

# Introduction to Walkie-Talkies

<http://www.epa-arrrl.org/ares/neighborhood-radio-watch-concept/>



## Guide for Cub Scout Leaders

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## WILLISTOWN RADIO WATCH – OPERATING PLAN

### EMERGENCY CALLS

FRS channel 1 will be monitored on a volunteer basis for the duration of the event. If you have a life-and-death emergency and cannot reach 911 by telephone, here is what to do:

1. Turn your FRS radio to channel 1
2. Deactivate/turn off all “privacy codes” (PL tones)
3. Press the transmit button (“Push to Talk” or “PTT”) and speak in a clear, evenly paced voice, **“EMERGENCY EMERGENCY EMERGENCY. EMERGENCY EMERGENCY EMERGENCY. THIS IS (your real name). PLEASE RESPOND.”**
4. Release the PTT momentarily and listen five seconds or so for a response.
5. If no response is heard, press the PTT again and repeat Step 3 as necessary until you receive a reply or take alternate action.
6. Non-emergency traffic should be moved to FRS channel 8 or higher.

### RECOMMENDED CHANNEL PLAN

Channels 1-7 should be used for Emergency communications relays, as they are universally accessible by the more robust General Mobile Radio Service (GMRS). FRS channel 1 should be reserved for 'General' emergencies common to all areas, allowing emergency services, agencies or organizations to receive information and channel assignments for the area. Other neighborhood communication should be assigned FRS channels 8-14.

- Channel 1 – RESERVED FOR INTER-NEIGHBORHOOD EMERGENCY TRAFFIC
- Channel 2 – Emergency messages to be relayed to the neighborhood coordinator,
- Channel 8 – Intra/Inter Family Communications
- Channel 9 – Neighborhood light search and rescue efforts
- Channel 10 – Evacuation/Relief/Health/Welfare efforts
- Channel 5 – Secondary Emergency Message Channel (Relay 1)
- Channel 6 – Secondary Emergency Message Channel (Relay 2)

### RECOMMENDED EQUIPMENT AND SUPPLIES

NEANS recommends the Midland Company’s FRS/GMRS radio products to facilitate cross training and battery interchange. However, all FRS radios operate on channels 1-7 at minimum and that’s enough for basic communications. For an event that lasts more than 72 hours, here is what you should have on-hand to maintain reliable communication:

- Two or more walkie-talkies for your family, one to monitor the rest to use
- Alkaline batteries to match your radio. NiCad and NiMH batteries have their place, but they will not power your radios half as long as alkaline batteries and, without AC mains, there is no way to recharge them. Store your batteries in the freezer to extend their shelf life. Rotate them regularly.
- Plastic zip-lock bags to protect your radios from rain or standing water.
- AM/FM portable radio with spare batteries
- NOAA All Hazards/Weather Radio with spare batteries (sometimes built in to a standard AM/FM).
- Flashlight with spare batteries
- DC car adapter for all the above, which is also a way to recharge NiCad batteries if necessary.

# Familiarization Training for Radio Communication

## I. Radio Nets

Radio nets are organized to address specific purposes but generally fall into a few common categories.

- **Traffic nets**, which relay formal written communications (“radiograms”).
- **Resource nets** which control and direct deployed assets.
- **Tactical nets** which provide direct communication between deployed assets and their command.

There are many other net types depending on the needs of the sponsoring organization. Skywarn nets collect and report weather data for the National Weather Service. Weather and information nets serve travelers on land and sea and are convenient “watering holes” to make contacts and obtain assistance when in disress. Weekly nets are useful to confirm functional communication circuits exist, exercising station equipment and operators alike.

Nets may be formal or informal, directed or open.

- **Formal** nets generally hold to a specific schedule with recognized member stations who meet to accomplish a specific mission.
- **Informal** nets are often convened to pass the time in simple conversation, often called “rag chewing”. They may be held in-between scheduled sessions of a formal net and serve to “watch” the frequency to ensure it is clear for regular net operations.
- **Directed** nets are commanded by a net control station (NCS) that uses established protocols and procedures. Directed nets are capable of managing high volumes of traffic, numerous participants, and generally keep formal written records. They are also useful when conditions are poor or chaotic, to maintain a calming influence and ensure smooth and efficient operations.
- **Open** nets operate without a net control but still follow established procedures and protocols. These are often used during lulls in activity or when station-to-station communication would facilitate operations better than mediated communication. These are also useful for watch purposes.

Nets may operate under any combination of the above. Depending on needs, they may switch from format to format as required.

## II. Net Operations

Net operations are comprised of individual participating stations. Stations must be capable of communicating with the net control station and with at least some of the other net members. Equipment and operating modes must be compatible, which implies prior publication of the schedule, frequency, mode and mission/membership list.

There are several common functions within an operating radio net.

- **Net managers** are assigned to all formal nets and work to ensure its operations are coordinated and effective. To this end, they determine the specifics of time, place, participation and roles of member stations. Of primary importance is the recruitment and training of suitable net control and liaison stations.

- **Net control stations** are the day-to-day management officers of the net. They open and close the net, admit stations, direct traffic, and maintain formal records. Alternate net controls monitor for stations that cannot be heard directly and provide relay services for them. They also are the official substitutes should a scheduled station be unable to keep to schedule.
- **Liaison stations** carry traffic between nets. These may entail formal messages between higher and lower levels of a hierarchical traffic net or perhaps to collect and relay information between nets of any kind.
- **Member stations** typically expect to pass traffic either inbound or outbound, whether it is formal radiogram traffic or tactical, operational traffic based on the situation.

All stations should be able to operate in any role needed and should be prepared for such eventuality by training and practice.

### III. Net Participation

Participating stations have a responsibility to operate with good efficiency and skills to ensure the success of the net itself. Station equipment must be in good order and condition. Operating skills must be maintained in a state of proficiency.

There are a number of time-tested rules for net operation that member stations must learn and internalize:

- **Listen first and transmit only when invited or directed** by the NCS or when you have something specific to contribute to an open net. While it may seem counter-intuitive, good radio discipline is simple listening—the primary role for a net member. Radio spectrum is a scarce resource. Unnecessary or irrelevant transmissions reduce the available spectrum and make it harder for a net to function. It also wastes power which may be in short supply.
- **Speak at conversational rate in a well-supported speaking voice.** Shouting into the microphone will overmodulate your signal. It produces “splatter” that wastes precious RF energy as noise that detracts from intelligibility and may interfere with adjacent signals.
- **Messages should be paced.** Read in complete phrases to improve contextual understanding. Do not repeat or interject your own comments without a specific warrant.
- **Speak across the microphone** to avoid aspirant pops and sibilance. There should be a gap of an inch or two between mouth and microphone to facilitate this condition.
- **Use standard English** and avoid “10 codes” and jargon/slang.
- **Use the standard NATO phonetic alphabet** to spell difficult or ambiguous words. Do not ad lib which will confuse the recipient and reduce intelligibility.
- **Use formal prowords** to maintain net efficiency.
- **Take notes and maintain a formal written log.** This will avoid confusion and alteration of important messages and traffic and will also provide an “audit trail” to confirm delivery or answer subsequent questions and follow on messages.
- **Station equipment should be suitable for conditions.** Use a combination of antenna and power necessary to achieve reliable communications. If mobile or portable, seek higher or clear and unobstructed ground. Generally speaking, antenna improvements produce “the most bang for the buck” as they are effective both in receiving and transmitting.
- **Have a source of backup power** appropriate to your mission parameters. This could be as simple as a supply of alkaline batteries to fit your walkie-talkie.

#### IV. Operating Aids

##### Prowords

Voice	Morse Code	Situation
Go ahead	K	Used after calling CQ, or at the end of a transmission, to indicate any station is invited to transmit.
Over	AR	Used after a call to a specific station, before the contact has been established
	KN	Used at the end of any transmission when only the specific station contacted is invited to answer.
Stand by or Wait	AS	A temporary interruption of the contact.
Roger	R	Indicates a transmission has been received correctly and in full.
Clear	SK	End of contact. SK is sent before the final identification.
Out		Leaving the air or closing the station
	CL	Indicates that a station is going off the air, and will not listen or answer any further calls. CL is sent after the final identification.

##### NATO/ITU Phonetic Alphabet

Character	Code word	Pronunciation
A	Alfa	AL FAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HOH TELL
I	India	IN DEE AH
J	Juliett	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAH
M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO
U	Uniform	YOU NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO

Digit	Code word	Pronunciation
0	Zero	ZEE-RO
1	One	WUN
2	Two	TOO
3	Three	TREE
4	Four	FOW-ER
5	Five	FIFE
6	Six	SIX
7	Seven	SEV-EN
8	Ait Eight	AIT
9	Nine	NIN-ER
100	Hundred	HUN-DRED
1000	Thousand	TOU-SAND

### **BASIC RADIO ANATOMY**

Avoid turning your radios on, as the amount of noise is liable make the class very chaotic.

The type of communications device recommended for purchase by CERT volunteers interested in radio communications is \_\_\_\_\_.

This recommendation is *not a requirement*. The recommendation should be in accordance with the CERT Communications Plan.

The first thing you should do with a radio before using it is **READ THE MANUAL!**

Owners should practice using the radios regularly to be familiar with the two-way radio when it is needed.



## **BASIC RADIO ANATOMY (CONTINUED)**

The basic controls on the radio include:

- On/off switch
- Volume control
- PTT button (Push to talk)
  - You must press down the PTT button while you are speaking.
  - Remind participants that they must release the button to listen!
- Antenna: Hold it vertical for best reception
- Speaker
- Microphone



## **BASIC RADIO ANATOMY (CONTINUED)**

The advanced features of the radio include:

- Battery location
- Channel selector
- Channel monitor
- Headset input jack
- Privacy line selector
- Lock button
- Transmit call tone

Additional features on the radio include:

- Monitor button
- Ring tone selector
- Power settings selector

### **BATTERY LOCATION**

Find the location of the battery on the radio. Learn how to change the battery and how to recharge the battery. Find out whether battery substitution is possible.

A radio is practically unusable while it is charging; therefore you should always carry extra batteries when working with the radio. Avoid overcharging the radio, as this can damage the unit!

**SAFETY NOTE:** Never attempt to recharge alkaline batteries!

### **PRIVACY CODES**

Most radios are equipped with a privacy line selector. Despite what the name suggests, these “privacy codes” do not make your conversation private. All a privacy code does is block you from hearing other conversations on that channel.

Privacy codes are not standard between different brands of radio. Privacy codes are not recommended for CERT use.