Basic Radio Communications

Community Emergency Response Team

CERT

Department of Homeland Security
Emergency Preparedness and Response Directorate
FEMA

September 16, 2025
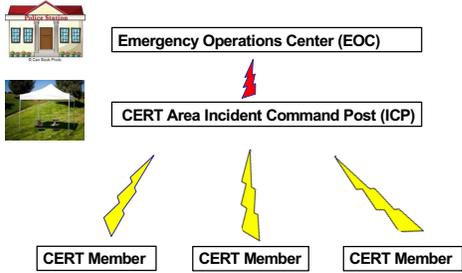
citizen corps

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Agenda

- Selecting and using FRS/GMRS Radios
- Communicating in the field environment
- Determining essential information to transmit
- Composing messages
- Performing a table-top exercise

Visual 1.2

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CERT Communication Flow

Police Station

Emergency Operations Center (EOC)

CERT Area Incident Command Post (ICP)

CERT Member   CERT Member   CERT Member

Visual 1.3

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Communicating During a Disaster

- **Individuals** and **teams** in the **field** will communicate with their **Incident Command Post (ICP)** via **FRS/GMRS** radios.

- Each **ICP** will communicate with the **Emergency Operations Center (EOC)**, located at the Pleasant Hill Police Department, via **ham** radio.

- In the absence of a ham radio, communications with the EOC will be in person.

Visual 1.4

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ABOUT FRS/GMRS RADIOS

- Very low power: 0.5 – 2 (or 5) watts ERP (effective radiated power)
- Very low cost: FRS: $70 - $85 per pair; GMRS: $30 - >$85 each
- Types of radio services:
  FRS: Family Radio Service - max ERP = 2 watts
  GMRS: General Mobile Radio Service - max ERP = 5 watts
- No license required for FRS; license required for GMRS
- Channels 1-7 max power: FRS = 2 watts; GMRS = 5 watts
- Channels 8-14 max power: FRS and GMRS = 0.5 watts
- Channels 15-22 max power: FRS = 2 watts; GMRS = 50 watts
- No external antennas allowed for FRS
- External antenna allowed (and used) for GMRS
- Typical 0.5 - 1 mile communication for FRS; longer range for GMRS, especially with external antenna

Visual 1.5

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Selecting FRS/GMRS Radios

- FRS / GMRS compatible with at least 22 channels

- Accepts AA alkaline batteries, not AAA

- Ignore "mileage" claims.
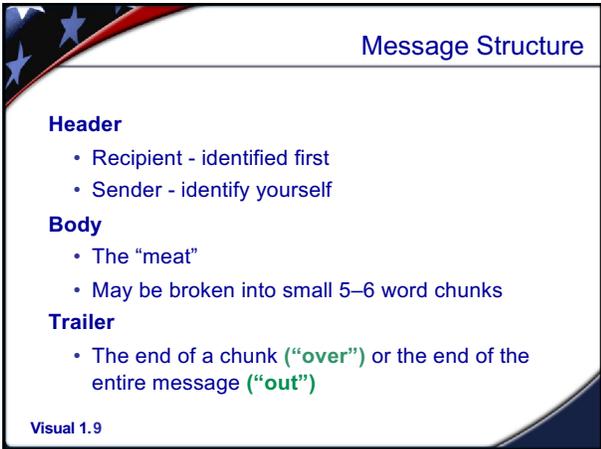
- GMRS is recommended

Visual 1.6

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Motorola Talkabout

On-Off/Volume Knob

Channel

Push to Talk Switch

Call Tone

Function Down Key

Menu Key

Antenna

Private Line Code

Ear Phone Jack

Monitor/Scan Key

Function Up Key

Speaker / Microphone

Visual 1.7

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Motorola Talkabout

AA Batteries Only

Visual 1.8

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Message Structure

Header
- Recipient - identified first
- Sender - identify yourself

Body
- The "meat"
- May be broken into small 5–6 word chunks

Trailer
- The end of a chunk **("over")** or the end of the entire message **("out")**

Visual 1.9

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Message Header Example

1. **This is a test.**

2. To the ICP at the PH CERT Area:
   - Before you have checked in/as you are arriving:

     "PH CERT NW ICP, this is <first name> …"
   - When you are in the field:

     "PH CERT NW ICP, this is NW Search and Rescue Team 1…"

3. To other CERT members in your area:

   "PH CERT NW area, this is <first name>; if you can hear me, please respond…"

Visual 1.10

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Message Body

When to send a message

- There is <u>danger</u> to **life** or property; specify the danger

- You <u>need something</u> (e.g., medical transport, fire department) from the ICP or EOC to address the danger

- You <u>need to warn first responders</u> of road closures that will impede their ability to respond (e.g., power lines across the road); specify the obstruction

- You are reporting status (e.g., check in every 30 minutes)

- Other specific requests

Visual 1.11

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Message Body: Preparing to Send

- Know your radio channel and tune to it
- Formulate your message ahead of time
  - <u>Write it down,</u> using a minimum of words (<= 25 words)
  - Use 5-6 word "chunks"
- The *PTT button*
  - Depress the *PTT button* to talk
  - You now have control of the channel
  - Take a deep breath before speaking

Visual 1.12

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Message Body: Sending

- Speak slowly and clearly
- Identify the recipient; identify yourself
- Give your location
  - Give street numbers as **single digits** (1-2-3)
  - **Spell** street names, if necessary (e.g., Kathryn, Kathleen; Carol, Karol, Carolyn; Allen, Alan; Jean, Jeanne; Boies); give the street suffix (e.g., Street, Lane, Drive, Court)
- Pause between message "chunks" using a **(pause)** or **("over")** as the trailer for this chunk

Visual 1.13

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Message Body: Ending

- Give control to the recipient and wait for a response
  - Release the *PTT button*
  - Wait for the recipient to repeat the message back to you
- Confirm or correct the message
  - **("Affirmative")** or **("Negative" + corrections)**
- End the message with **("out")** as the trailer for the entire message

Visual 1.14

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Calling Another Station (1)

1. Formulate your transmission. Keep it short and to the point (<= 25 words).
2. Listen to make sure the channel is clear.
3. Press *Push to Talk* button, take a breath, and then speak slowly and distinctly.
   - **State, "This is a test."**
   - NW Search Team One (in the field): Pleasant Hill Northwest ICP, this is Search Team One; **("over")**
   - Pleasant Hill NW ICP: Search Team One, this is Pleasant Hill Northwest ICP; go ahead; **("over")**

Visual 1.15

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Calling Another Station (2)

- **NW Search Team One:**
  Pleasant Hill Northwest ICP, this is Search Team One; **(pause)**;
  Location: intersection of Taylor Boulevard and Apollo Way; **(pause)**;
  A water main break is flooding the intersection. Need water company. **("over")**

- **Pleasant Hill NW ICP:**
  Search Team One, this is Pleasant Hill Northwest ICP; **("understand")** *repeat transmission to confirm*

- **NW Search team One:**
  Pleasant Hill Northwest ICP, this is Search Team One; affirmative; **("over") - or - ("out")**

- **Pleasant Hill NW ICP:**
  Search Team One, this is Pleasant Hill Northwest ICP; **("out")**

Visual 1.16

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CAUTION

THE GENERAL PUBLIC AND THE NEWS MEDIA CAN HEAR WHAT YOU ARE SAYING ON THESE FREQUENCIES.

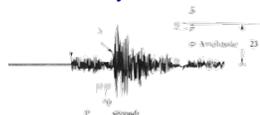THINK ABOUT **WHAT** YOU WANT TO SAY AND **HOW** TO SAY IT!

Visual 1.17

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Scenario: What Happened?

There has been a simulated earthquake of magnitude 6.9 on Monday September 16, 2025, at 7:23 AM along the Hayward Fault.

At approximately 7:52 AM, an aftershock of magnitude 6.5 subsequently triggered a magnitude 6.0 earthquake along the Concord-Green Valley fault.

Visual 1.18

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Scenario: Compose your message

- You have checked your house and everything is OK.
- You are now checking your neighborhood.
- At 381 Apollo Way, you discover a house fire.
  It appears all occupants have made it out safely.
  The occupants state that they tried to call 911 but couldn't get through.
  They said the fire started when a gas pipe broke.

Consider:

- Is there danger to life or property? Specify the danger.
- Do you need something to address the situation?
  Specify what you need.
- Do you need to warn first responders of an obstruction(s)? Specify the obstruction.

Visual 1.19

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PRACTICE

PRACTICE

PRACTICE

Visual 1.20

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Radio Etiquette (1)

- Speak slowly and clearly, avoiding long pauses.
  Know what you are going to say before transmitting.

- Limit your transmissions to no more than 10 seconds each.

- Hold the radio 2-3" from your mouth or use a headset for best clarity.

- Avoid interrupting transmissions already in progress, and always say "over" when you are done speaking.

- Repeat and acknowledge received messages.

Visual 1.21

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Radio Etiquette (2)

- Know who you are. Geographical identifiers are best ("Pleasant Hill CERT Northwest Search and Rescue (SAR) Team One").

- Use color codes for triage, (Red Tag, Yellow Tag). Do not use the word "dead" on the radio.

- Avoid use of sensitive information such as full names with addresses, birth dates, etc.

- Avoid arguments over the air. Stay calm and courteous if chaos occurs.

- Use plain English, no "10" or "11" codes.

Visual 1.22

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Pleasant Hill CERT Radio Channels

AREA	PRACTICE	EMERGENCY PRIMARY	EMERGENCY ALTERNATE
Northwest	8	2	5
Southwest	10	3	7
Northeast	12	4	2
Southeast	14	6	1

Ham Radio Frequency:: 147.495, Simplex

Visual 1.23

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NATO Phonetic Alphabet

- **A**lpha
- **B**ravo
- **C**harlie
- **D**elta
- **E**cho
- **F**oxtrot
- **G**olf
- **H**otel
- **I**ndia
- **J**uliet
- **K**ilo
- **L**ima
- **M**ike
- **N**ovember
- **O**scar
- **P**apa
- **Q**uebec
- **R**omeo
- **S**ierra
- **T**ango
- **U**niform
- **V**ictor
- **W**hiskey
- **X**-Ray
- **Y**ankee
- **Z**ulu

Visual 1.24

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How to Obtain a GMRS License

- **Register for an FRN (FCC Registration Number)** – required for license: apps.fcc.gov/cores/html/Register_New_FRN.htm

- **Apply for the GMRS License:**
  Once you have your FRN, log in to the ULS License Manager: Applying for a New License in the Universal Licensing System (ULS) | Federal Communications Commission (and follow the instructions)

- **Navigate to the application:**
  Select "Apply for a New License" and then choose "ZA - General Mobile Radio (GMRS)" from the dropdown menu (the last entry)

- **Complete the application:**
  Fill out the required information, including your contact details.

- **Certify and submit:**
  Review the application summary and, if correct, certify it with your name.

- **Pay the fee:** You'll be directed to the payment section to pay the $35 fee.

- **Receive your license:**
  Once the payment is processed, your license will be issued, and you'll receive a call sign.

Visual 1.25

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