



U.S. NAVAL ACADEMY SAILING PROGRAM



Offshore



Intercollegiate



CSNTS



P-100

To ensure safety at sea, the best that science can devise and that naval organization can provide must be regarded only as an aide and never as a substitute for good seamanship, self reliance, and a sense of ultimate responsibility which are the first requisites in a seaman and naval officer

Fleet Admiral Chester W. Nimitz
Letter to the Pacific Fleet
1945

Navigation 3

LCDR Neil Covington
Training Officer, Naval Academy Sailing



www.usna.edu/SailingTeam/training.htm



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
- Navigation Party
 - Organization, procedures & philosophy
- Making landfall
 - The Navigation Brief
- Review & Lessons Learned
- Navigation Practical



The Fix...

The Fix is:

WHERE YOU “WERE”

And...

THREE DIMENSIONAL

“Sounding – Checks with chart”



The Fix...

Treat Every Fix With

Suspicion



The Six Rules of DR

1. Every hour on the hour
2. At the time of every course change
3. At the time of every speed change
4. At the time of obtaining a single line of position
5. At the time of obtaining a fix or running fix
6. A new course line shall be drawn from each fix or running fix as soon as it is determined

YOU MUST KNOW THESE!!!

And make sure the midshipmen apply these!!!



The Bottom Line...

The DR is:

The Single Most Important Thing On the Chart



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The Navigation Party





The Crew...

- Officer in Charge
- Assistant Officer in Charge
- Midshipman Skipper/Watch Captain 1
- Midshipman XO/Watch Captain 2
- Watch Section 1 – 3 Underclass Midshipmen
- Watch Section 2 – 3 Underclass Midshipmen



The OIC/AOIC...

The safe and proper navigation of Sail Training Craft (STC) is, at all times, the responsibility of the assigned Officer in Charge (OIC).

The OIC shall delegate navigational authority to the embarked midshipmen whenever possible in order to enhance their training; however, ultimate responsibility will

reside permanently with the OIC



The OIC/AOIC...

The OIC is responsible directly to DNAS
for compliance with directives
contained in the applicable OORDER
and will serve as Safety Officer
during underway watchstanding



The OIC/AOIC...

The AOIC is responsible directly to the OIC for compliance with applicable directives, and together with the OIC will fulfill the role of
Safety Officer
during underway watchstanding



Midshipman Skipper/Watch Captain 1

- Midshipman Skipper (VOST)
- Watch Captain (CSNTS)
- See SOP, Page 2-6
- Key issue:

During CSNTS training evolutions and cruises a Midshipman Skipper will not normally be assigned.

In that case, Watch Captain 1 will perform all the duties of Skipper and XO...



Midshipman XO/Watch Captain 2

- Assigned as Navigator
- See SOP, Page 2-7

As Navigator...

- Report to the Midn Skipper/OIC
- Ensure all required charts, navigation instruments and references are prepared and aboard prior to getting underway
- Create a Navigation Plan prior to getting underway and measure progress underway with respect to the plan



Midshipman XO/Watch Captain 2

As Navigator...

- Ensure the watch teams maintain an accurate plot of the boat's position by all available means (visual, celestial and electronic)
- Train and supervise watch team navigators in the principles of visual, celestial and electronic navigation
- Train the ANAV as a navigator



The Watch Section

On Deck...

- OIC or AOIC
- Watch Captain
- Navigation Plotter
- Helm
- Lookout

Note:
**The Watch Captain cannot
serve as Navigation Plotter
Or
Lookout!!!**



The Watch Captain...

Overarching concepts...

- The key supervisory position in the conduct of the watch.
- Has overall responsibility for the safe operation of the STC, the efficient performance of the watch and the progress of the daily routine.
- Relieves LAST!!!



The Watch Captain...

Overarching concepts...

- The on-watch Watch Captain is responsible directly to the OIC for the safe and accurate navigation of the STC for the duration of the assigned watch.

Note: It doesn't say OIC or AOIC!!!

- The offgoing Watch Captain shall include a complete navigational update during the face-to-face turnover process between oncoming and offgoing Watch Captains.



The Watch Captain...

Duties and Responsibilities...

- Remain attentive to external conditions at all times; anticipate and respond to changes early (Navigation hazards nearby)
- Train the watch team
- Supervise the watch team navigator

And much, much more...



The Navigation Plotter...

Overarching concepts...

- The Navigation Plotter shall be a distinct station in the watch rotation. The Watch Captain may assign the Navigation Plotter for the duration of the watch, or may rotate the position among watch team members (not to include the Watch Captain).

The OIC must ensure the crew understands the rotation policy prior to getting underway.



The Navigation Plotter...

Overarching concepts...

- In no case shall an STC go for more than one hour without fixing its position.
- In piloting waters, the Navigation Plotter shall plot a fix at an interval that does not exceed half the time it would take the STC to reach the nearest navigational hazard at current speed.



The Navigation Plotter...

Duties and Responsibilities...

- The Navigation Plotter Serves as the Watch Team Navigator
- Fix the position of the STC in accordance with the fix interval established by the OIC.
- Maintain the navigation plot adhering to the six rules of DR.
- DR two fix intervals ahead to ensure the boat is not standing into danger
- Make course-to-steer recommendations to the helmsman



The Navigation Plotter...

Duties and Responsibilities (continued)...

- Monitor HF/VHF radios and advise the Watch Captain of pertinent radio traffic
- Maintain a radar watch (if warranted)
- Maintain The Offshore Yacht Log...

Printed Neatly In **BLACK INK**

And much, much more...



The Helmsman...

Duties and Responsibilities...

- Maintain a good lookout
- Maintain the ordered course. Inform the Watch Captain and Watch Team Navigator if unable to maintain the ordered course.
- Monitor sail trim

And much, much more...



The Lookout...

Duties and Responsibilities...

- Reports to the Watch Captain
- Maintain a proper lookout – See COLREGS
- Report all contacts to the Helmsman

And...

Not Much More!!!



Watch Relief...

Watch relief...

- Prior to relieving the watch the oncoming watchstanders shall:
 - Review the navigation plot with emphasis on current position, expected navigation aids and hazards and desired course.
- Determine the following once topside:
 - Identity and location of all visible and expected nav aids/hazards



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Making Landfall...

The Chart Shift

- Many navigation mistakes occur at the chart shift point
- OIC should approve Chart Shift – as follows:

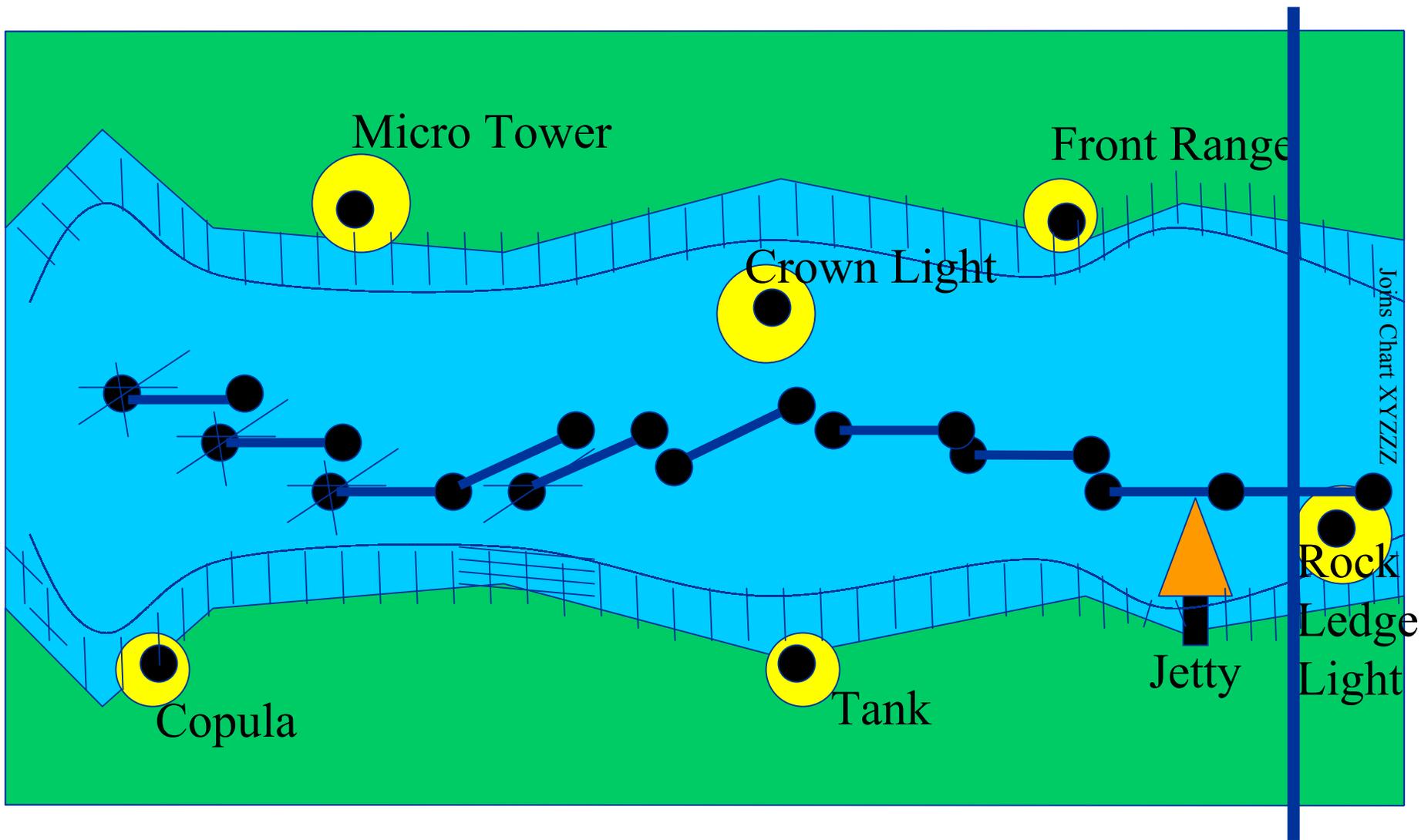
“Officer in Charge, my DR holds us leaving this chart in 30 minutes. Recommend shifting to chart 12224”

“Very well. Shift to Chart 12224.”

“Shift to Chart 12224, Aye.”



The Chart Shift





How Do You Do The Shift???

What should you look for personally to make sure this is done correctly?

- The chart is **ready** for use
 - The Chart Prep Checklist



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 this 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)

Did you, in fact, sign off on this chart???

If not – reverse course and do it right!!!

_____ X _____

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

6. Review the chart for actual sounding datum. Choose one based on Block 6 above (if required, round up): _____

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

8. Visual Nav Aids: Carefully review the chart, and identify visual nav aids:

- Circle, highlight in yellow, and label ABC (where ABC is an easily spoken, unmistakable noun name)

9. Nav hazards: Carefully review the chart, and identify unlighted buoys and other nav hazards.

- Circle, highlight in pink, and label UNLIT ABC/NAVHAZARD ABC.

10. Radar Nav Aids: Carefully review the chart, and identify radar nav aids.

- 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

11. Track: Draw and label the track

Enter the deep draft to the expected location

lined in 7 above, slash slash those areas where

chart as follows:

the chart's noun name e/below list the next

chart along the north/southbound track

14. Verify Currency: Immediately prior to use, verify the chart is up to date by querying the NIMA Notice To Mariners Database at:

http://pollux.nss.nima.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



How Do You Do The Shift???

What should the plotter do?

- Determine the Latitude and Longitude of the **DR** that will be advanced onto the new chart
- Write it in the log
- “Shifted to chart 12224. Advanced DR position $34^{\circ}17.8'N$ $074^{\circ}16.4'W$ ”
- Check you didn't make a transcription error
- Plot this DR position on the new chart



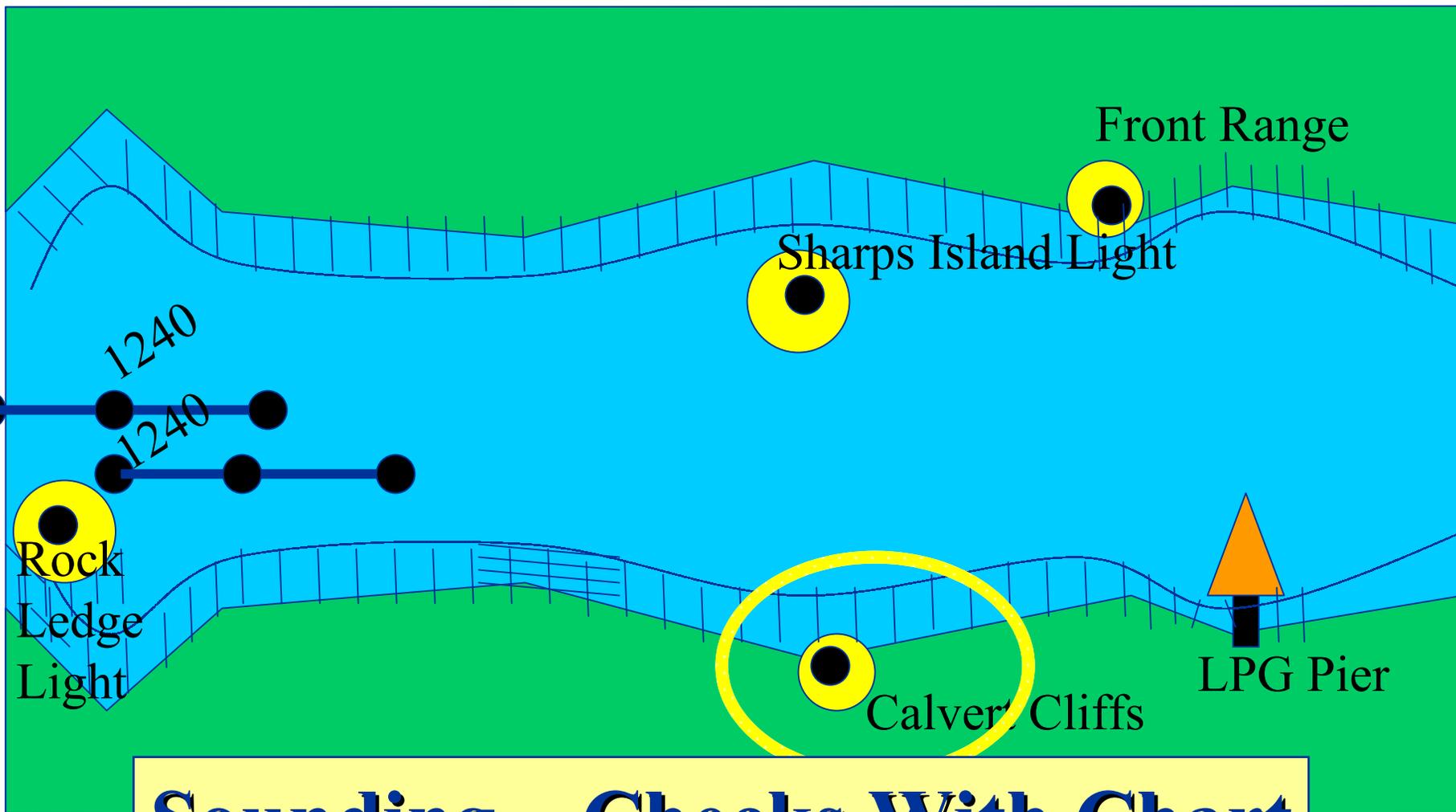
Latitude & Longitude...

- Two scales
 - Degrees, Minutes & Tenths
 - Degrees, Minutes & Seconds

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



The Chart Shift



Sounding - Checks With Chart



How Do You Do The Shift???

What should the plotter do?

- Fix the vessel's position at OR BEFORE the time of the advanced DR
- Compare and contrast those two posits
- Sounding???
- Does this make sense?
- DR
 - Minimum cyclic routine: Plot Label DR
 - Six rules of DR
 - Don't plot a fix on the new chart without something to compare it to



How Do You Do The Shift???

What should the plotter do?

- Invite Watch Captain and OIC/AOIC to check the shift.
- “Officer in charge. Shifted to Chart 12224. Fixed the ship’s position at time 1240 by Loran C, checks with DR. Request you lay below to check the chart.”
- Check it – and not in a perfunctory manner



How Do You Do The Shift???

Check it – and not in a perfunctory manner

- What do I mean by that?
 - Check the log entry – It's your logbook!!!
 - Compare what's written to the displayed data
 - Break out the dividers and plot it - yourself
 - Or, shoot a round – yourself
 - Then initial the log book





Caution!!!

When you make the chart shift **UPDATE YOUR INSTRUMENTATION** to match the chart exactly:

- Open Ocean Charts are often in Degrees, Minutes and Tenths
- Piloting Charts are often in Degrees, Minutes and Seconds
- Sounding datum – fathoms, feet or meters???
- Tell everyone the new “No go sounding”
- Make sure they acknowledge



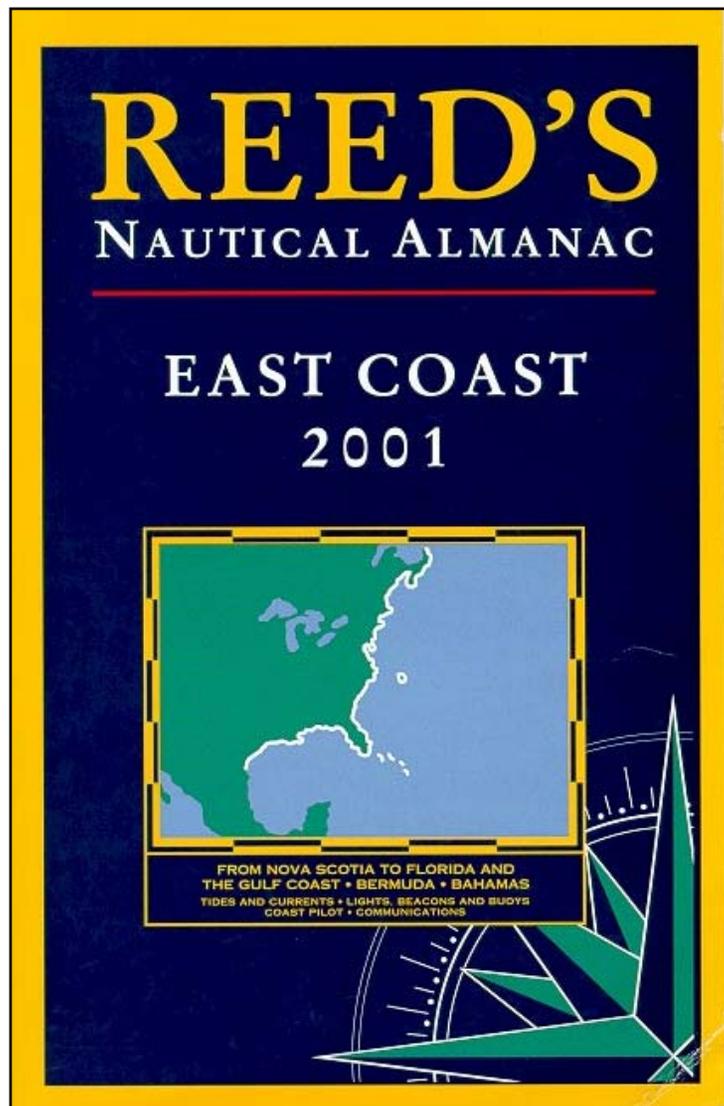
The Nav Brief

Break out & use the Navigation Brief Checklist

- This checklist was derived from those used in the fleet, but was modified for use in the Navy Sailing Program
- Who is responsible for the busy work?
- What do you read to make sure you know what you need to know?



What Pub should you use?

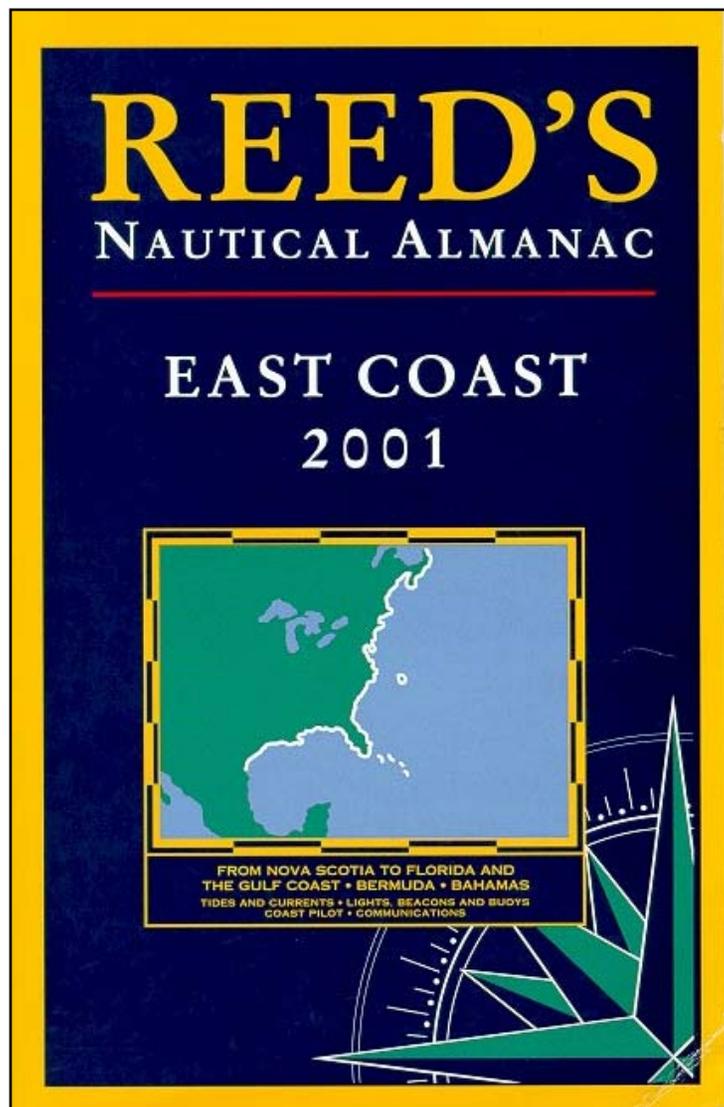


Truly one stop shopping

- Chapter 1 – The Coast Pilot
- Chapter 2 – Tides
- Chapter 3 – Currents
- Chapter 4 - Resources



What Pub should you use?

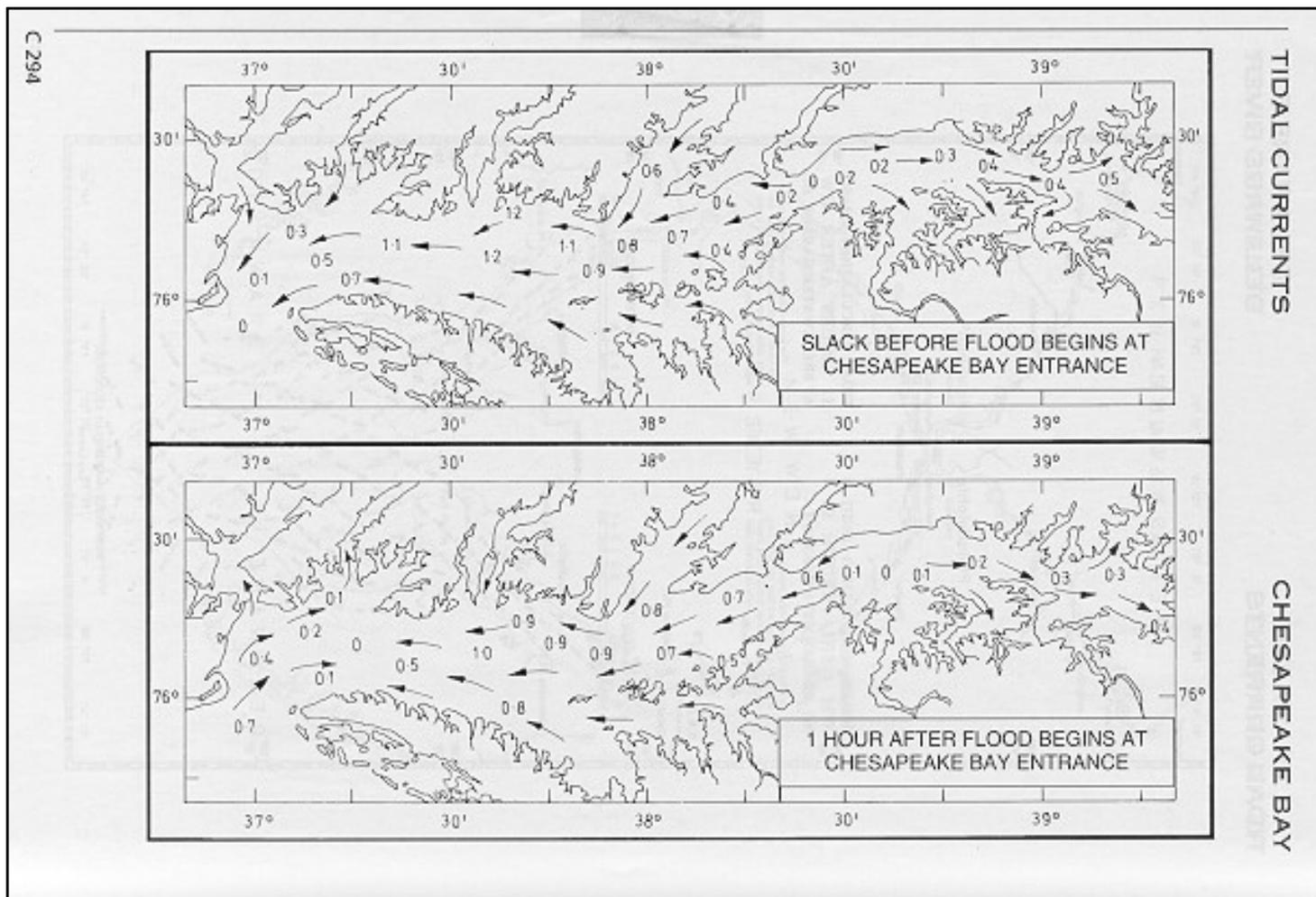


Tides & Currents

- We haven't talked about it in this course, but Reed's presents the material in an easily understood format



Reed's Tides & Currents





What Pub should you use?

United States Coast Pilot 2

Atlantic Coast:
Cape Cod to Sandy Hook

30th Edition



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

It's essentially Reed's
Chapter 1



What Pub should you use?

PUB. 940

FLEET GUIDE



ATLANTIC

2000



Second Edition

** CD-ROM
INCLUDED **

NSN 7642014413588
NIMA REF. NO. FGPUB940ATL

ED. NO. 002

Read this to ensure you don't do something stupid in a Navy controlled port like:

- Newport
- New London
- Boston



The Nav Brief

When, Where, Why & How

- When?
 - Early. Typically late afternoon on the day prior to arrival
- Where?
 - In the cockpit
 - Caution: The only time you should allow the chart topside
- Why?
 - There's always one stupid question
- How?



Too Late...



Review The Forecast...



How???

- With everyone up
- Review the Watch Quarter & Station Bill
 - SOP, Appendix
- USE THE CHECKLIST



Homework

- Read the SOP, Chapter 2
 - www.usna.edu/SailingTeam/
- Read the SOP, Appendices A & B
- Finish the Practice Nav Practical
 - On the CSNTS Website
- Prepare for the Nav Practical



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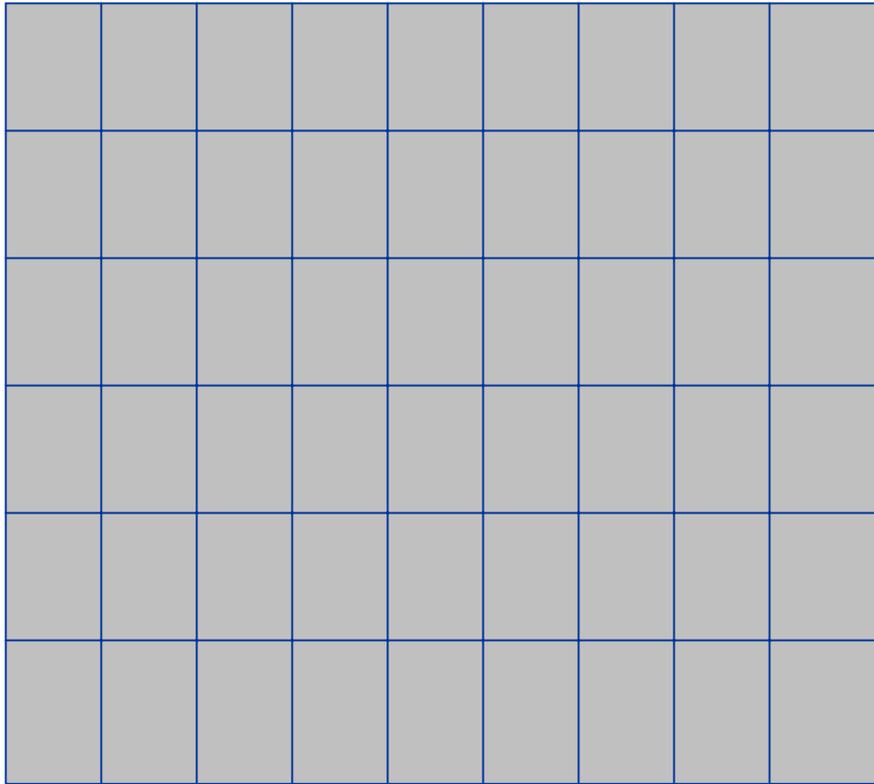
P-100

Questions???



A Few Tricks Of The Trade...

The Magic Of Mylar



Make Sure
these are
right!!!



Ready For Use...

