

# Technician License Course

## Chapter 6

### Communicating with other hams

#### Networks

#### Emergency Communications

#### Satellite Operating



**ARRL** *The national association for  
AMATEUR RADIO*

# Traffic Networks (Nets)

“**Traffic**” refers to formal messages that are delivered via ham radio

National Traffic System (NTS)

- Formal structure
- 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 |
|-------|------|------|------|------|----|------|------|
|-------|------|------|------|------|----|------|------|

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
- Direct communications only to Net Control.

## Check-in and check-out procedures

- Roll call
- Call for stations by callsign or area.
- Break in by saying your callsign.

## Communications discipline:

- Speak only when directed, and only to whom directed
- Follow through with your commitments.





# 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 organization.
- Amateur Radio Emergency Service (ARES).
  - Support for non-governmental agencies.
  - Local and regional organizations.



# 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.



# 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 use tactical callsign in communications.
- Operators must identify using amateur call sign
  - At end of communications.
  - Every ten minutes during lengthy 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 EMMCOMM, get training.  
Actively participate in EMMCOMM activities.

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

Take EMMCOMM courses.

- ARRL EMMCOMM courses
- NIMS and FEMA courses



# 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.

- On-board Amateur Radio stations operated by licensed crew members.



# Satellite Terms

**Space Station** – More than 50 KM above the earth.

**Uplink** – Earth stations transmit to satellite

**Downlink** – Satellite transmits to stations on Earth

**Beacon** – signal from satellite with information about satellite operating conditions

**Telemetry** – transmitted status of the satellite.

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

**LEO** – Low earth orbit



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# 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

**Keplerian Elements** – Inputs for tracking software.

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

**Blocking** – caused by strong received signals (too much power).

