# Offshore Essentials

## Skills for open-water trawler travel

TrawlerFest
BOAT SHOW – EDUCATIONAL EXPERIENCE – RENDEZVOUS

PassageMaker Magazine
Stuart, FL Trawler Fest 2020
Presented by Jeff Merrill

# Get ready before you take off!

- Nothing quite so satisfying as landfall and completing a trip
- Preparation and planning
  Safety, food, sleep...
- What do you do out at sea?

# What's it really like?

- WARNING – Impossible to simulate the motion, or the feelings, but this presentation should be helpful to all trawlers owners whether or not you have ventured out of sight of land or not.
- I am a yacht broker! 20+ years of working with clients including countless offshore trips training owners out at sea have provided the basis for this information

# About this presentation...

*(Photos from WA to SF trip on Nordhavn 62 and SD to Ventura trip on Selene 55)*

*Getting familiar with your trawler before you leave the dock is your best strategy and my strongest recommendation – learn it all!

*Key is to be safe and ready

*How to prepare your guests/crew

*What to be aware of in the Pilothouse (Nav/Com) and ER (machinery)

# About this presentation continued...

*We will discuss life underway – standing watch, engine room checks, enjoying your down time

*I'm going to recommend books, websites and other resources to help you plan for trips

* I am available after class for more detailed questions.

# Interactive Classroom

- Please let me know, if anything is unclear
- Please jot down suggestions to share with me on how I can make this better (you can connect with me after class by phone or email)


HANDOUTS BINDER –
Let's take a look

# Student Information sheet

This PowerPoint and all handouts are available for your own private use. Please let me know how to get in touch with you so I can email you how to access the information. You can also sign up for the JMYS email newsletter if you are interested.

# Learning more about you

- There is a lot of information to review
- First, a couple of questions for the class to help me gauge things...

# Some questions...

- How many of you have been aboard out of sight of land?
- How many of you have been underway through the night?
- Anyone have experience with modern navigation electronics?
- How many have your own boat?
- Anyone have a Captains license?

# You (the Owner) need training

- Education…online, local colleges, professional schools – any suggestions from the class?
- Coastal Navigation
- Diesel Mechanics
- Weather basics
- US Power Squadron classes
- Chapman's/Annapolis Seamanship School
- Hiring a Captain to train with you
- Boater's University – new course

# Pre-departure preparation

- Book smarts AND practical experience
- Navigation & Communications equipment
- Checklists, maintenance procedures, routines
- Join Vessel Assist, Sea Tow, Tow Boat US
- You need to be mentally and physically ready, preparation provides peace of mind

# Your boat must be ready too!

- You need to be intimate with your trawler
- Know RPM variations, speed and fuel burn (develop a Performance Card handout* )
- Understand operation of every system (Have manuals for every component?)
- Have the right tools, spare parts, etc.
- Routine maintenance: filters, fluids, impellers, etc.

# Confirm your key dimensions

- Actual LOA – alongside dock max length
- Beam on deck and beam on waterline – both of these items will help you get the correct sized slip
- Draft fully loaded – how much water do you need under your keel?
- Air draft (waterline to highest point) aka “Bridge Clearance”

# Get to know your boat!

- A label maker is a great tool to have, label components, systems, etc.
- Marking under seat cushion boards to easily relocate them
- What is in each locker and drawer?

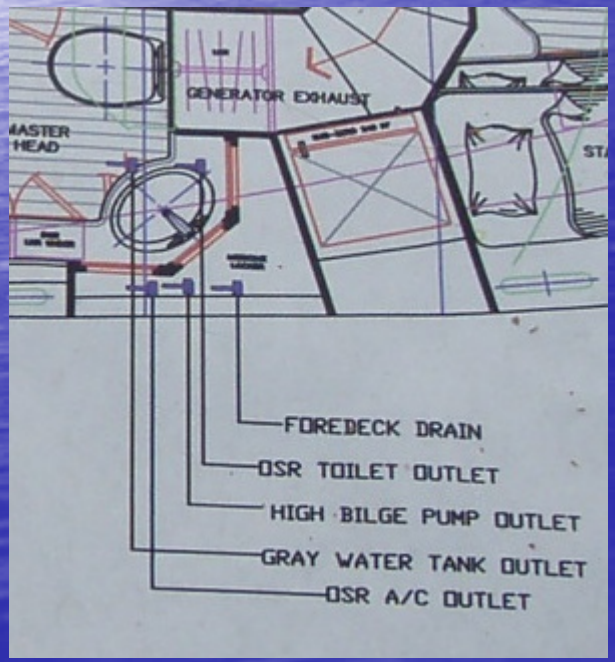
# Owner Hands-on Knowledge Hand Out*

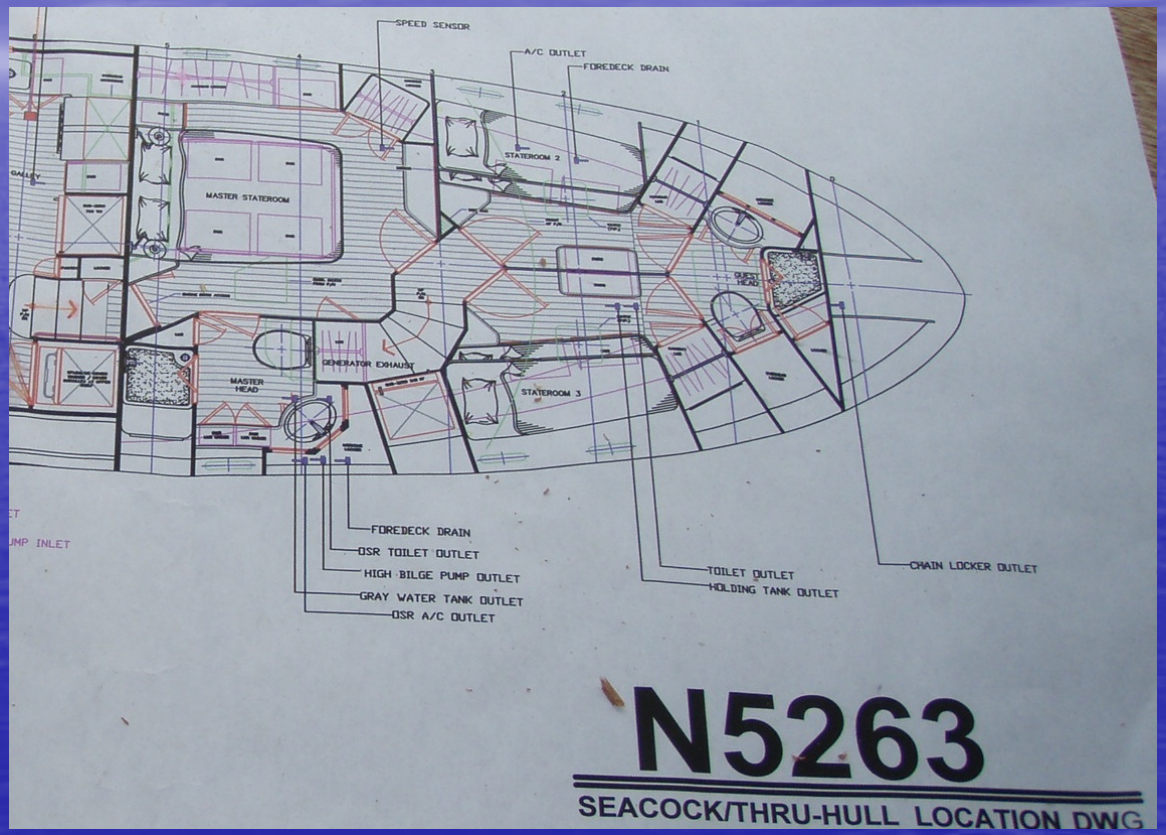
To get insurance you need to be familiar with the items on the attached hand out, let's review them...

# Through Hulls

- Create a “map” with all locations and label each individual (arrow direction closed)
- Exercise through hulls (every time you can reach them, work them)
- Many are drains
- Which are intakes?  Clean strainers – need to close intake valves to clean strainers
- Toilet and Holding tank valves - closed

# Through hull map



Through hulls labeled. Arrow showing closed direction

# Learning more about your boat

- USCG Safety Gear – have requirements?
- USCG Auxiliary inspection?
- Through hulls and bilges
- Clean fuel.  Fuel Valves, Tanks and Hoses
- How to “Stop” – anchor and windlass
- Make sure you AND your trawler are ready to go BEFORE you take off…

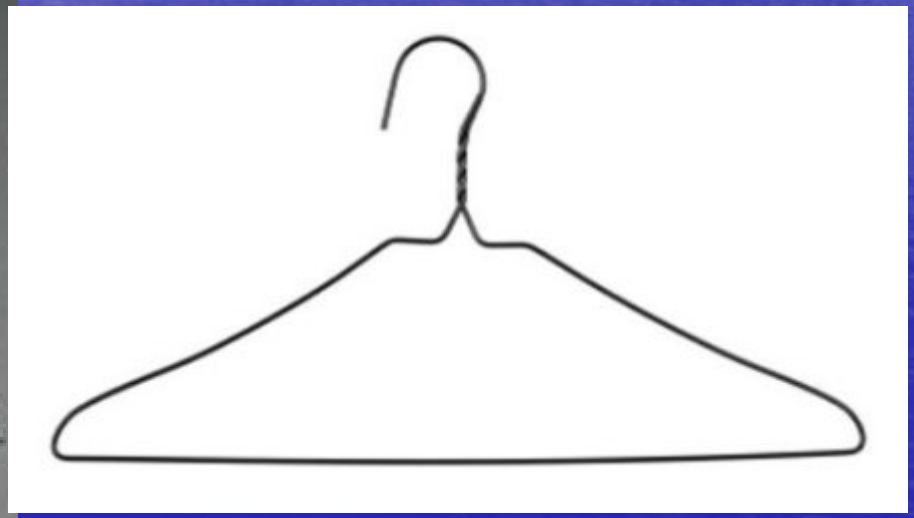
# Know USCG Requirements
# USCG Auxiliary inspection

- You need to know the requirements in case / when you are boarded.
- You should know where everything is.

**Tools** – you will need metric and imperial; nut drivers, sockets, etc. Find key service items and keep that tool nearby, ex. filter wrench



Other “tools” Turkey Baster, Wire coat hanger…
(Stuff you have at home, need at sea – also a toilet plunger might come in handy!)



# Spare Parts and Service Manuals

(When you get a spare replace the existing item and keep the item that was in service as spare)



# Organize your manuals

- Keep them in organized bins
- Go online to get electronic PDF versions
- Keep a list of vendors with contact information – phone and email
- Manuals help with spare parts and service intervals
- Service – Wheelhouse Technologies, Vessel Vanguard

# Electricity (Power management)

- You must know how to monitor your 12/24 Volt battery bank Voltage
- Engine Alternator charges batteries
- Battery Chargers/Inverters – AC and DC
- Generators – keep a load on them
- AMP draw – where is the “juice” going?
- Shore Power at the dock

# Electrical Panel – understand each breaker

# “Water” Tanks management

- Fresh water – level in tank(s)
- Water maker – drinking, showers, washing
- Gray water – discharge – dishwasher, clothes washer, sinks and shower drains
- Black water – y-valves, through hulls, deck pump out: proper places to dispose of waste and methods to do so

# Diesel (Fuel Management)

- Fuel supply – taking on fuel and monitoring tank levels underway
- Diesel fuel is “returned” - supply and return valves must “follow the flow circle”
- Understand valves – “To” and “From”
- Racor vacuum gauges
- Fuel filters
- Sludge, dirt, water and how to remove


Label “To” and “From” on your manifolds
TO
PORT TANK
TO
STBD TANK
TO
FWD TANK
TO
SUPPLY TANK
RETURN
PORT ENGINE
FROM
STBD ENGINE
FROM
FWD GEN.
FROM
AFT GEN.
FROM
TO
PORT TANK
TO
STBD TAN
TRANSFER PUMP
FROM
ALGAE SEP
FROM

# Lubricating and hydraulic oils

- Spare oils (several) and funnels to refill
- Spare filters, filter wrenches
- Dip sticks and sight glasses
- Oil change system – main, generators, transmissions
- Steering hydraulic oil and pressure
- Active Fin Stabilizer hydraulic oil

# Know before you Go...

- Simulate a “Day in the Life”
- Spend time aboard at the dock (24 hours)
- Get familiar with the engine room
- Anchor out overnight (pick a local spot)
- Learn where everything is and how it works, sounds, and how to service it
- Hire a captain to gain their insights
- The best thing you can do is use your boat locally, before you take off on a big trip

# What about Guests as Crew?

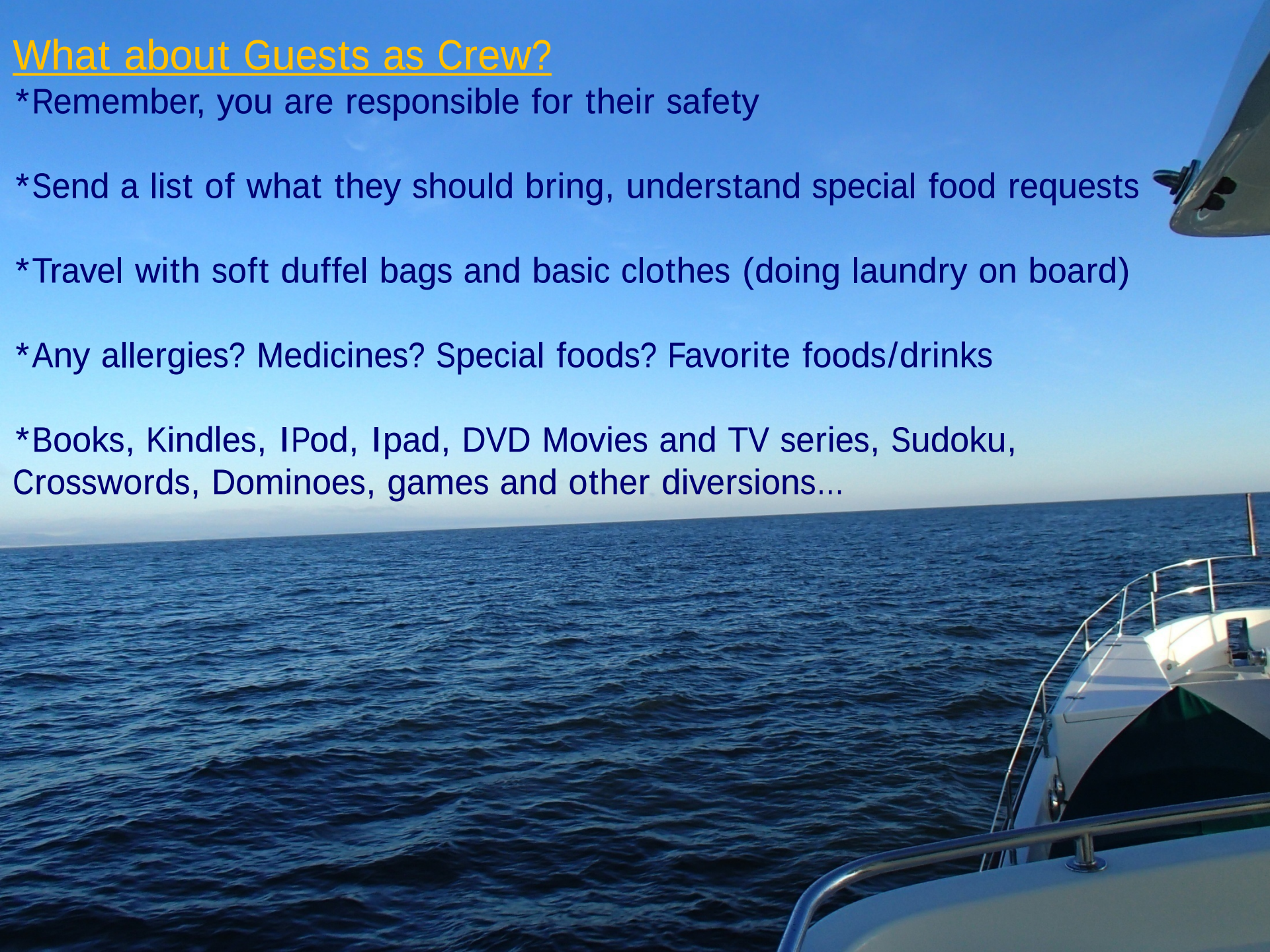
*Remember, you are responsible for their safety

*Send a list of what they should bring, understand special food requests

*Travel with soft duffel bags and basic clothes (doing laundry on board)

*Any allergies? Medicines? Special foods? Favorite foods/drinks

*Books, Kindles, IPod, Ipad, DVD Movies and TV series, Sudoku, Crosswords, Dominoes, games and other diversions...



# Welcome Your Crew

- Show where the safety equipment is: lifejackets, fire extinguishers, first aid, etc.
- Toilet operation – what to flush and what not to!  It is OK to sit down for safety!
- Explain your Trash Plan
- What is expected of each crew

# Guests/Crew

Need special guidance to become “boat people”

- Walking around the boat safely
- Wanting to help you (can get in the way)
- Teach how to use appliances and equipment (toilets, showers, hair dryers – not endless supply of water or electricity)
- Schedules are uncertain – weather or repairs may create delays…

# Get Everyone Acclimated

(Spend time training and explaining)

- Live a day at the dock with the crew before you depart
- All will get familiar with simple things like light switches, toilets, showers, cooking…
- Exterior and interior tour and inspection
- Safety and First Aid supplies
- Navigation basics in the pilothouse
- What is happening in machinery spaces?

# Shopping! (Provisioning)

- Have a grocery list and take the crew to the market
- Breakfast – light?
- Lunch – sandwiches?
- Dinner – hot meal?
- Snacks – salty, pretzels, granola bars
- Drinking water
- Easy to microwave
- Soups and stews in pan on burner
- Where items are stored once you get back to the boat so all can help themselves

# Organize the groceries...


So everyone knows where the good stuff is!

# Cooking at Sea (warm meals satisfy)

- Simple warm foods work best: Soup, Chowder, Stew – heat on stove top or microwave
- Elaborate meals can be prepared in advance and then stowed in refrigerator or freezer
- If you cook in advance, pack in small portions
- Boiling water for Noodles, Ramen, Tea, etc.
- Make sure all of your appliances work and can withstand “dropping” (no glass coffee carafe)
- Crockpot, Bread maker ~ smell and taste great


“Capture Arms” retainers for stove top

# Crock Pot / Instant Pot

## Great smells underway -warm & tasty


# Bread making machine


Prepare small portions in advance if hungry, eat two!
All Natural
Spanakopita
HANDMADE SPINACH & FETA TRIANGLES
All Natural
Spanakopita
Butter
Shaws
GLAD
GLADWARE
INVENTO GKING LIDS

# Safety First!

- Medical First Aid Kit
- Red Cross First Aid
- Red Cross CPR
- Life raft – with paperwork inside
- Ditch bag – hand held GPS, VHF, small H20 maker, EPIRB, etc.
- Sun screen, sunglasses and hats
- Galley fire blanket
- Supplemental visuals – distress smoke and water dyes
- Burn injuries
- Defibrillator

# USCG Requirements - example

- *See Northern Ranger Nordhavn 50 – good idea to identify all of the safety gear you have on board and its' location. This is a nice document to have laminated and kept in the pilothouse for easy reference.

# Safety Equipment

- Life Raft, EPIRB
- Defibrillator, Medical pack
- PLB (personal locator beacons)
- Life Sling and lifting apparatus
- “Ditch” bag – abandon ship
- Satellite phone
- Survival immersion suits
- SOSpenders (inflatable vest) and tethers

# Life rafts


**MD-3**

**Offshore Life Raft**

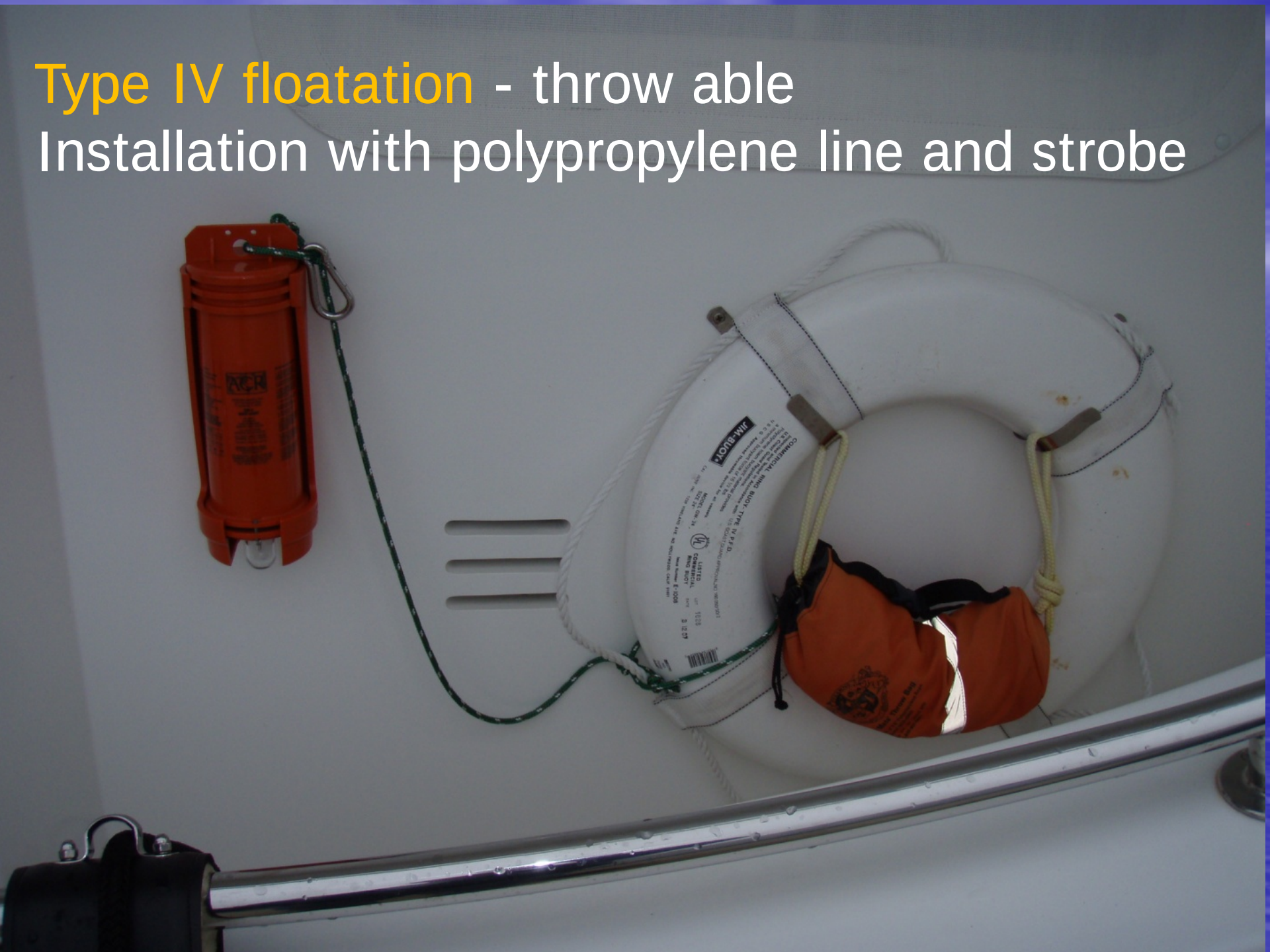
6-person international racing raft.

Learn more ➡

# EPIRB

emergency position indicating radio beacon


# Type IV floatation - throw able
# Installation with polypropylene line and strobe



# Personal Locator Beacons


# Lifejackets – comfortable – try them, don't forget kids and pets


# First Aid and Injuries

- You need a proper ships medicine cabinet and some basic first aid gear
- Phone a doctor service – www.medaire.com
- Most injuries occur when moving about underway – slipping while wearing socks
- Move around with one hand for you and one for the boat, keep your weight low and don't grab overhead handrails
- Burn injuries, cuts are most common
- Dan Boating – at event


defibtech
LIFELINE
AED
check pads
do not touch patient
analyzing
SHOCK
FIRST AID
FAC-4
CERTIFIED
SAFETY
MFG.
Meets ANSI Standards
MADE IN AMERICA
WITH CERTIFIED PRIDE
DAN
DIVERS ALERT NETWORK
919-684-4DAN (919-684-4326)

# SOSpenders - inflatable life vest, comfortable, attach with tether to jack lines for on deck moving about


# Sea sickness (motion nausea)

- It can happen to anyone – discuss it in advance
- Medication: Bonine, Stugeron, Dramamine
- Relief bands on your wrist
- Scopolamine patch
- Ginger snaps and crackers
- Where to vomit – bucket vs. toilet, disposal
- Clean up – Lysol - ventilation
- Rehydration and Rest - look at the horizon, take helm, lie down, don't sit up

# The Captain is in charge!

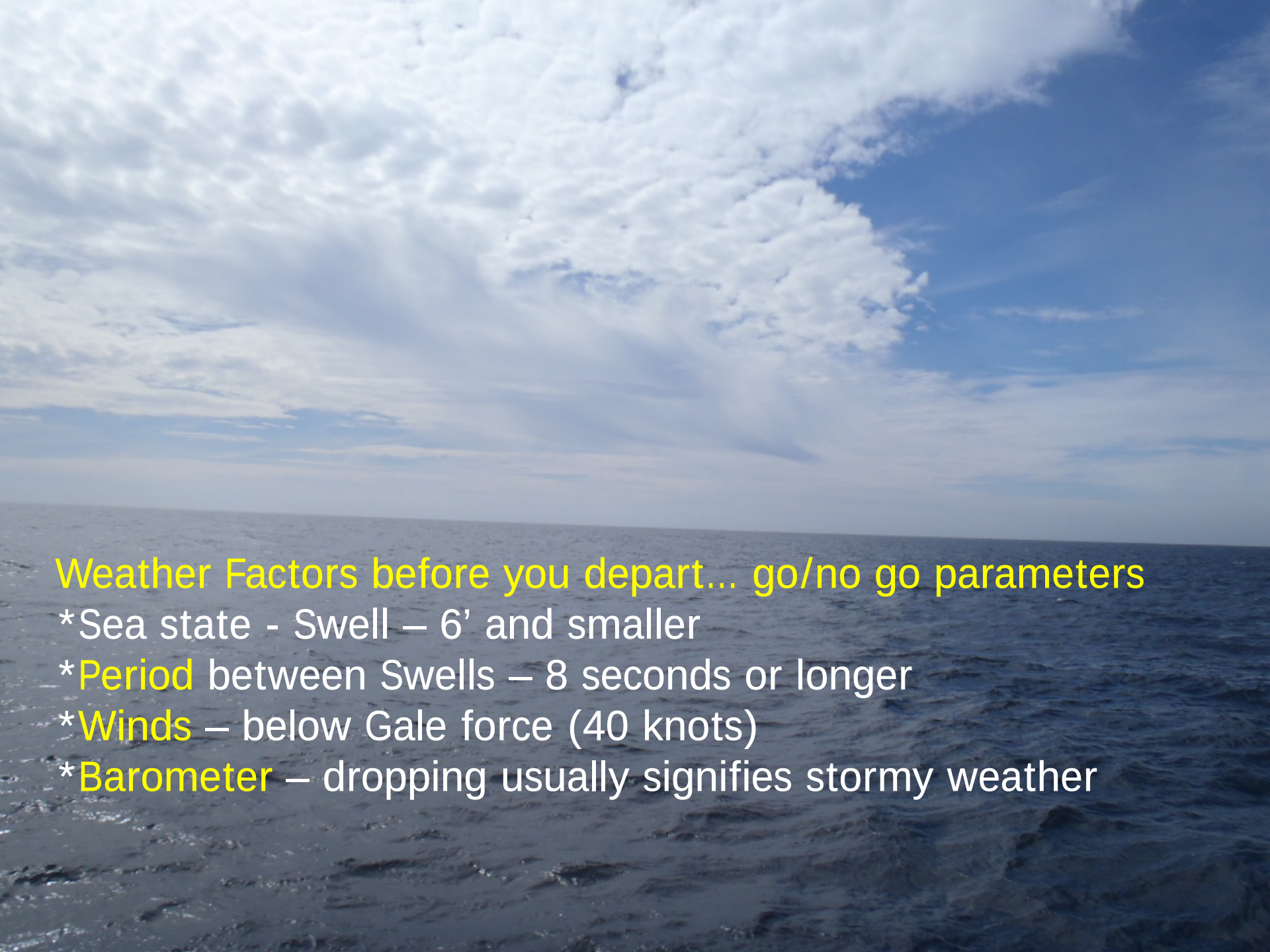
- Whether it is you as the Owner or someone you hire, only *ONE* person can be in command
- Weather forecast – the Captain makes the call to depart and/or return to port
- Navigation, charting and routing decisions

# The Captain is in charge!

- Trip planning: Speed, RPM, time and distance to destination – alternative safe harbors
- Will set the Watch Schedule
- Will review Coast Pilot – Local Notice to Mariners Update: Military traffic zones, new wrecks, buoys adrift, etc.

# Crew Meeting

- Before setting out to sea get the team together
- Captain's decisions final, no second guessing
- Safety (USCG, life vests, etc.), First aid briefing
- Eating and food preparation-help yourself, clean up your own mess
- The intended route, weather and what to expect
- Watch schedule timing, Navigation, ER checks
- Keep the common areas uncluttered, and your personal space tidy
- Well rested make best decisions



Weather Factors before you depart… go/no go parameters

*Sea state - Swell – 6’ and smaller

*Period between Swells – 8 seconds or longer

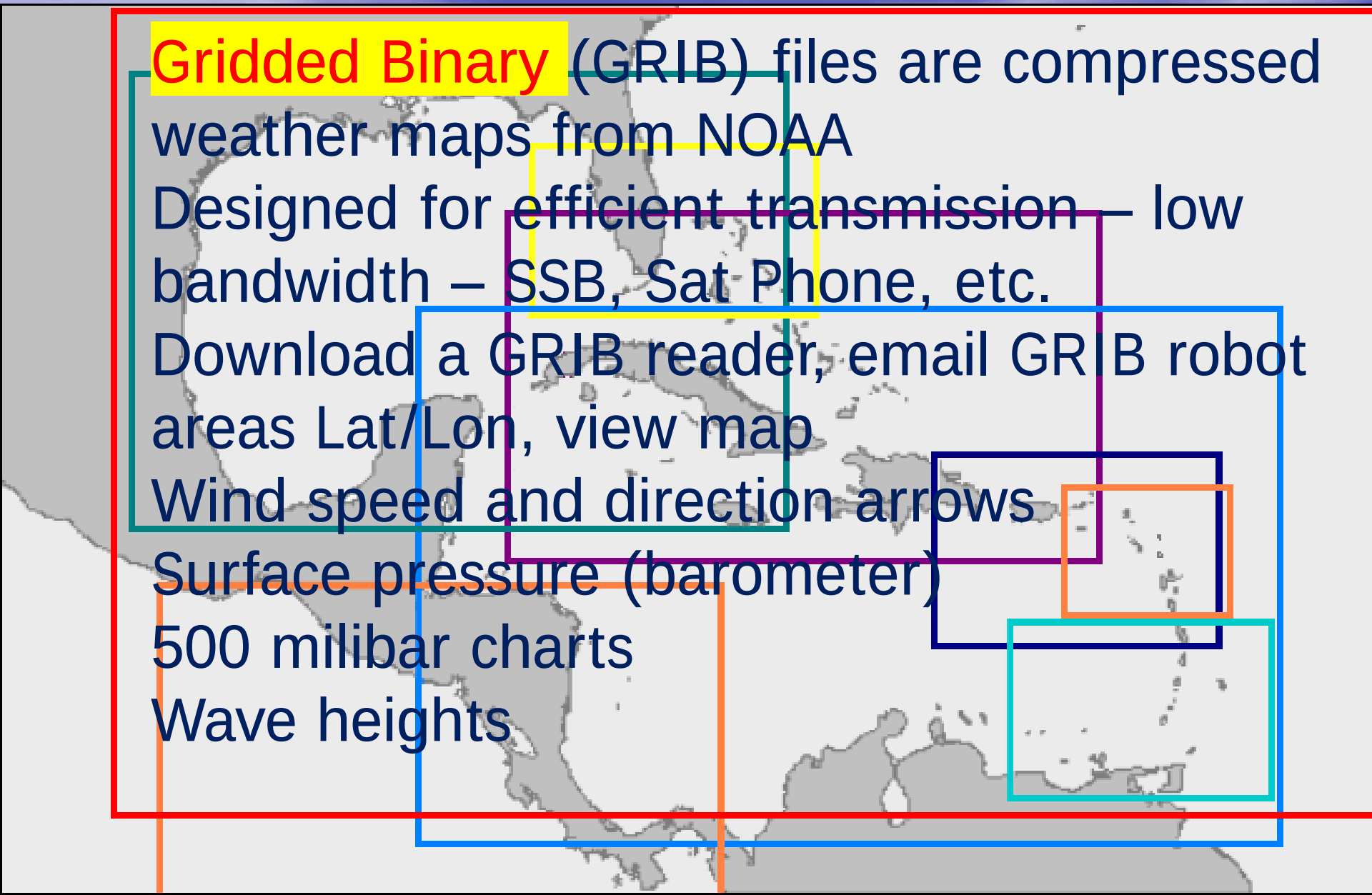
*Winds – below Gale force (40 knots)

*Barometer – dropping usually signifies stormy weather

# Weather Factors

- Air, Land and Water temperatures
- Wind and Sea conditions
- Tropical depressions, Hi's and Low's
- Barometric pressure
- Don't forget to look outside and see for yourself

# What's a GRIB?



Gridded Binary (GRIB) files are compressed weather maps from NOAA

Designed for efficient transmission – low bandwidth – SSB, Sat Phone, etc.

Download a GRIB reader, email GRIB robot areas Lat/Lon, view map

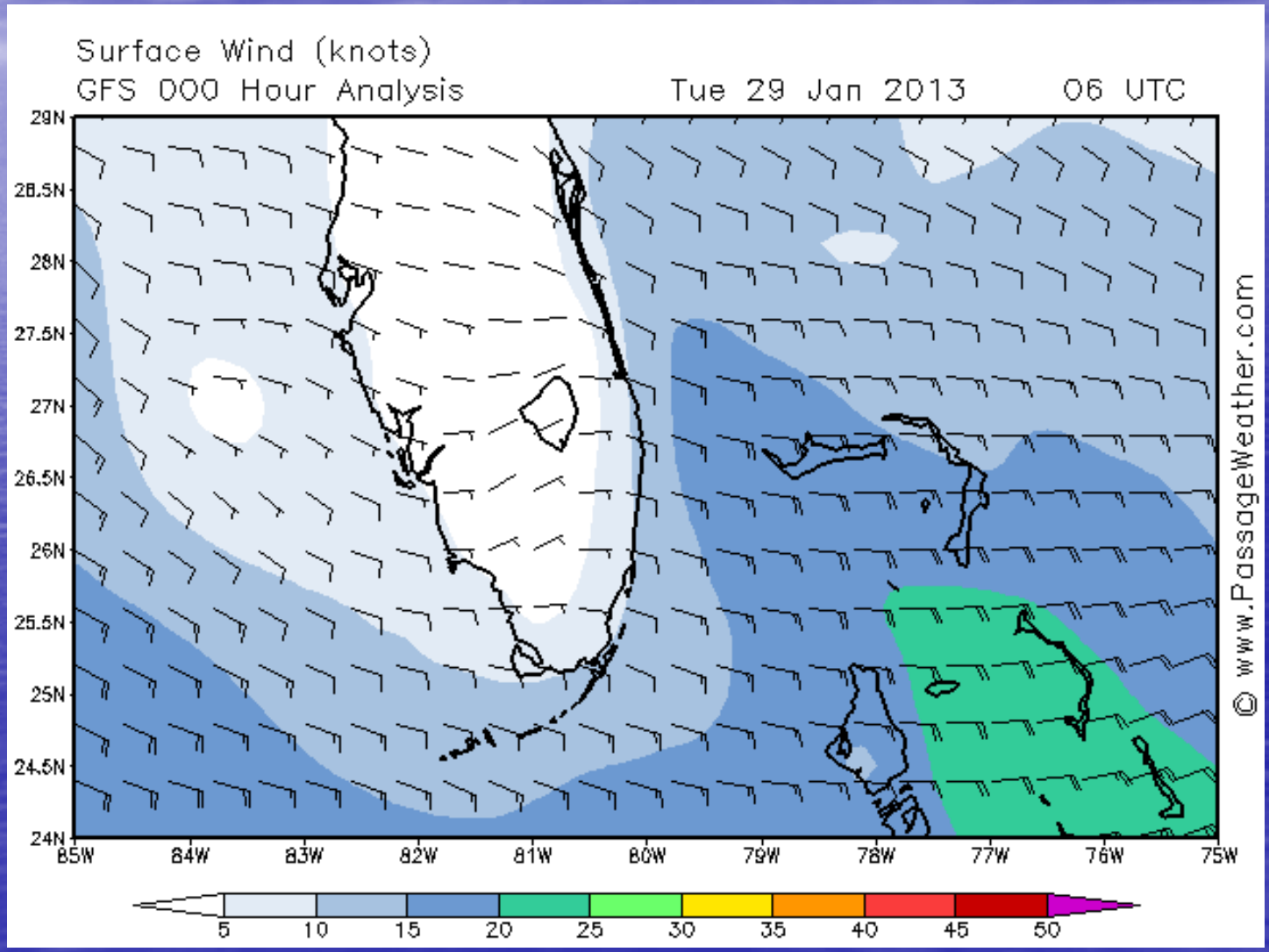
Wind speed and direction arrows

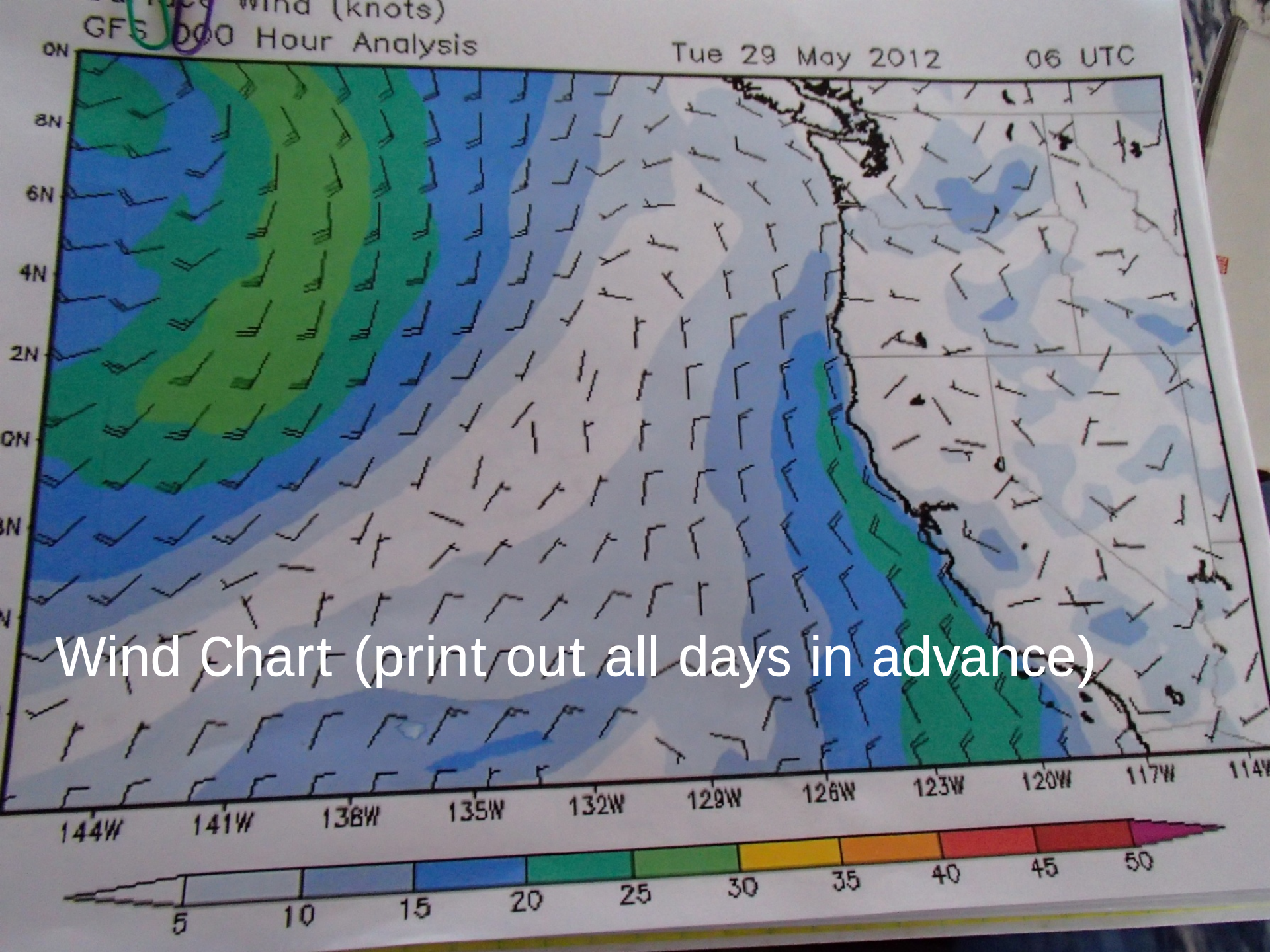
Surface pressure (barometer)

500 milibar charts

Wave heights

# www.passageweather.com





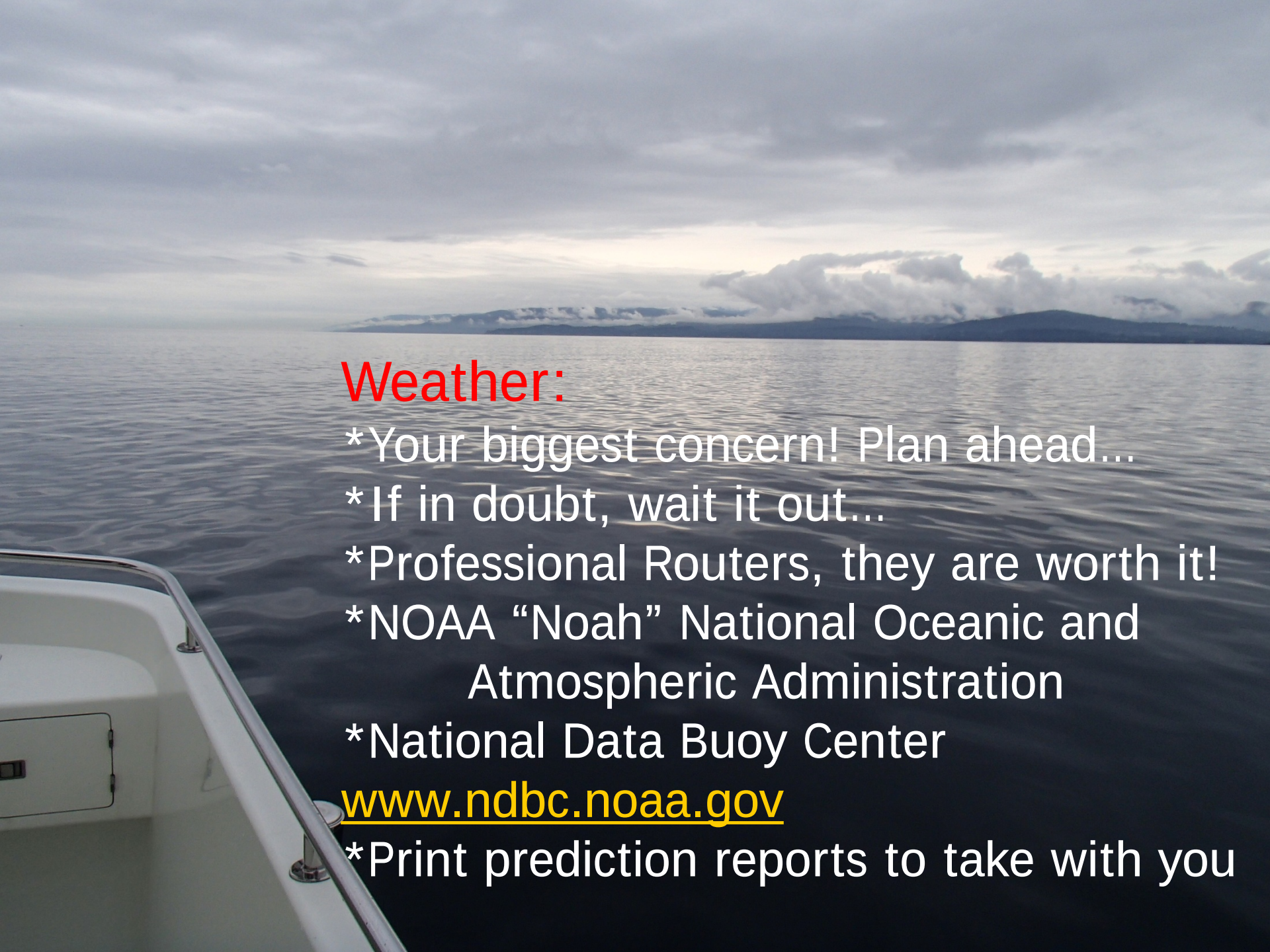

Wind Chart (print out all days in advance)

# Weather Websites

www.noaa.gov – National Weather service
www.buoyweather.com – Sea State
www.sailflow.com - Wind speed and direction
www.darksky.com Local weather
www.intellicast.com – Weather
www.stormsurf.com – Weather
www.predictwind.com - Weather

Anyone in class have a favorite?


Remember, there are nice days out there too...
Your loved ones can track your AIS on www.marinetraffic.com
Also www.vesseltraffic.com



## Weather:

*Your biggest concern! Plan ahead...

*If in doubt, wait it out...

*Professional Routers, they are worth it!

*NOAA “Noah” National Oceanic and Atmospheric Administration

*National Data Buoy Center

www.ndbc.noaa.gov

*Print prediction reports to take with you

Firefox

National Data Buoy Center

www.ndbc.noaa.gov

National Oceanic and Atmospheric Administration's

# National Data Buoy Center

Center of Excellence in Marine Technology

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Gliders
APEX
TAO
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**Storm Special!** View the latest observations near Atlantic TROPICAL STORM NADINE as of INTERMEDIATE ADVISORY NUMBER 37A @ 200 PM AST THU SEP 20 2012.

Recent Data | Historical Data | Show Labels

| Program Filter: | Owner Filter: |
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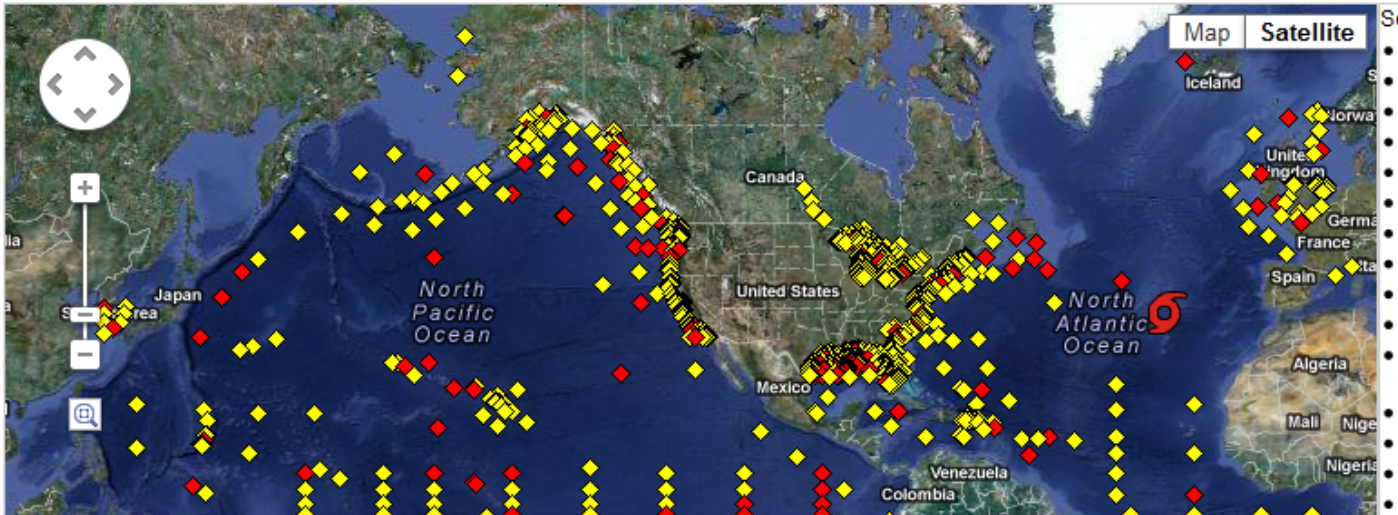
| International Partners | Amerada Hess |
| IOOS Partners | Anadarko |

To save the current map view, right click on this link and select either "Add to Favorites" or "Bookmark this link".
To view observations, left-click a marker on the map.
To zoom the map, use the zoom slider on the map; or hold down the **Shift** key while dragging a box; or click the magnifying glass below the zoom slider to turn drag zoom on and off.




Select a region:

- Atlantic (Tropical)
- Atlantic (West)
- Australia
- Bay of Bengal
- Caribbean Sea
- Central America
- Chile
- Europe
- Gulf of Alaska
- Gulf of Mexico (West)
- Gulf of Mexico (East)/Florida
- Nova Scotia
- Pacific (North)
- Pacific (West)
- USA-Alaska

Weather Forecasts Underway:

*Satellite Radio – XM/Sirius forecast service

*VHF – channel 3 and 4.

*Do you have a Weatherfax?

*Visual Passage Planner – very popular

*Professional Weather Routers – Chris Parker

*Internet, if you have it aboard

# Rough Weather Suggestions

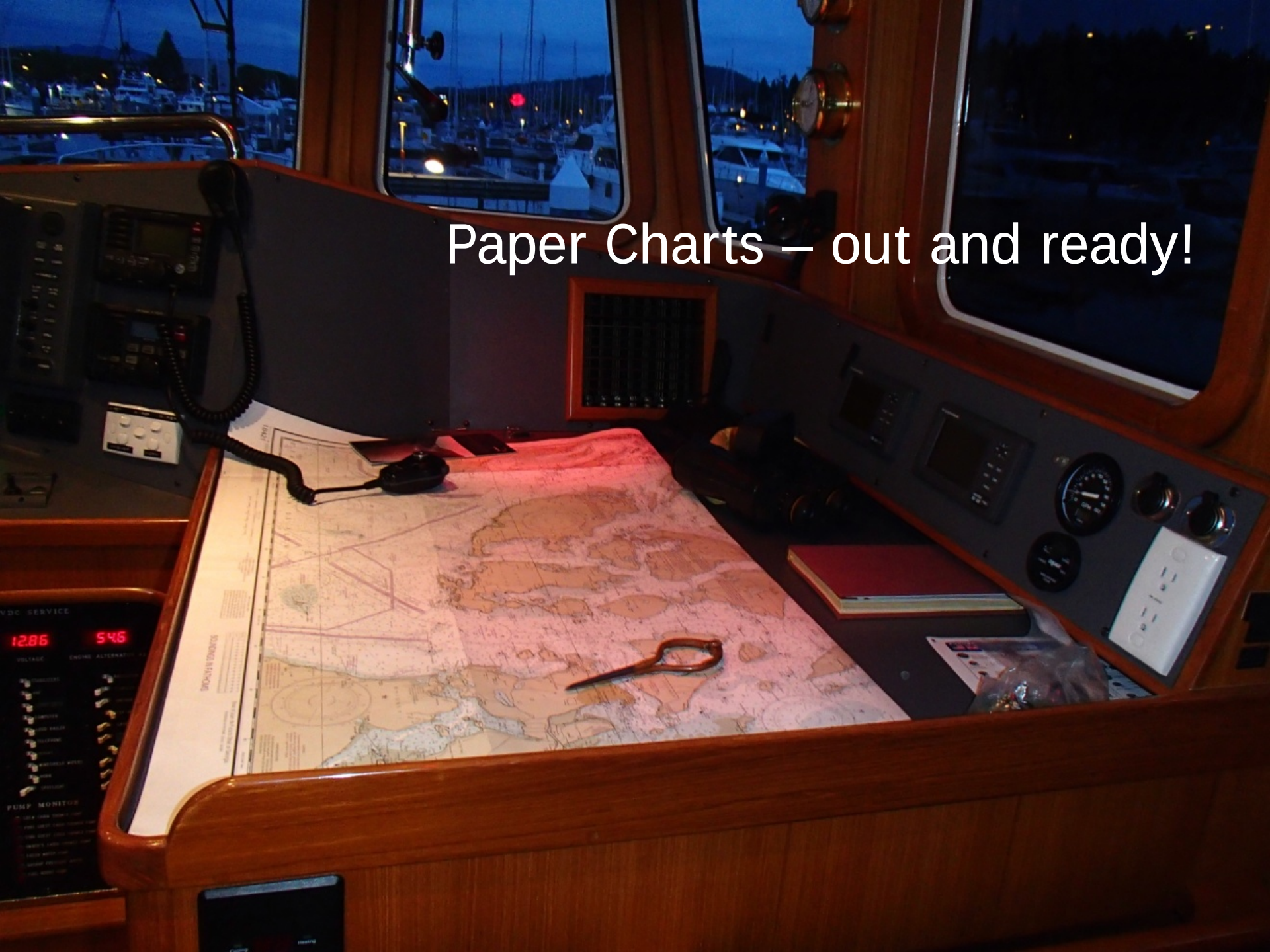
- Anticipate and prepare, sometimes you have to go through it…it won't last forever
- Make sandwiches in advance
- Secure all moving parts
- Change course and slower speed to make it a more comfortable ride

# Basic Navigation – Paper Charts

- Know how to read a paper chart
- Continually cross reference with electronic charts
- Tools – Dividers and Parallels
- Depth – safe waters, shoals, etc.
- Shipping Lanes
- Obstructions, wrecks
- Buoys and aids to navigation
- Organize charts in the order you will use them

Post-its' for chart tracking

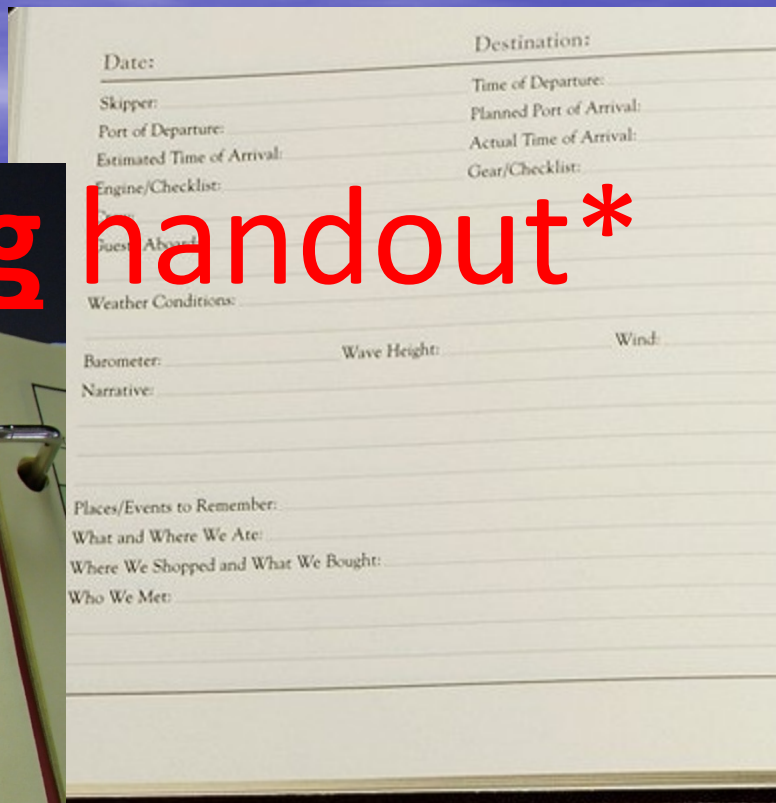
# Light Wedge – magnifier for night mode


Paper Charts – out and ready!

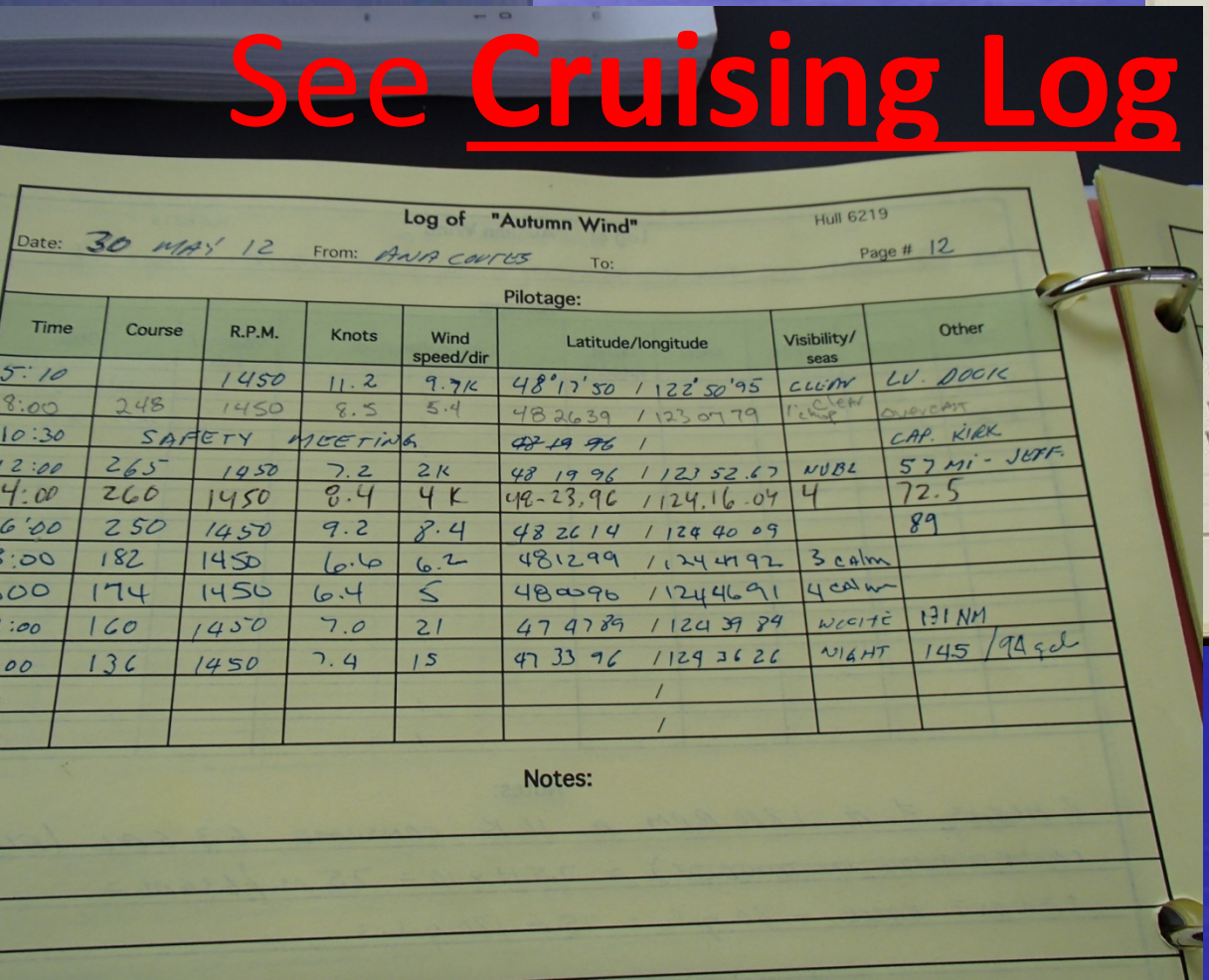
# Ships Log

- Keep track of your position, departure and arrival times plus machinery hours of operation
- Hourly - on the hour - recordings
- Typical details – lat/long, speed, RPM, heading, miles off shore, distance to waypoint, wind and sea conditions

# Ships Log – buy or make your own


## See Cruising Log handout*



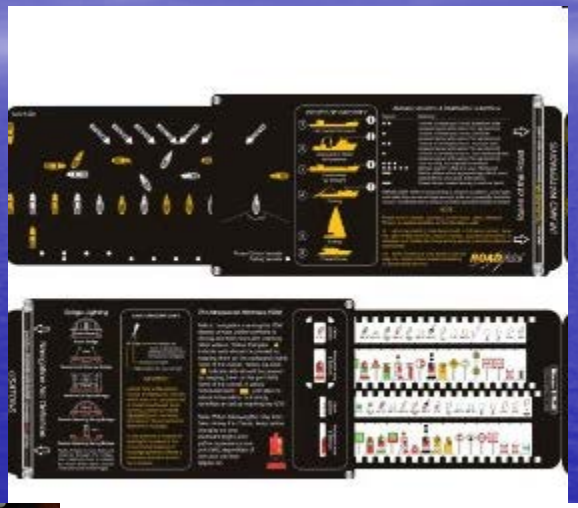

# Your “job” as crew

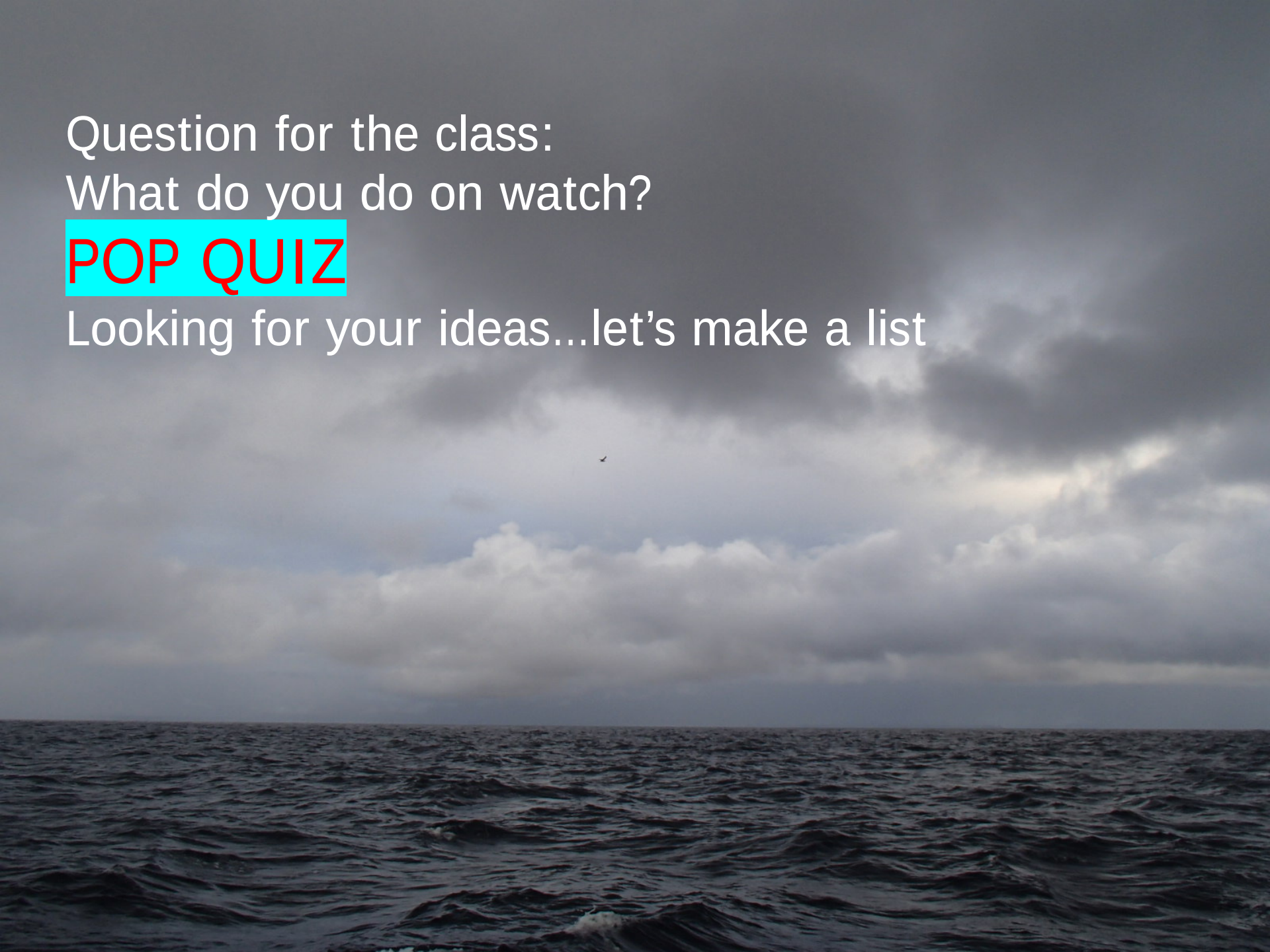
- Help out with chores
- Clean up after yourself
- Do some magic in the galley
- Keep your bunk area neat
- Set your own alarm for reporting to watch
- Find out about the engine room
- Learn basic navigation electronics
- Ask questions, alert Captain if concerned…

# Pilothouse Tools

- Binoculars “long eyes”
- Night vision (FLIR), hand held monocular
- Closed Circuit TV
- Spot light – built in, hand held
- Flash light, red lens
- Good pencil & sharpener
- Barometer
- Clock – local and GMT
- Calculator
- Chart Guide
- Hand held compass
- Back up navigation on laptop
- Nav lights “slide rule”

# Navigation Tools




Question for the class:
What do you do on watch?
POP QUIZ
Looking for your ideas...let's make a list

# Watch Standing Essentials

- Keep water under the keel -don't hit anything!
- Compass Heading: correct direction
- Navigation: position and intended course
- Radar: Awareness of targets, boats and land

# Watch Standing Essentials

- All systems running smoothly – temperatures, fuel flow, voltage, check all control heads
- VHF communications: Monitor channel 16
- Weather conditions: Changing?
- Look outside the boat – ahead and astern

Stay alert and pay attention
Know where you are
Scan the horizon every 15 minutes

# Crossing Situations – Part One

- *Handout from Chapman's – "Danger Zone"
- Identify Targets well in advance (Head on – Overtaking)
- Determine their speed, heading and CPA
- Stay clear by at least 1.0 mile (use judgment)
- Pass Port side to Port side [or] change via VHF
- Hail on VHF 16 to discuss crossing with other captain (ARPA and AIS will give you details: ship name, length, speed, course, when you'll "intersect", etc.)

# Crossing Situations – Part Two

- Make your intentions clear – exaggerate your heading direction (make sure you have water)
- Understand the rules for "Give Way" (you alter) vs.

  "Stand On" (you maintain course and speed)
- Don't "push it", you are probably the smaller, more maneuverable boat and remember the old saying, "Safe Boating is No Accident"
- Slow or change course to avoid a collision – go behind, crossing in front is nerve wracking...!

# Try to keep one mile apart

# Navigation Electronics Things you need to know…

- Autopilot modes: Auto, Standby and Nav
- Radar – Targets, Rings, Distance, CPA
- VHF – 16, how to talk and switch channels
- Chart Plotter – Waypoints, Routes
- GPS – Latitude/Longitude
- Depth Sounder
- AIS – ship tracking
- Chart and Radar overlay
- How to Dim and Mute devices (Alarms)
- All electronics manuals
- Understand the basics – rank in order 1 - 15…

# VHF Communications

- VHF radio – Ship to Ship (line of sight)
- Hi vs. Lo settings (close range or far away)
- Weather channel on VHF (Channel 3 or 4)
- Radio check (Channel 27)
- Channel 22A “Twenty Two Alpha” – USCG communications to a boat
- Working channels –switch to 68, 69, 71, 72, 78
- MOB – Latitude/Longitude distress signal
- Fog horn, Hailer

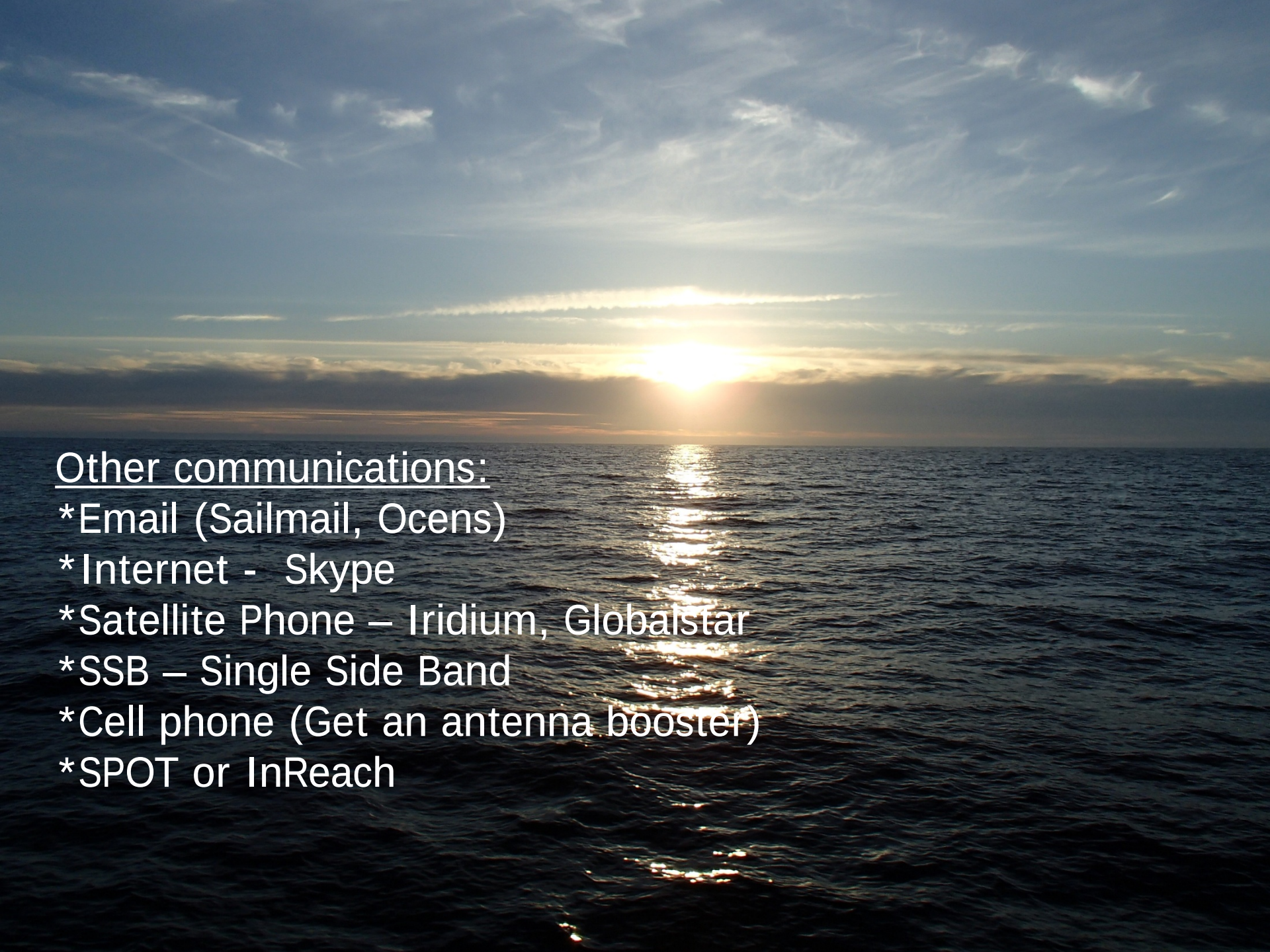
# VHF (Very High Frequency) main source for ship to ship communications. Nice to have two sets built in. Have a waterproof handheld as a back up.


# VHF radio basics

- You are required to monitor 16
- If you have two VHF's you can monitor 16 and listen/talk on another channel
- Put on "scan" auto switch to talking channels
- Repeat Three Times (3X)
- "Pan Pan" – USCG Emergency Alert
- "Securite Securite" – USCG Navigation and Weather Warnings
- Over, Out, Roger, Affirmative, Negative

# VHF – calling for Help

- This is like 9-1-1. Captain should make the call
- "Mayday Mayday Mayday" (Broadcast if you are in imminent danger and need immediate assistance)
- The USCG will ask... "Your coordinates?"
  "How many souls are aboard?"
  "Describe your boat colors"
- All crew will be asked to put on life jackets
- You may have to be a "relay" link for an emergency on another boat, be ready for this



Other communications:

*Email (Sailmail, Ocens)

*Internet - Skype

*Satellite Phone – Iridium, Globalstar

*SSB – Single Side Band

*Cell phone (Get an antenna booster)

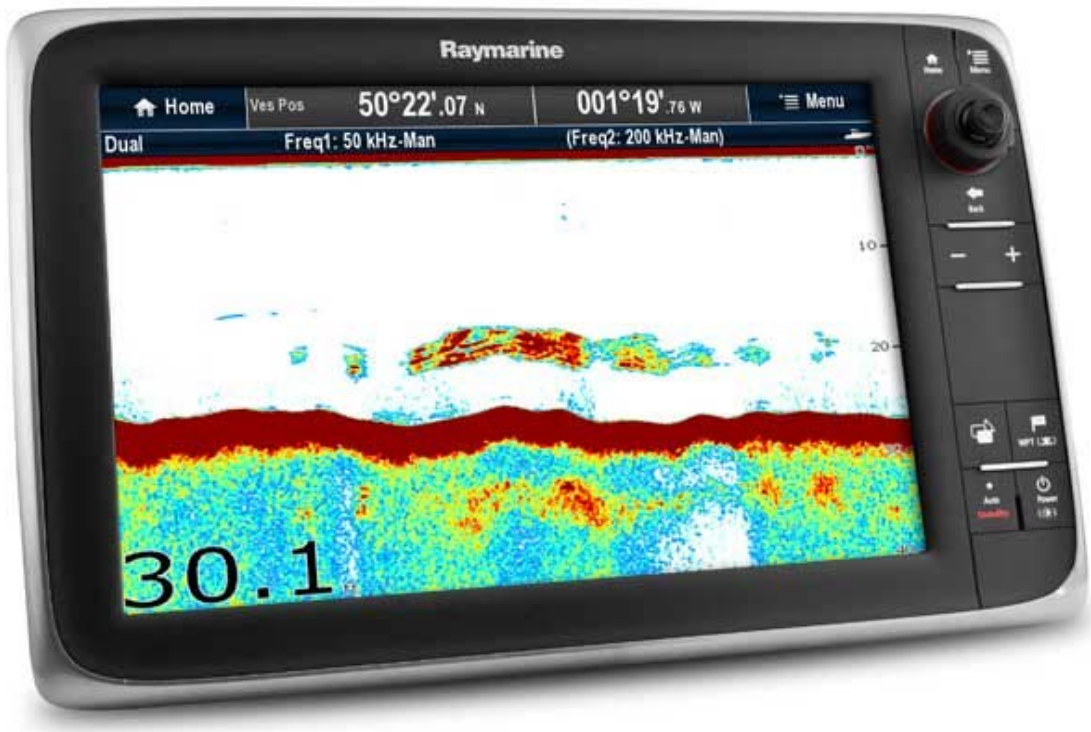
*SPOT or InReach

# Depth – Fish Finders, Sounders

- If you don't have water under the keel…
- What does your boat draw? Lead line
- Set transducer to measure from keel
- Fish Finder will show bottom features
- Sonar – forward scanning
- Charts showing feet or fathoms (6')?
- Someday you will run aground (Tow Boat US/ Vessel Assist). Back off, wait for tides

# Depth Sounder

Fish Finder shows bottom contours



# GPS – Global Positioning System

Knowing your Latitude and Longitude is a key navigational development, surely much easier and more accurate than a sextant – revolutionary development – has allowed cruising to become more mainstream

# AIS (Automatic Identification System)

- A separate system that integrates a VHF transceiver with GPS coordinates and navigation sensors to “exchange” information between ships – details like ships name, length, speed, heading, destination – and time to closest possible approach.
- Very helpful, but don’t forget Radar blips that are also targets without AIS
- Short range, line of sight, pop up quickly

# AIS – Class A (12w) or Class B (2w)

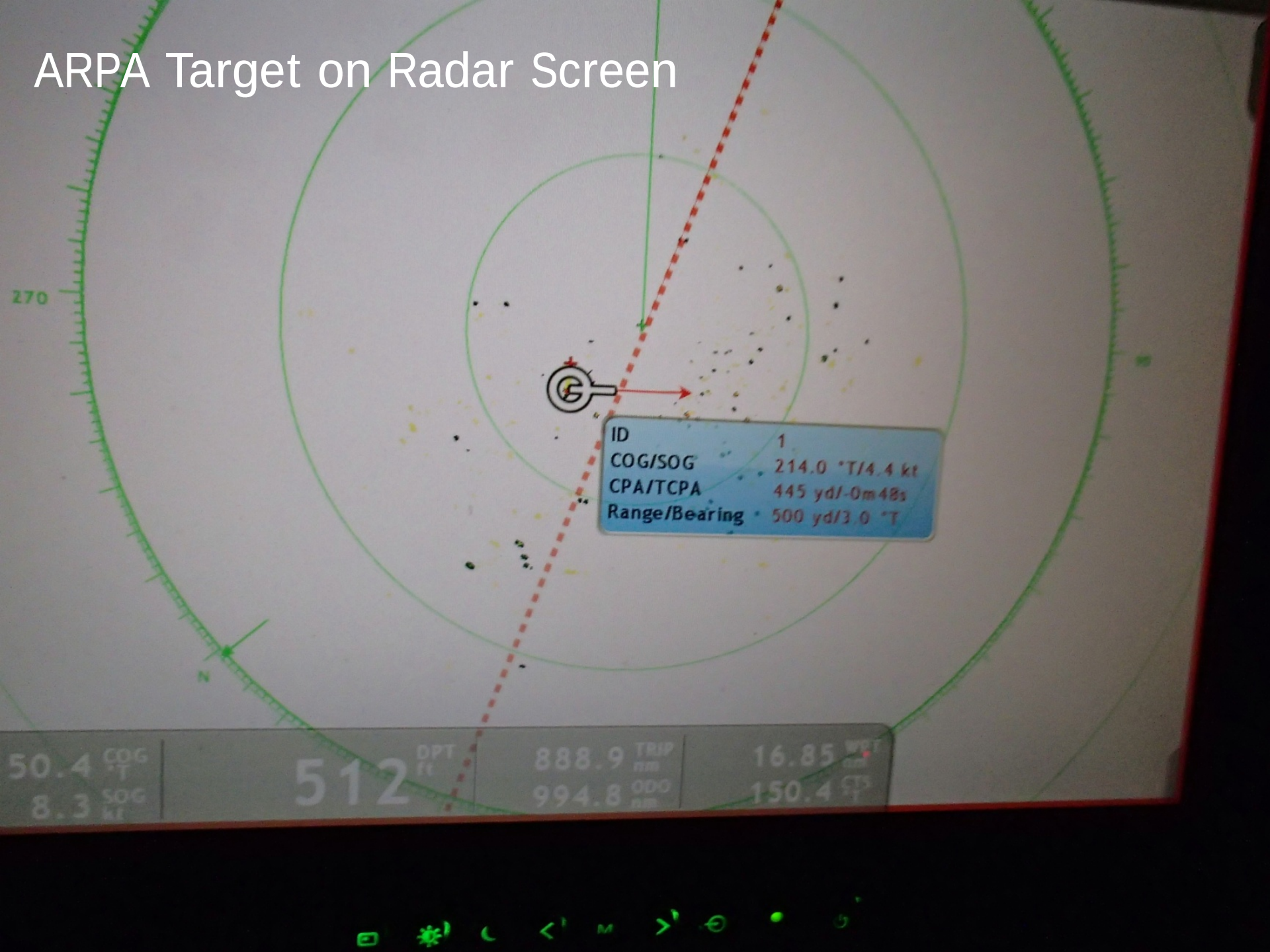
- This is a system that broadcasts your vessels' details and also receives AIS info from surrounding vessels – uses VHF transmitter
- Primarily for collision avoidance – easy VHF communications
- Vessel Traffic Service (VTS) uses it to manage movement of ships, tankers and freighters

# Radar


- "Charts are legend, GPS is theory, Radar is TRUTH!" Author unknown
- Paints a picture of coastline and objects
- Radar rings help with distance (Zoom in and Zoom out frequently)
- Targets – ARPA – Auto Radar Plotting Aids
- Determine speed and direction of other boats ("Targets") – right click to acquire


Distance Rings, “See” land, Targets

# ARPA Target on Radar Screen




AIS target (Variable range, 6 - 12 miles avg.)

# AIS details

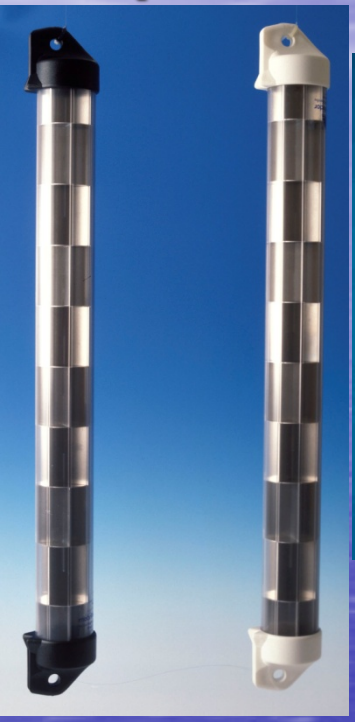

Name EVER ELITE
COG/SOG 290.0 °T/16.8 kt
CPA/TCPA 2.372 nm/-1m58s
Range/Bearing 2.400 nm/208.7 °T


Hdg 266.1
Object Detail
Name EVER ELITE
MMSI 235554000
COG 290.0 °T
SOG 16.8 kt
ROT +0.0 °/m
CPA 2.383 nm
TCPA -1m41s
Range 2.403 nm
Bearing 209.3 °T
Destination KAOHSIUNG
Ais Status Normal
Call Sign VSJG7
Beam 42.0 m
Length 299 m
Position 48°19.9430' N; 124°05.9380' W
NavStatus Under way using engine

# Two types of Radar (Coming in to SF – GG bridge)


# Radar Reflectors – “signature”

(Mobri S2, Firdell Blipper, Davis)

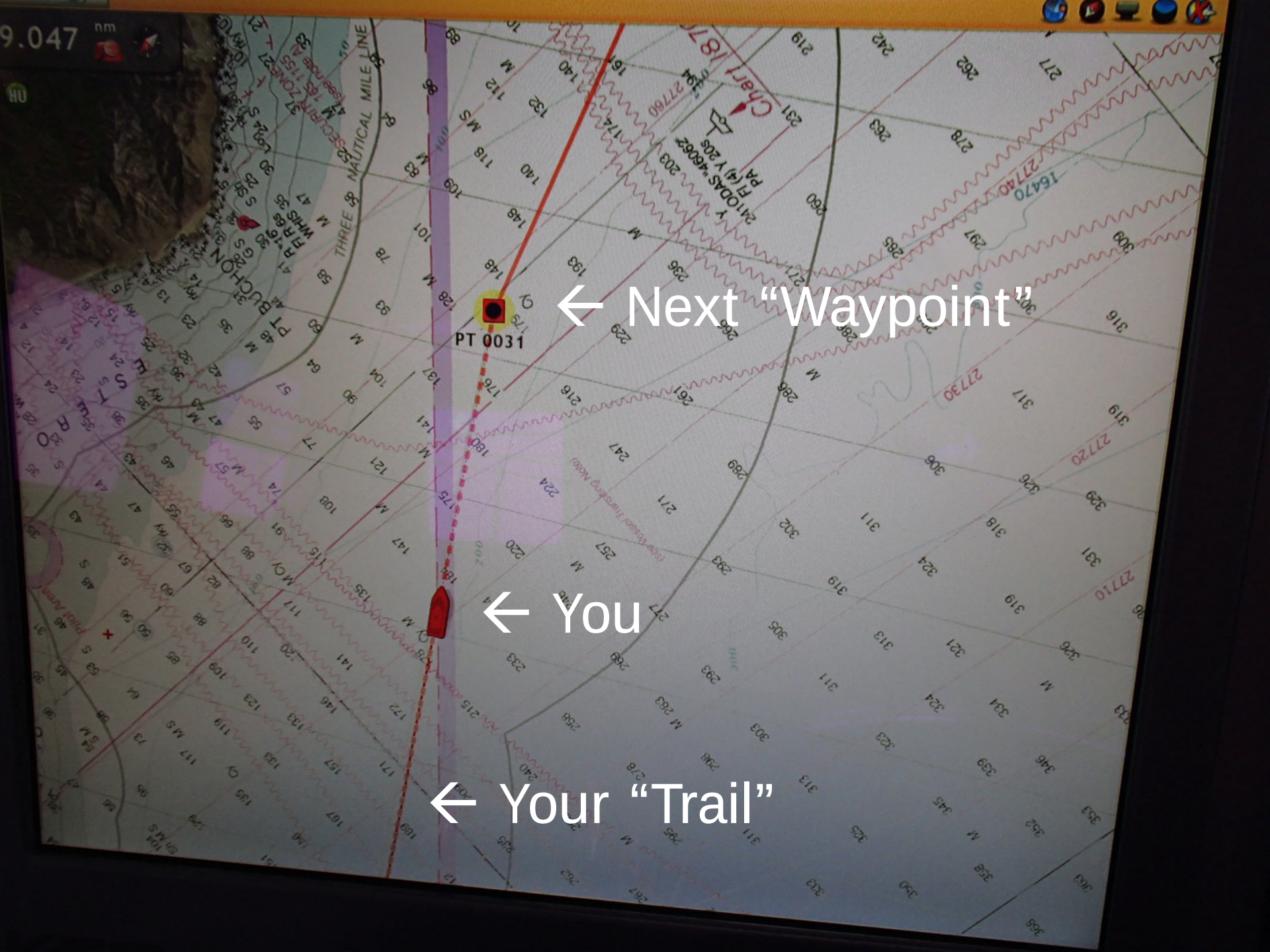



# Plotting : (Paper and Electronic Charts)

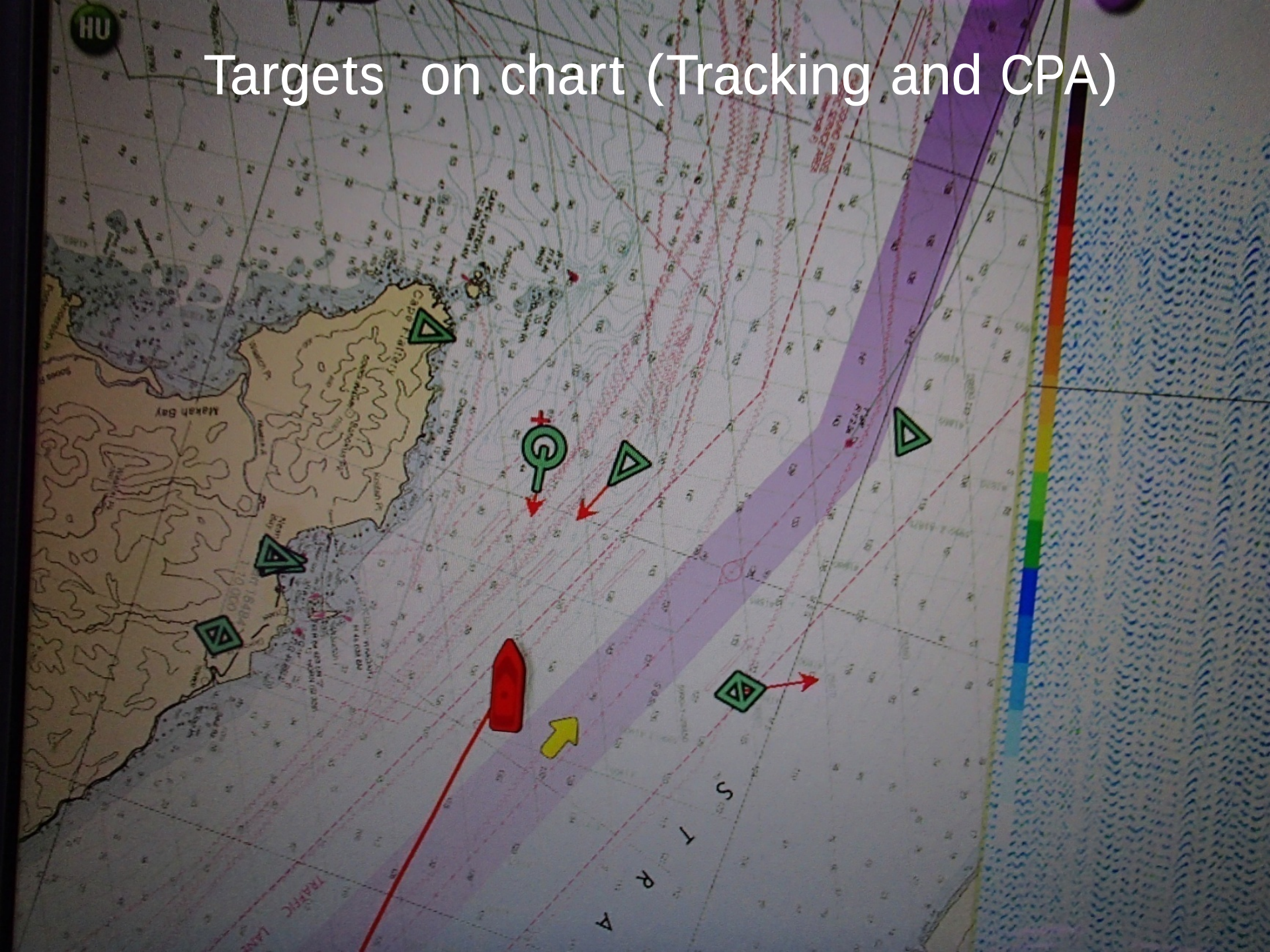
- Always have a Paper Chart out
- Hourly pencil Lat/Long on the chart
- If you have an electrical problem you will have a reference with the Paper Chart
- Electronic charts are fantastic and reliable, but be prepared in the event they falter – continually cross check with paper charts

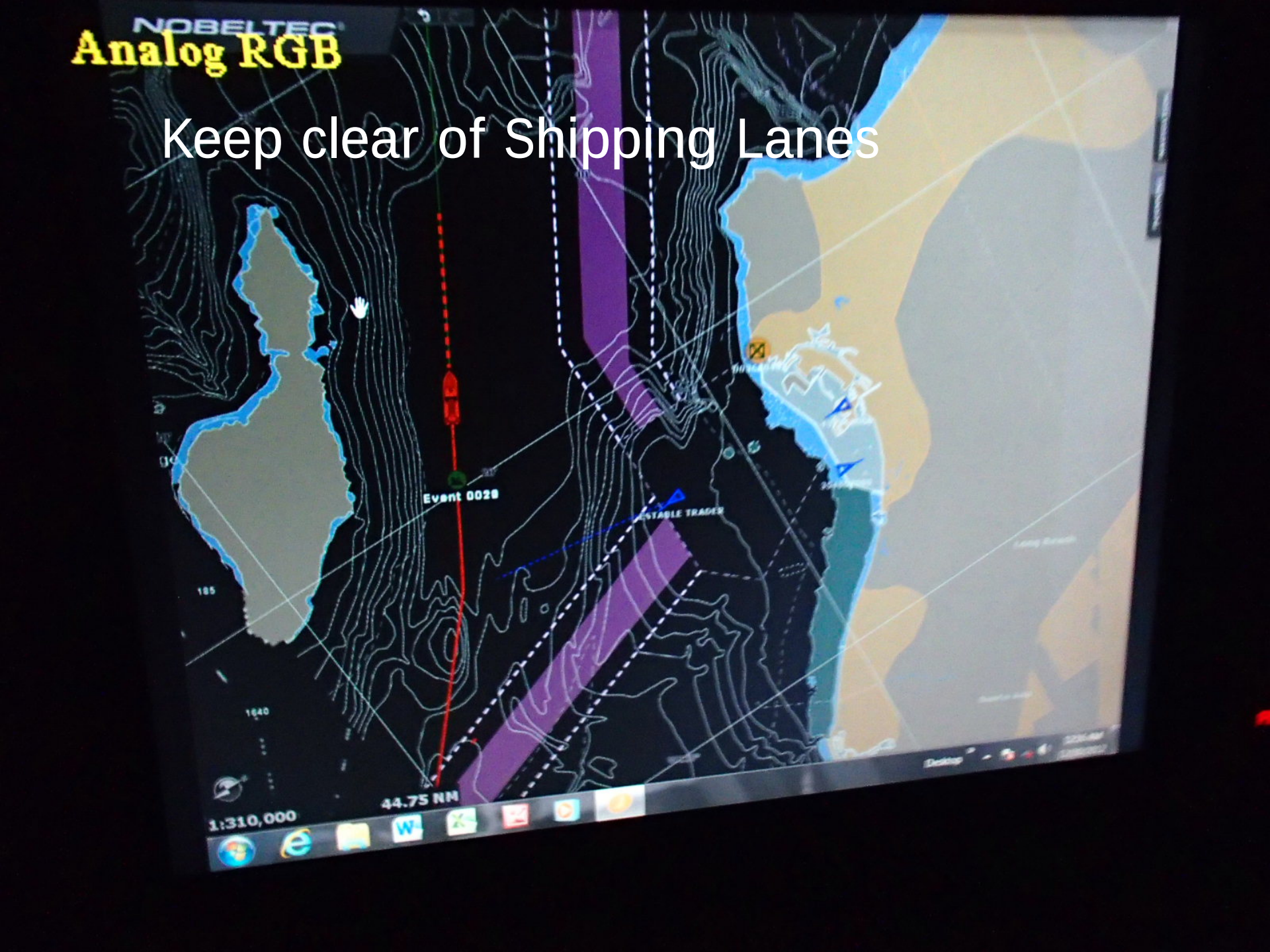
# Chart Plotting – Electronic Chart features

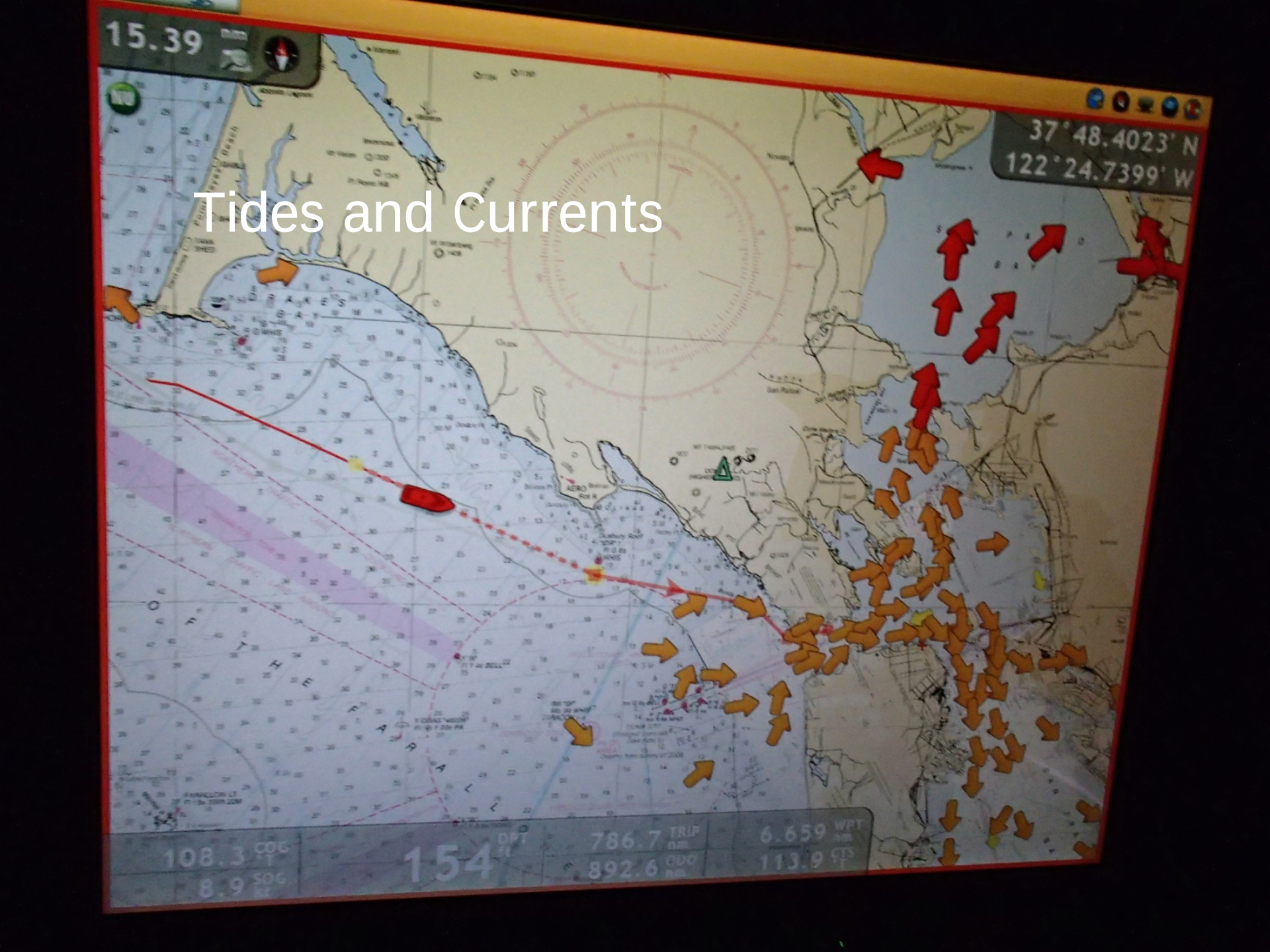
- Set up Waypoints (GPS positions)
- Can save Routes, also pre-program trips
- Move Cursor and “Go-to” it on Chart
- Create a Route (connect Waypoints)
- Connect Autopilot to Navigate the Route
- Leave a “bread crumb” trail
- Can overlay Chart and Radar
- Center Boat on Screen

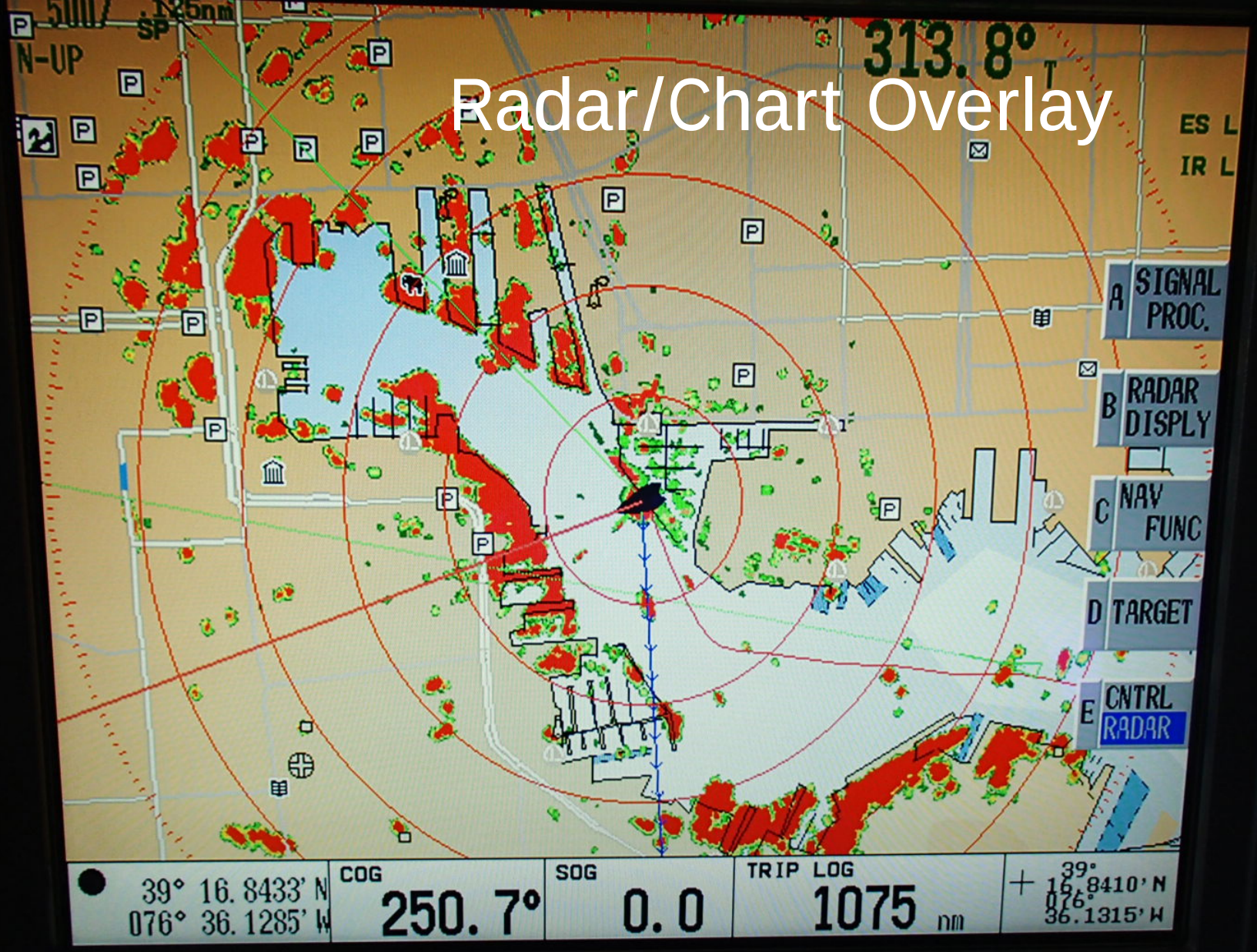

← Next “Waypoint”
PT 0031
← You
← Your “Trail”

# Targets on chart (Tracking and CPA)




NOBELTEC
Analog RGB
Keep clear of Shipping Lanes
Event 0028
185
1640
1:310,000
44.75 NM


Tides and Currents
15.39
37°48.4023' N
122°24.7399' W
108.3
8.9
154
786.7
892.6
6.659
113.9


Radar/Chart Overlay
N-UP
313.8°
A SIGNAL PROC.
B RADAR DISPLY
C NAV FUNC
D TARGET
E CNTRL RADAR
39° 16.8433' N
076° 36.1285' W
COG
250.7°
SOG
0.0
TRIP LOG
1075 nm
39° 16.8410' N
076° 36.1315' W

# Computer “Mouse’s” and Cursors are very helpful

- You can find Lat / Long of another Target
- You can measure distance to another location (ex. From your Boat to a Target or the Shore)
- You can Scroll along the Chart
- You can move the Chart under the Boat to look ahead on your Route
- You can right click the Route to see Heading and Distance to the next Waypoint

# Course, Heading and Track

- You will be Navigating to the next Waypoint steering a Course (intended direction)
- Autopilot will display a compass Heading (the actual direction your boat is pointing
- Track is the straight line you are travelling

  (there may be drift or set effecting your COG – this is the “cross track error” feature)
- Captain plots Route with Waypoints, as skipper, you need to keep the boat safe and on course

# Steering with your Autopilot

- Large pumps and rams that use a built in compass to aim boat on a course (flux gate/rate gain – know where)
- "Hands Free" much easier than steering
- "A" Autopilot – goes to digital compass course
- "N" Navigate – steers to Waypoint on Route
- "S" Standby – hand steer
- Hydraulic Steering popular – air pressure in cylinder, also a bypass for emergency hand steering.
- Have it 'dialed-in' so you travel in a straight line – understand settings (write them down)

# Autopilot Features (Auto heading, Nav heading, Rudder Angle, Jog Lever) don't forget "Standby"



# Autopilots and Active Fin Stabilizers

- Both steer the boat
- Need to be in harmony, will fight each other
- Both have settings and parameters you can tune and tweak
- Need to have balance for uphill and downhill offshore cruising
- No how to get back to your best setting

# What's Up? Course/Heading/North

- Radar & Chart can be Course Up, Heading Up or North Up
- If your boat is heading North it's easy
- When heading South, can be confusing
- Know how to change the screen orientation so that it is logical to you

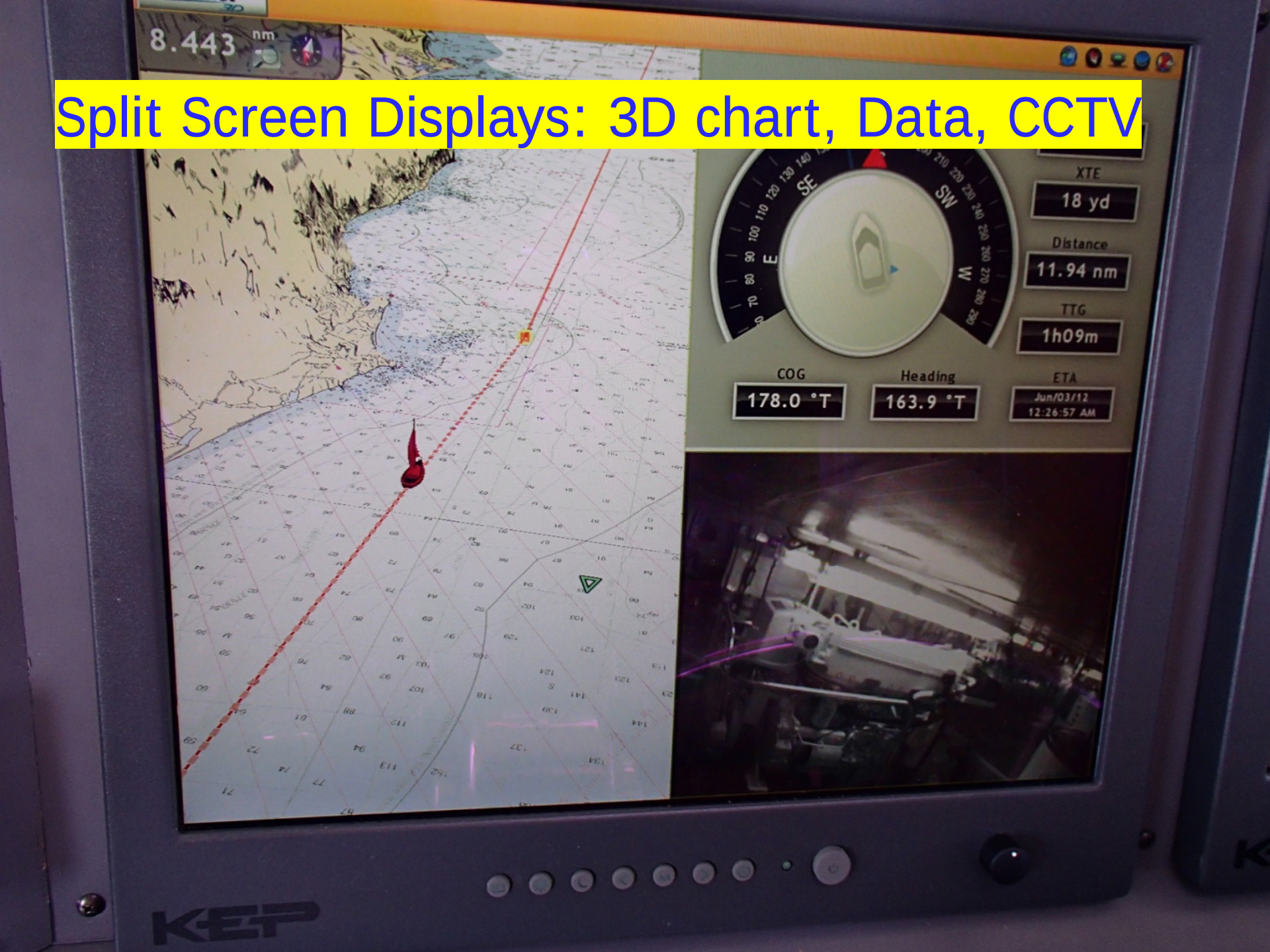
# UPs: Plotter and Radar North Up

- You are piloting from “Point A to Point B” and your boat is typically in the center of the screen (Radar or Plotter) showing the direction you are heading.
- “Old School” captains prefer North UP

# UPs: Plotter and Radar Heading Up

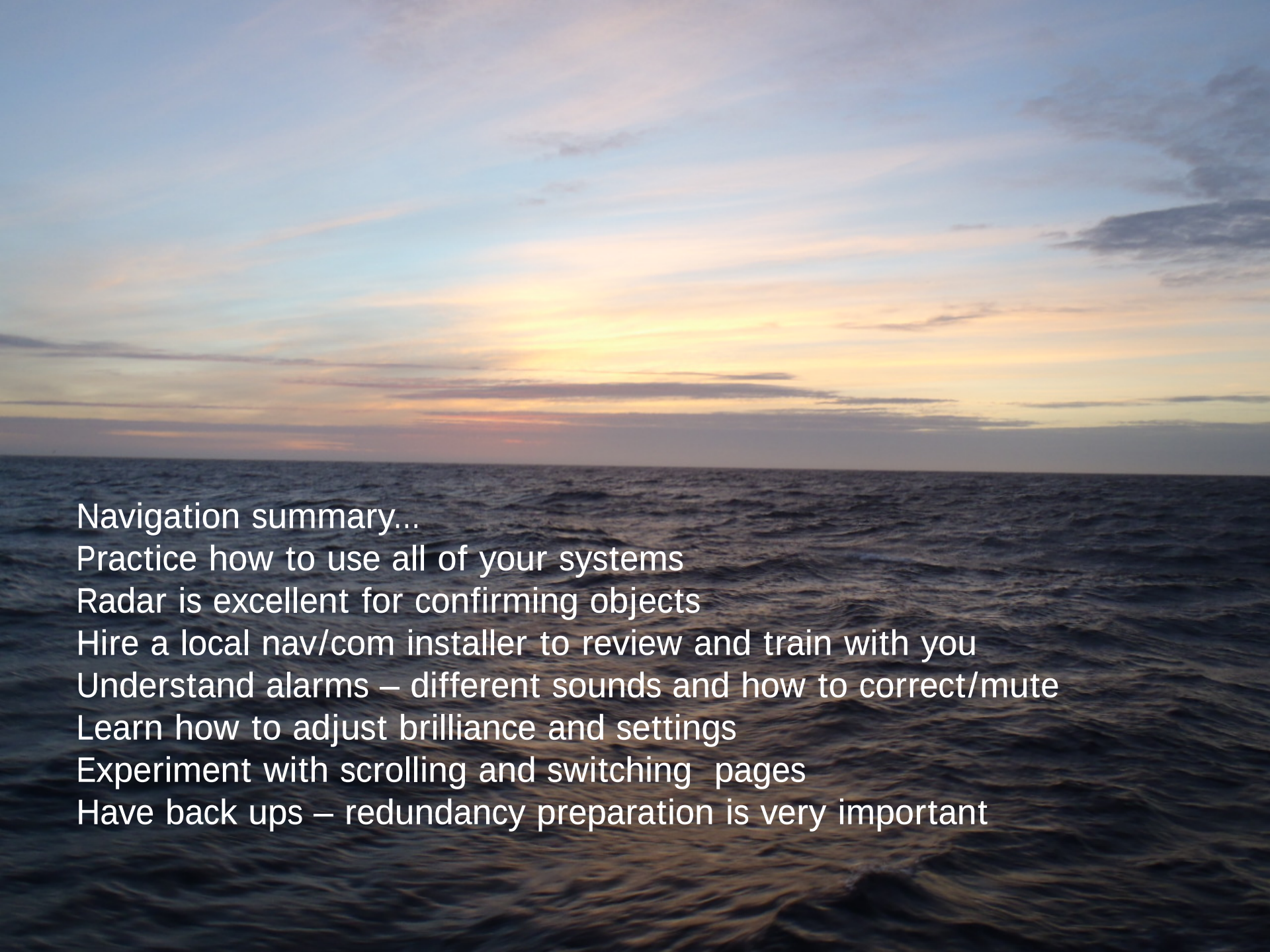
- You can select your preference
- I find it more intuitive and easier to travel in “Heading Up” mode – the coast is painted by the radar, the chart matches.
- When you are in command you should know how to set things up that are easiest for you to run the boat and keep oriented


Plotter and Radar – Heading Up


Split Screen Displays: 3D chart, Data, CCTV
8.443
nm
XTE
18 yd
Distance
11.94 nm
TTG
1h09m
COG
178.0 °T
Heading
163.9 °T
ETA
Jun/03/12
12:26:57 AM

# Some “common” alarms…

- Autopilot loses GPS
- Oil pressure alarm
- Water in fuel alarm
- Bilge alarm
- Target has gotten too close
- Others?  Depth, etc.



Navigation summary...
Practice how to use all of your systems
Radar is excellent for confirming objects
Hire a local nav/com installer to review and train with you
Understand alarms – different sounds and how to correct/mute
Learn how to adjust brilliance and settings
Experiment with scrolling and switching  pages
Have back ups – redundancy preparation is very important

# Questions on Nav/Com? Over-reliance? Don't forget to cross reference!

- Old salts used paper charts, sextants, soundings with lead lines – it took an accurate clock and lots of math to get a "fix"
- They did not have not pin-point accuracy, lots of estimating of coordinates and positions – "Dead Reckoning"
- Know how to estimate Range and Bearing
- Constant effort and consistent doubt, made mariners more observant...keep engaged - you are not a bystander when at the helm

# As far as setting schedules go...

**There's a saying in the cruising community:**

***"All cruising plans should be etched in the sand at low tide."***

# Summary points

- Weather – what about fog?
- Any tips for standing watch?
- Back up navigation equipment?
- Questions on nav/com electronics?
- How do you get time on the water? Charter, ride on someone else's boat
- Training Courses – others

LET'S TAKE A BREAK

Keep an eye out for obstacles...and a camera nearby!

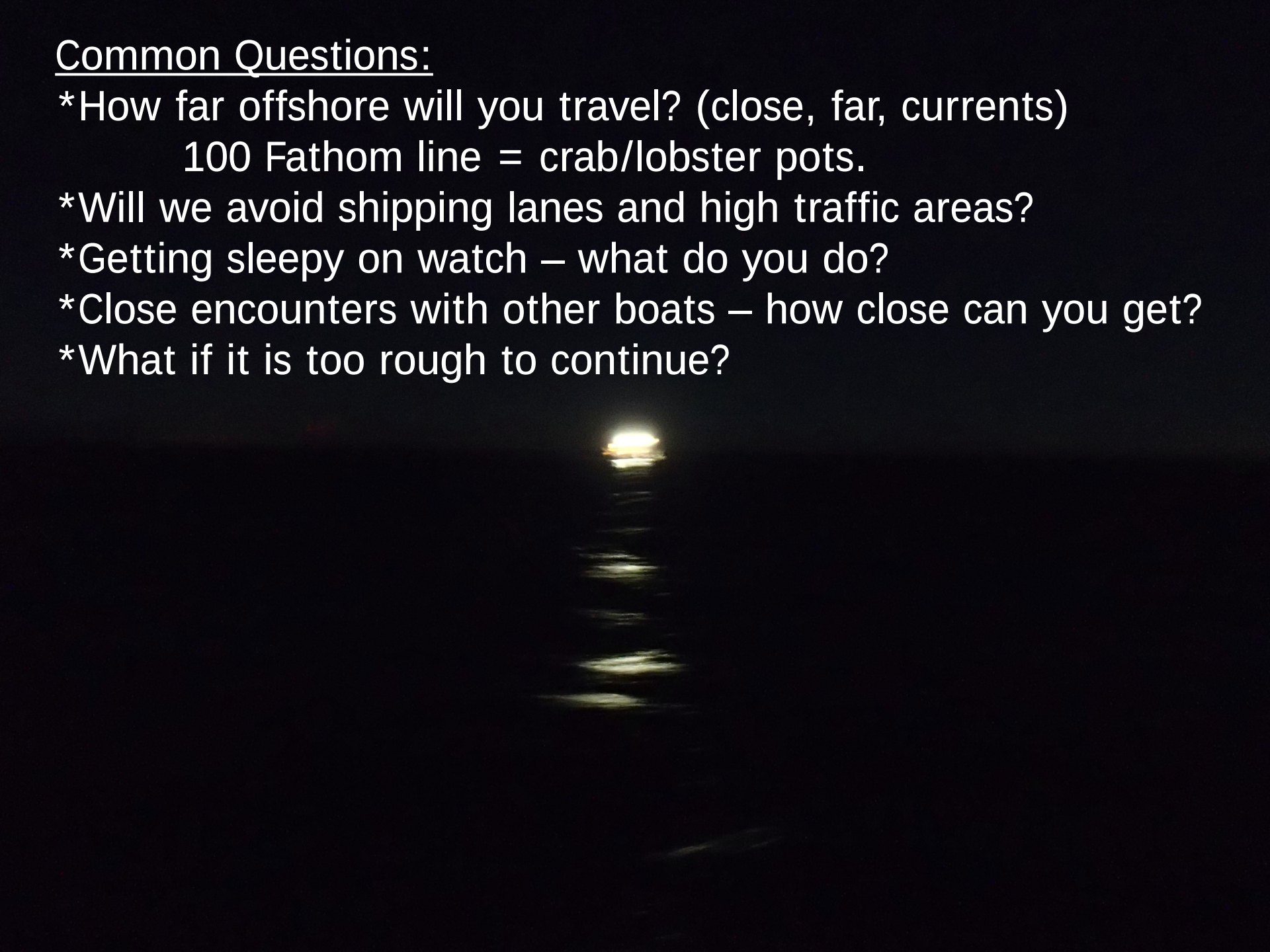
# Pre-Departure Check List

- See sample Start Up list*
- Rain-X on windows
- Fresh Impellers, Clean Filters
- Clean Fuel and confirm Valves correct
- Clean out intake Strainers
- Test run all equipment at the dock

# Route Planning – The Captain

## See *Ready for Sea* check list*

*Departure time – Daylight, Tides
*Paper charts, electronic Route plotting with Waypoints – How many miles offshore will we be?
*Distance to travel, speed average (Arrival ETA?)
*Anticipated Sea and Weather conditions
*Travel Guides, read up on destination(s)
*File a Float Plan let people know your itinerary
*Keep looking back, you may need to retreat...



Common Questions:

*How far offshore will you travel? (close, far, currents)

100 Fathom line = crab/lobster pots.

*Will we avoid shipping lanes and high traffic areas?

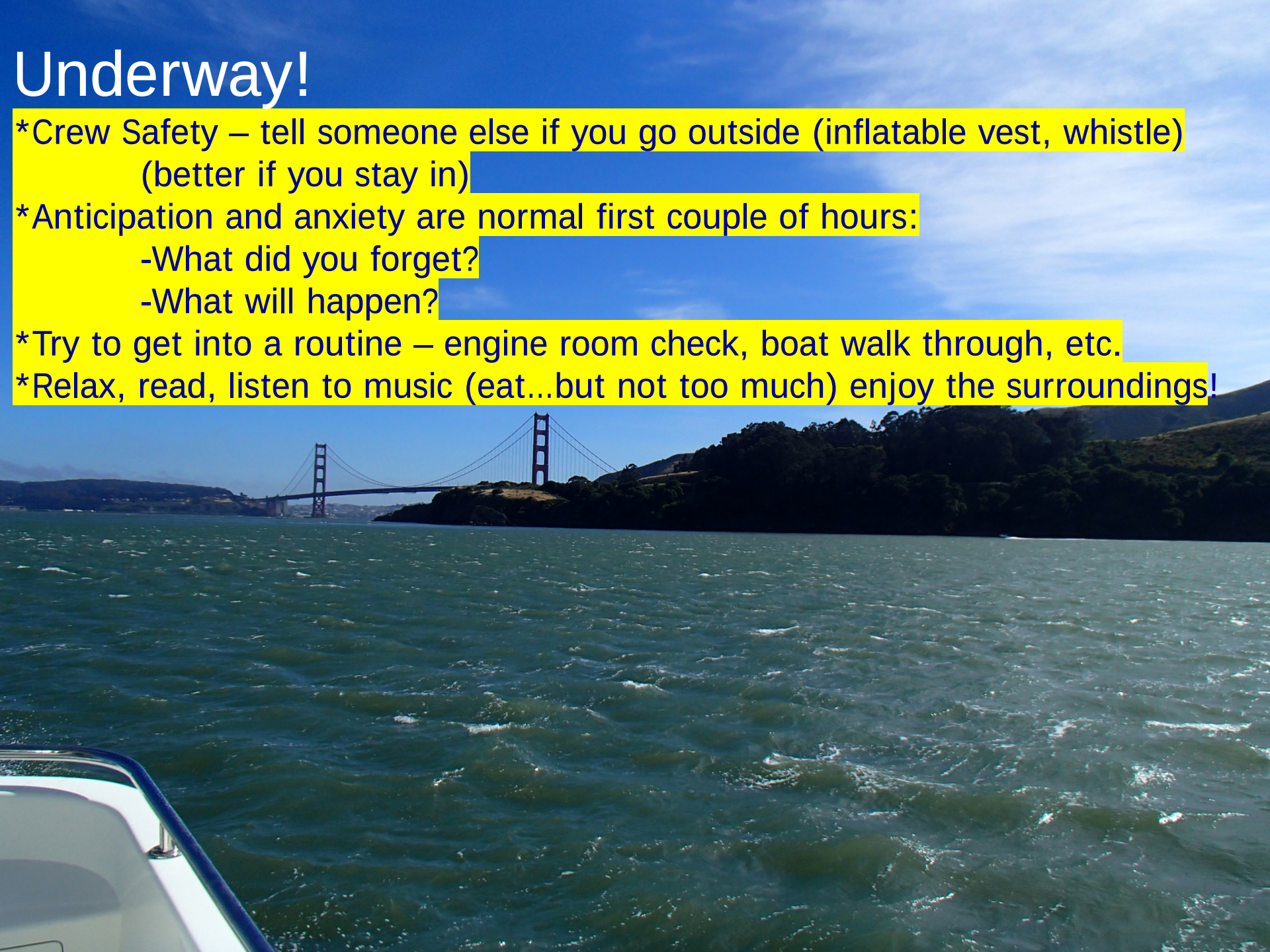
*Getting sleepy on watch – what do you do?

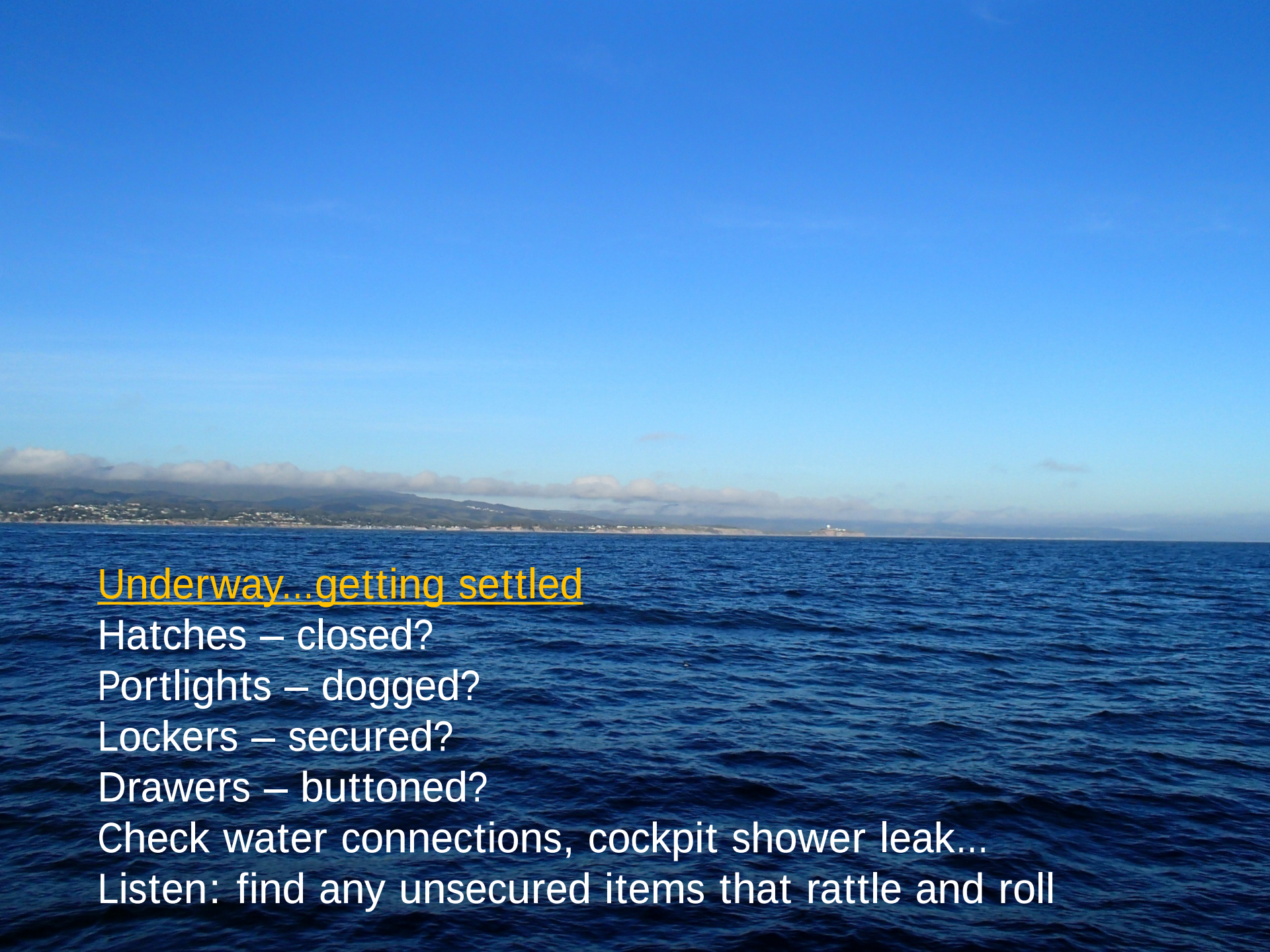
*Close encounters with other boats – how close can you get?

*What if it is too rough to continue?

# Underway!

*Crew Safety – tell someone else if you go outside (inflatable vest, whistle)
(better if you stay in)
*Anticipation and anxiety are normal first couple of hours:
-What did you forget?
-What will happen?
*Try to get into a routine – engine room check, boat walk through, etc.
*Relax, read, listen to music (eat...but not too much) enjoy the surroundings!





Underway...getting settled

Hatches – closed?

Portlights – dogged?

Lockers – secured?

Drawers – buttoned?

Check water connections, cockpit shower leak...

Listen: find any unsecured items that rattle and roll

# What do you record in the log?
# Underway Log Handout*

- Heading, course – on you following the route?
- Latitude and Longitude position
- Trip Log – fill out details
- Speed of your boat – RPM, Knots
- Fuel burn/consumption
- Engine hours – main(s) and generator
- Weather – Wind: speed/direction,
  Sea state: – wave height and period
- Barometer
- Traffic, obstacles on the water, concerns
- Battery levels – voltage good?

# Changing Watch

- See sample Watch Schedule* hand out
- Last Engine Room inspection?
- Identify all Ships Traffic (coming and going) so new skipper knows the history – show the Radar blips and AIS triangles on the screens
- Confirm Course, Route and next Waypoint
- Any observations? Record in the log
- Make sure new Skipper is ready before handing over the helm

# Taking the Helm

- Visit the Head, arrive rested, with water and a snack
- Debrief with skipper before taking the “Conn”
- Write down your Heading, understand Route/Waypoints
- Understand any nearby Targets (on water traffic) and/or obstacles
- Radar Zoom In and Zoom Out
- Scroll up your course close in looking for obstructions
- Look Outside the boat, all around, especially behind you!

# Check your status

- Zoom in on Plotter Course and slowly Scroll to the next Waypoint – confirm you have a clear route with no obstructions
- Radar – all clear?
- Verify your gauges and settings – engine temp, oil pressure, battery voltage, etc.
- Check VHF – on channel 16? Weather?

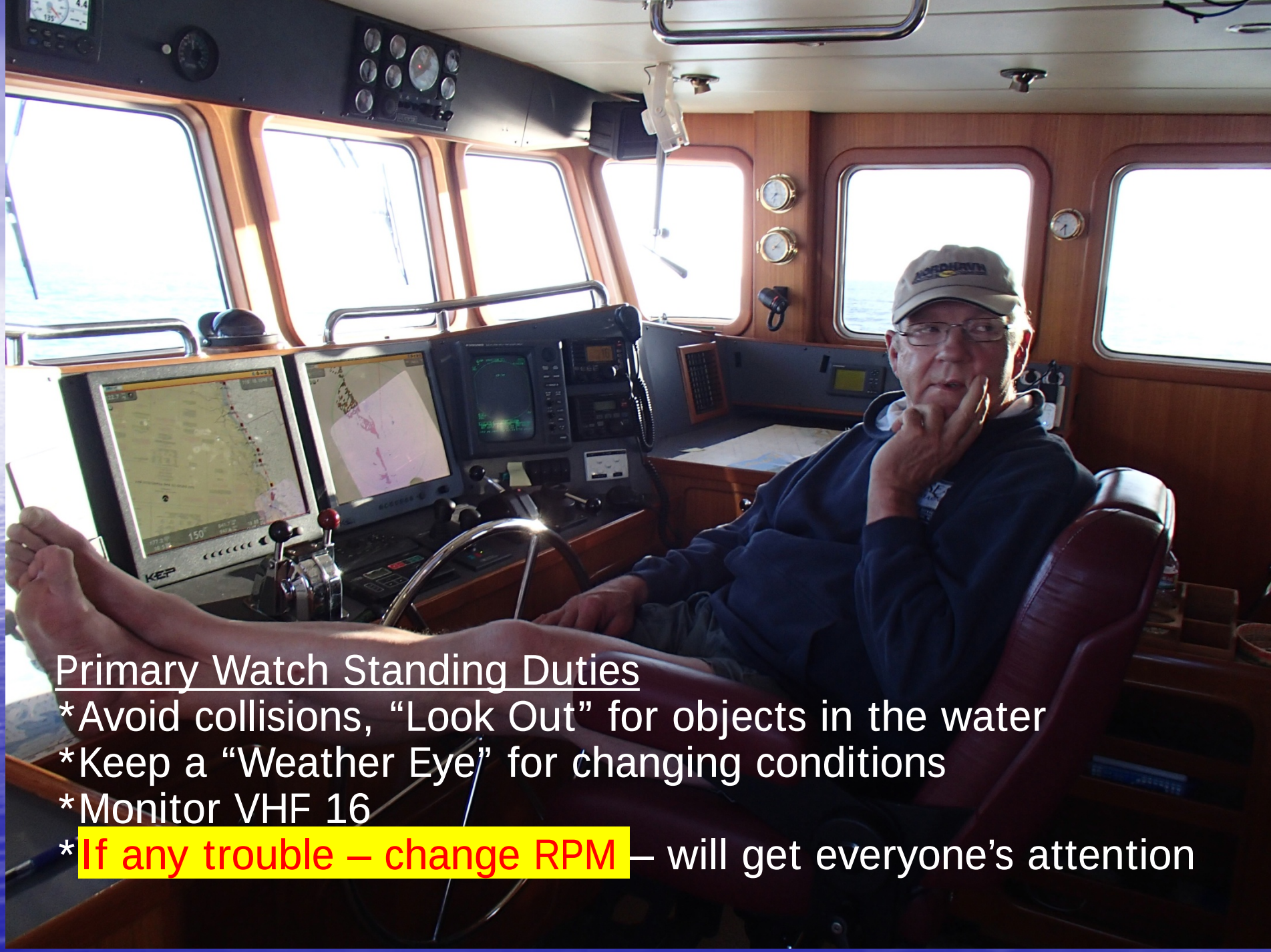
# 15 minutes

- Use an egg timer or other reminder to look outside of the boat.
- Visually, with naked eye and binoculars look at each outside area in zones and inspect that zone looking for traffic and objects
- 15 minutes is the time a fast moving ship can appear out of no where...

# I like Junior Mints and Green Apple Jelly Belly's on Watch!

# Standing Watch

- Posted schedule
- Responsibilities clear
- Ships Log Entries
- Pencil position on paper chart
- Don’t close your eyes
- Beware of distractions
- Alarm panels
- “Sweet Spot” speed
- Avoid Collisions
- Follow Rules of Road
- Drink water, snack
- Weather conditions?
- View CCTV screens
- Take a look outside
- ***“Not on my watch”***



Primary Watch Standing Duties

*Avoid collisions, “Look Out” for objects in the water

*Keep a “Weather Eye” for changing conditions

*Monitor VHF 16

*If any trouble – change RPM – will get everyone’s attention

# While On Watch:

Monitor engine gauges – engine oil pressure, coolant temp, etc.

Monitor all electrical – battery voltage, amperage consumption

Radar: Targets - speed and heading
CPA "Closest Possible Approach" (time to intersect?)

Plotter: Waypoint – Are you on course?

Autopilot – Heading – Hand steer or Auto/Nav?

Listen to VHF radio, Update the Ship's Log

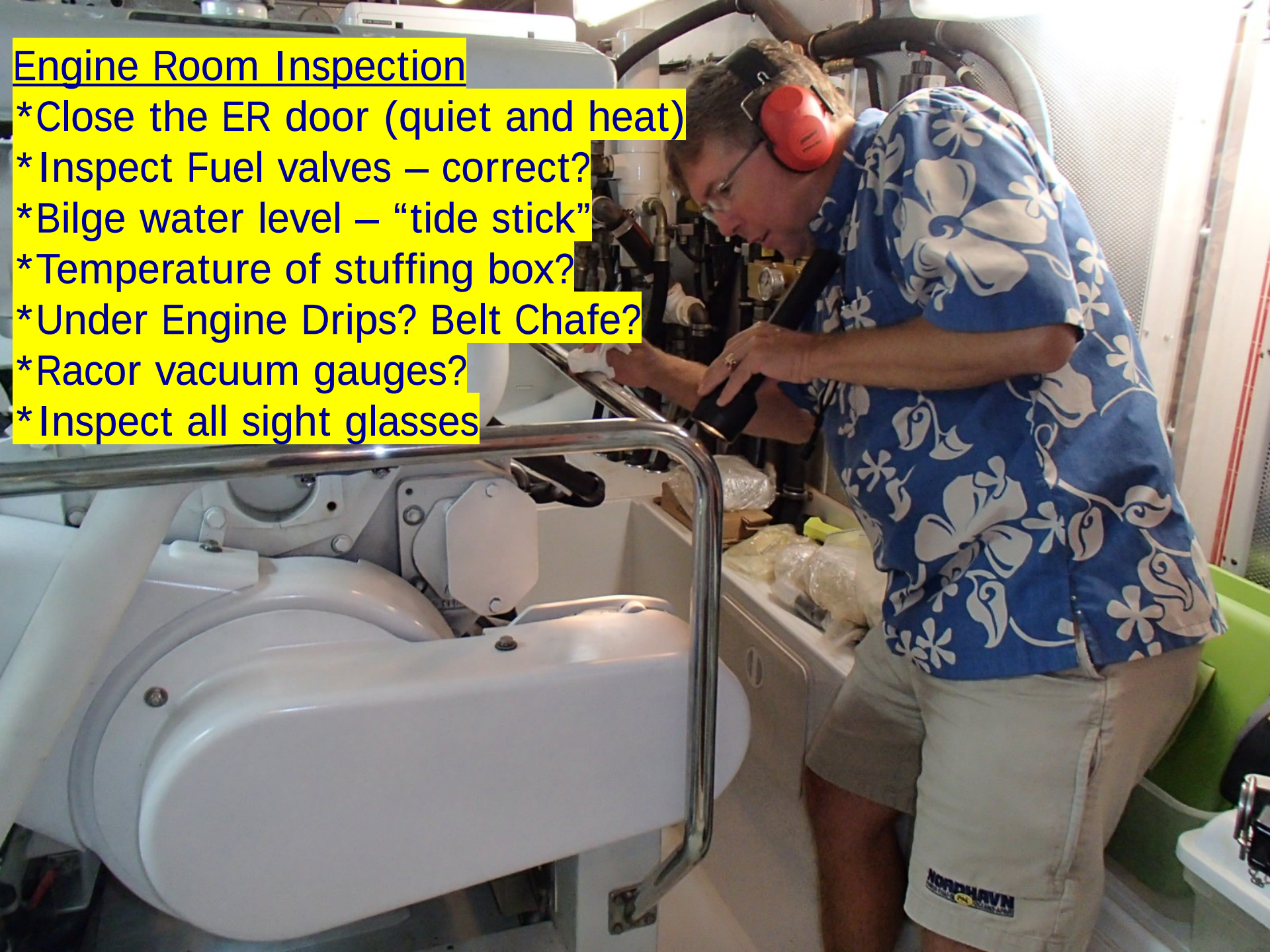

Question for the class:
What do you for an Engine room check?
Looking for your ideas...
POP QUIZ * let's make a list!

# Engine Room Checks

- *Handout – Hourly Temperature Watch List
  What are you looking for?
- Wear ear muffs
- Careful, it's hot & there are moving parts!
- No loose clothing or jewelry
- Does everything look right? Do you see any evidenced of chafe or drips?
- Does everything smell right?

# The Holy Place On the Hour or Once per Watch

- Check lists
- What is normal?
- Look
- Listen
- Smell
- Paper towels
- Drip pads (diapers)
- Keep it clean


Engine Room Inspection
*Close the ER door (quiet and heat)
*Inspect Fuel valves – correct?
*Bilge water level – “tide stick”
*Temperature of stuffing box?
*Under Engine Drips? Belt Chafe?
*Racor vacuum gauges?
*Inspect all sight glasses

# Engine room “Must Haves”

- Good ear muffs – several pair
- Working gloves
- Temperature gun
- Flash light
- Knee pads
- Proper tools for adjustments
- Trash Can
- Tapered wooden plugs for thru hulls
- Open pipe for thru hull leverage
- Duct tape
- Blue tape and Sharpie
- Paper towels
- Dry erase board and pen

# Ear Muffs – noise cancelling

Essential for the engine room – at least two pair

# Infrared Temperature Gun

Identify key spots to observe, red Sharpie marks on items

# Dry erase message boards

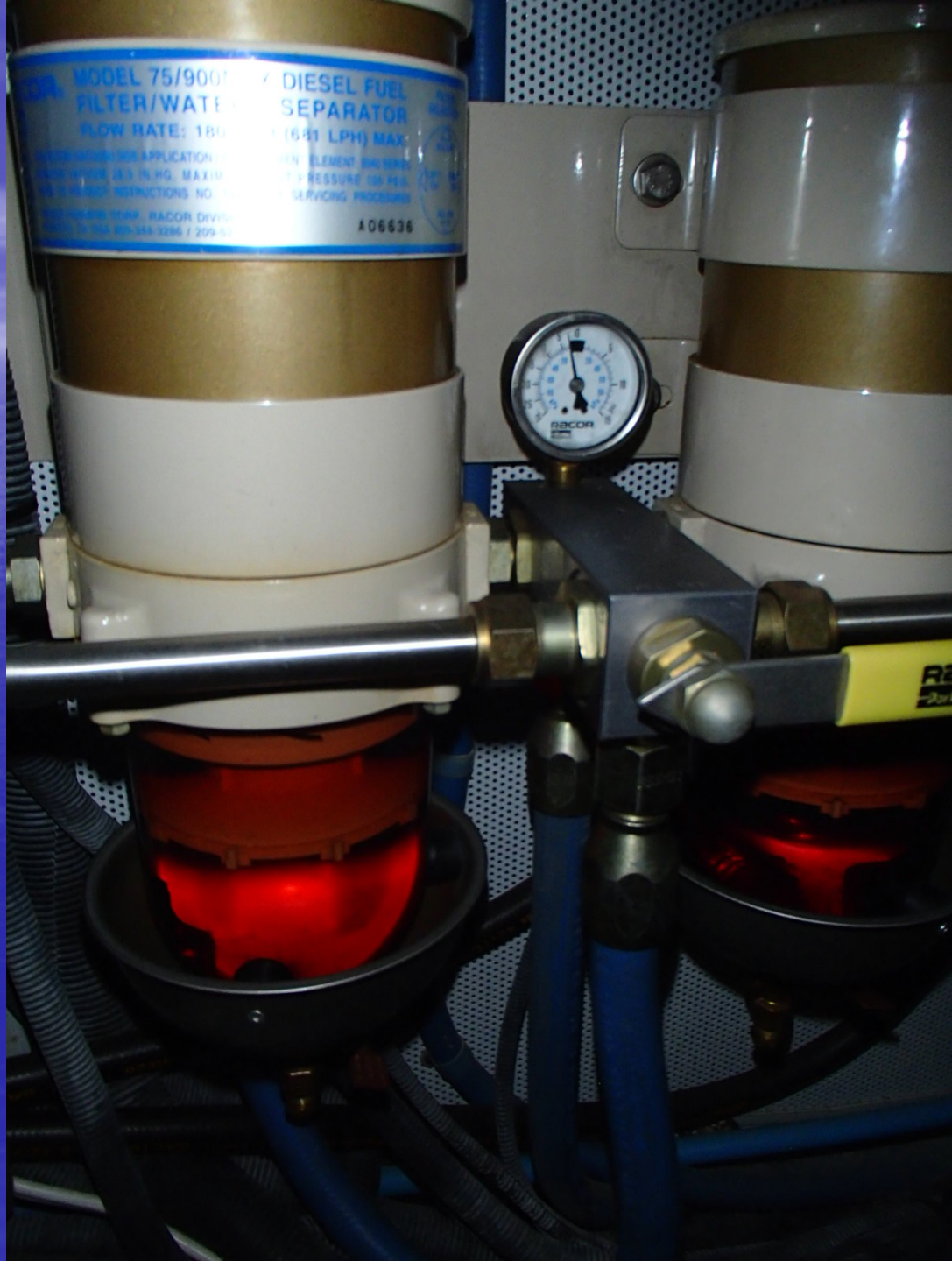
(quick reference to keep track of things)

# E R Tips

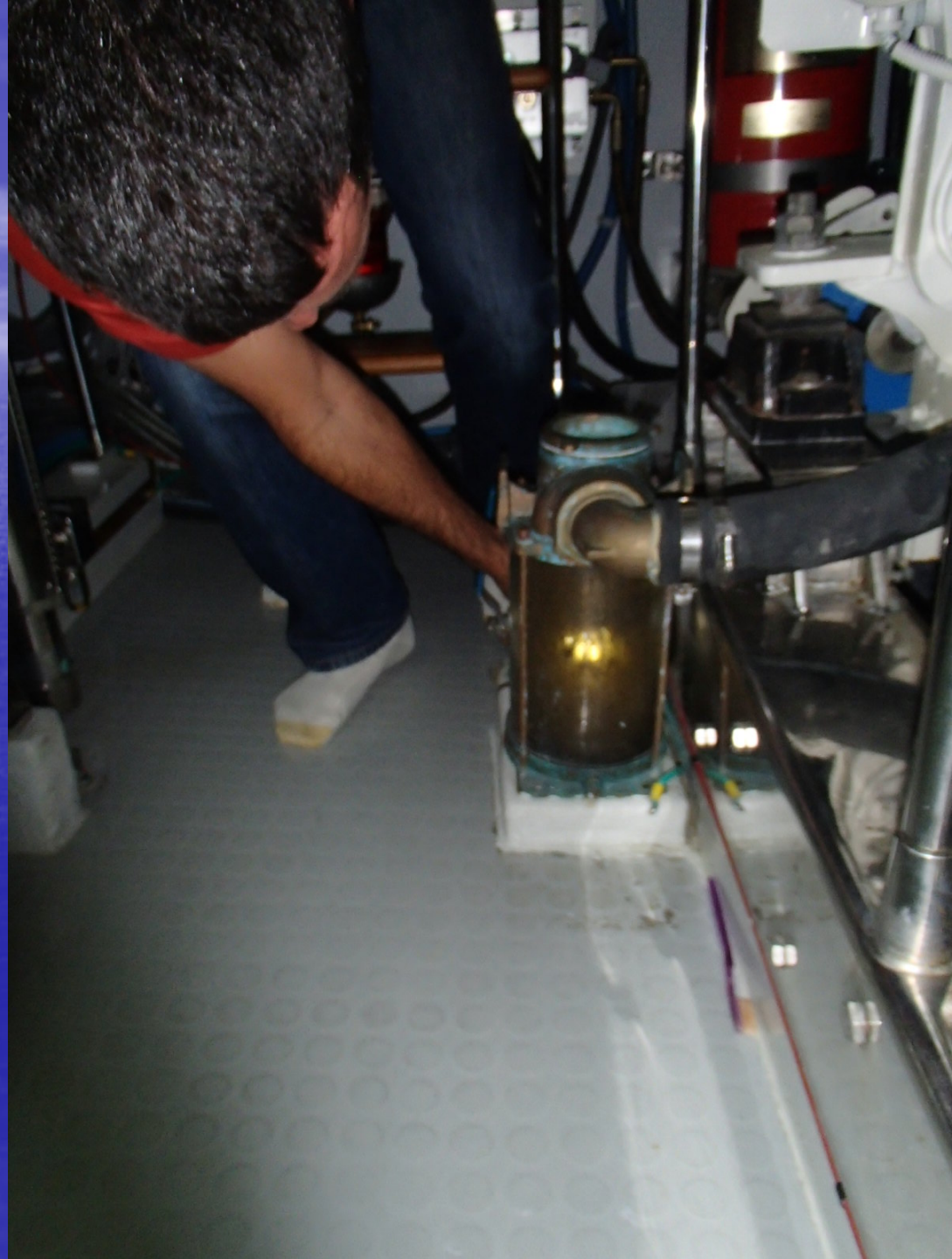

MODEL 75/900FGX DIESEL FUEL
FILTER/WATER SEPARATOR
FLOW RATE: 180 GPH (681 LPH) MAX
GENERATOR


TURBO CHARGER

# Racor gauge



# Strainers



# Fuel Considerations

- Clean Fuel is crucial – polish, filter
- Understanding fuel flow – “Supply” and “Return”, “To” and “From”
- Correct valve positioning – easy to mistakenly cut off Supply or Return
- Racor fuel filters (Vacuum gauge)
- Have Captain change fuel tanks
- Top off before you go! (Arrive with 10%)


Don’t forget to check the lazarette!
Village Marine Tec.

# Daily “Chores” for the Captain

(I recommend a Noon Daily inspection checklist)

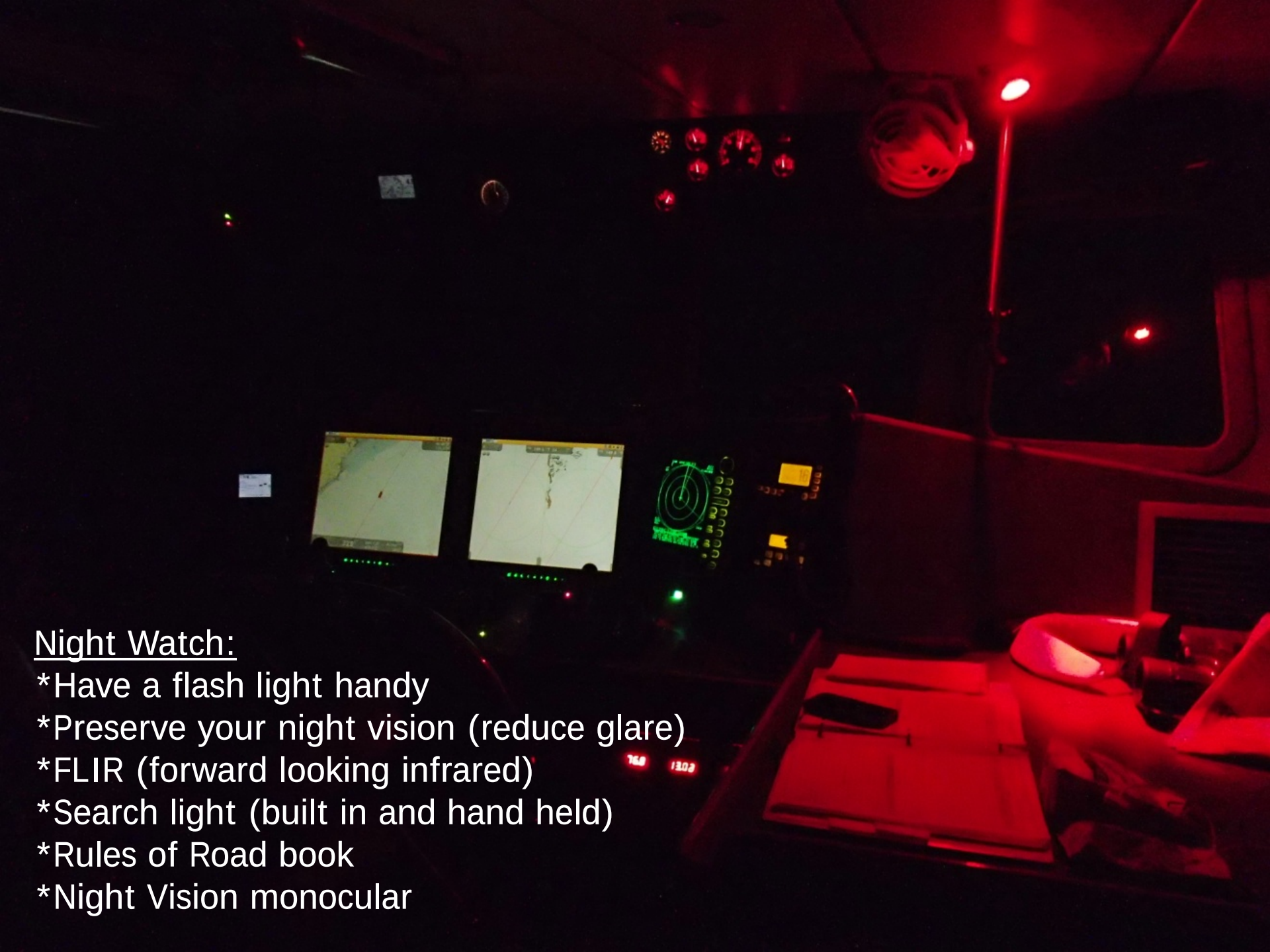
- Fuel selection balanced, switch tanks?
- Run Generator to: charge batteries, make water, do laundry, provide air conditioning
- When it is calm, with daylight, walk the deck to check fittings – tender secure?
- Check the lazarette – all gear secure?
- Weather stability? Route still best course?
- Routine Maintenance – rinse windows, empty holding tank (not when making water!)

# Ready for Night time?

Don’t forget spare bulbs for your Navigation running lights! (Better to upgrade to LED)

# “Night Ops” running after dark

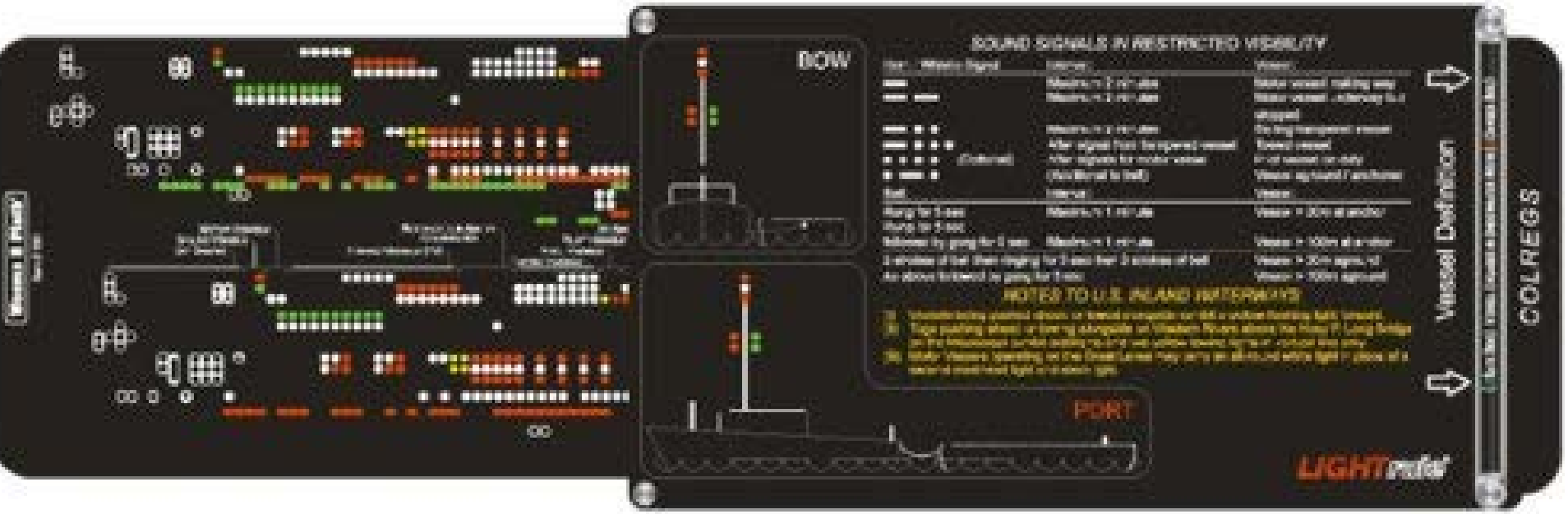
*Running lights – make sure they are all on
*Interior lights: courtesy red, overhead red
*Pilothouse command – dim and mute electronics
*Very important to understand Nav/Com
*Wake the Captain if there is a concern
*Stay awake, be extra vigilant – use VHF to communicate with other ships

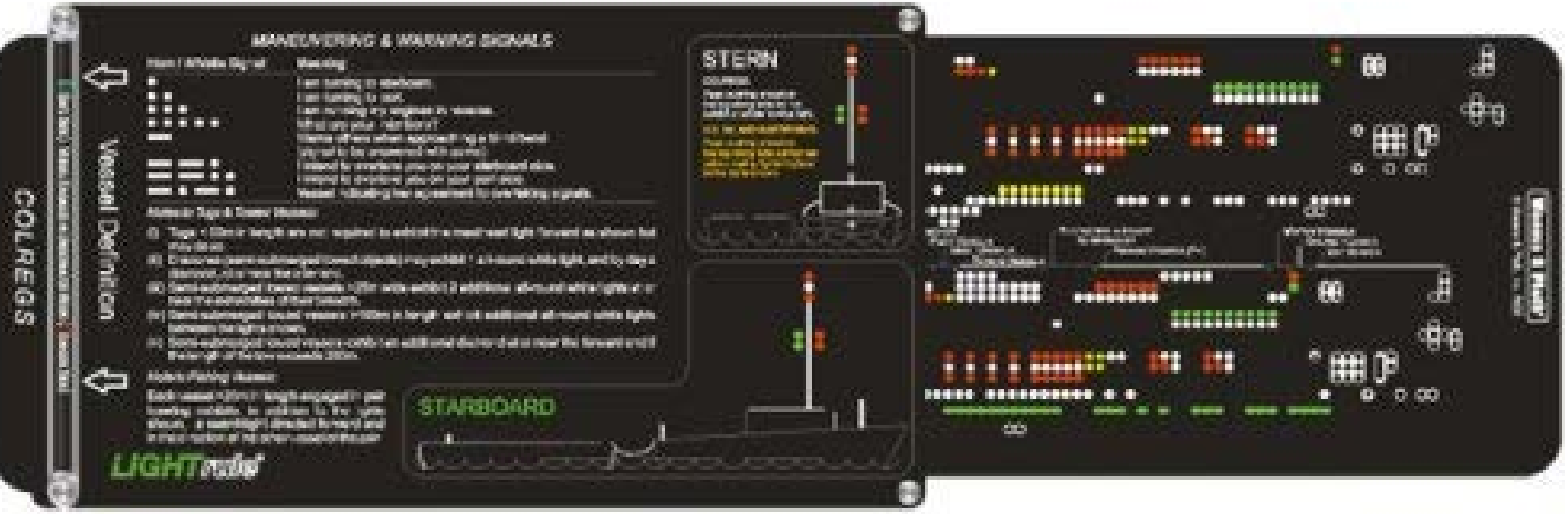


Night Watch:

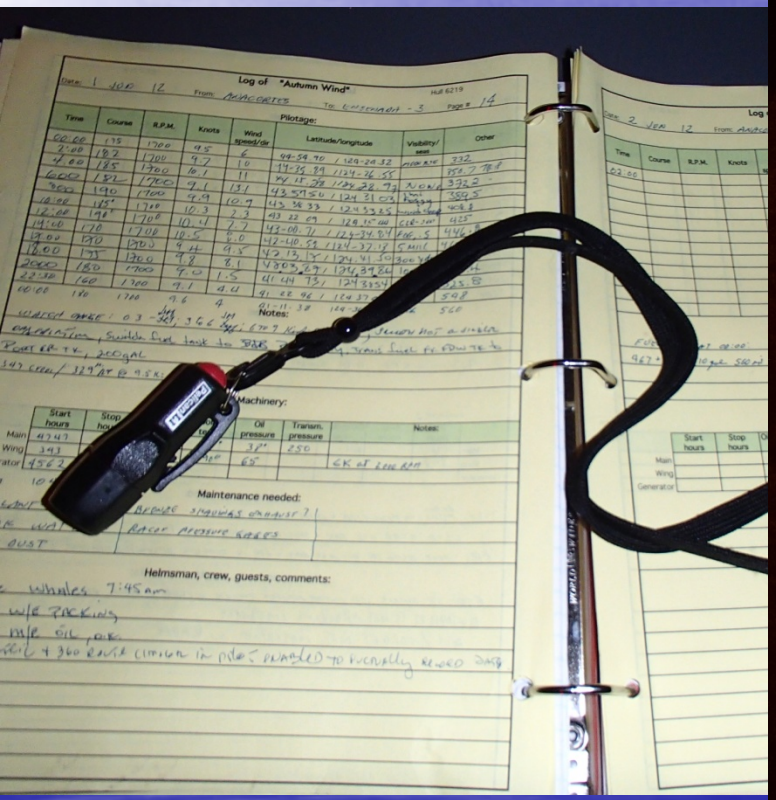
*Have a flash light handy
*Preserve your night vision (reduce glare)
*FLIR (forward looking infrared)
*Search light (built in and hand held)
*Rules of Road book
*Night Vision monocular

# At night - Weems and Plath LIGHT RULE



# Night time tools. Flash lights, Thermal imaging





Night mode – dimmed down, red film, blue tape...preserve night vision


Night time is quiet and peaceful, look for lights

# SLEEP is your friend!

- You have to get rest – it's not an option
- Lack of sleep makes for bad decisions
- Travel with an eye mask and ear plugs
- In rough conditions pillows wedged around your body help you get comfortable
- Further back in the boat you can find a place to stretch out with less motion

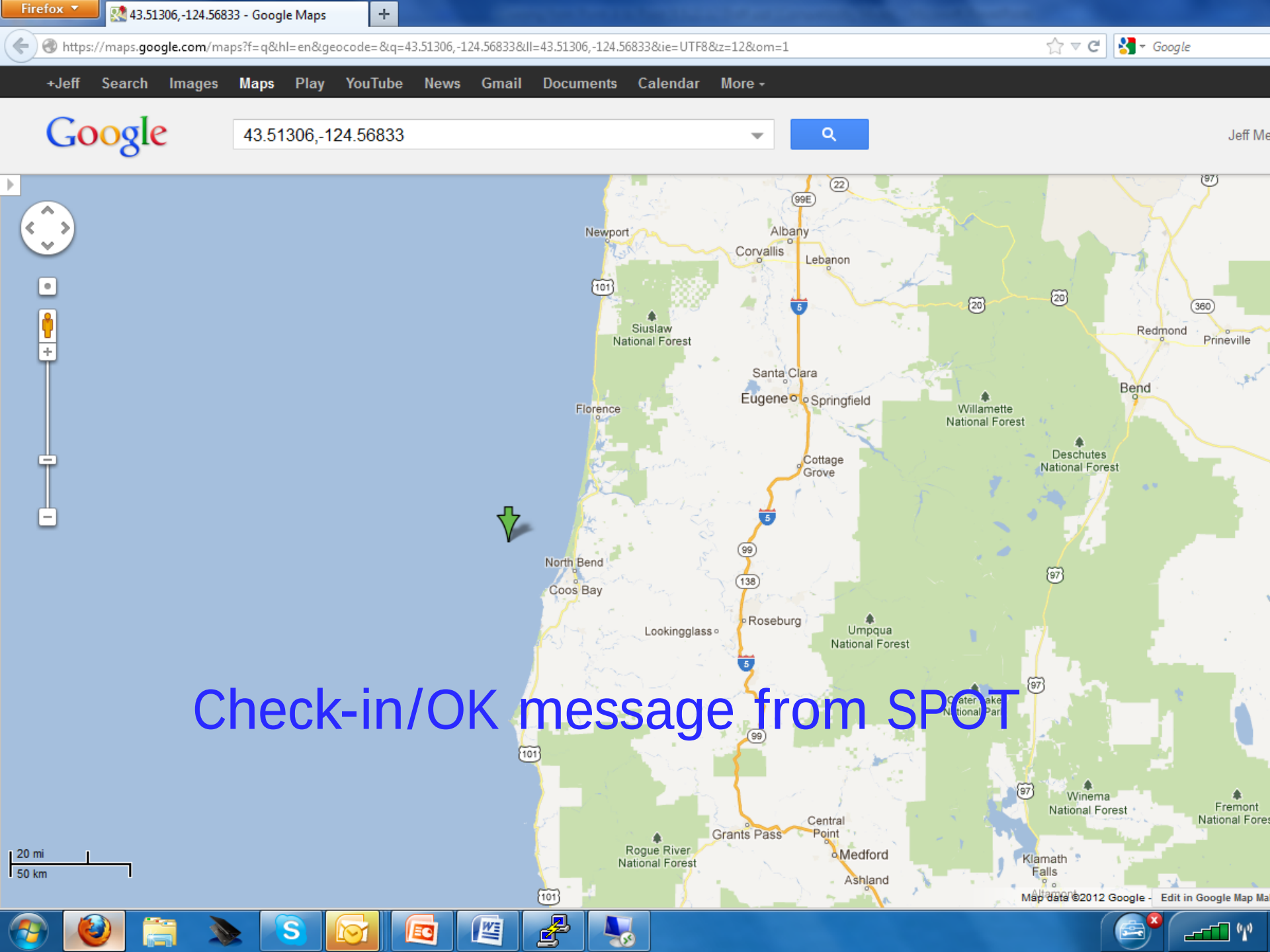
Napping is good! (Just not while you are on watch)

# In the groove...

- Get your Sea Legs. Finishing your first overnight with some sleep can reset your body clock
- You will settle into a natural routine – Stand watch, Sleep, Eat, Read, Relax and enjoy!
- There may be times when you wish it would end (especially if it's rough or you don't feel well), but as the end draws near you often wish the trip was longer (but you'll be happy to be back ashore standing on solid ground, too!)

SPOT can help keep you in touch with family ashore...

Uses GPS to acquire its coordinates, and then sends an email message to your preprogrammed list with your boats location via Google Maps™ -




Check-in/OK message from SPOT

# In Reach

*Two Way texting
*Subscription you can turn on/off. I prefer this over the SPOT

# Waste Management Plan* (handout)

- Coast Guard requirement for boats over 40', a good idea for all trawlers to have.
- Guests must understand disposal rules
- Trash compactor?
- Recycling bin?
- Oil byproducts disposal?

# Stabilization

- Most trawlers will roll and “wallow” a bit
- Side to side rolling can be minimized with active fins or flopper stoppers
- What about at anchor?
- Spare hydraulic oil and filters
- Won’t effect pitch, change speed or course if “hobby horsing”
- Fins, paravanes, gyros

# Hydraulic Oil – note level

# Anchoring

- Types of anchors
- Swivels? Shackles with seizing wire
- Length of chain (flake for easy deployment)
- Chain marking (HundRED)
- Bitter end – line, cut away on deck
- Nav Com – anchor alarm settings
- Windlass – auto/manual, clutch, release bar
- Chain stoppers, take shock load off windlass

# Practice Anchoring and Docking

- Know how to “stop”
- Spring lines, chafe protection (fire hose)
- Fenders
- Snubbers
- Bridles
- Tying to shore
- Extra anchors
- Chain marking – paint, color wire ties, etc.

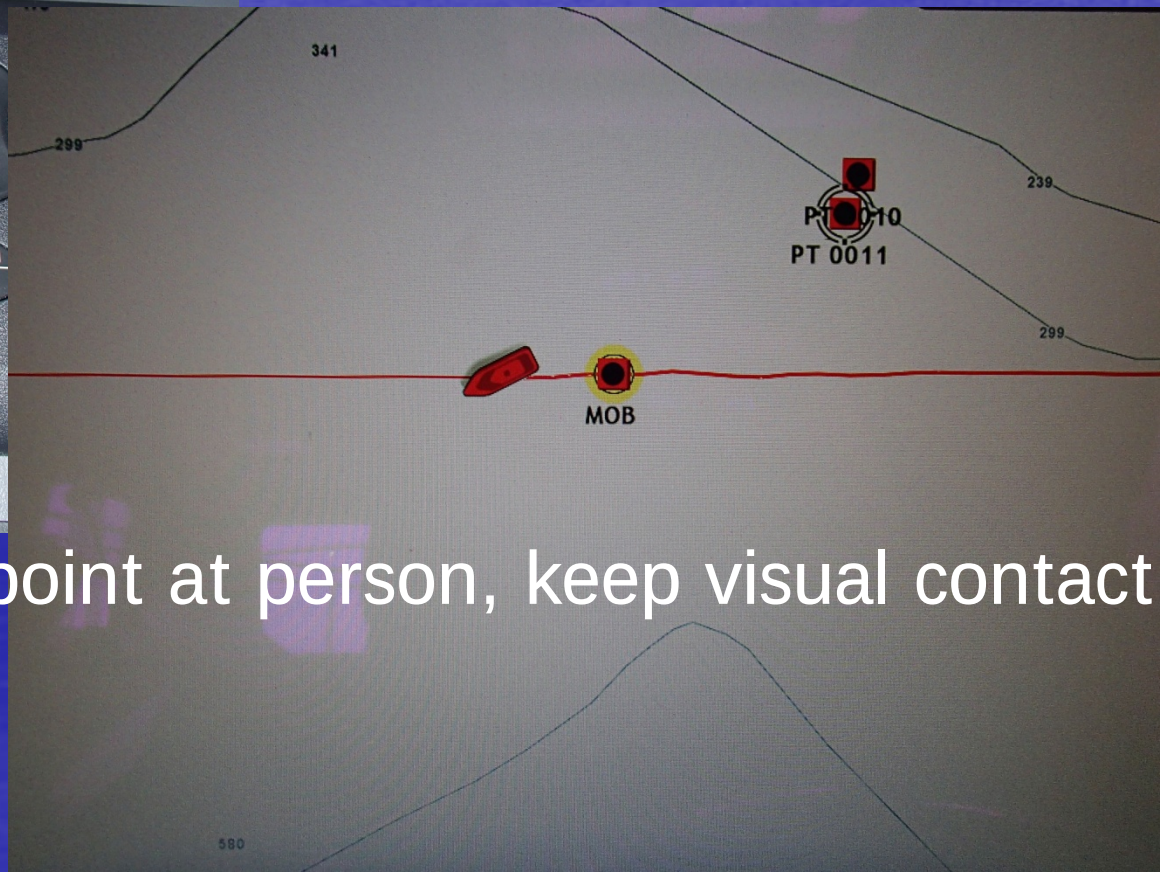
# “What ifs”...? Do you have a back up plan for various contingencies?

- Lose steering?
- Lose electricity?
- Lose propulsion?
- Lose GPS position?
- What if another boat calls for assistance, what do you do? Are you prepared to tow?

# Fog, Rain and Visual impediments

- Harder to “see” what is outside the boat
- This is where you have to understand and TRUST your electronics
- Adjust Radar – RAIN, GAIN, Clutter
- Fog/strong rain/heavy spray is kind of like running at night – you can’t see outside of the boat and need to rely on your electronics (don’t forget the fog horn)

# Man Overboard do you have this button?


Sound Horn 5 Times, point at person, keep visual contact

# You could have a fire...what will you do?


# Damage Repair



# Carbon Monoxide, Smoke Detector/Fire Alarms


# Lifesling

You need to install a system to attach a lifting line to retrieve an overboard crew and should practice this!


# Ditch bag contents – class*

# Rapid Ditch Bag

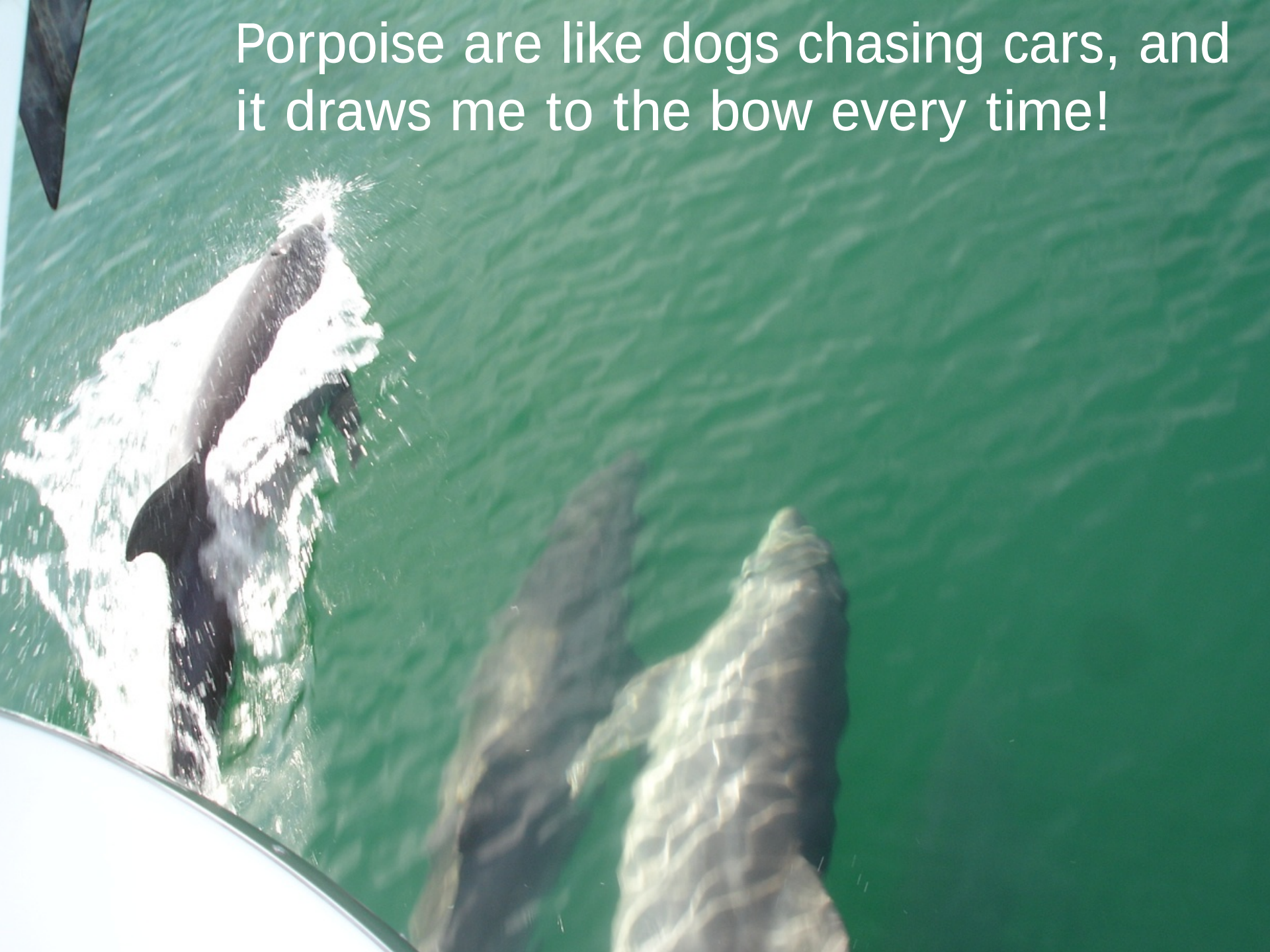
Buoyant abandon ship bag filled with a GPS, VHF, EPIRB, water maker, survival blankets, flares, strobe, first aid, sat phone and more.

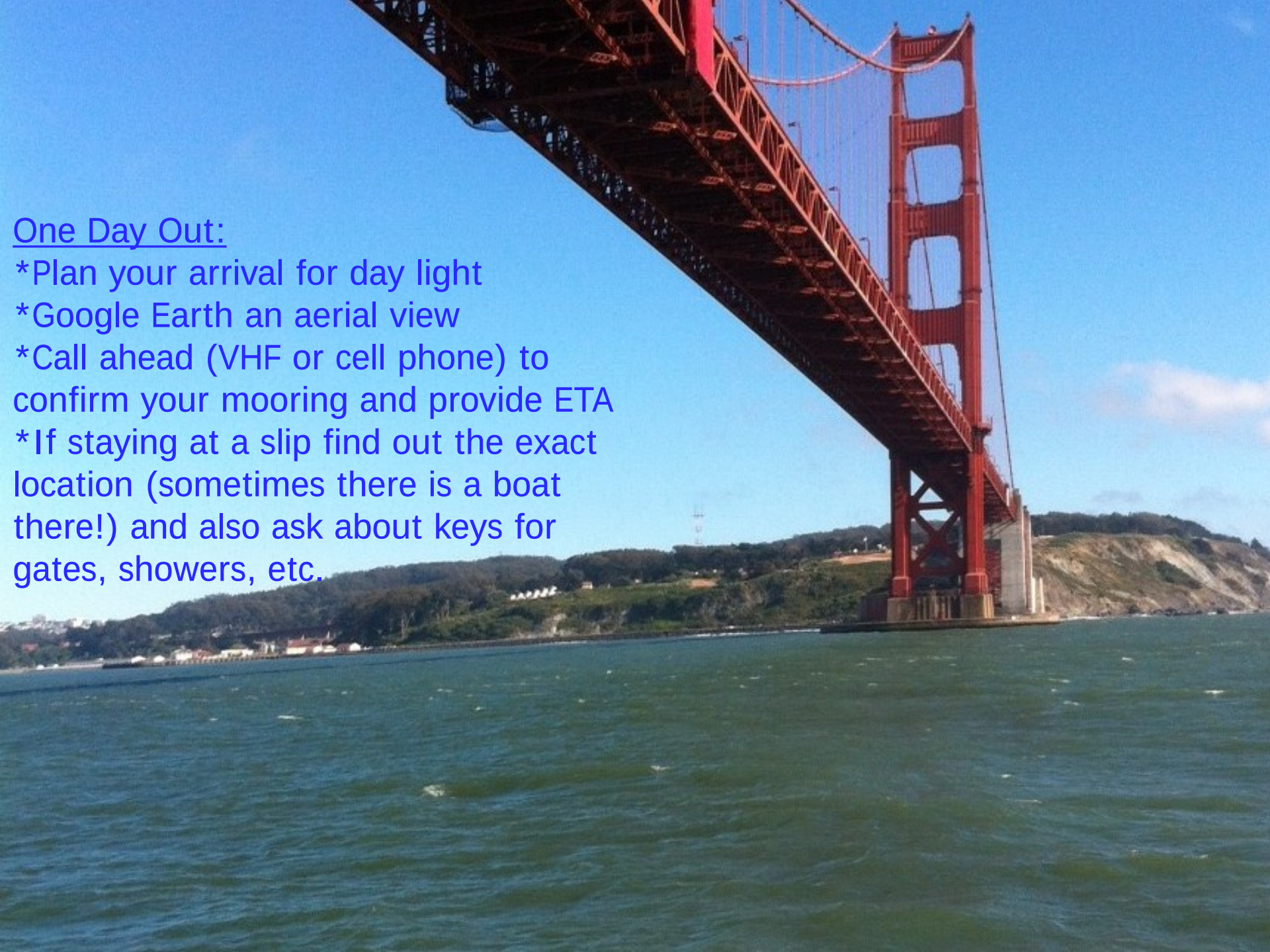
# EPIRB, Life Raft, Survival Suits


# Rough Weather

- Tall seas  - coming over the bow
- Heavy winds – Gale warnings
- Try to make the ride as comfortable as possible.  Slow down or change course if you can.
- You will eventually get through it, but it's no fun riding it out...


Are we there yet?


Porpoise are like dogs chasing cars, and it draws me to the bow every time!



One Day Out:

*Plan your arrival for day light

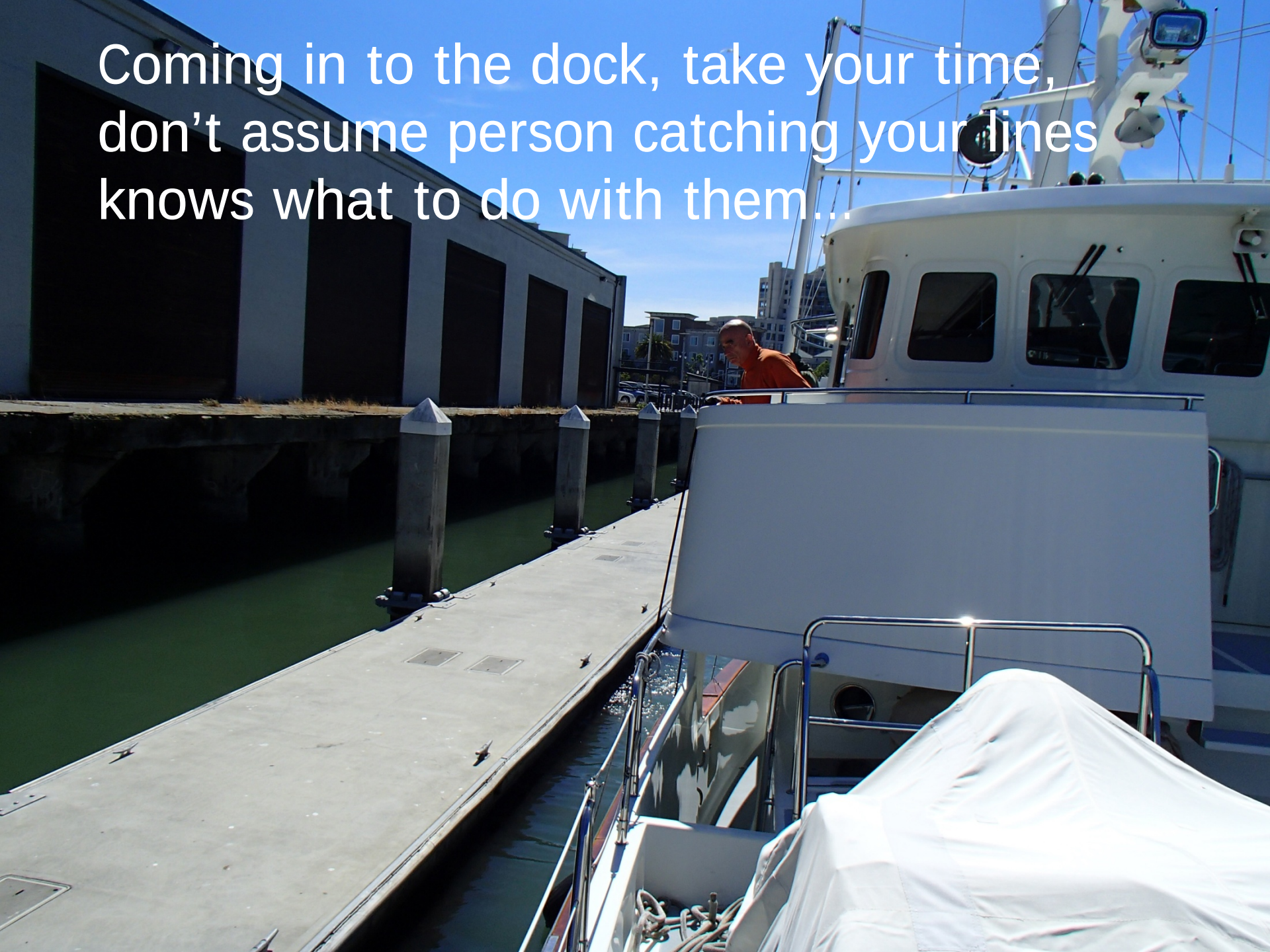
*Google Earth an aerial view

*Call ahead (VHF or cell phone) to confirm your mooring and provide ETA

*If staying at a slip find out the exact location (sometimes there is a boat there!) and also ask about keys for gates, showers, etc.

# Arrival location

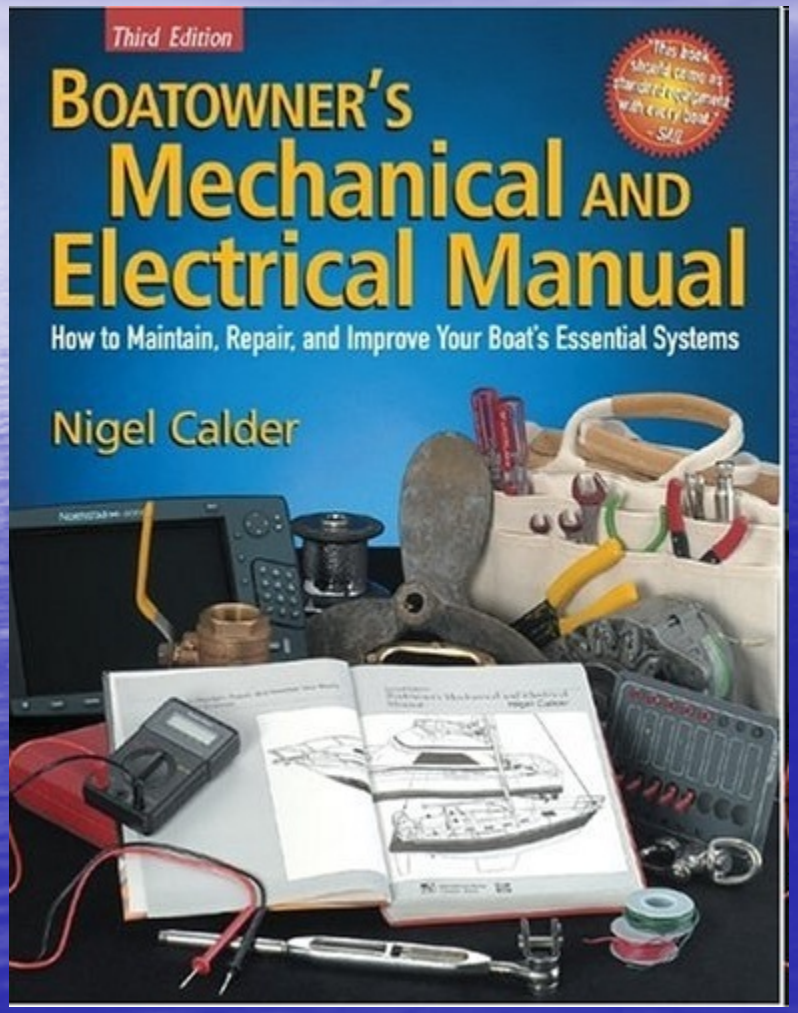
- Be careful, don’t let your guard down…
- Hardest part is docking
- Trip log summary – mileage, hours
- Fuel burned – gallons consumed
- Change AIS position to “moored”
- Let Float Plan shore contact know you made it

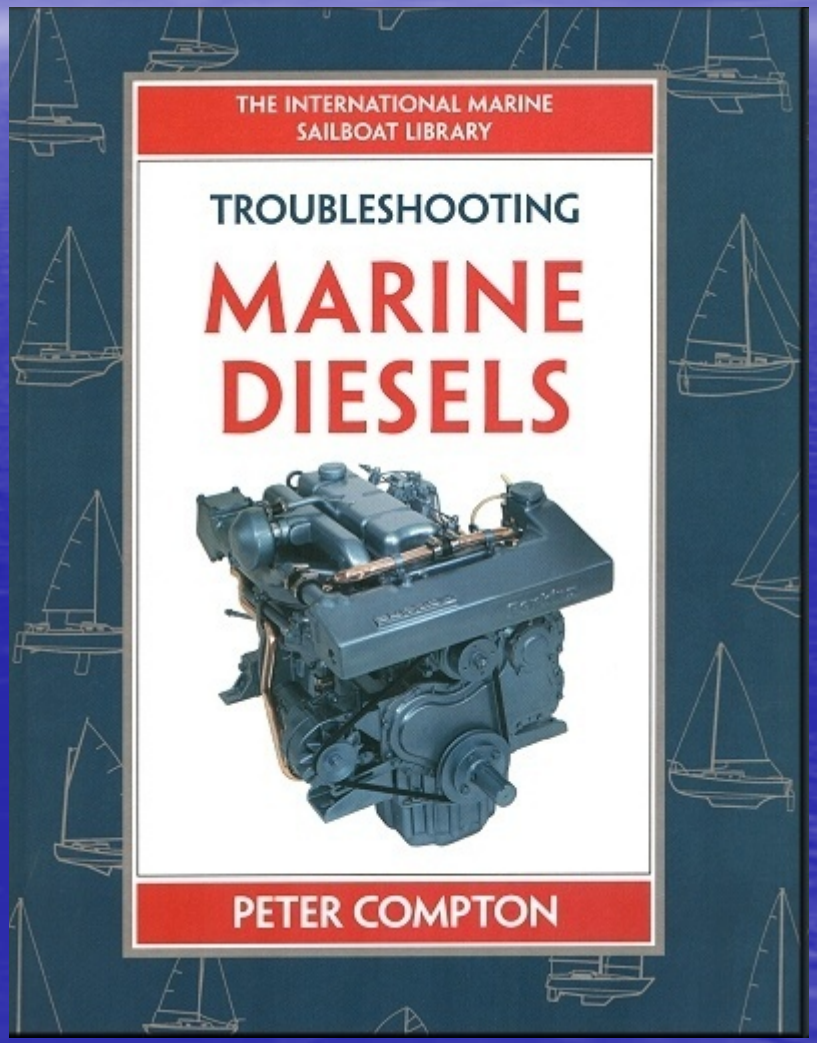

Coming in to the dock, take your time, don’t assume person catching your lines knows what to do with them…

# Ships Library – See Handout*

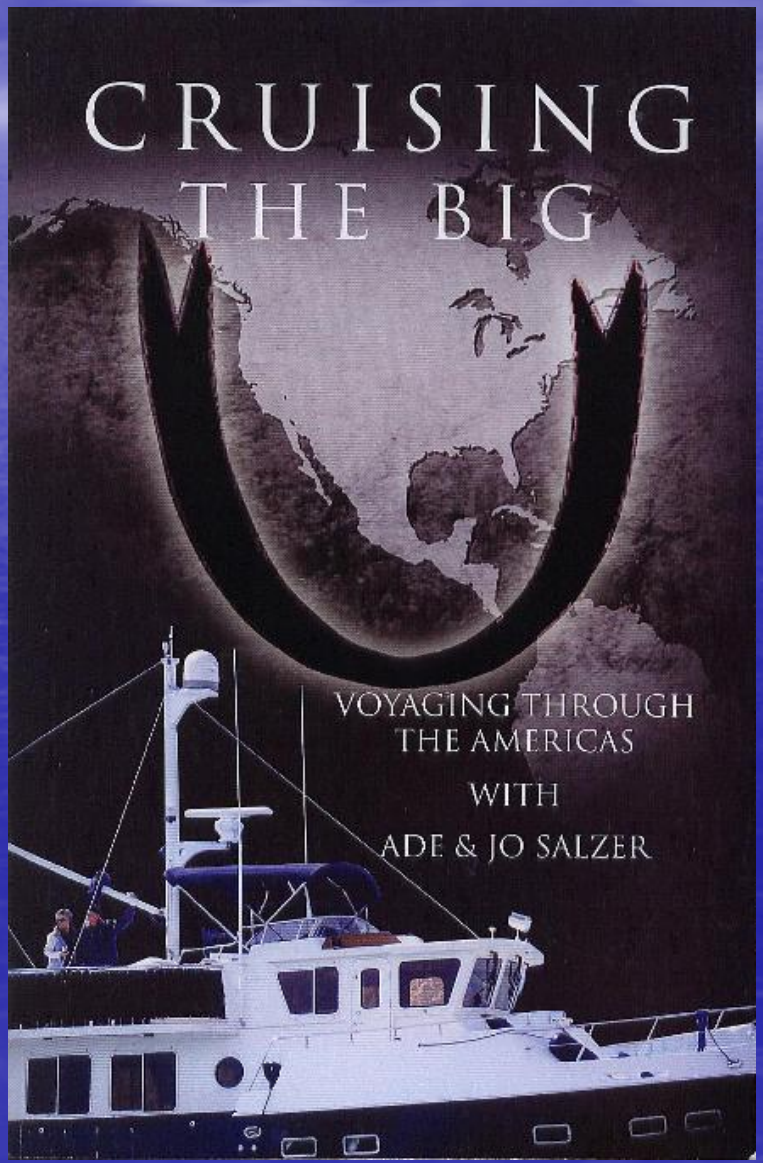
- Many books for study and reference
- Helpful websites
- You should have a ship operators manual, either supplied by builder or create your own that details every system and included schematics/drawings with parts and locations

# Review systems reference and fix-it books

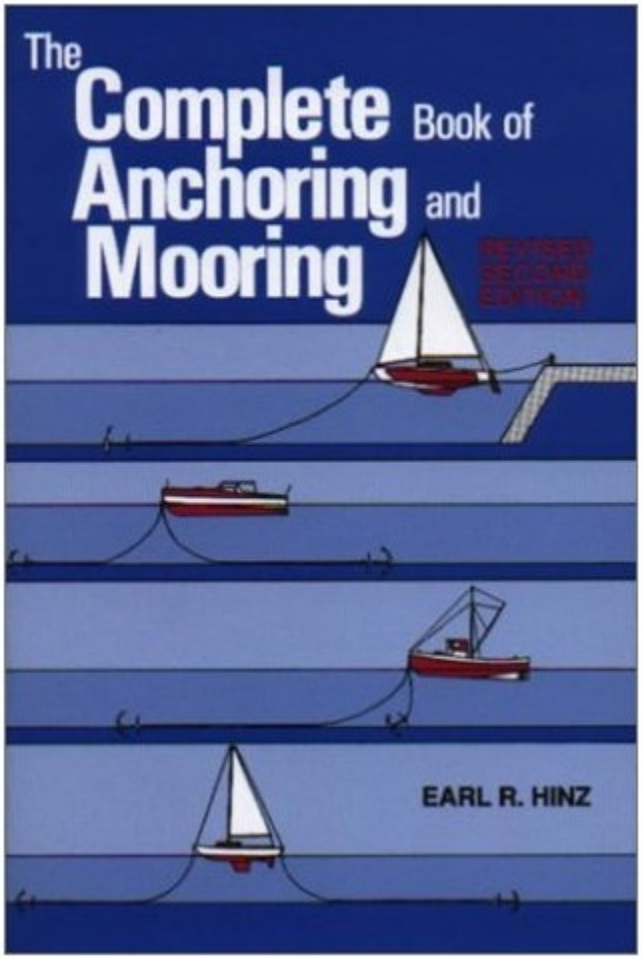


# A great book for coastal cruising



# “The” book on anchoring




Class bonus if we have time ...let's do a priority list of nav/com – Handout*

# Good Stuff to have aboard

Product review follows…

# Engine Room Bilge Tips

Plug leaks, absorb oil


# Eartec (aka the “marriage savers”)

No more yelling, one ear free! 2 pack or 4 pack.

www.eartec.com

Note: kind of expensive and priceless at the same time

# Multi-meter – Electrical tester


# Stabilized Binoculars

Very nice to have on a bumpy sea

# Hands free head lamp

Three point harness, better than just a headband


# Handheld Thermal Imaging

# Go Pro video - waterproof

# Multi-tool – Gerber or Leatherman

# Mask, Fins and Snorkels

# Polarized Sun Glasses



Questions & Answers:
Any tips or suggestions?
Open discussion…
Island Greeter


Thank you!