CERT Emergency Communications

CERT Basic Training

Radio Communications

FEMA

citizen corps

Unit Objectives

- Understand the operating characteristics of FRS, GMRS and Ham Radios
- Learn to operate a radio effectively
- Use correct operational procedures
- Learn to create well formed messages

Your Safety First

- Check your surroundings
- Check in with your family
- Find your “charged” devices
- Which devices are working
- Listen to emergency communication channels
- Check in on your neighbors
- Go in teams - someone must know where you are going
- Do Not preform operations outside your scope of training
- Do Not self-deploy
- Good Samaritan laws will not cover deployed CERT members

Mobile Communications

C.O.W.

Cell On Wheels

C.O.L.T.

Cell On Light Truck

Working as a Team

Does Bonner County have C.O.Ws or C.O.L.Ts?
NOPE!

- Bonner County has 2 mobile command centers
- Bonner County also has many support groups:

  ARES, HAM Radio Clubs, CERT, CSG, Search and Rescue, 7B Cares and other community organizations that strengthen our community's ability to stand against adversities.
- Remember the chain of command and your place in the hierarchy.
- Ham radios have a boarder reach and should be used accordingly.
- Assignment - Who are the Ham operators in your area?

FRS Channels

Channel 3 project
Local community

- Top of the hour
- Every 3 hours
- For 3 minutes
- Channel 3

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CERT
COMMUNITY EMERGENCY RESPONSE TEAM

Types of Radios

Radio Options

Handhelds: 1-3 miles in most terrain;
Good ones can access repeaters.
Get one with NOAA weather channel.

FRS (UHF) – GOOD!

Inexpensive, easy to use!
No license required.

You can buy packs of several. Saves money and makes setup simple.

CB(HF)-OK!

5-15 miles in most terrain;
Need good mobile or base station antenna. Not a lot of them out there ay more.

More expensive. Easy to use.

GMRS(UHF) -BETTER!

Handheld and Mobile units: 1-5 miles in most terrain; can use repeaters;
W/ base station antenna 10-30 miles to a repeater. Height of antenna and quality of coaxial cable make a lot of difference.

More expensive. Easy to use!
GMRS License Required.

MURS (VHF) OK!

HAM RADIO (VHF/UHF)– BEST!

Can be Expensive:
License required.

- Handhelds: 5-15 miles.
- Mobile/ base 20-60 miles.
- All can use repeaters.

Base units need a good antenna mounted above the roof line and good coaxial cable.

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CERT COMMUNITY EMERGENCY RESPONSE TEAM

About FRS Radios – Family Radio Service

- No license required
- 22 FRS channels shared with GMRS
- Channels 1 to 22
- Channels 8 – 14 are ½ watt
- Range is typically 0.5 - 3 miles
- Fixed antenna
- Handheld only
- No Repeaters
- Low cost

About GMRS Radios – General Mobile Radio Service

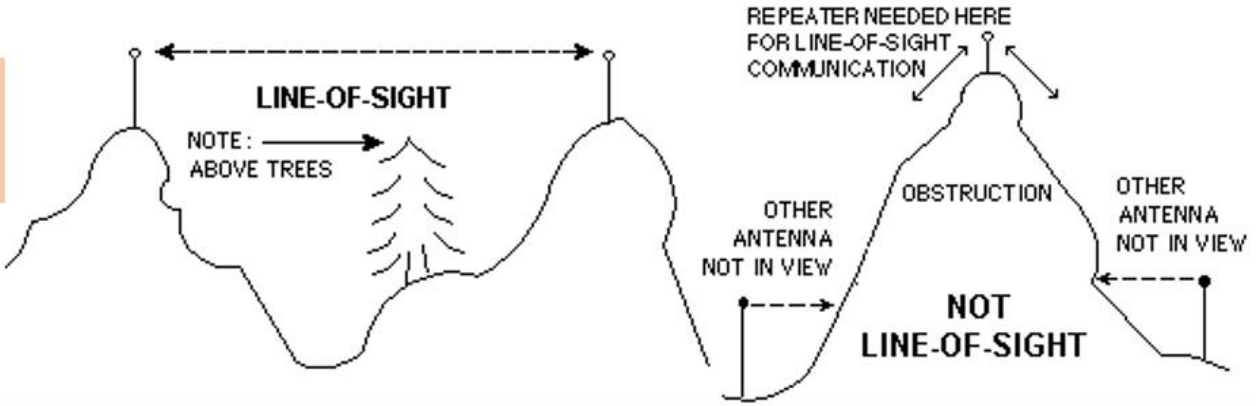
- FCC License required, no test ($35 for 10 years)
- License covers all family members
- 22 GMRS channels shared with FRS
- Channels 1 to 22
- Up to 5 watts (up to 50 watts for mobile units)
- Range is typically 2 - 5 miles
- Automatically change to .5 watts on channels 8 to 14
- Multiple antenna, mobile and base unit increases communication distance
- Can use repeaters
- Moderate cost

About Ham Radios

- FCC test and license required
- Multiple levels of usage and pricing
- Infinite channel (specify frequencies)
- Range is typically 2 - 15 miles
- Multiple antenna options, mobile and base unit increases communication distance
- Up to 1500 watt
- Can use repeaters
- Can become costly

Line of Sight

MOST RADIOS FOR LOCAL COMMUNICATION ARE VHF OR UHF

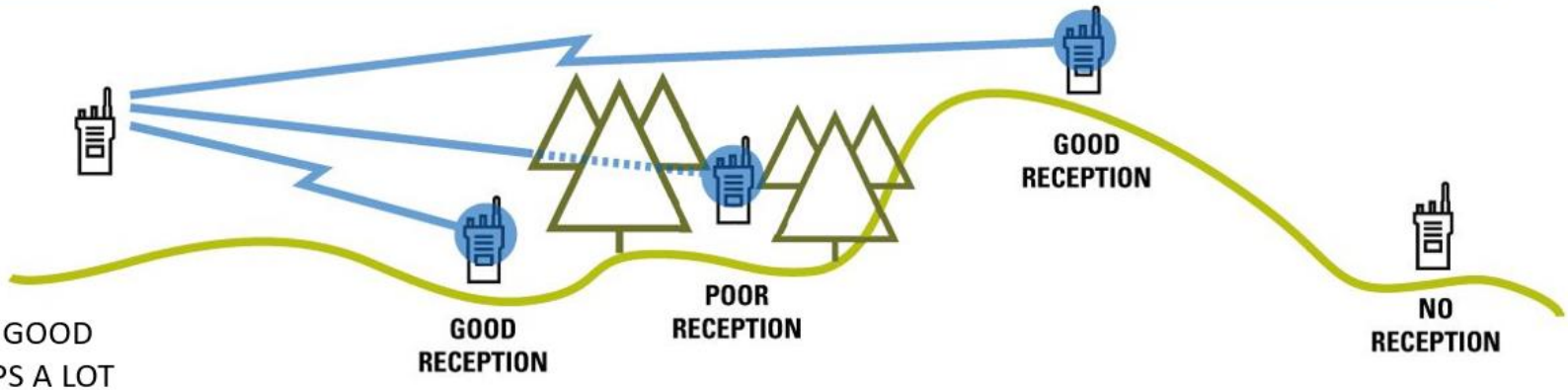


VHF IS MOSTLY LINE OF SIGHT, BUT CAN BEND A BIT TO GET OVER AND AROUND OBSTACLES.

UHF IS **REALLY LINE OF SIGHT**, WORKS WELL AROUND BUILDINGS. MORE EASILY DISRUPTED BY FOLIAGE THAN VHF.

GMRS IS UHF

POWER AND A GOOD ANTENNA HELPS A LOT



Misc. Data

Repeaters - A repeater is an electronic device that receives radio signals and retransmits them at a higher power, allowing communication over longer distances. They are often located in elevated positions to enhance their coverage area.

Did you know you receive on one frequency and transmit on another frequency when using a repeater?

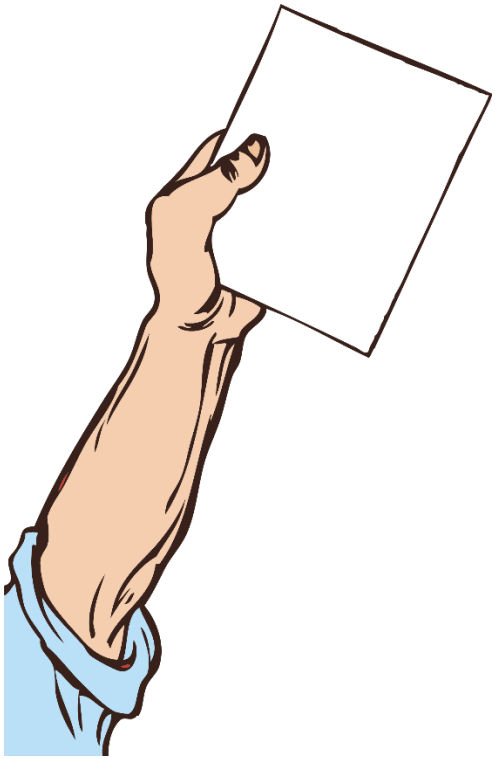
PL Tone - PL, or Private Line, refers to a Continuous Tone-Coded Squelch System (CTCSS) used in ham radio to reduce interference on shared frequencies. It allows a radio to only receive signals that include a specific sub-audible tone, effectively filtering out other transmissions.

Watts - A watt is a unit of power that measures the output of a radio transmitter. It indicates how much energy is being used to transmit a signal, with higher wattage generally allowing for greater transmission range.

Field Radios

	Family Radio Service (FRS)	General Mobile Radio Service (GMRS)	Dual Radio Service FRS/GMRS	Amateur Radio Service [HAM]
Channels	22	22	22	Infinite
License Required	No	Yes	Maybe is used as GMRS	Yes
Power (Maximum)	Up to 2 Watts	50 Watts	5 Watts Appropriate to service	1500 Watts
Range	Line of Sight	Line of Sight	Line of Sight	The Moon
Antenna	Fixed	Varies	Fixed-Depends on FRS and GMRS	Assorted

FRS & GRMS Channels



See Handout

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Learning to use your radio

- Read the instructions for **YOUR** radio.

Basic Radio Controls

Learning to use your radio

- Selecting channel
- Hold the microphone away from your face
- Speak across the radio w/ antenna vertical
- Speak in a slow normal voice – No raised voices
- Use clear pronunciation
- If adjacent noises obscure your speech shift your location.
- Lock the channel, so you don't accidently switch channel
- Earphones – Listen hands free, sometimes clearer
- Do NOT use VOX (voice operated transmission)

When Issues Arise

- You may be too far away from each other
- Obstructions
- Wrong channel selected
- Not everyone hears you. Too weak or poor location on either side.
- Just because you hear them doesn't mean they hear you.
- Channels may be crowded causing interference or noise (move to alternate channel if directed)
- Feedback from other channels (too close)
- Holding the antenna at a poor angle.

Portable Radio Kit

- Extra Batteries
- Extra Charger and adaptors
- Headset
- Antennas

Best Practice

Store kit in your car, or grab and go location, with extra batteries & instruction manual.
When radios are not in use, remove batteries as they may discharge accidentally.
Use your radios frequently for fun and practice, before an emergency.

Batteries, Alternate Power and Antennas

DON'T FORGET THE REALLY IMPORTANT "STUFF"

HIGH GAIN ANTENNA

MOUNTED ABOVE THE ROOF LINE

POWER!!

GOOD COAX

Q:What do I need?
A: It Depends……

LIGHTNING GROUND

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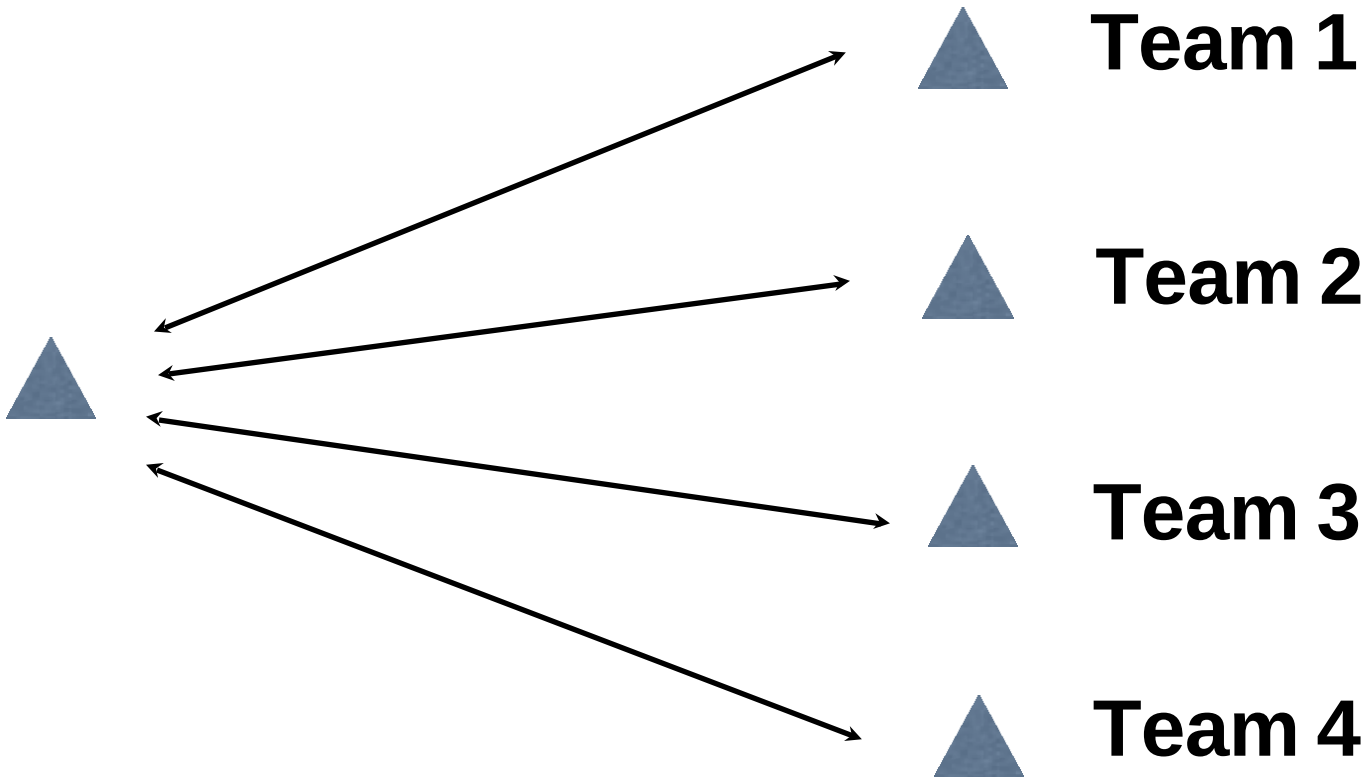
Reality: One to Many



Communications

- Command Post maintains communications with all teams during an incident.
- Communication flows upstream
- To be effective, we need to learn the efficiencies of Emergency Radio Communications!

Best Practices

- Speak slowly and clearly
- Hold radio 2” - 3” from mouth, speak across the mic
- Avoid interrupting
- Avoid pauses on the air
- Avoid "stepping" on each other
- Know what you are going to say BEFORE you start
- Stay calm & courteous if chaos occurs
- Always know the assignment of your channels
- Acknowledge the receipt of information
- Always say, OVER when you complete your transmission

What are Prowords

- The Military developed Prowords are Procedural Words in order to:

  - Convey maximum information with a minimum of confusion
  - Keep voice transmission as short and clear as possible

Some Common Prowords

- **Affirmative** – “Yes” (in answer to a specific question)
- **Break** – “I am not done speaking yet”
- **Break-Break** – “I have emergency traffic.”
- **Clear** – “I am finished with this communication.”
- **Copy** – “I acknowledge receipt of message.”
- **Negative** – “No”
- **Out** – see Clear
- **Over** – end of transmission, waiting for response
- **Roger** - "I have received and understand your transmission." It does not mean yes, affirmative, I agree, or I will comply.
- **Wilco** – “I will comply”

The Phonetic Alphabet

Letter	Phonetic	Letter	Phonetic
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

Best Practices

- Use the proper team names or call signs depending on your function and assignment.

  CERT may use team 1

  GMRS will use their call sign

  Ham must always use their call sign.

- There are legal obligations and requirements when using these devises. Know your obligations and regulations on your devise.
- Example:

  GMRS and Ham will speak their call sign
  Every 15 minutes state your call sign
  Last transmission state call sign

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ICS Log 214

- ICS 214 is the activity log to communicate details of a active event.
- Activation starts the timer for state and/or federal government reimbursement
- Reimbursement depends on the details of the forms.

"If it isn't written down, it did not happen."

ICS Activity Log 214

ACTIVITY LOG (ICS 214)

1. Incident Name:	2. Operational Period: Date From:	Date To:
	Time From:	Time To:

3. Name:	4. ICS Position:	5. Home Agency (and Unit):

6. Resources Assigned:

Name	ICS Position	Home Agency (and Unit)

7. Activity Log:

Date/Time	Notable Activities

Report Just the Facts!

- Identify yourself
- Give your location
- Keep the information to 20 words or less. Just the facts!
- Stick to CERT terms, Prowords and Phonetic Alphabet

62004 Hawthorne Way

Message Traffic

- This is what a clear message would look like

"ICP, this is CERT Team 4: at 62004 Hawthorne Way. Tree down on house. Heavy Damage, Over"

Just the facts

- Today: 7:50 PM. Your team discovers a fire in an apartment building. There are people screaming inside. One woman is begging you to help save her baby and her mother in apartment 8. The apartment is at 7452 Carson Street. The unmistakable smell of gas is in the air. Your team has discovered seven people with first degree burns.

Try this ….

- Today: 7:50 PM. Your team discovers a fire in an apartment building. There are people screaming inside. One woman is begging you to help save her baby and her mother in apartment 8. The apartment is at 7452 Carson Street. The unmistakable smell of gas is in the air. Your team has discovered seven people with first degree burns.

2005 Pine Street

USGS Photo

Example: Message Passing

- You - “ICP, Team 4”
- ICP - “Team 4 Go Ahead.”
- You - “Team 4. 2005 Pine Street Heavy Damage. Team 4 Over”
- ICP - “Copy 205 Pine Street, Heavy Damage. ICP Over”
- You - “ICP. Negative. I repeat. Two Zero Zero Five Pine Street, Heavy Damage. Team 4 Over”
- ICP - “Team 4 Copy 2005 Pine Street Heavy Damage ICP Over”
- You - “ICP. Affirmative. Team 4 Over”

Message Complete

Speak Slowly… No, Even Slower.

YOUR GOAL

Pass your message in one try

- Someone is writing these message down.
- Everything you say to the command post is being legibly written down.
- Records tell the story.

Best Practices

- Organize your thoughts & follow the protocol
- Pass accurate & timely information from the sender to the receiver
- Transmit only when necessary
- Limit your transmission time
- Avoid use of sensitive information over the air; personal names, addresses only when necessary

Common Mistakes

- Speaking without listening first.
- Message poorly formed, not brief
- Speaking too fast
- Bad microphone technique

Unit Summary

- You should know:
  - The difference between FRS, GMRS, & Ham Radio
  - Basic operation of your radio
  - Correct Operational Procedures
  - How to create and pass a message
  - Why Radio communication is important

Always follow the safety rules established for CERTs – personal safety comes first!

Assignments

- Who are the Ham radio operators in your area?
- Get your GMRS license
- Do you have a neighborhood block watch?
- Practise on your device
- Log in and listen to the nets

Links

Bonner County Cert
https://bonnercert.org/

Register for a GMRS license
https://wireless2.fcc.gov/UlsEntry/licManager/login.jsp

Bonner County ARES/RACES
https://bonnerares.org/

GMRS Map
https://mygmrs.com/map

North Idaho Repeater Map
https://k7jep.org/wp-content/uploads/simple-file-list/NID-2m70cmRepeaterMap-Freqs_2024-06-12_2pgs.pdf