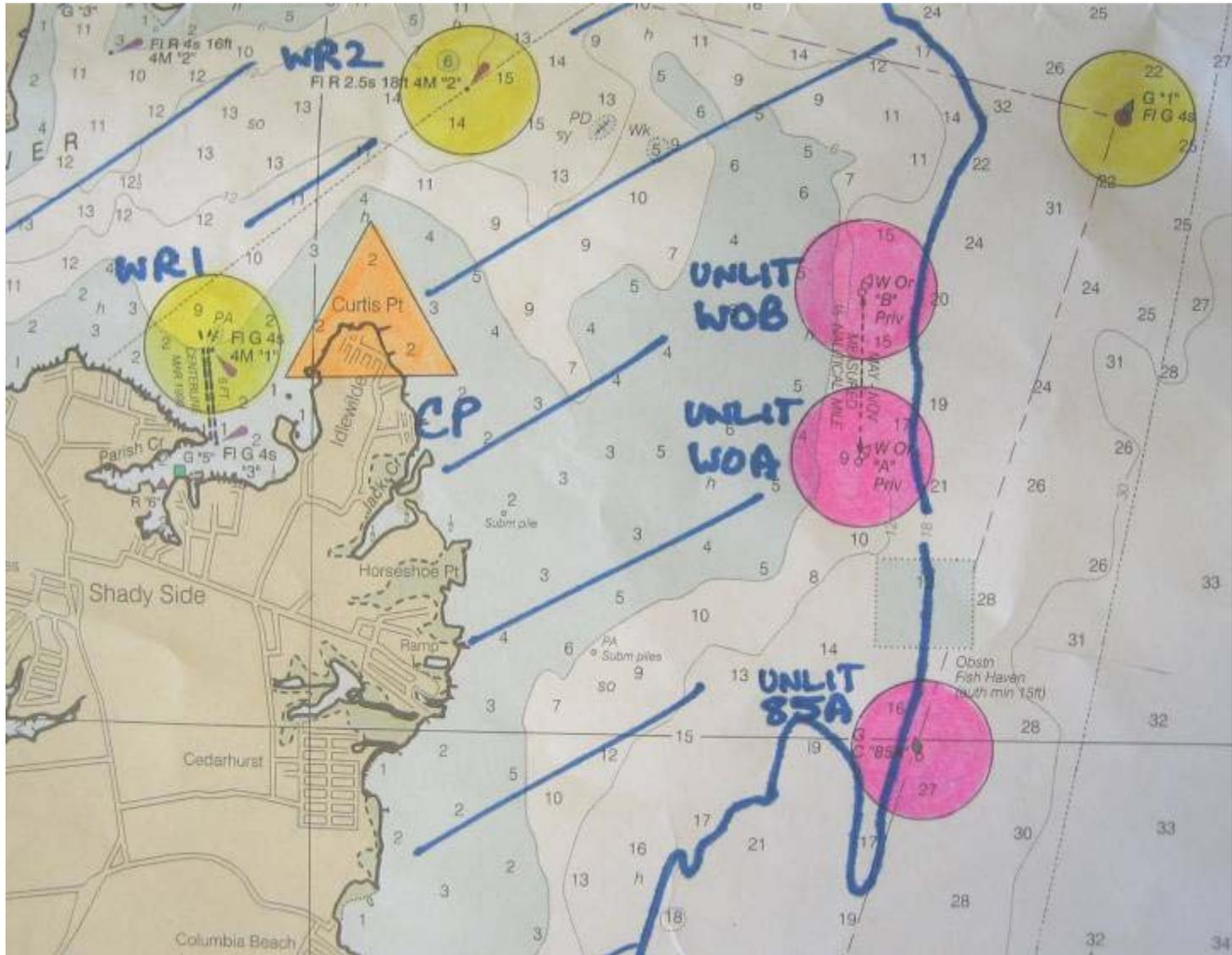


Chart Correction Template



Chart Prep





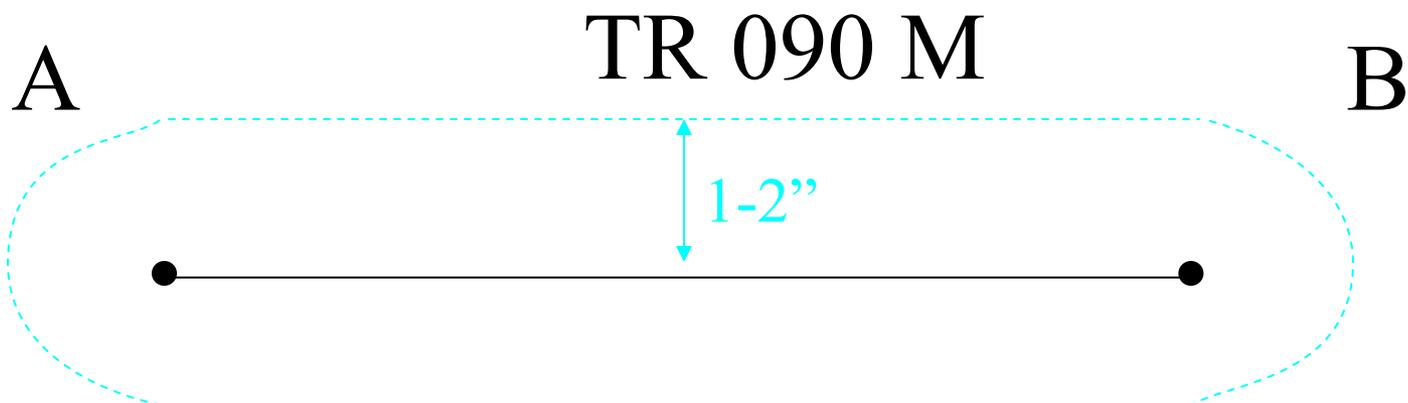
Should We Label A Track???



- Sailboats don't move in straight lines...
- Previews where are we're going
- It's proof that you thought it through...
- It tells you how much you've deviated from the game plan that was developed while warm, dry and comfortable
- Where are the merchants???



How Do We Label A Track???



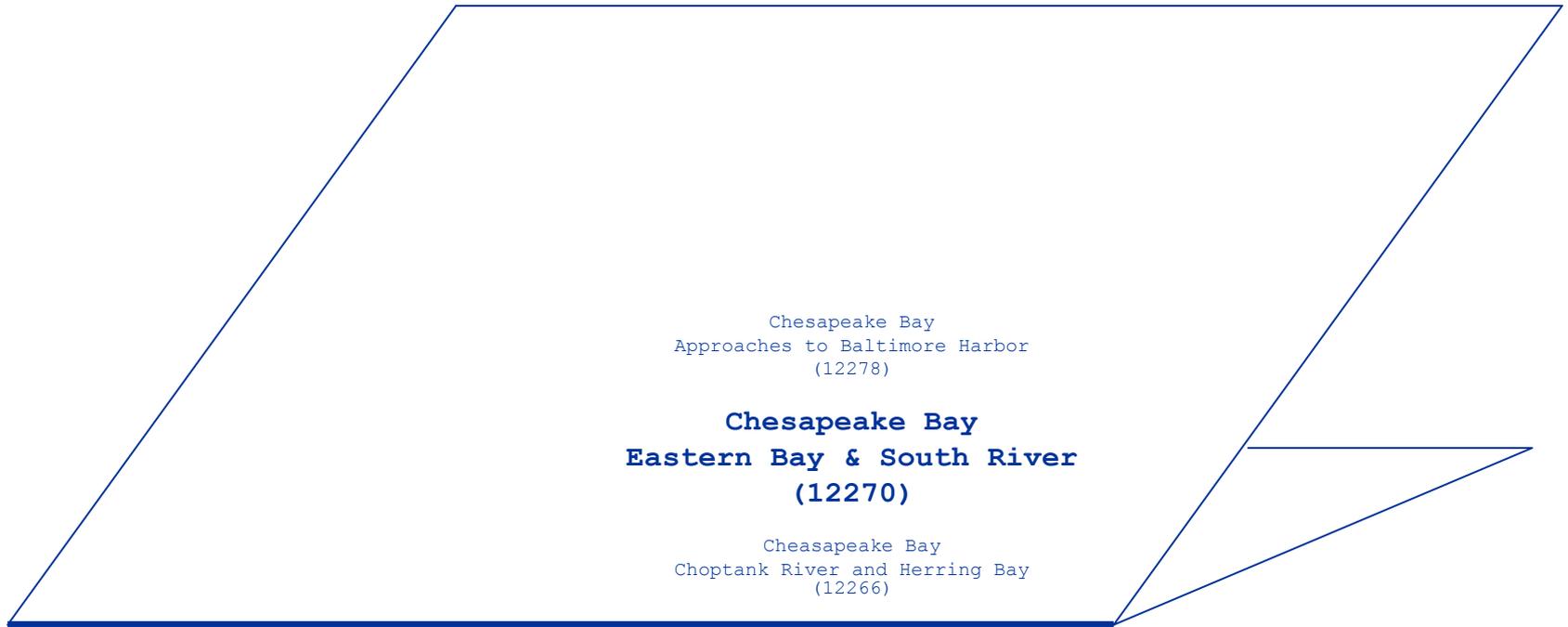
130800 Q JUN05
120.5 NM

SOA 7

131200 Q JUN05
92.5 NM



How Do You Fold A Chart?





How's It Labeled?



Chesapeake Bay
Approaches To Baltimore Harbor
(12278)

Chesapeake Bay
Eastern Bay & South River
(12270)

Chesapeake Bay
Choptank River & Herring Bay
(12266)



Next Class...



- For Homework
 - Work on your charts with chart prep checklist
 - Coastal Navigation
 - Read Chapters 1, 2, 3, and 4
 - Skim Chapter 5
 - Familiarize yourself with 13223



Next Class...



- ✓ The Chart
 - Primary emphasis on chart preparation

- The Fix
 - Visual & Electronic
 - Accuracy and errors

- The DR
 - The most important thing on the chart