

Technician License Course

Chapter 6

Communicating with other hams

Lesson Plan Module 14: Nets;
Emergency Communications;
Special Modes and Techniques

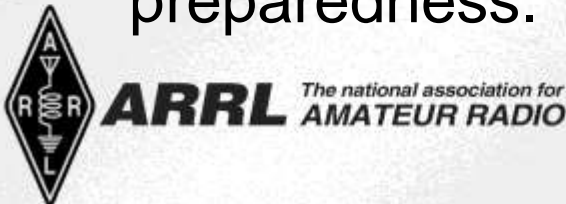


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Networks

Networks or “Nets” were developed to relay messages between stations with no direct contact. Techniques were adapted from telegraph and shipping companies. “Traffic” included radiograms and weather reports.

- ARRL sponsored a National Traffic System to improve efficiency and accuracy.
- Social nets provide scheduled opportunities for members of a group to exchange news and ideas. They are sometimes called “roundtables”.
- Emergency and public service nets provide an opportunity to practice discipline and accuracy and preparedness.



Traffic Nets

Traffic refers to formal messages that are delivered via ham radio

National Traffic System (NTS)

- Formal structure to ensure accuracy
- Procedures
- Accountability





The American Radio Relay League
RADIOGRAM
 Via Amateur Radio

Number	Precedence	HX	Station of Origin	Check	Place of Origin	Time Filed	Date
207	P	E	W1FN	10	LEBANON NH	1200 EST	JAN 4

To:
MARK DOE
RED CROSS DISASTER OFFICE
123 MAIN ST
RUTLAND VT 05701

Telephone Number: **802-555-1212**

This Radio Message was received at:

Amateur Station _____ Date _____
 Name _____
 Street Address _____
 City, State, Zip _____

NEED MORE COTS AND SANITATION
KITS AT ALL FIVE SHELTERS

JOAN SMITH SHELTER MANAGER

RBC'D	From	Date	Time	SENT	To	Date	Time
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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.



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Emergency and Public Service Nets

Public service nets support public events and provide training for:

- Operators
- Emergency groups
- Managers

Emergency nets are conducted in connection with the supported agency. They encourage:

- Procedures for coordination
- Proper traffic handling
- Regular meetings to practice skills
- Readiness for activation.



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Net Structure

Net Control Station (NCS)

- The station which controls the flow of information
- Other stations communicate only to Net Control

Check-in and check-out procedures

- Some nets have a roll call – some call for checkins.
- Say your callsign or call “Net Control”

Communications discipline:

- Learn and follow procedures.
- Speak only when directed, and only to whom directed
- Follow through with your commitments.
- Try to be on-time.



Supporting Emergency Operations

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

- Get involved and use what you have learned.
- Know where you fit in the overall emergency management team.



EMCOMM Organizations

There are two recognized groups which participate in EMMCOMM.

- Radio Amateur Civil Emergency Service (RACES).
 - Support for governmental agencies in civil emergencies.
 - National in scope.
- Amateur Radio Emergency Service (ARES).
 - Supports non-governmental agencies.
 - Local and regional in scope.



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 like a 'party line.'



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

Speak in plain language! Use standard phonetics.

Voice: “Mayday”, “Emergency”

Morse: “SOS” di di dit dah dah dah di di dit

Identify

Give location

State the situation

Describe assistance required

Provide other important information



Tactical Communications

Tactical Call Signs are made up for an event to facilitate communications.

- Location or function specific.
- Operators can change but tactical call doesn't.

FCC ID rules still apply.

- Operator must identify using amateur call sign but only at end of communications.



Emergency Equipment

“Go-kits” consist of equipment packed and ready to employ in an emergency of event.

- Portable ham radio equipment.
- Emergency power sources.
- Personal survival supplies and equipment.



EMCOMM Training

If you are going to participate in ECOMM, get training.
Actively participate in ECOMM activities.

- Nets
- Public service activities
- Attend community meetings and get involved in your community.

Take ECOMM courses.

- ARRL ECOMM courses
- NIMS and FEMA courses



Awards, Contests and DX

On-air activities provide an incentive to get on the radio.

- You learn about propagation as you search for specific stations on various bands.
- Activities encourage you to improve your operating skills and station capabilities.
- Activities provide the enjoyment and satisfaction of competition.



Awards

The ARRL has many awards programs. Non-members can earn them. Check ARRL.ORG. Some big ones:

- DXCC – DX Century Club
 - Contacting 100 different entities (countries)
- WAS – Worked All States
 - Contacting 50 states
- VUCC – VHF/UHF Century Club
 - Contacting 100 grid squares on VHF/UHF



DXing

DX – the CW abbreviation for distance – usually means a contact with a distant station. Contacting stations far away is a tradition since the first days of radio.

- On HF, DX usually means contacting stations in other countries.
- On VHF/UHF, DX can mean contacting stations outside your normal coverage area, i.e., another state or county beyond line of sight.



Contests

Contests are set up or sponsored by clubs and associations. The intent is to get hams on the air to make contacts. Contests are usually announced on the QST Contest Calendar and on QRZ.COM.

- ARRL Field Day
- ARRL Sweepstakes
- State QSO Parties
- VHF/UHF contests
- RTTY contests
- CQ World Wide DX Contest



Field Day

ARRL Field Day is an annual event on the last full weekend in June. It is open to individuals or clubs.

- Set up portable station and antenna (in the field, mobile, anywhere!) and make as many contacts as possible.
- Emergency communications training with a competitive spirit
- Get started with your local club or group – great way to get involved.



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.



Radio Direction Finding

Directional antennas and mapping techniques can be used to locate a source of interference or noise. This is good training for search and rescue

- “Fox hunting” competitions on FM offer a fun opportunity to learn how to do it.
- Directional antennas can be simple and portable. They can also use rotating devices and phasing. In some cases you can use your body to shield signals from one direction to get a general direction.



Satellites

OSCAR – Orbiting Satellites Carrying Amateur Radio – satellites built by Amateur consortiums and launched with NASA facilities. They act as repeaters for:

- FM
- Analog (SSB and CW)
- Digital

ISS – International Space Station.

Amateur Radio equipment on board operated by licensed crew members.



Satellite Terms

Uplink – Earth stations transmit to satellite

Downlink – Satellite transmits to stations on Earth

Beacon – signal from satellite with information about satellite operating conditions

Doppler– shift in frequency due to relative motion between satellite and Earth station

LEO – Low earth orbit



Satellite Terms

Spin fading – caused by rotation of satellite

Pacsat – packet radio satellite

Tracking software – gives beam heading and times when satellite is in view

Mode – bands satellite is using for uplink and downlink (e.g. Mode U/V = 70 cm uplink, 2 meters downlink)



Other Special Modes

Video

- Slow Scan TV (SSTV)
 - Sending snapshot pictures.
 - Sounds like FAX
- Amateur TV (ATV)
 - Like commercial TV
 - Wide Bandwidth



Other Special Modes

Radio Control (RC).

- Telecommand.
- Telemetry
- 50 MHz band.
- Up to 1 Watt



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