

# Introduction to Emergency Communication Course

## Topic 24– Alternative Communication Methods

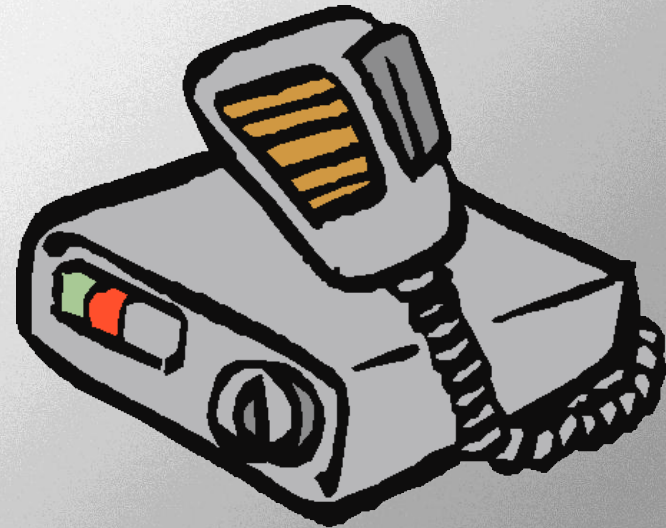


**ARRL** *The national association for  
AMATEUR RADIO*



# Objective

- The emcomm volunteer should know the pros and cons of using alternate communication systems. This unit discusses a variety of communication options that do not depend on Amateur Radio, and some circumstances where they might be used.



**ARRL** The national association for  
AMATEUR RADIO

# Overview

- Amateur Radio may not always be the only or best radio service for the job.
- For example, sometimes it is better to hand an official a radio he can use to stay in contact with the ARES<sup>®</sup> team on site, and not saddle him or her with a ham radio “shadow”.
- The radio services discussed here are commonly available at low cost and are in general use.
- Most of these radio services allow only voice communications.

# Legal Considerations

- Some radio services require a license and some do not.
- FCC rules give everyone special permission to use “any means necessary” to communicate in order to protect life and property – but only when no other normal means of communication is possible.
- Other services such as GMRS, require a license that is relatively easy to obtain, although not free.
- Obtain licenses well before any emergency and keep them current.



# Using Modified Ham Radios

- While it is easy to modify many VHF and UHF Amateur radios for operation in nearby public service and business bands, it is not legal to do so for regular “emergency” use.
- Radios used in those bands must be “Type Accepted” by the FCC and amateur radios are not.
- It is better to purchase the proper radio.



# Citizens' Band (CB)

- No licensing is required, and tactical or self-assigned identifiers are acceptable; **do NOT use your amateur call.**
- Operate in 11 meter band; 4 watts
- **Channels 9 and 19 often monitored for emergencies**
- Effective range between 2-8 miles



# Multi-Use Radio Service (MURS)

- For both personal and business operation; no license needed
- Maximum power – 2 watts
- Uses several VHF frequencies in 150-155 MHz range



# Family Radio Service (FRS)

- Short-range personal communications; no license needed
- Low cost and readily available
- 14 UHF channels and 38 different CTCSS tones
- Output power up to 500 mW (1/2 watt)
- REACT recommends FRS channel 1 for emergencies
- First 7 FRS channels are shared with the General Mobile Radio Service (GMRS)





# General Mobile Radio Service (GMRS)

- 15 UHF frequencies between 462.5625 and 462.7250 MHz.
- Eight are paired with matching repeater inputs 5 MHz higher. Power on these eight is limited to 50 watts.
- Seven are shared with FRS and operation there is limited to simplex at 5 watts.
- FM voice only – no digital modes or phone patch.
- **Individuals must get a license from the FCC for GMRS which covers family members.**
- 462.675 MHz recognized for emergencies



**ARRL** The national association for  
AMATEUR RADIO



# Public Safety Radio

- Police/fire might allow and train you for such use, or an individual officer may ask you to use the radio to call for help
- Keep transmissions short and to the point.
- Cease transmission if they tell you to.



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

# Cellular and PCS Phones

- In a widespread disaster situation, these phone systems can quickly become overloaded; texting may be possible.
- Since they depend on infrastructure, these systems can fail.
- Low speed fax or data can be sent over cellular.
- Secure communications.



# Marine Radio

- Allocated channels in the 160 MHz band.
- HF SSB radios operate on a variety of channels between 2 and 30 MHz.
- Operation of FM stations for vessels in US waters does not require a license but operation on HF does.
- Channel 16 is the distress channel.
- You can legally contact a vessel in distress if the call is unanswered by the Coast Guard.
- Most other land-based operation is illegal, except where authorized by a FCC coast station license.



# Aviation Radio

- AM radios operating in the 108-136 MHz band.
- FCC licenses are required for all stations.
- Emergency Locator Transmitters (ELTs) are automatic devices that transmit on 121.5 and 406 MHz.
- New land-based Personal Radio Beacons (PRB) transmit on 121.5 MHz also.



# Non-Radio Communications

- Telephone – good for security
- Fax – good for long lists
- Subject to disruption and outages
- Subject to being overloaded
- Couriers or “runners” are often the last resort



# Questions

1. Which can you NOT use to identify your transmissions on Citizens' Band radio?
  - a. Your Amateur call
  - b. Your handle.
  - c. A self-assigned identifier.
  - d. A tactical call sign.

2. Which is the best course of action for summoning help via CB?
  - a. Use channel 1, since the lowest frequency has the longest ground-wave signal.
  - b. Call at regular intervals on Channels 9 and 19 for a response.
  - c. Call only on channel 9, since it is designated for assistance and emergencies.
  - d. Say “Break-Break” or “MAYDAY” on any channel.





3. Which is NOT an advantage of using Family Radio Service (FRS) systems?
- a. They are readily available at low cost.
  - b. Operation of FRS radios is simple and requires little training.
  - c. There is no requirement for licensing to use FRS.
  - d. Low transmission power.

4. Who may currently license a GMRS system with the FCC?
  - a. A privately owned business, for routine communications.
  - b. An individual, for family and personal use.
  - c. A charitable institution, for benevolent purposes.
  - d. A local repeater club.

5. Which is NOT true of the MURS?
- a. A station license is required.
  - b. Power output is limited to 2 watts.
  - c. Radios operate in the VHF band
  - d. Data emission are permitted.

# Answers for Questions Topic 24

1. A
2. B
3. D
4. B
5. A