



Communications

Winter Training

2007

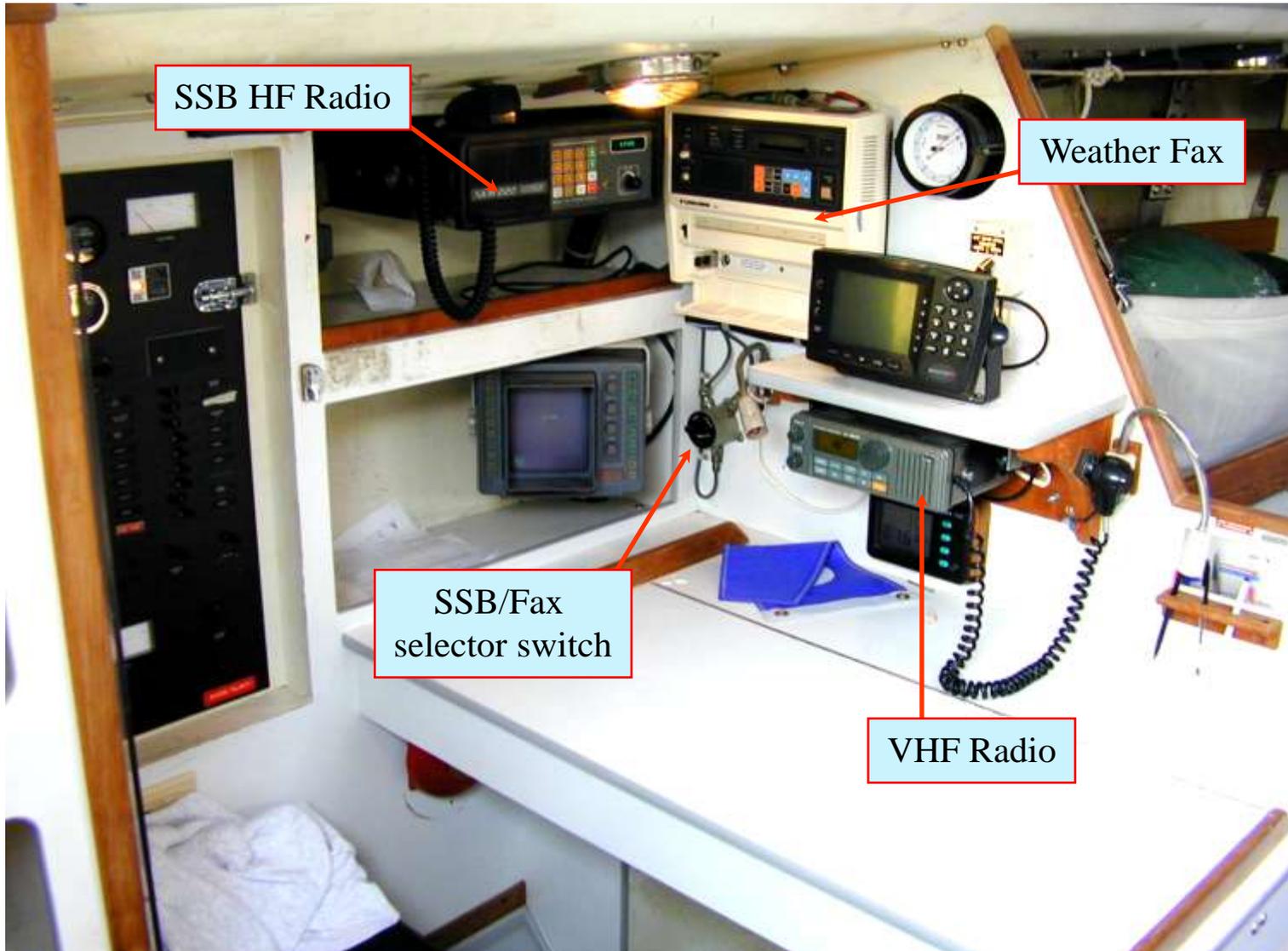


References

- Chapman Piloting - CH 24 Communications
- Passage Making - CH 7 Communications
- Fundamentals of Naval Science - CH 6
Radiotelephone Usage
- Reed's Nautical Almanac
- Tech manuals
- Radiotelephone Users Training Handbook
(RUTH)
- ACP 125



NAVY 44 Comms Equip



SSB HF Radio

Weather Fax

SSB/Fax
selector switch

VHF Radio



Communications Frequency Chart

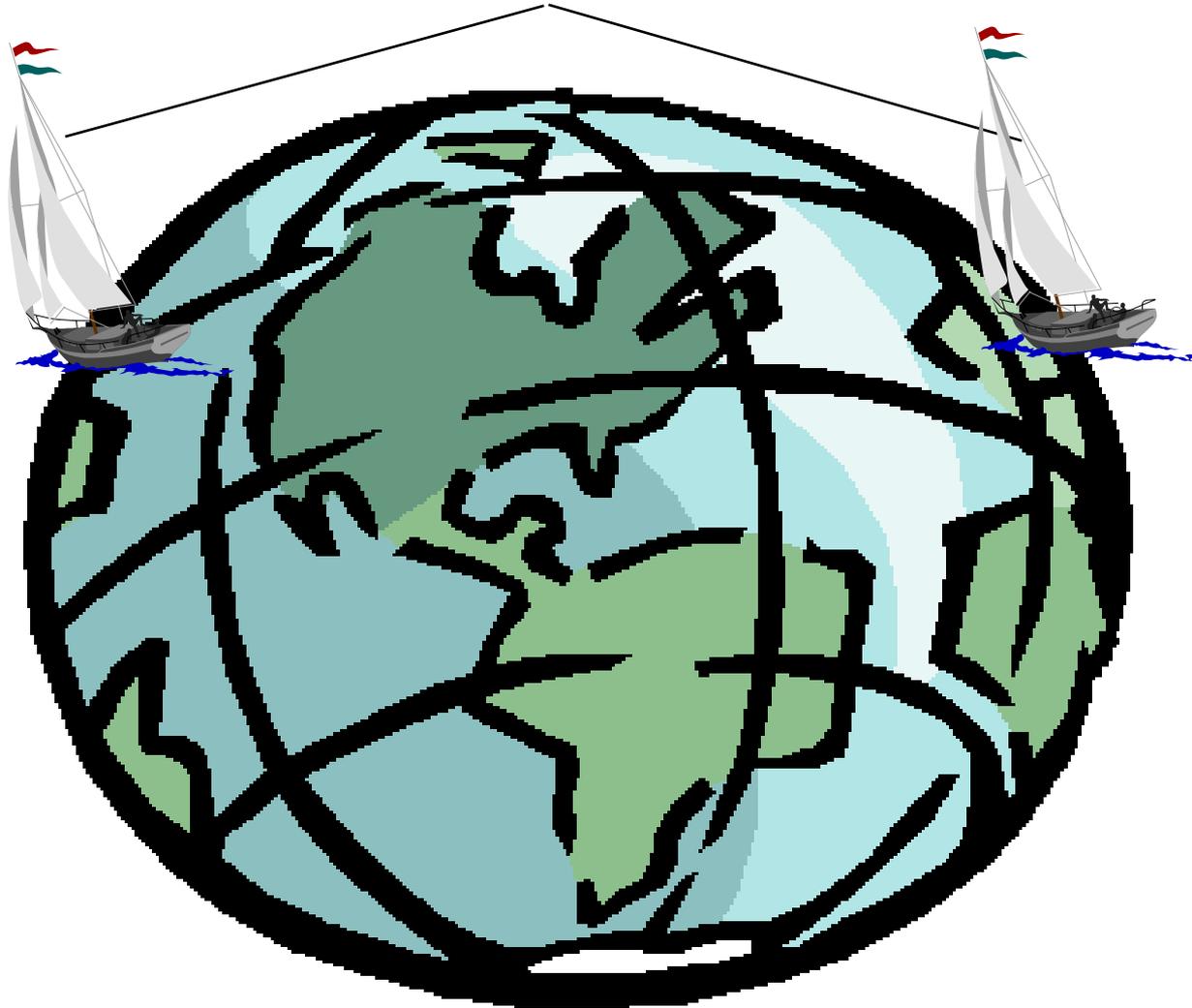


Band	Band Name	Frequency Range
ELF	Extremely Low Frequency	30 - 300 Hz
VLF	Very Low Frequency	3 - 30 kHz
LF	Low Frequency	30 - 300 kHz
MF	Medium Frequency	300 kHz - 3 MHz
HF	High Frequency	3 - 30 MHz
VHF	Very High Frequency	30 - 300 MHz
UHF	Ultra High Frequency	300 MHz - 3 GHz
SHF	Super High Frequency	3 - 30 GHz
EHF	Extremely High Frequency	30 - 300 GHz

Band	Frequency Range	Comments
Long wave	0 - 300 kHz	often considered to be anything below AM broadcast band (below 540 kHz)
Medium wave	300 kHz - 3 MHz	often considered to be the AM broadcast band (540 - 1700 kHz)
Short wave	3 - 30 MHz	often considered to be from top of AM broadcast band (1700 kHz) to 30 MHz



HF Comms





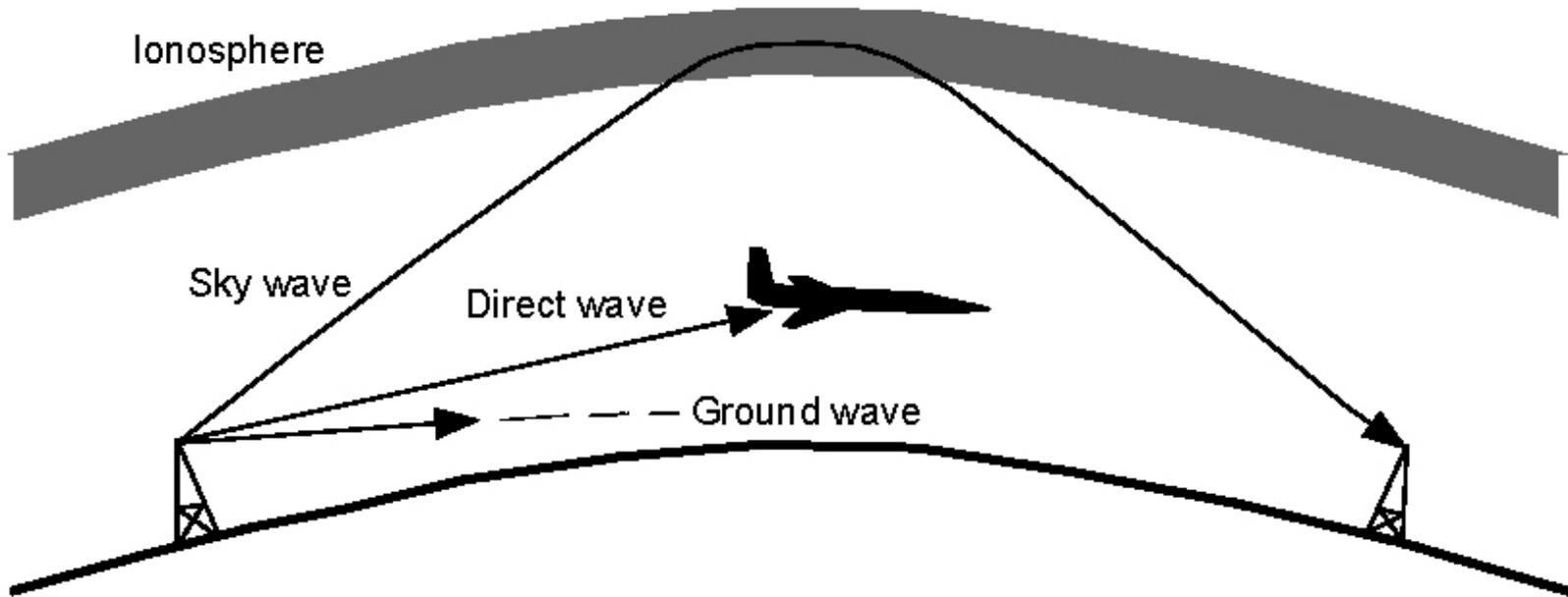
HF Comms



- Used for long distance ship to ship or ship to shore communications.
- HF circuits are either DUPLEX or SIMPLEX
 - DUPLEX – separate transmit and receive frequencies
 - SIMPLEX – same transmit and receive frequencies



HF Propagation paths



HF communications have LOS and both ground waves and sky waves. HF can travel thousands of miles due to RF signal bouncing off the atmosphere.



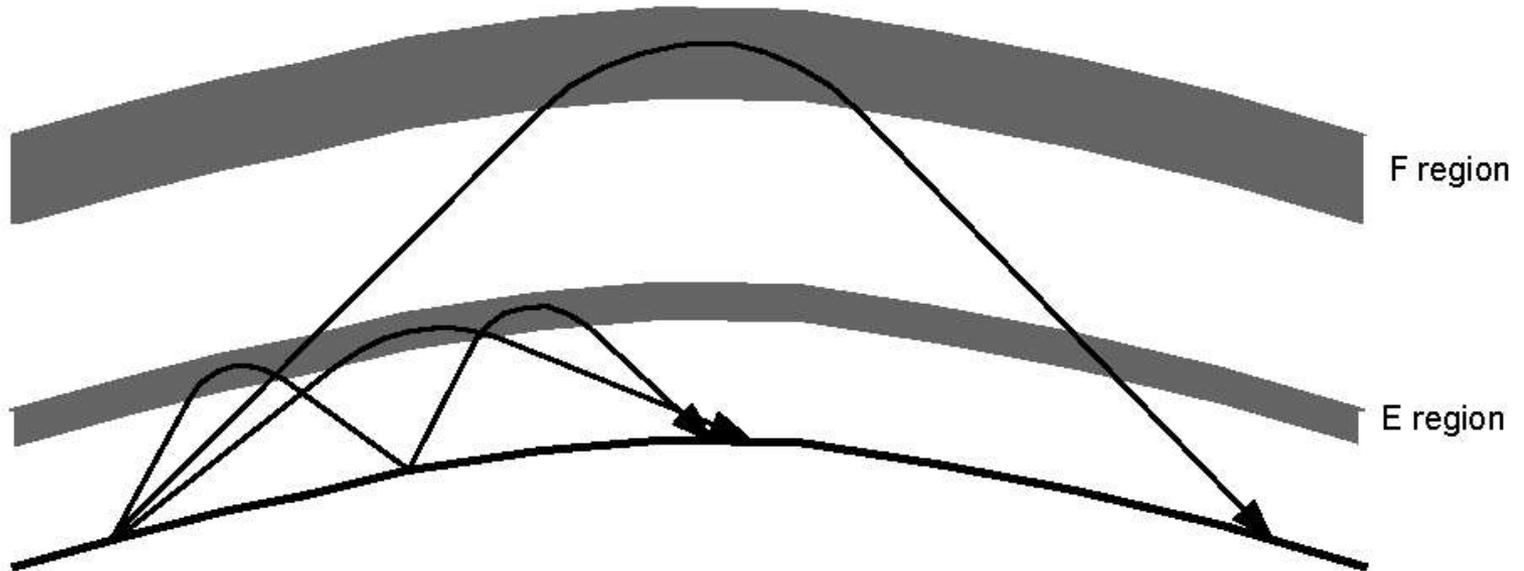
HF Comms



- What factors effect the range of HF?
 - Time of day
 - Solar activity
 - Atmospheric conditions (weather)
 - Ducting & skip zones
 - Frequency used



Sky waves and skip zones





HF Comms



- Which frequency do you chose?
 - Rule of Thumb - frequency follows the sun - higher the sun in the sky, higher the frequency.
 - Appendix II of Annex A of the OPORD has the Communications Plan which lists all the frequencies and times for HF voice.
 - 4, 6, 8, 12 MHz



HF Comms

- SSB – Stephens SEA 222





HF Comms

- Frequencies are stored in pairs (xmt/rcv) in bins or channels
 - Bins - memory locations that allow the user to store specific frequencies
 - Channels - preset by the factory for xmt/rcv frequencies (see owner's manual)



HF Comms

- Insulated backstay is used as the HF/SSB long wire antenna (also serves as Fax receiver)
- Switch at Nav station selects either HF or fax



**Caution: SSB transceiver can be damaged if transmission on HF is attempted with the antenna in the fax position



HF Comms





Weather Fax

Furuno FAX 208A





Weather Fax



- USCG Station Marshfield, MA (NMF) covers the East Coast.
- Reed's Almanac contains schedule for broadcast:
 - 24 hr forecast, 36 hr forecast, and 500 mb forecast
 - Times for broadcasts listed in Reed's (rebroadcasted during the day several times)



U.S. COAST GUARD
MARSHFIELD, MA (NMF)

R
Resources

Broadcast times and frequencies: 0230-0438 and 0800-1028 on 4235, 6340.5 and 9110.0 kHz; 1430-2228 on 6340.5, 9110.0 and 12750.0 kHz.

These charts are also available by email from the National Weather Service (See the section on FTPmail.), or by download using one of several available weather software packages.

Notes: Select a frequency 1.9 kHz below those listed above when using a single-sideband radio to receive these broadcasts. All times are UTC.

Broadcast Times	Subject	FTP file names	
		1st brdcst	2nd brdcst
0230 1400	Test pattern (start of broadcast)		
0233	Preliminary surface analysis, 28N-52N; 45W-85W	PYAA10.gif	
0243 1405	Fax schedule, Part 1		
0254 1420	Fax schedule, Part 2		
0305 1433	Request for comments		
1443	Product Notice Bulletin		
1453	Preliminary surface analysis, 28N-52N; 45W-85W		PYAC01.gif
1503	Satellite image, 20N-55N, 55W-95W		evnt12.jpg
0315 1515	Sea state analysis, 28N-52N; 45W-85W	PWAA68.gif	PWAA89.gif
0325 1525	Surface analysis (NE Atlantic), 15N-65N; 10E-45W	PYAA01.gif	PYAA05.gif
0338 1538	Surface analysis (NW Atlantic), 15N-65N; 40W-95W	PYAA02.gif	PYAA06.gif
0351	Satellite image, 20N-55N, 55W-95W		evnt00.jpg
1600	Ice Charts		
1720	Test pattern		
0402 1723	(rebroadcast of 0325, 1525)		
0415 1736	(rebroadcast of 0338, 1538)		
0428 1749	500 mb analysis, 15N-65N; 10E-95W	PPAA50.gif	PPAA51.gif
1759	Sea state analysis, 15N-65N; 10E-95W		
1810	Ice Charts	PIEA88.gif	
0745 1900	Test pattern		
0755	Prelim. surface analysis, 28N-52N; 45W-85W	PYAB01.gif	
0805 1905	24-hour surface forecast, 28N-52N; 45W-85W	PPAE00.gif	PPAE01.gif
0815 1915	24-hr wind/wave forecast, 28N-52N; 45W-85W	PWAE98.gif	PWAE99.gif
0825 1925	24-hour 500mb forecast, 28N-52N; 45W-85W	PPAE50.gif	PPAE51.gif
0835 1935	36 hour 500mb forecast, 28N-52N; 45W-85W	PPAG50.gif	PPAG51.gif
0845 1945	48-hour 500mb forecast, 15N-65N; 10E-95W	PPAI50.gif	PPAI51.gif
0855 1955	48-hour surface forecast, 15N-65N; 10E-95W	QDTM85.gif	QDTM86.gif
0905 2005	48-hr wind/wave forecast, 15N-65N; 10E-95W	PJAI98.gif	PJAI99.gif
0915 2015	48-hr wave period forecast, 15N-65N; 10E-95W	PJAI88.gif	PJAI89.gif
2025	Preliminary surface analysis, 28N-52N; 45W-85W		PYAD01.gif
2035	96-hr 500 mb forecast, 15N-65N; 10E-95W		PPAM50.gif
2045	96-hour surface forecast, 15N-65N; 10E-95W		PWAM99.gif
2055	96-hr wind/wave forecast, 15N-65N; 10E-95W		PJAM98.gif
2105	96-hr wave period forecast, 15N-65N; 10E-95W		PJAM88.gif
2115	(rebroadcast of 2045)		
0925 2125	Surface analysis (NE Atlantic), 15N-65N; 10E-45W	PYAA03.gif	PYAA07.gif
0938 2138	Surface analysis (NW Atlantic), 15N-65N; 40W-95W	PYAA04.gif	PYAA08.gif
0951 2151	Satellite imagery, 00N-60N; 30W-100W		evnt06.jpg
1002 2202	(rebroadcast of 0925, 2125)		evnt18.jpg
1015 2215	(rebroadcast of 0938, 2138)		

Station name

24 hr surface forecast

24 hr 500 mb forecast

48 hr surface forecast



Weather Fax





Weather Fax



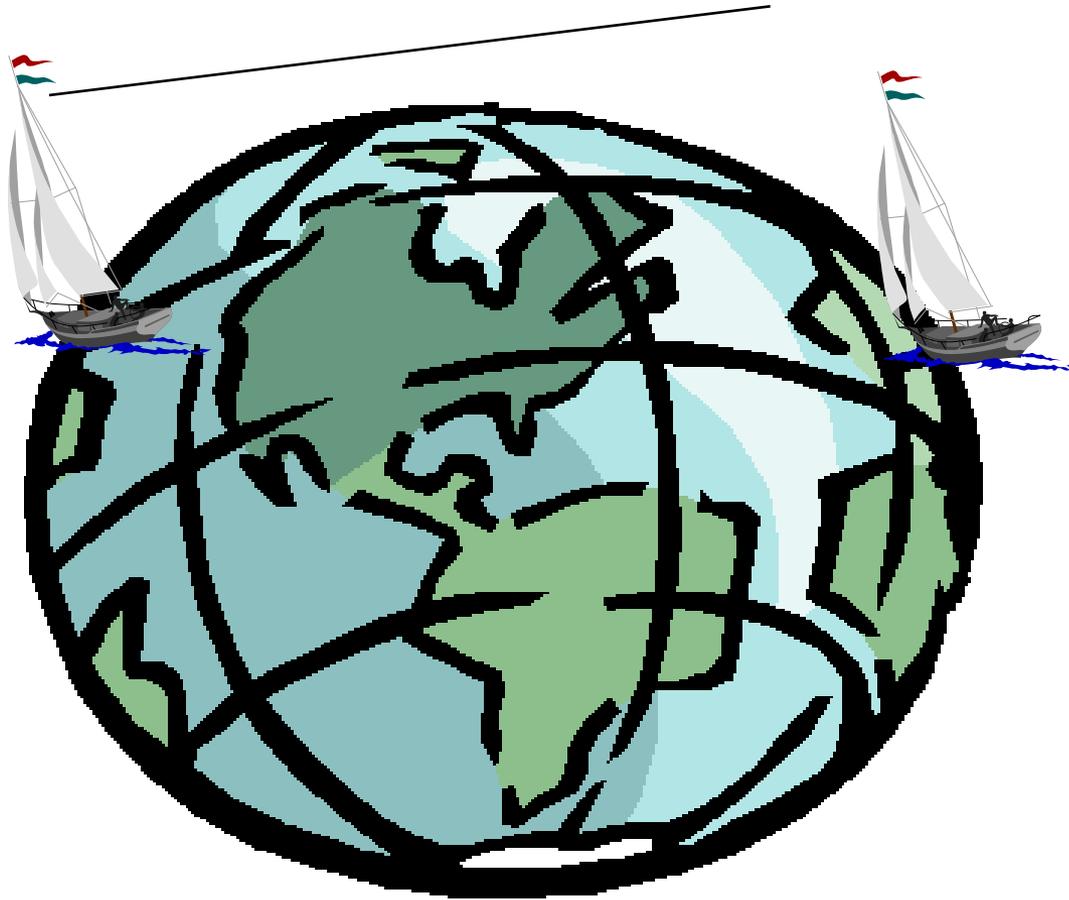
- When fax is complete, power down unit and change the Antenna Switch back to HF



- When replacing the paper, ensure you save the end caps on the roller...
 - *NEW PAPER ROLLS DO NOT COME WITH NEW CAPS!!!*
- If paper is dry, brittle it is bad!



VHF Comms





VHF Comms



- Line of sight (LOS) communications
- LOS distance : $d \text{ (nm)} = 1.4 (h)^{1/2}$
h = height of antenna (ft)
- Used for:
 - Ship to ship
 - Ship to shore (within sight of land)
 - Local weather
 - Shore to Ship (some Coast Guard Stations can communicate up to 120NM)



VHF Comms



NA1
-
NA8



NA9
-
NA20



VHF Comms



- 2 Speakers

Nav Desk (local)

Cockpit (remote)

Both

- Selector switch
located above radio



VHF Comms



- Channel Usage:
 - Hailing & Distress : CH16
 - Merchant Traffic : CH13
 - USNA Santee Basin : CH82A
 - Small Craft : CH12
- At beginning of cruise, verify the desired channels in memory:
 - 13, 16, 82A, & squadron channel
- While underway, scan those channels using memory scan feature.

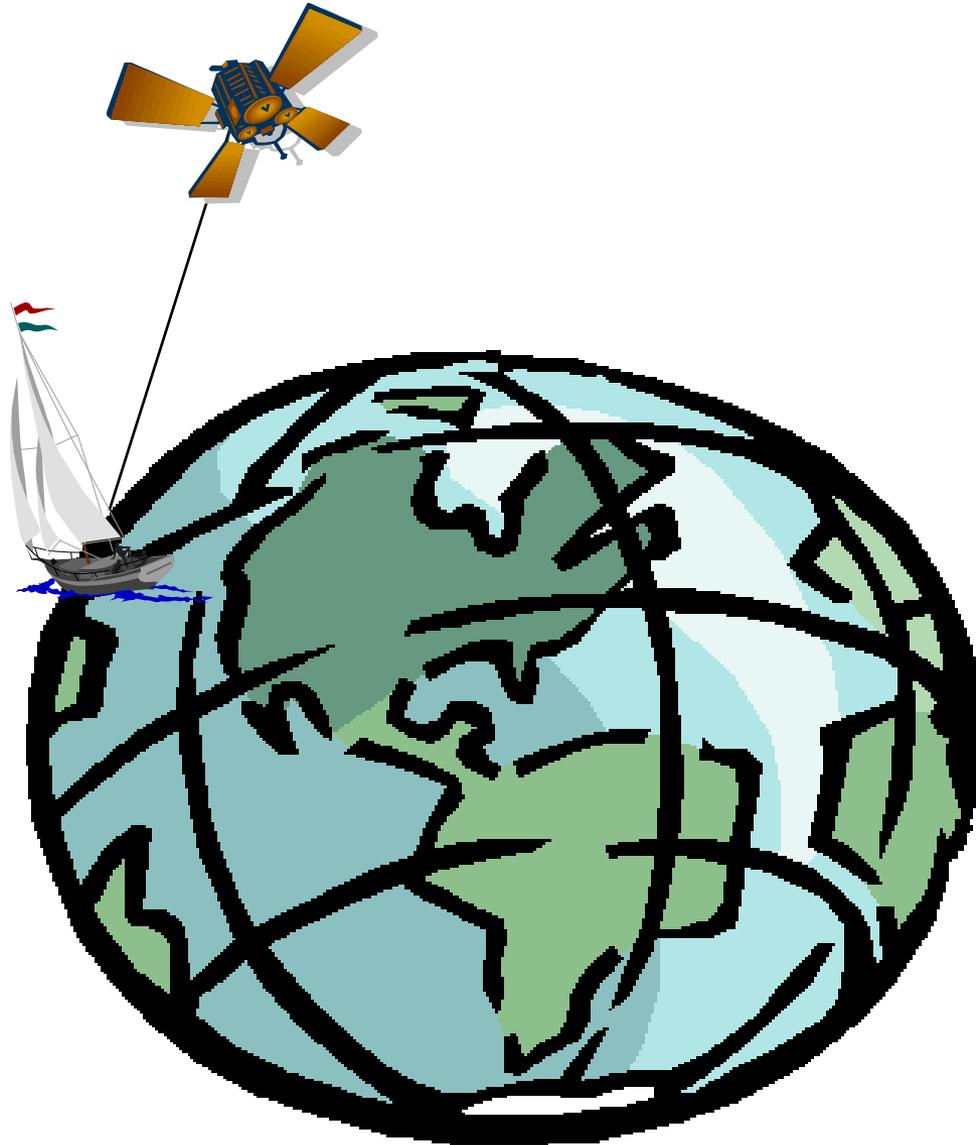


VHF Comms





Satellite comms





Satellite comms



- NA 2 and 17 have satellite phones installed onboard for OTC use
- OTCs on other vessels will have hand-held satellite phones
- See manual for dialing instructions
- Use
 - Used to relay daily sitreps and provide emergency communications to/from the Navy Sailing Duty Officer (NSDO)
 - Phone numbers published in Summer OPORD



EPIRB

Emergency Position Indicating Radio Beacon



- Satellite 406 EPIRB
 - Transmits signals at 121.5 and 406 MHz
 - Used only for emergency situations
 - turning it on will activate the USCG's emergency rescue system
 - Registered to each boat (cannot be cross decked)
 - Once the EPIRB is activated for an emergency, do not turn it off
 - Satellites can localize signal down to within a few nm
 - Approximately \$1000.00





Comms procedures



Appendix II of Annex A of OPORD describes the communications and reporting procedures for summer cruise



Comms Procedures



- **SATPHONE** – Each squadron OTC and each MIDN Skippered STC will be outfitted with a SATPHONE



Comms Procedures



- **HF Voice** – One STC per squadron shall maintain guard on HF during comms window when directed or if SATPHONE connectivity with RCC is unable to be established for greater than 24 hours



Comms Procedures

- **Cellular Phones** – Each OTC will be assigned a duty cell phone to increase the reliability of real-time, person-to-person comms with NSDO (who will also have a duty cell phone)



Comms Procedures: Underway Reports from OTC

- Daily comms check/report
 - Cell phone - 0800
 - SATPHONE - 0800
 - HF Voice - on frequency defined in para 11 of OPORD
 - If morning comms check is unsuccessful, second attempt should be made between 1630-1730



Comms Procedures:

Underway Reports from OTC

- Content of Underway Daily Comms Check:
 - Position - latitude, longitude, geographical reference
 - Course, speed, and ETA at next port
 - Weather
 - Status or any unusual information
 - "Nothing significant to report"



Comms Procedures:

Underway Reports from OTC

- Personal injury or significant material damage - by fastest means available
- Heavy Weather forecast - when expected to affect operations or cruise itinerary
- SOE deviation - significant deviation has occurred or is expected
- Upon arrival - provide one-time report covering highlights of transit



Comms Procedures: Underway Reports from OTC

- Situational Reports (SITREPS)
 - Provide details of new personnel injuries or material casualties and/or a brief update on existing casualties
 - Intentions if heavy weather is forecasted
 - Intentions if significant change in SOE is expected or occurred
 - Any other incident with potential impact on schedules, health or welfare of personnel, or of which the chain of command should be made aware



Comms Procedures:

Inport Reports from OTC

- OTC shall make reports by telephone to NSDO by 0800
- Content:
 - Time of arrival (first day only)
 - Daily status, as of 0700
 - Ready to get underway (day of departure)
 - Other information deemed pertinent



VHF Emergency Comms



- SECURITE (Ch 13)
- PAN PAN
- MAYDAY



SECURITÉ

- Pronounced "se-cu-ri-tay"
- When desiring to notify other vessels of special circumstances concerning your vessel or to query for other vessels in your area during periods of low visibility
- "SECURITÉ, SECURITÉ, THIS IS SAILING VESSEL DASH 2 NM SOUTH OF THOMAS POINT LIGHT. PROCEEDING ON A HEADING OF 020 AT A SPEED OF 4 KTS. ALL CONCERNED TRAFFIC CONTACT DASH ON CHANNEL 13. OUT"



PAN PAN



- Pronounced "pahn-pahn"
- Urgent communications concerning the safety of a ship, aircraft, other vessel or person in sight or on board
- "PAN-PAN ... PAN-PAN ... PAN-PAN. ALL STATIONS. THIS IS DASH, DASH, DASH. OUR SKIPPER HAS BEEN KNOCKED UNCONSCIOUS. WE REQUIRE EMERGENCY MEDICAL ASSISTANCE. WE ARE LOCATED 1 NM NORTH OF BUOY 86. THIS IS DASH, OVER."



MAYDAY

- MAYDAY – absolute first priority distress call involving imminent danger of loss of life or vessel and immediate help is required
- "MAYDAY ... MAYDAY ... MAYDAY. THIS IS DASH, DASH, DASH. MAYDAY: DASH, POSITION IS 1 NM EAST OF WOLFTRAP LIGHT. WE HAVE STRUCK AN OBJECT AND ARE FLOODING. WE REQUIRE IMMEDIATE ASSISTANCE. ON BOARD ARE 10 ADULTS. THE BOAT IS SINKING. DASH IS A 44 FOOT SAILING SLOOP WITH A DARK BLUE HULL AND GOLD TRIM. I WILL BE LISTENING ON CHANNEL 16. THIS IS DASH, OVER."



Basic communications



- Identify who you are calling
 - Identify yourself
 - Context of message
 - End transmission
-
- OUT, OVER, BREAK, WAIT, ROGER, STAND-BY



Hailing merchants



- When do you hail a merchant?
- How do you hail a merchant?



Hailing merchants



TOO LATE!!



Hailing merchants



- When do you hail a merchant –
 - Whenever you think the pilot on the bridge of the merchant would like to know your intentions
 - When you want to know the intentions of the merchant vessel
 - Definitely call when:
 - Entering a traffic scheme with traffic visible
 - Crossing a channel with traffic visible
 - Crossing the bow of a merchant
 - You are unsure about the intentions of the merchant



Hailing merchants



- When hailing merchants, ensure you identify who you are and the specific vessel you are calling.
- Identifying merchants:
 - Name the type of vessel (tanker, car-carrier, etc.) or the color of the vessel
 - Give reference to landmark (Bloody Pt, Cove Pt)
 - Give merchant's course (northbound or southbound)
 - Give merchant's approximate LAT/LONG (last resort)



Hailing merchants



- Identifying yourself:
 - Give your position relative to a landmark and the merchant.
 - Give your course.
 - Give your description (blue sloop...)
 - Tell them your lighting configuration
- State your intentions (**Stay out of their way!**)
- Do not cross the bow of tug and tow without first contacting the tug via VHF

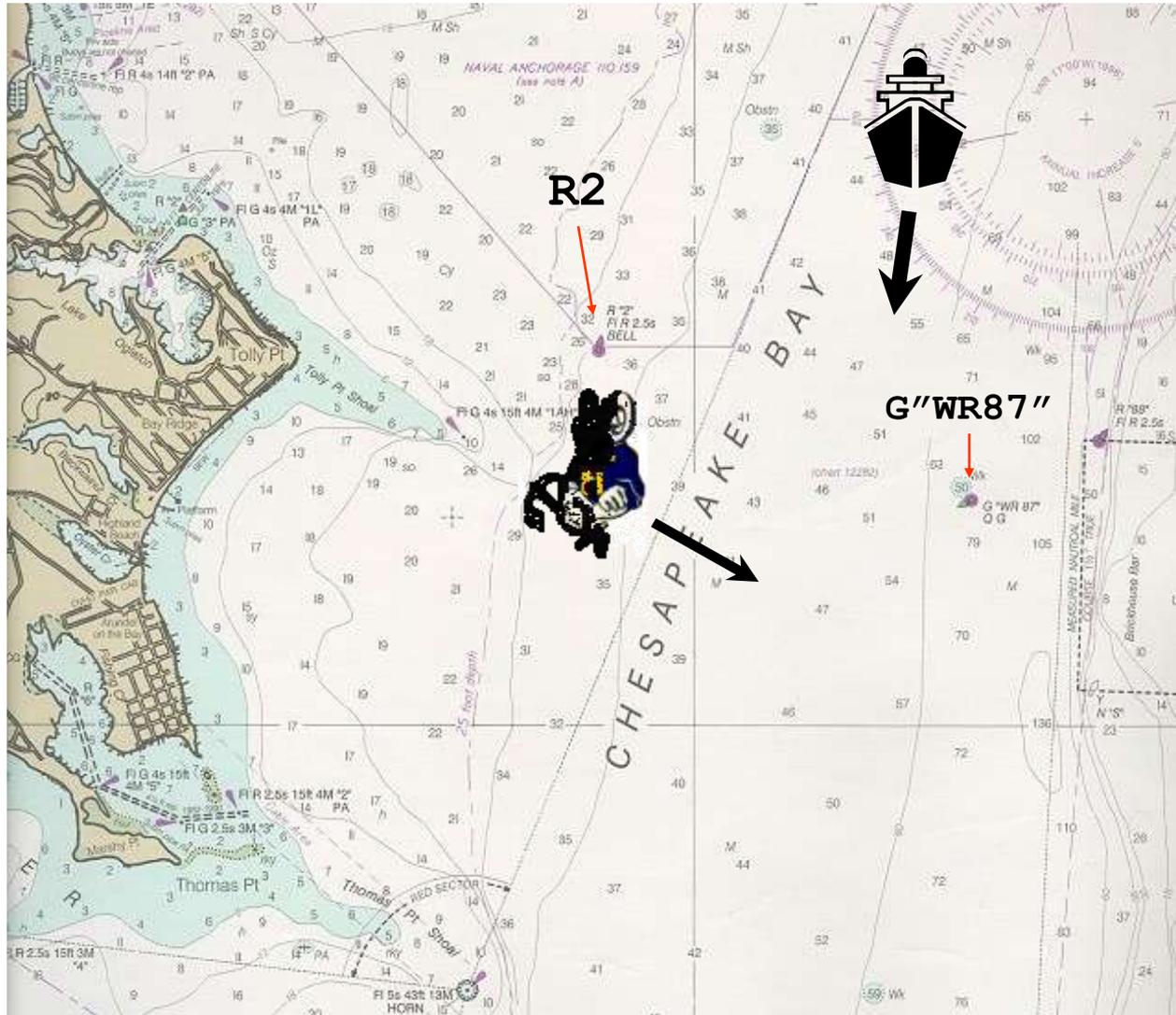


HAILING MERCHANTS PRACTICAL



CONTSHIP SPIRIT





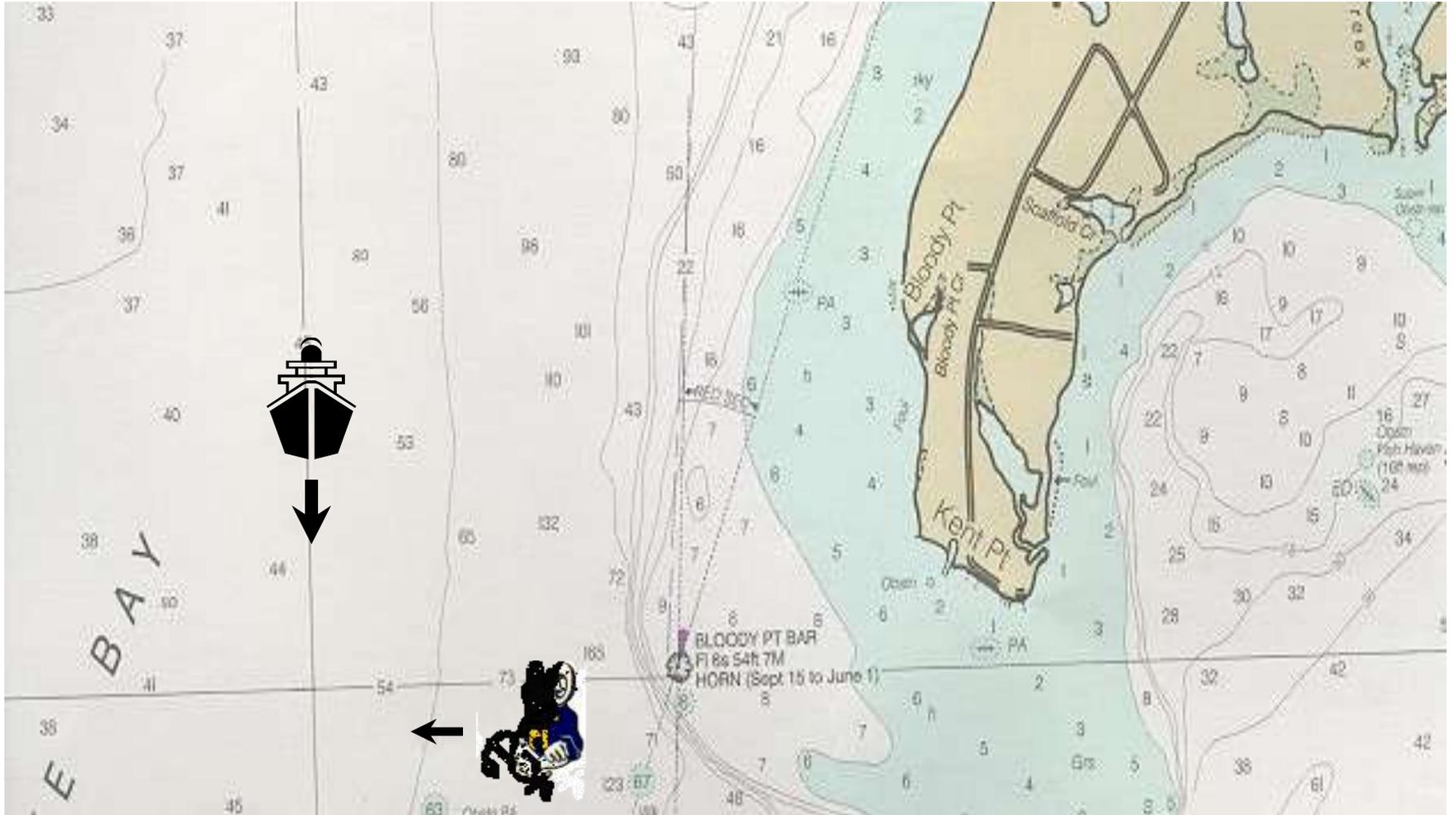


HAILING MERCHANTS

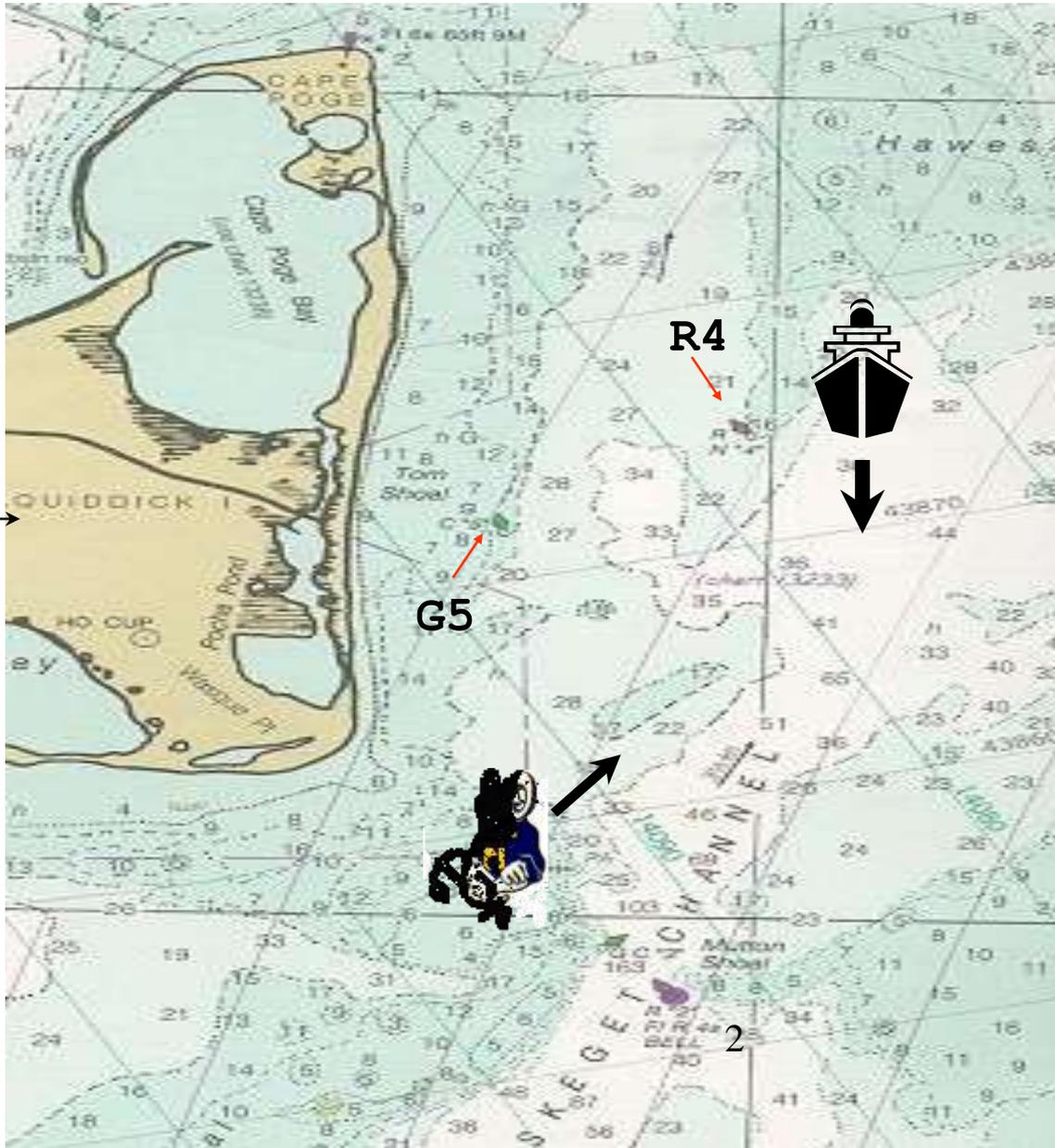


- Southbound blue-hull container ship north-east of R2, this is the sailing vessel *Challenger*, off your stbd bow, east of Tolly Point, CH 13, over.
- *Challenger*, this is *Contship Spirit*, roger over.
- This is *Challenger*, good afternoon Captain, we will stay on your stbd side and pass astern of you, over.
- This is *Contship Spirit*, roger Captain, thank you and have a nice sail, OUT.
- This is *Challenger*, roger out.









Chappquiddick
Island

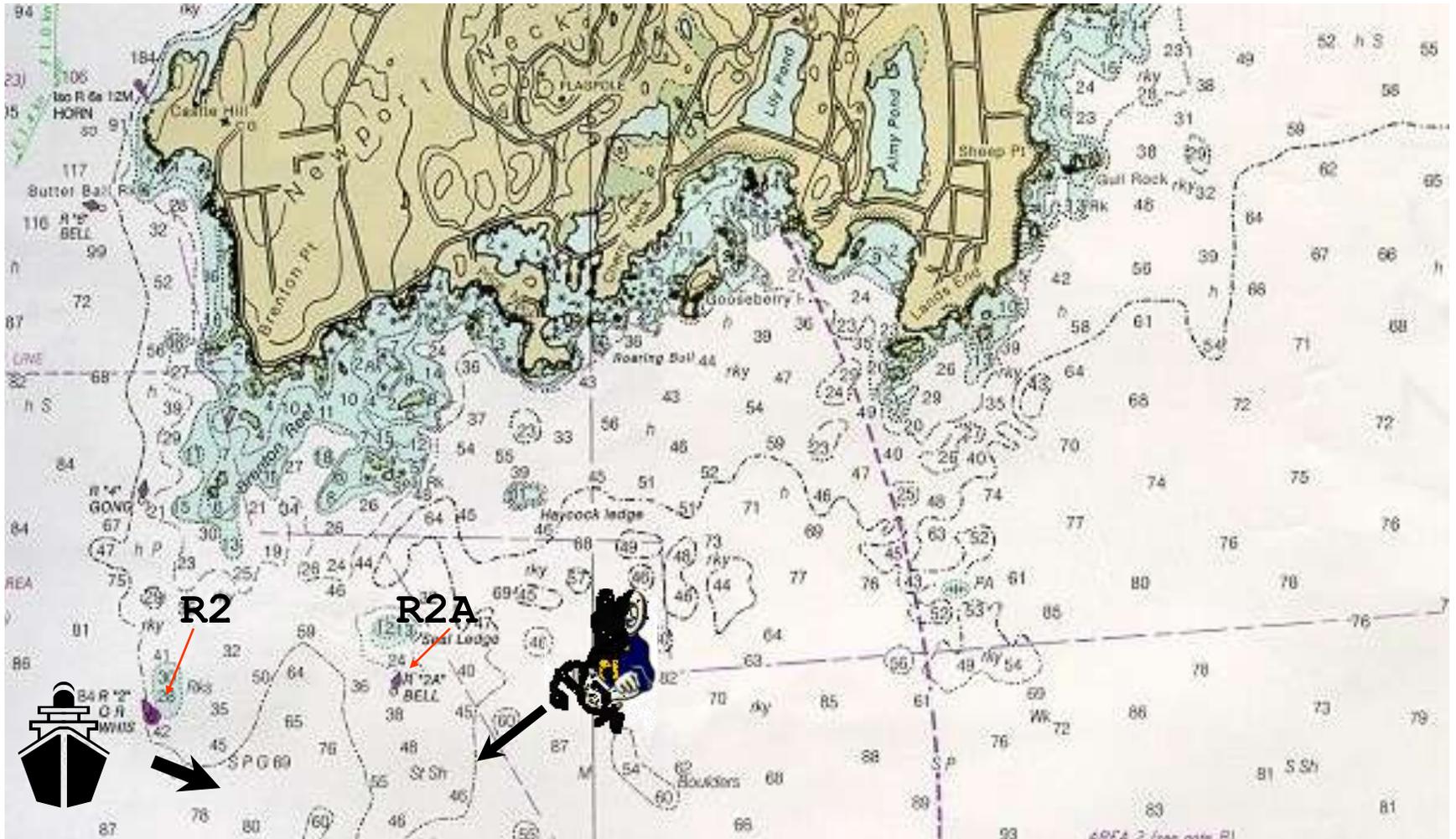


R4

G5

2







QUESTIONS?