Technician License Course
Chapter 4
Communicating with other hams
Making Contact

PHYS 401  P. Reiff  2009
The Typical Telephone Conversation

- Greeting.
- Identify who is participating.
- Exchange information, generally taking turns.
- Salutations.
- End the conversation.
The Typical Ham Contact (QSO)

- Greeting.
- Identify who is participating.
- Exchange information, generally taking turns.
- Salutations.
- End the conversation.
Radio Manners

• Speak clearly and distinctly.
• Giant party line - topics accordingly.
• Shared use of frequencies.
• One long turn instead of just a few words… let them know you are done.
• Break between turns to allow others to join
Radio Manners

- Signal Reports
- Power level
- Location

- RST
  - Readability (1-5)
  - Strength (1-9)
  - Tone (CW only 1-9)

- “Your RST is 58”
- “You are 59 in Houston”
- CW: RST 599
Radio Manners

- Ham radio is self-regulated.
  - ARRL Official Observers.
- Logging
  - Logbook of the world
- QSL’s
  - Awards Program
  - QSL cards (by mail or electronic)
  - Send $1 with yours to help with postage
Band Plans

• A band plan is a way of organizing the use of radio frequencies.
  – Formal and legal plan.
  – Informal – gentleman's agreement.
Operating Dos and Don’ts

- Use of CQ versus “monitoring.”
- Use of phonetics.
- Taking turns and breaking-in.
- Station identification.
- Using repeaters.
- Using simplex.
Repeater/Digital/Internet

- Echolink – your computer to a tower
- IRLP – towers linked over the internet
  - IRLP codes designate distant repeaters
- WinLink – sending email
- D-Star – new Japanese digital mode (icom)
Nets and Emergency Communication

• Net is short for “Network.”
  – Evolved over the years of radio to share and exchange information in an organized and efficient way with accuracy.

• Social Nets.
• Traffic Nets.
• Emergency and Public Service Nets.
Traffic Nets

• Traffic refers to formal messages that are relayed via ham radio. (not car traffic reports!)

• Formal structure to ensure accuracy – National Traffic System (NTS).
  – Procedures.
  – Accountability.
To: MARK DOE
   RED CROSS DISASTER OFFICE
   123 MAIN ST
   RUTLAND VT 05701

Telephone Number: 802-555-1212

NEED MORE COTS AND SANITATION

KITS AT ALL FIVE SHELTERS

JOAN SMITH, SHELTER MANAGER

A licensed Amateur Radio Operator, whose address is shown above, handled this message free of charge. As such messages are handled solely for the pleasure of operating, a "Ham" Operator can accept no compensation. A return message may be filed with the "Ham" delivering this message to you. Further information on Amateur Radio may be obtained from ARRL Headquarters, 225, Main Street, Newington, CT 06111.

The American Radio Relay League, Inc. is the National Membership Society of licensed radio amateurs and the publisher of QST Magazine. One of its functions is promotion of public service communication among Amateur Operators. To that end, the League has organized the National Traffic System for daily nationwide message handling.
Emergency and Public Service Nets

- Public Service Nets – training for emergency nets.
  - Training for ham operators as well as supported emergency managers.
  - Standard weekly or monthly
- Emergency Nets.
Net Structure

• Net Control Station (NCS).
  – Traffic cop that controls the flow of information.

• Check-in and check-out procedures.
  - Net control calls for check-ins (by callsign) and then calls for your report.

• Communications discipline vital.
  – Learn and follow procedures.
  – Speak only when directed, and only to whom directed.
  – Follow through with your commitments.
Supporting Emergency Operations

• One of the pivotal reasons for the existence of Amateur Radio.

• You will be licensed communicators.
  – Get involved and use what you have learned.

• Know where you fit in the overall emergency management team.
EMCOMM Tips

• Don’t become part of the problem!
• You are a communicator, not a decision or policy maker
• Don’t give out unauthorized information.
• Know your abilities and limitations-keep yourself safe.
• Follow radio discipline and net procedures.
• Protect personal information-ham radio communications is a ‘party line.’”
EMCOMM Training

• If you are going to participate in EMCOMM: get training.

• Actively participate in EMCOMM activities.
  – Nets.
  – Public service activities.
  – Attend community meetings and get involved in your community.

• Take EMCOMM courses.
  – ARRL EMCOMM Courses 1, 2, and 3.
  – NIMS and FEMA courses.
EMCOMM Organizations

• Radio Amateur Civil Emergency Service (RACES).
  – Supports civil emergencies.
  – National in scope.

• Amateur Radio Emergency Service (ARES).
  – Local and regional in scope.
  – Supports non-governmental agencies.
Emergency Declarations

- FCC may declare a Temporary State of Communications Emergency.
  - Includes details of conditions and rules to be followed.
  - Specifics communicated through web sites and ARRL bulletins, the NTS, and on-the-air.
  - Avoid operating on restricted frequencies unless engaged in relief efforts.
Making and Answering Distress Calls

• Rule number one – speak in plain language!
• Mayday (voice); SOS (Morse code) are flags
• Identify
• Give location
• State the situation
• Describe assistance required
• Provide other important information
Tactical Communications

• Tactical Call Signs.
  – Facilitate communications.
  – Location or function specific.
  – (e.g. Sagwagon; shepherd bridge station)
  – Transcends operator changes.

• FCC ID rules still apply.
Emergency Equipment

- “Go-kits” (keep in car; keep charged)
  - Portable ham radio equipment.
  - Emergency power sources.
  - Personal survival supplies and equipment.
Awards

- **DXCC**
  - Contacting 100 different countries and/or entities.

- **WAS** (“Worked All States”)
  - Contacting 50 states.

- **VUCC**
  - Contacting 100 grid squares on VHF/UHF.
Special Events

• Special Event stations are set up to commemorate some significant local event.
• Usually stations are demonstration stations set up for public display.
• Commemorative certificates are awarded for contacting the stations.
Contests

• Field Day (June)
• Sweep Stakes
• QSO Parties (Texas QSO party in Sept)
• CQ DX Contest

• Contest Corral
Amateur Satellites

- **OSCAR**
  - Orbiting Satellites Carrying Amateur Radio.
- **Modes**
  - FM
  - Analog (SSB and CW)
  - Digital
- **International Space Station.**
What satellite contacts sound like (left-click to hear the satellites)

- FM contact (best quality sound)

- SSB contact: can be distorted if off-frequency
  – doppler shift of spacecraft (+ if approaching; - if receding along line of sight)

- ISS contact (generally FM)
Digital Techniques

• Radio Teletype (RTTY).
  – Single letters sent as they are typed.

• AMTOR and PACTOR.
  – Small grouping of letters sent with error correction.

• Packet and Packet Networks.
  – Groups (packets) of collected data sent with error correction and automatic forwarding.

• PSK31.
  – Different modulation technique. (phase shift)
What Digital sounds like
(left-click to hear the modes)

- RTTY
- AMTOR
- PACTOR
- PACKET
- PSK31
Digital Mode Modulation Techniques

- Digital means two states: ON and OFF.
  - Digital code is a sequence of ON and OFF states or 1’s and 0’s.
  - The letter “A” is 0100 0001 (65 decimal).
- When two audio tones are used to represent the ON and OFF states it is called Frequency Shift Keying (FSK).
- When changing phase states are used to represent ON and OFF states it is calls Phase Shift Keying (PSK).
APRS

• Automatic Position Reporting System (APRS).

• Packet based Global Positioning System (GPS) position reporting.
  – Uses a packet-like digipeater system to create an APRS network (also Internet connected).
  – Some HT’s have GPS included
Other Special Modes (left-click to hear SSTV)

- Video
  - Slow Scan TV (SSTV).
    - Sending snap-shot pictures.
  - Amateur TV (ATV).
    - Similar to commercial TV imagery.

- What SSTV sounds like:
Other Special Modes

• Meteor Scatter.
  – Reflecting radio signals off of the ionized trail left by meteors.

• Moonbounce.
  – Reflecting radio signals off the surface of the moon.
Other Special Modes

- Radio Control (RC).
  - Telecommand.
  - 50 MHz band.