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
<table>
<thead>
<tr>
<th>Band</th>
<th>Band Name</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELF</td>
<td>Extremely Low Frequency</td>
<td>30 - 300 Hz</td>
</tr>
<tr>
<td>VLF</td>
<td>Very Low Frequency</td>
<td>3 - 30 kHz</td>
</tr>
<tr>
<td>LF</td>
<td>Low Frequency</td>
<td>30 - 300 kHz</td>
</tr>
<tr>
<td>MF</td>
<td>Medium Frequency</td>
<td>300 kHz - 3 MHz</td>
</tr>
<tr>
<td>HF</td>
<td>High Frequency</td>
<td>3 - 30 MHz</td>
</tr>
<tr>
<td>VHF</td>
<td>Very High Frequency</td>
<td>30 - 300 MHz</td>
</tr>
<tr>
<td>UHF</td>
<td>Ultra High Frequency</td>
<td>300 MHz - 3 GHz</td>
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<tr>
<td>SHF</td>
<td>Super High Frequency</td>
<td>3 - 30 GHz</td>
</tr>
<tr>
<td>EHF</td>
<td>Extremely High Frequency</td>
<td>30 - 300 GHz</td>
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<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Range</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long wave</td>
<td>0 - 300 kHz</td>
<td>often considered to be anything below AM broadcast band (below 540 kHz)</td>
</tr>
<tr>
<td>Medium wave</td>
<td>300 kHz - 3 MHz</td>
<td>often considered to be the AM broadcast band (540 - 1700 kHz)</td>
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<tr>
<td>Short wave</td>
<td>3 - 30 MHz</td>
<td>often considered to be from top of AM broadcast band (1700 kHz) to 30 MHz</td>
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</table>
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 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
• 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)
<table>
<thead>
<tr>
<th>Broadcasting Times</th>
<th>Subject</th>
<th>FTP file names 1st brdrcst</th>
<th>FTP file names 2nd brdrcst</th>
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</thead>
<tbody>
<tr>
<td>0230 1400</td>
<td>Test pattern (start of broadcast)</td>
<td>PYAA10.gif</td>
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<tr>
<td>0233</td>
<td>Preliminary surface analysis, 28N–52N; 45W–85W</td>
<td>PYAC01.gif</td>
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<tr>
<td>0243 1405</td>
<td>Fax schedule, Part 1</td>
<td></td>
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<tr>
<td>0254 1420</td>
<td>Fax schedule, Part 2</td>
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<td></td>
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<tr>
<td>0305 1433</td>
<td>Request for comments</td>
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<td></td>
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<tr>
<td>0315</td>
<td>Product Notice Bulletin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0315 1515</td>
<td>Preliminary surface analysis, 28N–52N; 45W–85W</td>
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<td></td>
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<tr>
<td>0325</td>
<td>Satellite image, 20N–55N, 55W–95W</td>
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<td></td>
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<tr>
<td>0325 1525</td>
<td>Sea state analysis, 28N–52N; 45W–85W</td>
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<tr>
<td>0338 1538</td>
<td>Surface analysis (NW Atlantic), 15N–65N; 40W–95W</td>
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<tr>
<td>0351</td>
<td>Satellite image, 20N–55N, 55W–95W</td>
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<td>0351</td>
<td>Ice Charts</td>
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<tr>
<td>0402 1723</td>
<td>Test pattern</td>
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<tr>
<td>0415</td>
<td>(rebroadcast of 0325, 1525)</td>
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<td>0428 1749</td>
<td>500 mb analysis, 15N–65N; 10E–95W</td>
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<td>0745</td>
<td>Test pattern</td>
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<tr>
<td>0905</td>
<td>Preliminary surface analysis, 28N–52N; 45W–85W</td>
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<td>0915</td>
<td>24-hour surface forecast, 28N–52N; 45W–85W</td>
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<td></td>
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<td>0925</td>
<td>24-hour wave forecast, 28N–52N; 45W–85W</td>
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<td>0935</td>
<td>36-hour surface forecast, 28N–52N; 45W–85W</td>
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<td>0945</td>
<td>48-hour surface forecast, 15N–65N; 10E–95W</td>
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<tr>
<td>1005</td>
<td>500 mb analysis, 15N–65N; 10E–95W</td>
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<td>1015</td>
<td>48-hour wave forecast, 15N–65N; 10E–95W</td>
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<tr>
<td>1015</td>
<td>(rebroadcast of 2045)</td>
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<tr>
<td>1025</td>
<td>Surface analysis (NE Atlantic), 15N–65N; 10E–45W</td>
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<td></td>
</tr>
<tr>
<td>1035</td>
<td>Surface analysis (NW Atlantic), 15N–65N; 40W–95W</td>
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<td></td>
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<tr>
<td>1051</td>
<td>Satellite imagery, 20N–60N, 30W–100W</td>
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<td>1100</td>
<td>(rebroadcast of 0925, 2125)</td>
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<tr>
<td>1125</td>
<td>(rebroadcast of 0938, 2138)</td>
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</tbody>
</table>

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.
Weather Fax

56°N NMF 9110.0
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: $d \text{ (nm)} = 1.4(h)^{1/2}$
  $h = \text{height of antenna (ft)}$

- 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

IC-M120 VHF Marine Transceiver

Channel 16: USA

VOLUME
SQUELCH
LOW

HAILEX HI/LO L-SCAN SCAN WX DIAL
INCOM USA DUAL DIMMER MR CH-16
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.
• **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 is 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 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.

• 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.
QUESTIONS?