Communications

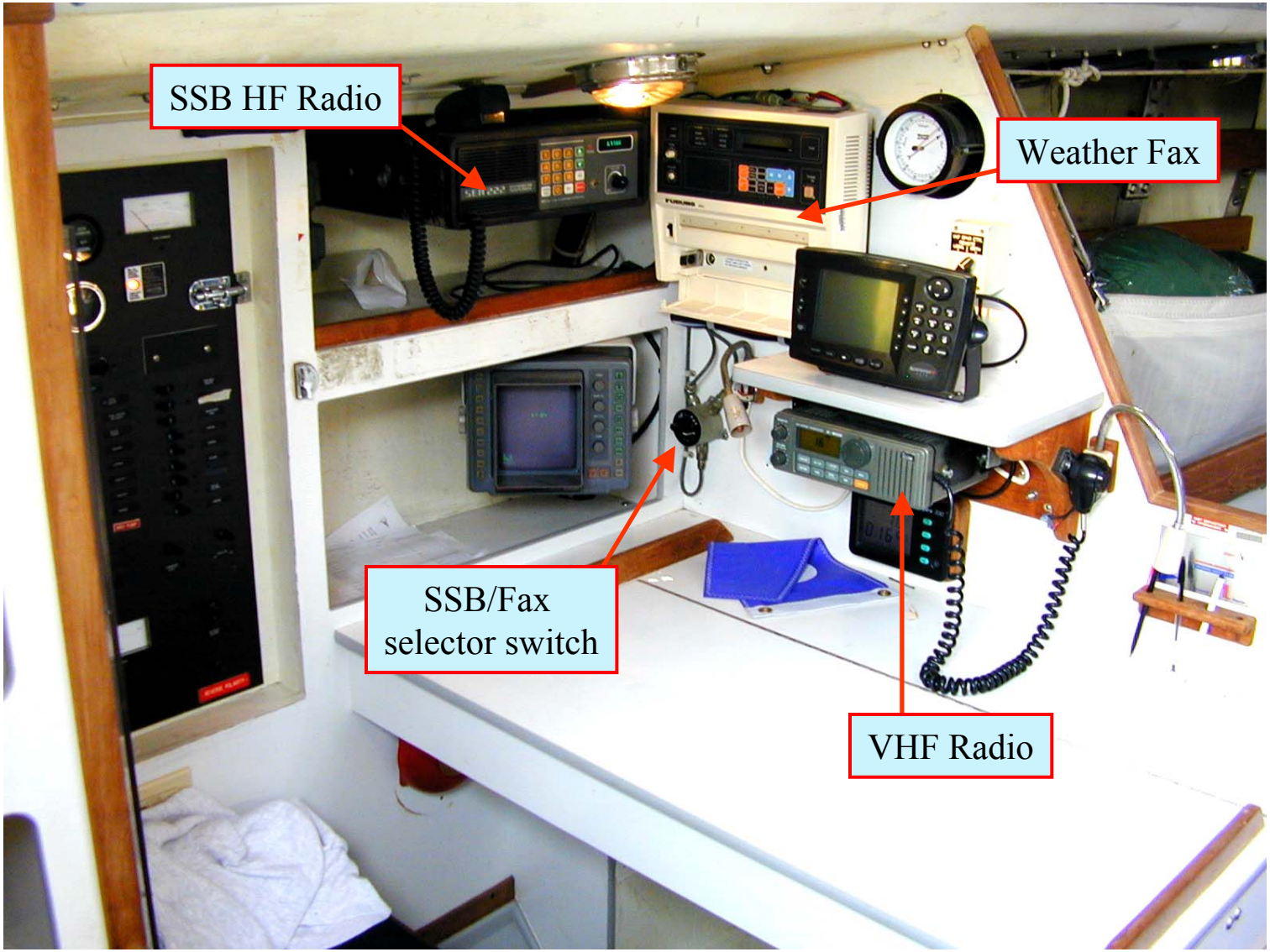
Skipper/XO Training

2005

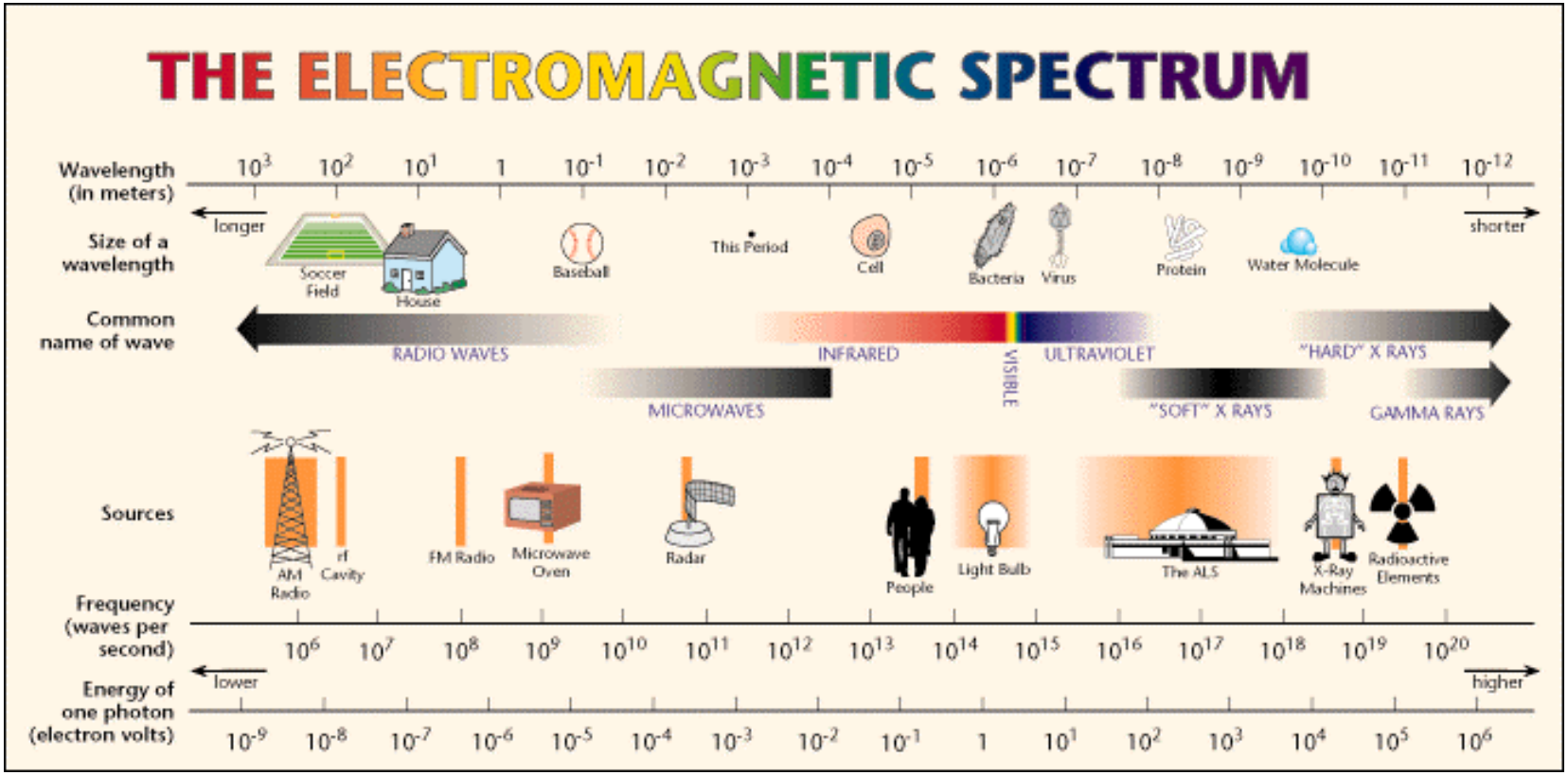
References

- 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



Comms frequencies



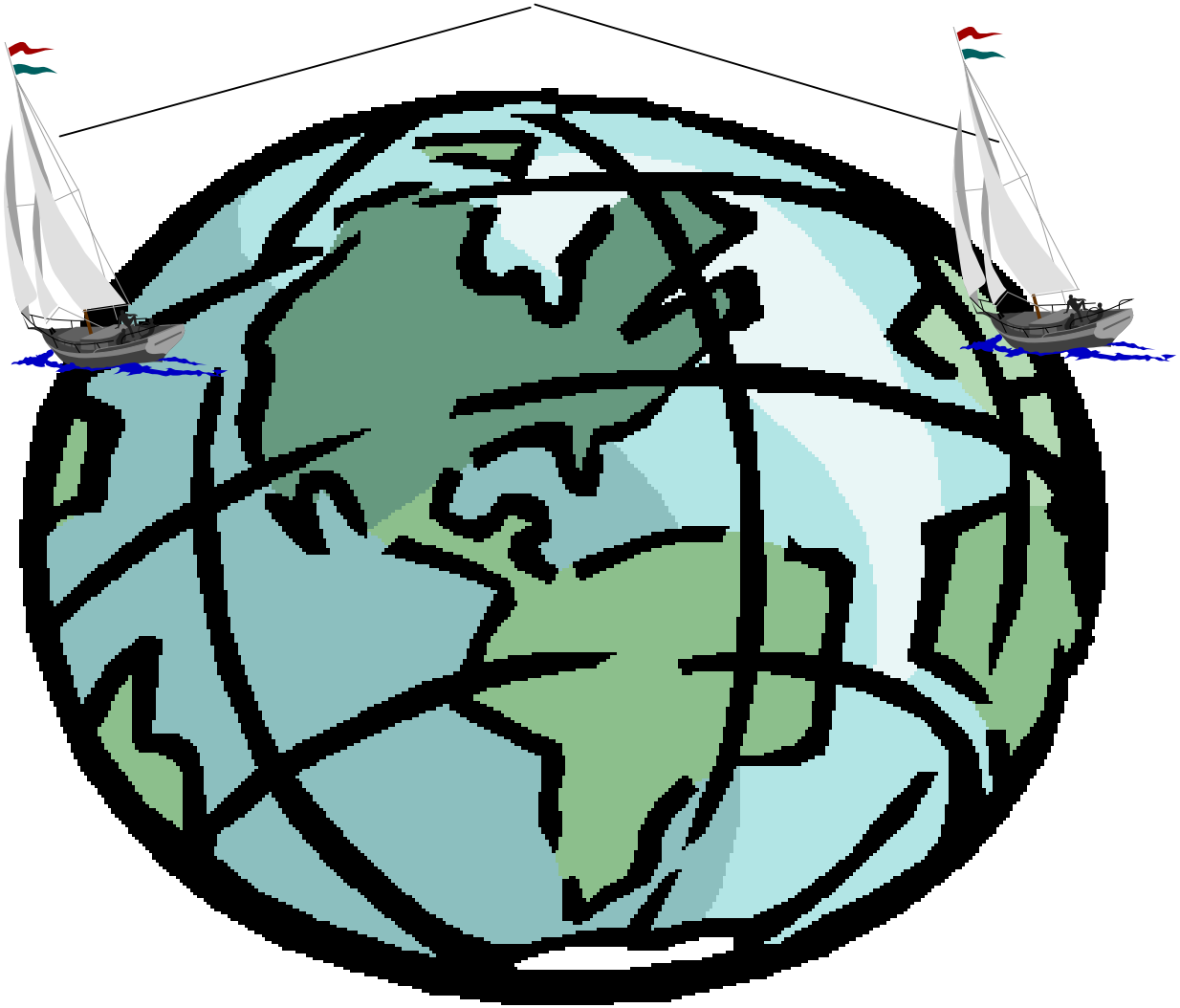
From: Data & Computer Communications, Stallings, 6th Edition

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



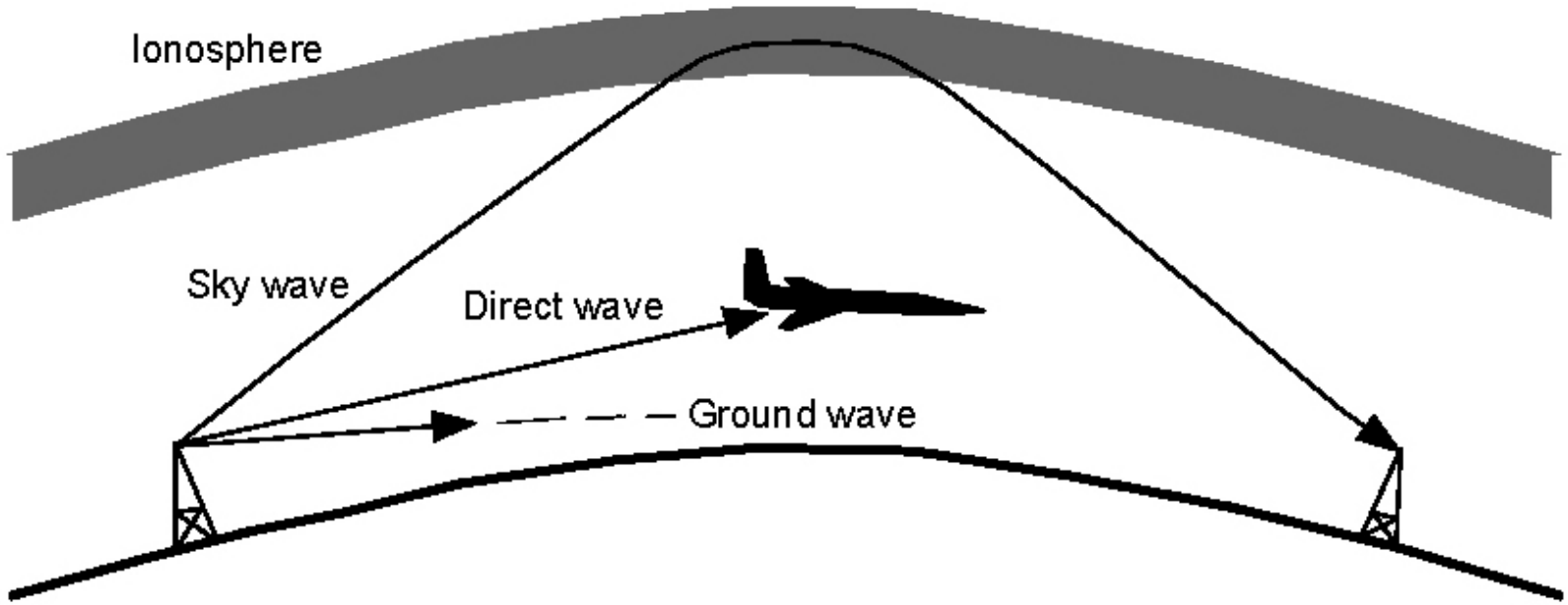
HF Comms

- 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 Comms

- What is the maximum range for HF communications?

HF Propagation paths

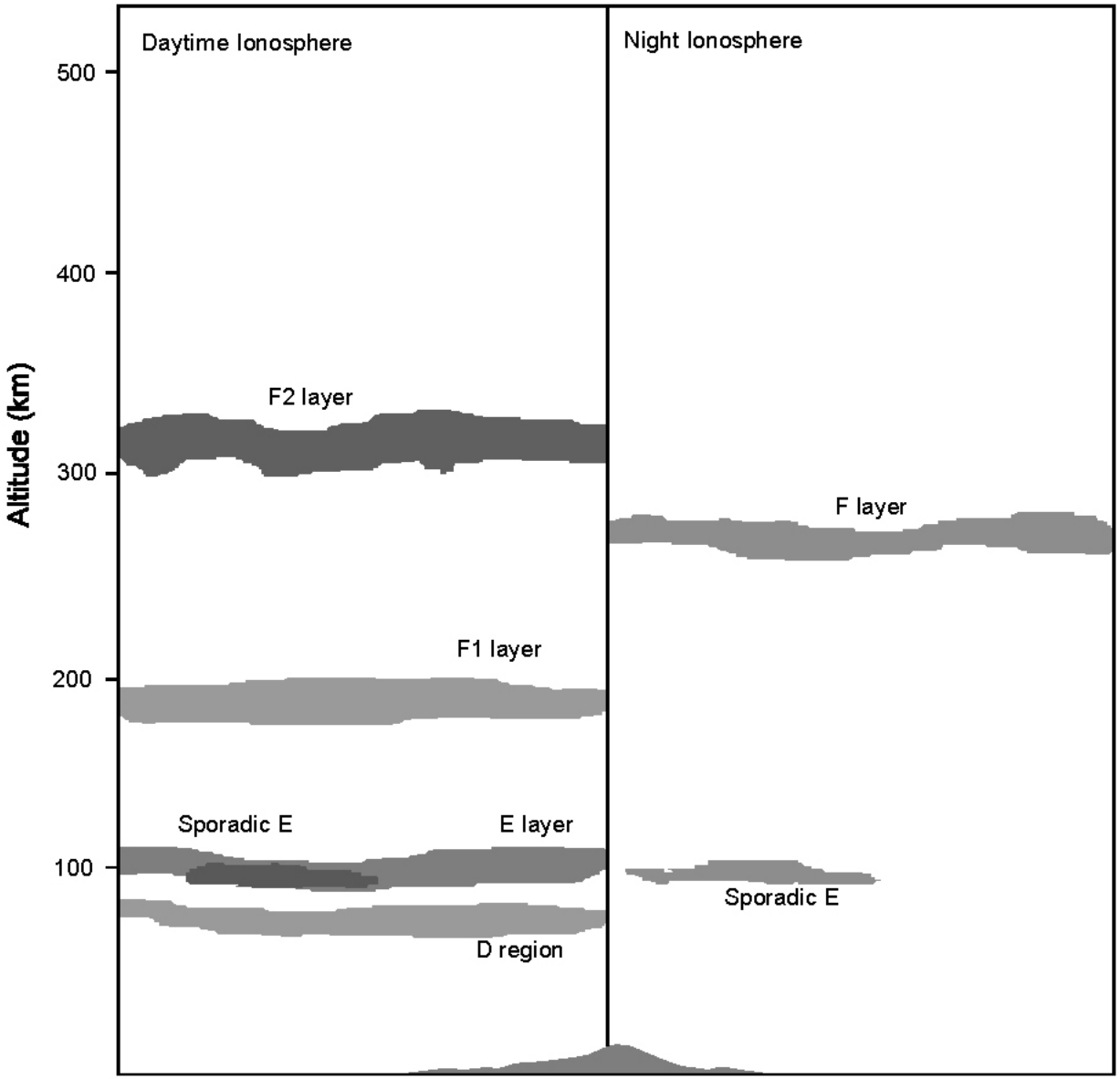


HF communications have LOS and both ground waves and sky waves. HF can travel thousands of miles due to RF signal bouncing off the atmosphere.

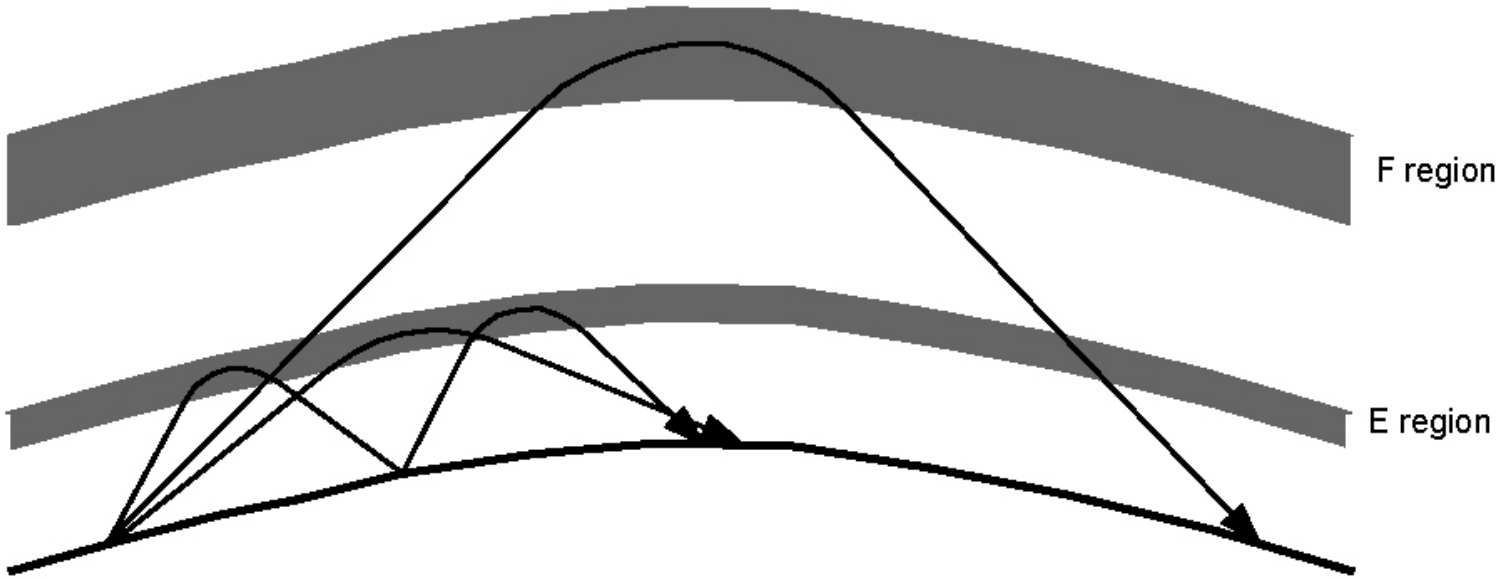
HF Comms

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

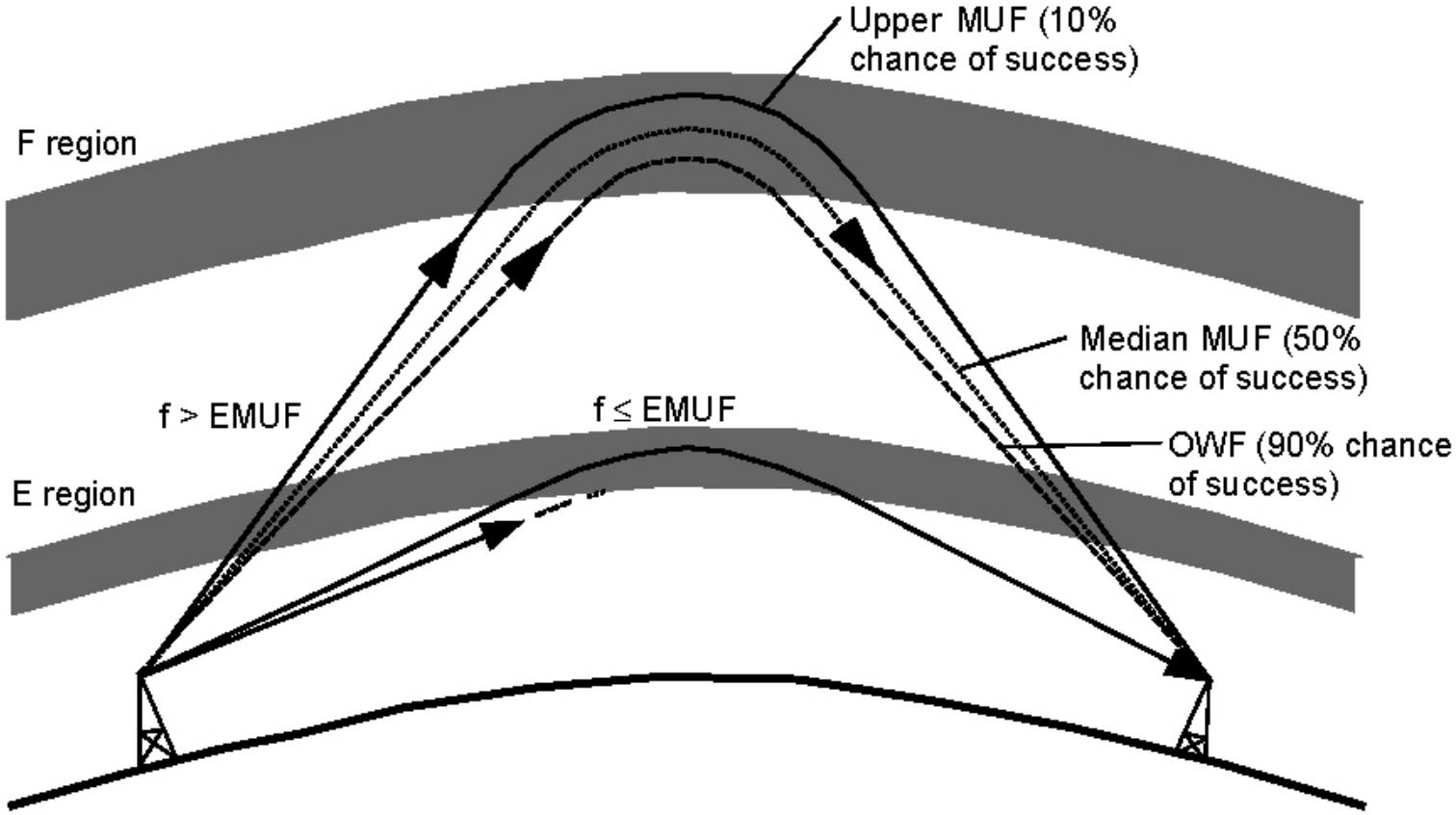
Ionosphere layers



Sky waves and skip zones



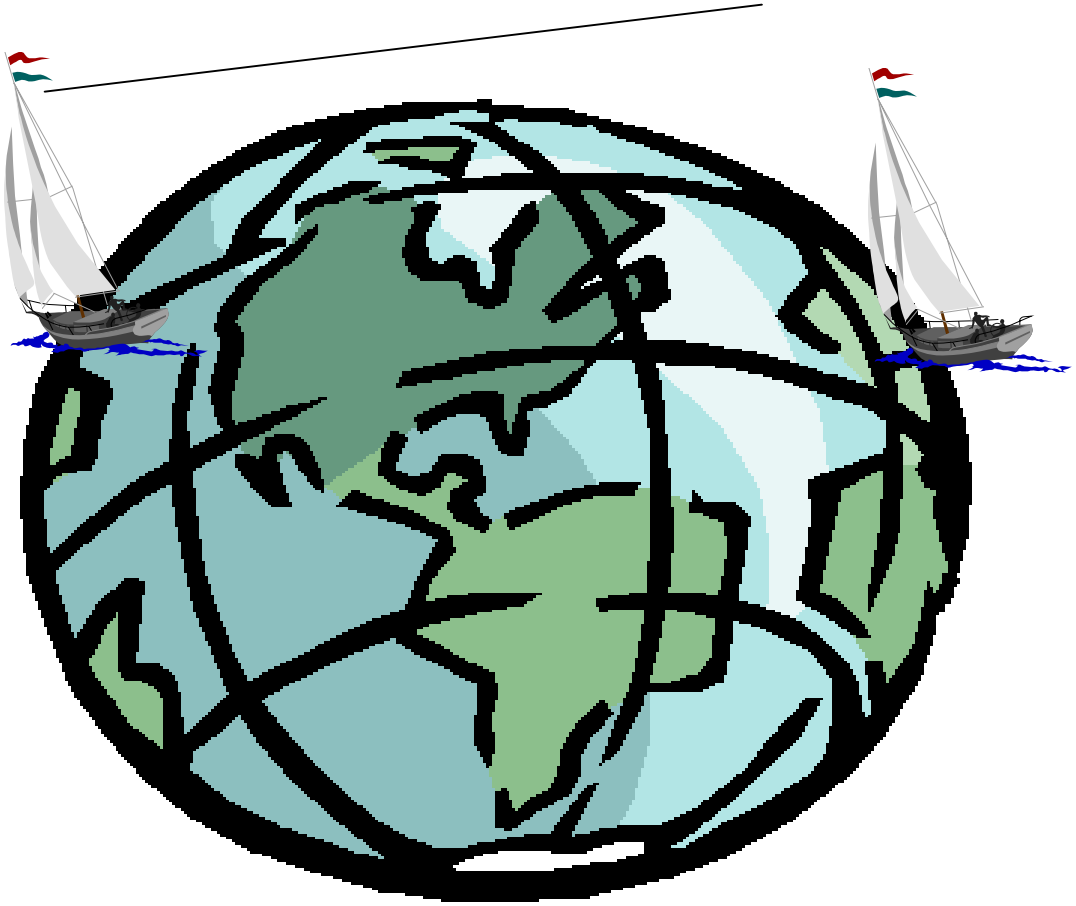
Range of useful frequencies



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

VHF Comms



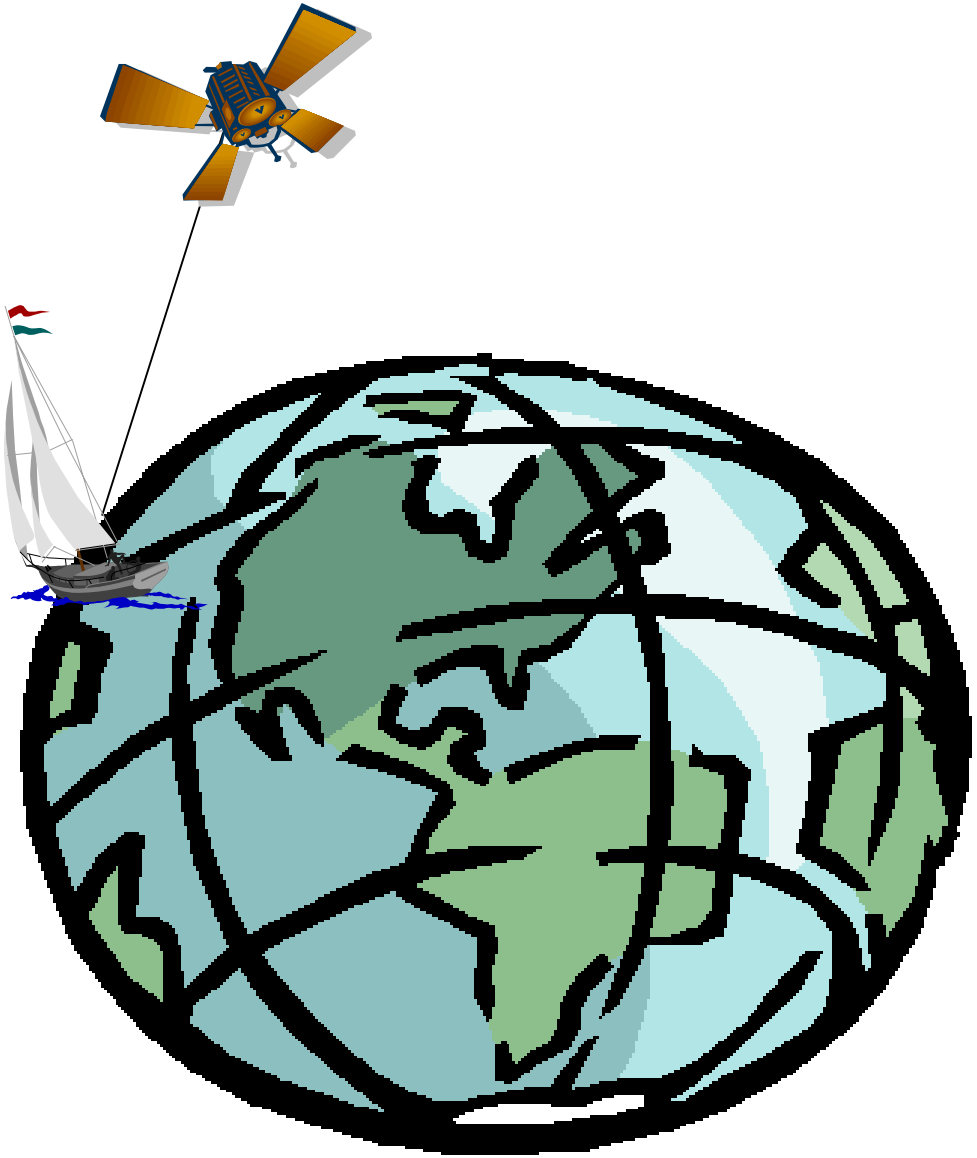
VHF Comms

- Line of sight (LOS) communications
- LOS distance : $d\ (nm) = 1.4(h)^{1/2}$ h = height of antenna (ft)
- Used for:
  - Ship to ship
  - Ship to shore (within sight of land)
  - Local weather

VHF Comms

- USNA Santee Basin uses channel 82A
- Small Craft uses channel 12
- At beginning of cruise, verify the desired channels in memory:
  - 13, 16, 82A, squadron channel
- While underway, scan those channels using memory scan feature.

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

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)

REED'S NAUTICAL ALMANAC, 2004

R Resources

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

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	PWAA88.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	evnt18.jpg
1002	2202	(rebroadcast of 0925, 2125)		
1015	2215	(rebroadcast of 0938, 2138)		

Station name

24 hr surface forecast

500 mb forecast

48 hr surface forecast

Weather Fax

- Change the Antenna Switch back to SSB

- When replacing the paper, ensure you save the end caps on the roller...
  - *NEW PAPER ROLLS* ***<u>DO NOT</u>*** *COME WITH NEW CAPS!!!*

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.
- Daily reports:
  - When underway, the OTC shall make a daily report by the following methods:
    - SATPHONE at 0700 with daily status
    - HF Voice per OPORD if SATPHONE is OOC

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 aboard

- "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

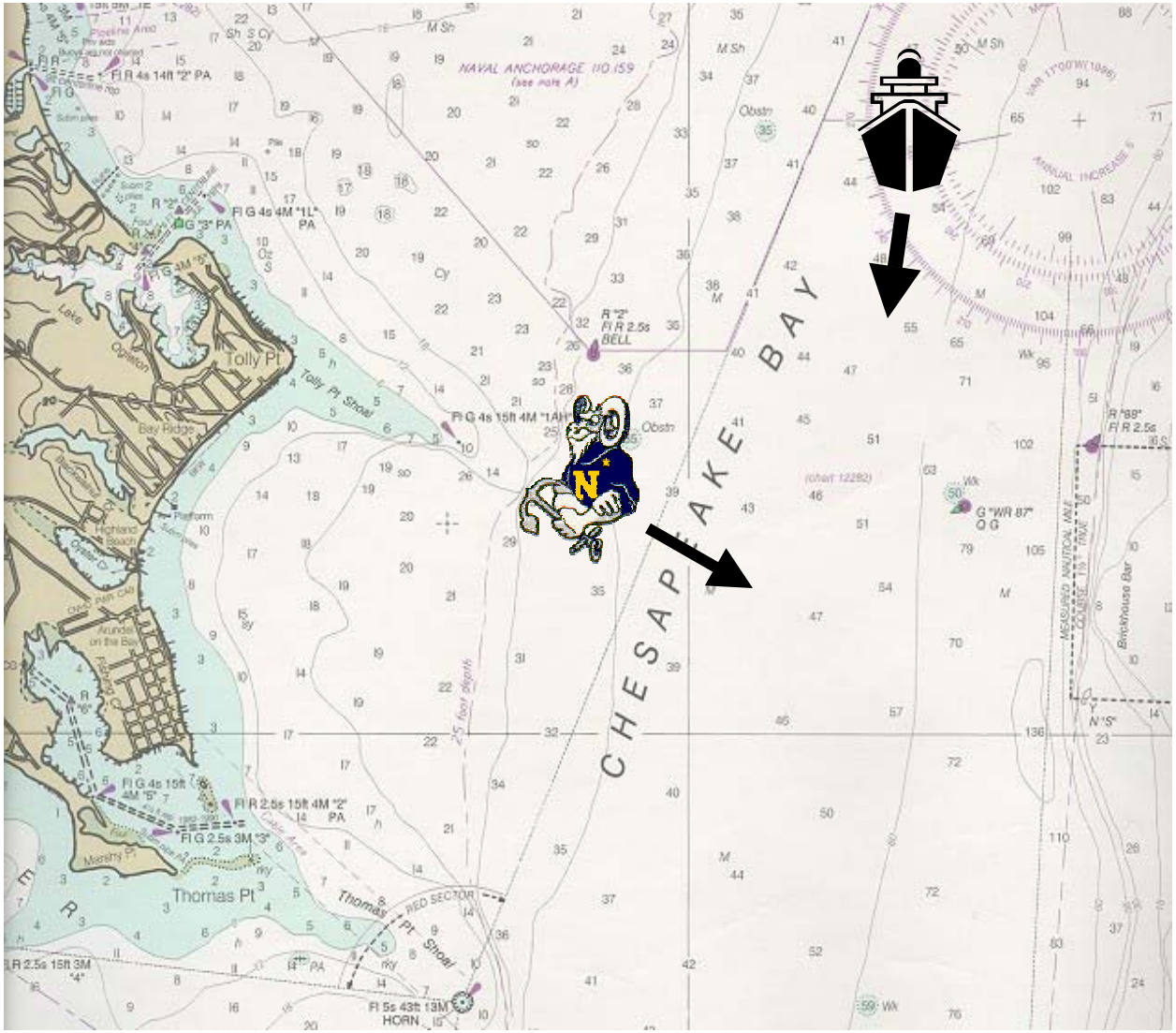
- When hailing merchants, ensure you identify who you are and the specific vessel you are calling.
  - i.e. “Merchant vessel in Chesapeake Bay, this is sailing vessel...”
- Identifying merchants:
  - Name the type of vessel (tanker, car-carrier, etc.) or the color of the vessel
  - Give reference to 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

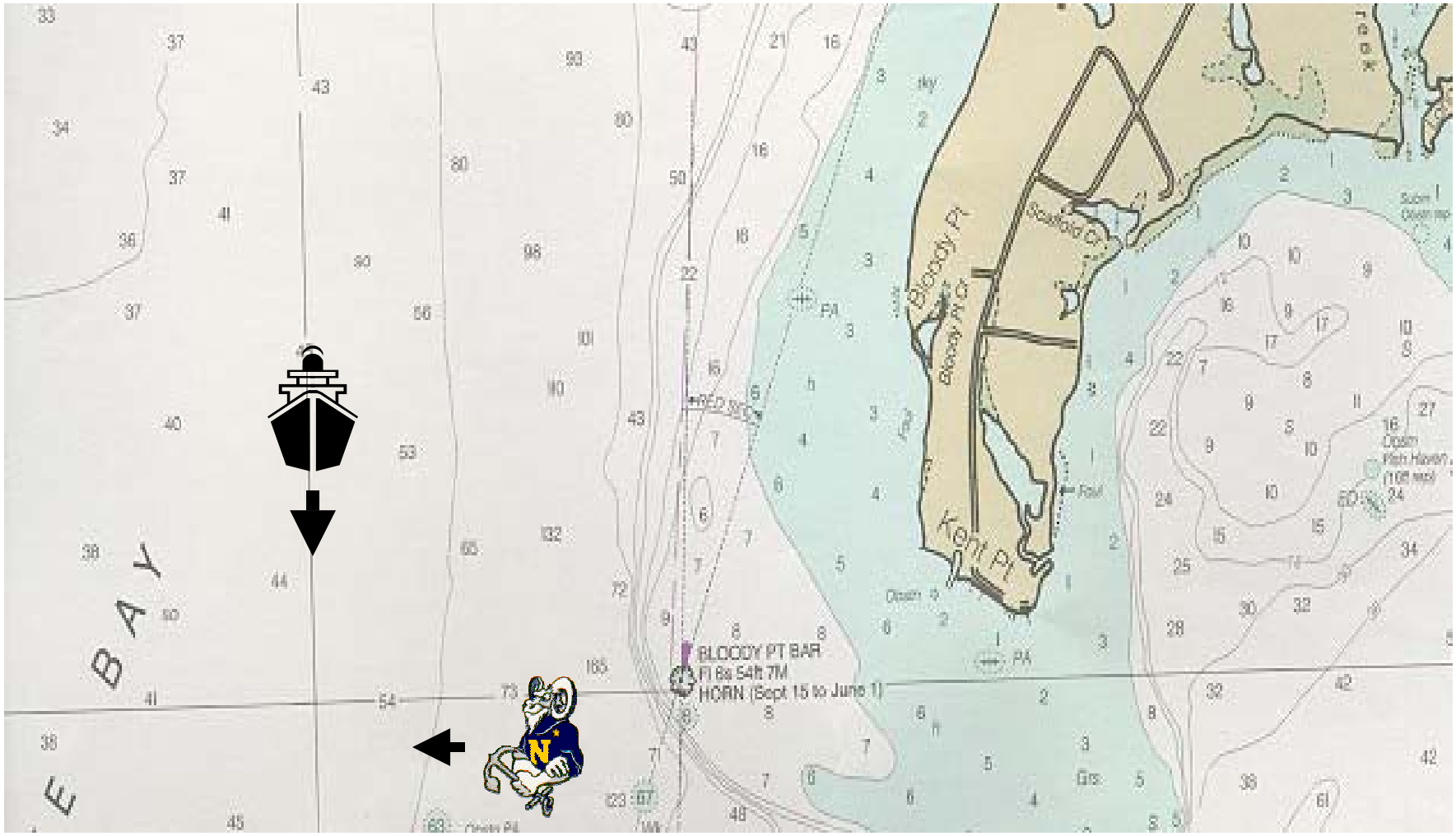
HAILING MERCHANTS PRACTICAL

CONTSHIP


NAVAL ANCHORAGE 110.159
(see note A)
CHESAPEAKE BAY
Tolly Pt
Tolly Pt Shoal
Thomas Pt
Thomas Pt Shoal
Bay Ridge
Highland Beach
Arundel on the Bay
Lake Ogleton
Brickhouse Bar
Fl R 4s 14ft "2" PA
Fl G 4s 4M "1L" PA
Fl G 4s 15ft 4M "1A"
Fl R 2.5s 15ft 4M "2" PA
Fl G 2.5s 3M "3"
Fl G 4s 15ft 4M "5"
Fl R 2.5s 15ft 3M "4"
Fl 5s 43ft 13M HORN
R "2" Fl R 2.5s BELL
R "88" Fl R 2.5s
G "WR 87" Q G
RED SECTOR

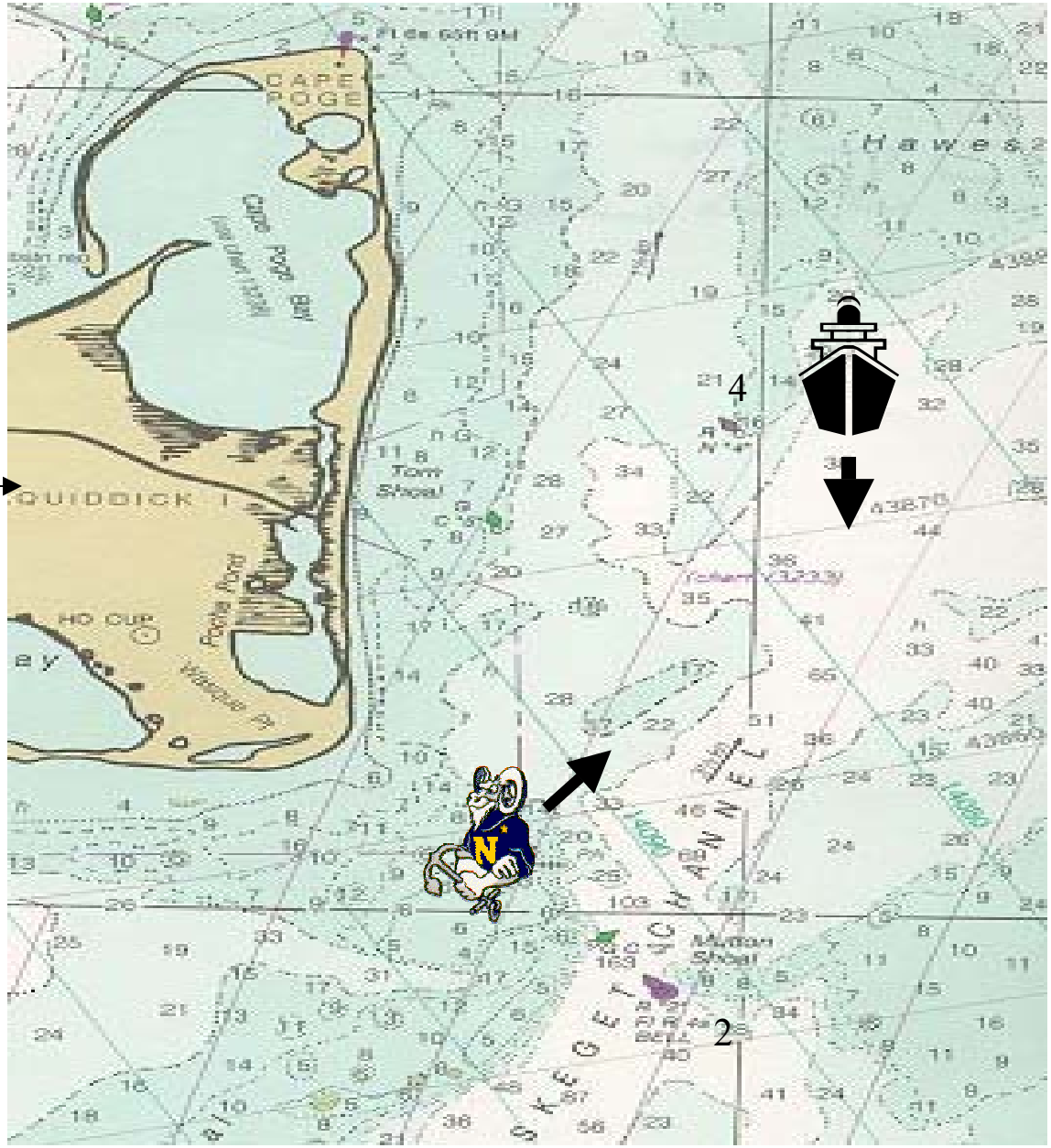
HAILING MERCHANTS

- 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.

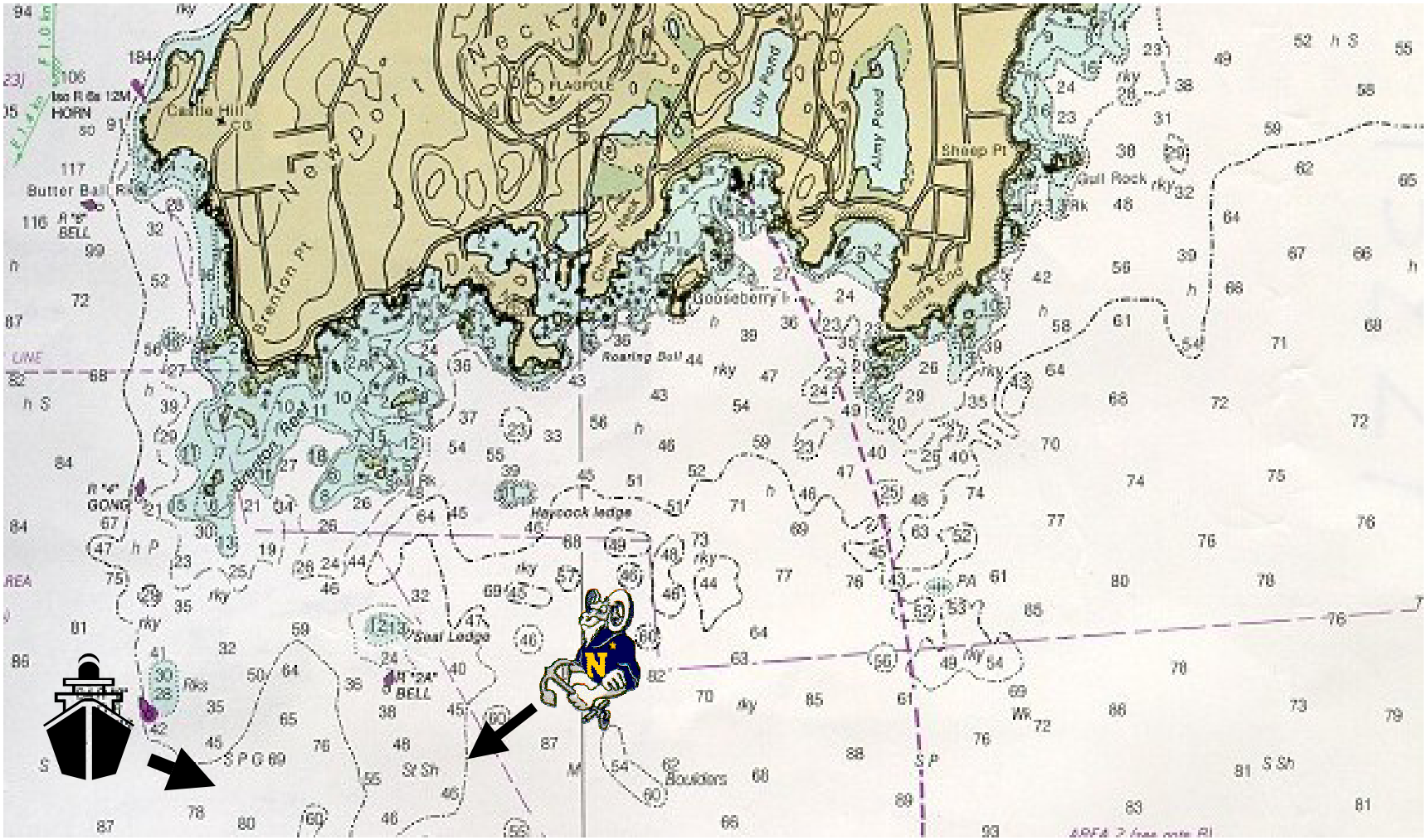

BLOODY PT BAR
Fl 6s 54ft 7M
HORN (Sept 15 to June 1)
Bloody Pt
Bloody Pt Cr
Kent Pt
Bayfield Cr
RED BELL
Fish Haven
Open
Foul
Gas
E BAY

EVERGREEN

Chappquiddick Island



NSCSA


Castle Hill
Butter Ball Rock
Brenton Pt
Lily Pond
Almy Pond
Sheep Pt
Gull Rock
Gooseberry
Roaring Bull
Haycock ledge
Seal Ledge
Boulders
FLAGPOLE
HORN
BELL
GONG

QUESTIONS