

Community Emergency Response Team



The logo features the word 'CERT' in large, bold, grey letters. Below the letters is a silhouette of a city skyline with houses and a tall building. Underneath the skyline, the text 'LAMORINDA COMMUNITY EMERGENCY RESPONSE TEAM' is written in white on a black background.

CERT Emergency Communication

using a Baofeng UV-82HP

Released: 08 August 2025 Lamorinda CERT

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Community Emergency Response Team

- 📞 Personal safety is ALWAYS the number one priority
- 📞 Show up prepared
 - Wear appropriate clothing and footwear, have WATER
 - Wear PPE - your personal protective equipment ...mask, gloves, helmet, goggles, boots, etc.
 - Have at least one communications device: cell, radio, etc.
- 📞 Work as a team
- 📞 Size-up - maintain situational awareness
- 📞 Stand in a safe place when speaking on the radio (not the middle of the road)
- 📞 The CERT goal is to do the
Greatest Good for the Greatest Number
- 📞 *Hope for the best but plan for the worst!*

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Unit Objectives & Topics


- 👤 **Why** communications are important
- 👤 **How** do we communicate
 - Why two-way radios
 - How to use a hand-held radio
- 👤 **What** information is to be communicated
 - Actionable content
- 👤 **When** information should be communicated
 - Precedence, what can be delayed
 - How to compose a message

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Why Communications are Important

- 👤 Effective communications is the greatest logistical problem during an emergency event
- 👤 CERT volunteers can be part of the solution



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How Do We Communicate?

Landlines, Cell Phones and Internet

- 📞 We use these every day but we can't count on them after a disaster
- 📞 All of these technologies depend on wires or fiber optics and electricity
- 📞 After a disaster these may be out of order for days, weeks or even months!



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Why a 2-way Radio?

- 📞 If landline phones work, use them but expect them to be very busy
- 📞 Cell phones may work but will be very busy also
 - Text messages use less bandwidth and may work better than voice calls
 - Texts are "store and forward" so they may be delayed
- 📞 Use something that does not depend on wires, fiber cables or grid electricity
- 📞 Radios will work when all else is down

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Using a 2-way Radio

- 📞 Be polite and mindful of who might be listening
- 📞 Exchange questions and answers in brief, clear language, understandable to all who may be listening
 - NO police "10" codes, just plain language
 - NO CB jargon
 - NO slang or ethnic/gender slurs
- 📞 You are conveying important information to people you may neither know nor have worked with in the past
- 📞 Remember, radio transmissions are NOT secure and may be heard by many people!

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Make Friends with your Radio

Key skills: familiarize yourself with radio, load batteries, check settings, adjust volume

📞 Controls

- On/Off
- Volume Control
- Lock Settings
- PTT
- Antenna
- Microphone
- Speaker



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Selecting a Channel

- 📡 To select a channel:
 - Turn on radio
 - Note channel in window – active has arrow on left
 - Upper channel is “A” channel
 - Lower channel is “B” channel
 - Select other channel with the EXIT/AB button or the Push-to-Talk Switch
 - Use ▲ and ▼ keys to move up or down to desired channel or enter 3 digit channel number on keypad
- 📡 Lock your settings by pressing Lock Button for 2 seconds
- 📡 Your radio is now ready for communications.



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Communications

- 📡 **WHAT**
- 📡 **WHEN**
- 📡 **WHO**
- 📡 **HOW**

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Communications: **WHAT**

Effective communications promotes safety

- Calling for help when needed—emergencies and urgent requests
- Reporting safety-related incidents or concerns: Casualty Reports and Damage Assessments
- Search and Rescue Intra-team communications
- Status Reports – Team leaders keeping track of team members and their needs
- Mutual Aid Requests
- Health and Welfare messages

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Communications: **WHEN**

Determining message precedence is essential

- Effective communication *prioritizes* messages
- CERT Team Leader (Incident Commander) determines what to send to City EOC




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Communications: **WHEN**


 **Emergency, interrupt traffic:**
Immediate threat to life, property, or the environment, e.g., mass casualty, spreading fire, major infrastructure failure, large hazardous material release





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Communications: **WHEN**


 **Priority, queued:**
Likely to escalate rapidly if not dealt with promptly, e.g., major transportation artery blocked, trapped victims. Most traffic on an emergency net should be Priority.




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Communications: WHEN

 **Routine, when traffic permits:**


- Medical requirements (need supplies etc.)
- Damage assessments
- Staffing requirements
- Important announcements
- Water, power and communications utility status




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Communications: WHO

 **Who makes the decision?**

- In the field – individual CERT member or group lead
 - What
 - When – Emergency, Priority, or Routine
 - Who – All messages go to CERT ICP (Incident Command Post) or as designated by the local operations plan
- At the CERT ICP – CERT Team Leader or delegate
 - Who – messages go to Incident ICP, EOC or CERT group (Operations, Plans, or Logistics)
- At the EOC – City emergency manager or delegate



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Communications: HOW

📡 “Communicate like it’s 1950” - Butte County ESO

📡 Bay Area Earthquake Plan, OES 2016

- Neither landline nor cellular telephone systems will work for at least the first day post-event, probably longer, due to system overload and damage to cell phone towers
- Loss of communications capabilities will impact the response and needed communication with the public




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Communications: HOW

📡 USGS

- Assume cell network overloaded or damaged
- Only 7% of landlines and cellular calls go through in the first few hours







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Communications: **HOW**





 There are multiple communication options

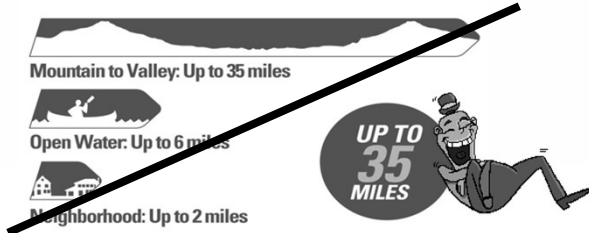
Mode	Technology	Plus	Minus
Simple	<ul style="list-style-type: none"> ▪ Runner 	<ul style="list-style-type: none"> ▪ Reliable ▪ Flexible ▪ No special training 	<ul style="list-style-type: none"> ▪ Limited distance ▪ Slow
Conventional	<ul style="list-style-type: none"> ▪ Landline ▪ Cell Phone ▪ Internet 	<ul style="list-style-type: none"> ▪ Familiar ▪ Texts may get through congested networks ▪ Potential high data rates 	<ul style="list-style-type: none"> ▪ Depends on wires or fiber optics and electricity ▪ Likely overwhelmed ▪ May be out for days, weeks, or even months
Emergency	<ul style="list-style-type: none"> ▪ Two-way Radio ▪ FRS ▪ GMRS ▪ MURS ▪ HAM 	<ul style="list-style-type: none"> ▪ HAM: Extremely reliable ▪ Infrastructure not required ▪ Long range with repeaters 	<ul style="list-style-type: none"> ▪ May require a license ▪ Complex radios ▪ Not secure



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Communications: **HOW**


-  FRS/GMRS range is limited (without repeater)
-  Realistic range is 1 to 2 miles
-  Channels 8-14: about 1 block
-  Ignore manufacturers' claims of range

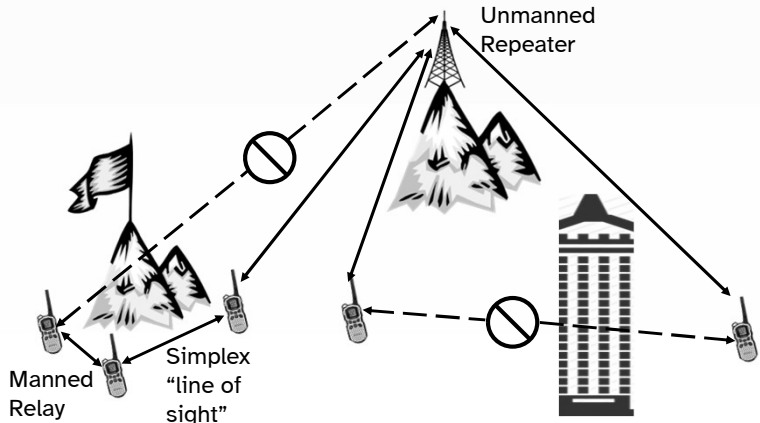



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Communications: **HOW**

 Repeaters and manned relays help overcome the range limitations






The diagram illustrates how repeaters and relays overcome range limitations. It shows a central 'Unmanned Repeater' tower. To its left is a 'Manned Relay' (a person with a radio). Solid lines with arrows show communication paths between the Manned Relay and the Unmanned Repeater, and between the Unmanned Repeater and several mobile phones. Dashed lines with a slash through them represent 'line of sight' requirements. One dashed line connects the Manned Relay to a mobile phone, and another connects the Unmanned Repeater to a mobile phone behind a building. A 'Simplex "line of sight"' label is placed near the Manned Relay. A city skyline is visible at the bottom of the slide.

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Radio Services

Unlicensed radios



-  **FRS: Family Radio Service**
 - Short-range, unlicensed, 2-way radio system
 - Low-cost walkie-talkies you can purchase in local stores
 - Channels 1-22 (Ch 8-14 low power, 0.5 watt)
-  **MURS: Multi Use Radio Service**
 - Short-range, unlicensed, 2-way radio system
 - Not common in our area so less interference than FRS
 - Low-cost walkie-talkies you can purchase on the internet
 - Channels 1-5
-  **CB: Citizen's Band Radio Service**
 - Still available but not common anymore
 - More expensive than FRS or GMRS
 - 40 Channels


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Radio Services

Licensed radios




-  **GMRS: General Mobile Radio Service**
 - Longer-range than FRS
 - Upgradable antennas, higher power than FRS or MURS
 - Allowed to use repeaters, but only a few models can
 - Most walkie-talkies are now GMRS/FRS combinations
 - FCC License required, no test, \$35 for 10 years, covers entire family
 - Can communicate with FRS radios on channels 1-7 & 15-22
-  **HAM: Amateur Radio**
 - Most flexible 2-way system. Can use repeaters and other antennas
 - Wide range of hand-held, mobile and base stations
 - Individual FCC license required with test, \$35 for 10 years.




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How to Speak on a Radio


-  Good communications practices are independent of device
-  Remember the radio **A B C**s
 - **A** ccuracy
 - **B** revity
 - **C** larity
-  Think about what you will say before getting on the air




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How to Speak on a Radio

 **A**ccuracy – What will you say?

- **Who?** Identify yourself, use tactical call signs
- **What?** What is happening?
- **Where?** Where is the incident occurring
- **When?** When is action required?
- **How?** How should the situation be handled?




 Write down the answers before you get on the air

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How to Speak on a Radio

 **B**revity – 25 words or less!

There is a damaged house on Walnut Blvd. Boy it's a mess. The windows are crooked, and the garage looks like it fell on a car. There are a bunch of neighbors outside blocking the street. They tell me a family of four lives there. I hear voices and a barking dog, but no one is coming to the door. Lights are on upstairs. I'm walking down the block now to see if anything else is damaged. Oh, and I smelled some gas.


- Priority
- Severely damaged house at 2333 Walnut Blvd.
- 1 to 4 victims inside, condition unknown
- Gas Leak - Not shut off
- Send rescue team

 Many CERT teams have developed special forms to aid in message composition

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How to Speak on a Radio

 **C**larity – How will you say it?

- Use phonetic alphabet for spelling out words when needed
 - CERT = Charlie Echo Romeo Tango
 - For numbers say “one niner eight fower” not “nineteen eighty-four”
- Speak slowly, clearly and calmly
- Break messages into 5-word groups with a pause – someone is trying to write it down!
- Recipient repeats back messages: **A**ccuracy is more important than speed

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Phonetic Alphabet

A Alpha	J Juliet	S Sierra
B Bravo	K Kilo	T Tango
C Charlie	L Lima	U Uniform
D Delta	M Mike	V Victor
E Echo	N November	W Whiskey
F Foxtrot	O Oscar	X X-ray
G Golf	P Papa	Y Yankee
H Hotel	Q Quebec	Z Zulu
I India	R Romeo	
FIGURES		
	3 TREE	7 SEV en
0 ZE ro	4 FOW er	8 AIT
1 WUN	5 FIFE	9 NIN er
2 TOO	6 SIX	. DECIMAL

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How to Speak on a Radio

 **C**larity – Acceptable Jargon, Pro-Words


- To make communications more clearly understood, use “Pro-Words” that are universally understood by radio communicators:
 - **GO AHEAD:** Invites a response
 - **OVER:** Finished talking
 - **CLEAR:** Finished talking, no response needed, will continue to monitor
 - **OUT:** Finished talking and leaving the net

EMERGENCY: Immediate threat to life, property or the environment. You must STOP TALKING immediately and yield the frequency to the EMERGENCY traffic.

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Forms

 Message forms help ensure the **ABCs**

GENERAL MESSAGE (ICS 213)

1. Incident Name (Optional)		
2. To (Name and Position)		
3. From (Name and Position)		
4. Subject	5. Date	6. Time
7. Message		
8. Approved by: Name _____ Signature _____ Position/Title _____		
9. Reply		
10. Received by: Name _____ Position/Title _____ Signature _____		
ICS 213		

FIELD TEAM MESSAGE FORM (ICS 213 - for engine)


Item 1: Message from (optional)	
Item 2: Message precedence (EMERGENCY or Urgent or Routine)	
Item 3: Message sender (tactical call sign)	
Item 4: Sender location	
Item 5: Victim(s) location	Item 6: Send On/Post vehicle(s) for
Item 7: Details	Item 8: Neighbors will transport to CP
Item 9: Victims left of the site	Item 10: Action taken
Item 11: Details	Item 12: Incident system
Item 13: Location	Item 14: Action
Item 15: Count of damaged property	Item 16: Counts of damaged property
Item 17: Location(s)	Item 18: Action taken
Item 19: Details	Item 20: Wheel load
Item 21: Location	Item 22: Details
Item 23: Counts of train members	Item 24: Details
Item 25: Planned direction of travel	
Item 26: MESSAGE Number	

LOCAL EXAMPLE

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Privacy







 **Communicating: Privacy & HIPAA Concerns**

- Some information must not be passed over an open communications channel :
 - PII – Personal Identifiable Information including names, birthdates, social security numbers, phone numbers, etc.
 - “Identity to be reasonably inferred by either direct or indirect means”
 - Individually identifiable health information including the individual’s past, present, or future physical or mental health or condition

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When You Venture Out in the World

-  Your team leader will tell you which channel
-  Test the radio *before* you venture out; talk to your team
-  “Lock” the settings; bring spare batteries
-  Hold the antenna vertically
-  To talk: hold radio **VERY** close to your mouth (1 - 2 inches),
 - then press the Push-to-Talk “PTT” button,
 - slight pause (2 count), then talk
-  **SPEAK SLOWLY..... AND CLEARLY**
-  To listen: let go of the “PTT” button

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Transmit Message

- 📻 **Skill: Efficient and effective transmission.**
Transmit a message with Tactical Call sign and using proper protocol
- 📻 Get accustomed to listening, AND to writing ("scribing")
- 📻 Instructor assigns Tactical Call signs to each group member, SAR 1, MEDICAL 2, etc.
- 📻 Instructor (TEAM LEADER) initiates communication with Student, using a tactical call, and exchanges message or question and answer

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COMMS Briefing

- 📻 A "Just-In-Time" briefing before deployment is sound practice. This includes 'friendly' reminders.
- 📻 Safety first
- 📻 Listen before talking
- 📻 Push to talk, slight pause, talk, then release
- 📻 **ABCs** – **A**ccuracy, **B**revity, **C**larity
- 📻 Test radios; Hold antenna vertically
- 📻 Agree on 'lost contact protocol'
 - Alternate channel
 - Change location to last successful communication
 - Return to base

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Sample Dominoes Exchange

- 📻 “Team 3-B, this is Team 3-A, Over”
 - “Team 3-A this is Team 3-B, Over”
- 📻 “Place 9x0 vertically at bottom center, 0 at bottom, Over”
 - “9x0 vertically at bottom center, 0 at bottom, Over”
- 📻 “Place 9x9 horizontally above 9x0, Over”
 - “Placing 9x9 horizontally above 9x0”
 - “Team 3-B, WZZZ999, Clear”
- 📻 Note, message was repeated back

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Interactive Dominoes Exercise


To practice with radios, each team has 4 players, A-D.
One team member (A) goes outside with the illustration and, tile by tile, describes the position to the team inside.
Inside team member (B), the radio operator, records the instructions and
Passes it to the tile manager (C) who then finds the correct tile and
Passes the tile to the player (D) who places it in the position as described.
At the end of the practice, the (A) outside member brings in the illustration and compares to the layout as placed. A point is awarded for each tile correctly placed.
The winner is the team with the most points.
You have 10 minutes for this exercise.

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Radio Call Signs

- 📡 HAM call signs are always required and are in the form KX6ABC
- 📡 GMRS call signs are required above 2W and are in the form WZZZ999
- 📡 The FCC assigned call sign must be transmitted:
 - at the end of each communication block
 - and at least every 10 minutes during a communication
- 📡 This is in addition to the tactical call sign
 - Example: "Green Valley Team A, WZZZ999"




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Nets

- 📡 There are regular radio nets in most areas
- 📡 Participate to practice your radio skills
- 📡 Meet people in your area who will be there following a disaster
- 📡 Set up a regularly scheduled FRS / GMRS net in your neighborhood
- 📡 Check your local CERT website for day and time of established nets




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Net Control Operator

- 📻 Radio “traffic cop”
- 📻 Coordinates to ensure orderly radio traffic
- 📻 Duties:
 - Acknowledges your turn to speak
 - Directs you when to stand by
 - Prioritizes calls based on the nature of the message
 - May direct you to a different channel



Visual LMO_COMMS.38 Lamorinda CERT 52

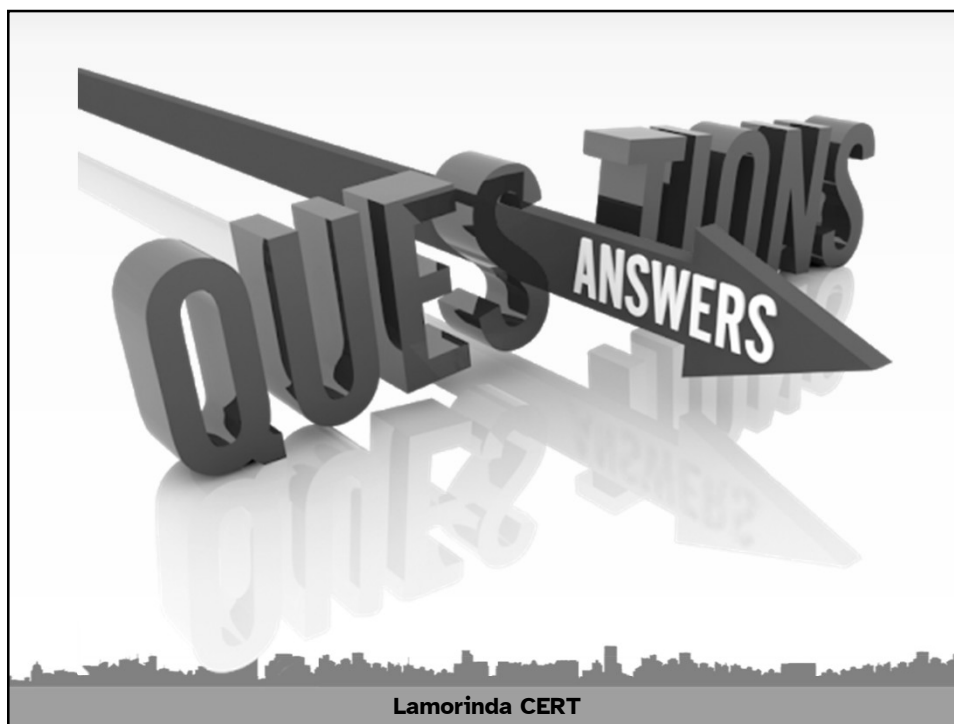
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CAUTIONS


- 📻 The general public and the media can hear what you are saying on radios
- 📻 During drills, make sure to announce that it is an exercise at least every ten minutes
**“All Stations, this is an EXERCISE,
This is ONLY an Exercise”**
- 📻 If you have a REAL emergency during an exercise, state
“NO PLAY” or “REAL WORLD”
- 📻 Think about WHAT you want to say and HOW to say it!

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Takeaways	
 Effective communications:	
➤ Is the greatest logistical problem during any emergency	
➤ Promotes safety	
➤ Prioritizes messages	
➤ Gets the message to the correct destination	
➤ Uses clear, unambiguous, language	

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Takeaways

- 📻 Radio **ABCs**
 - **A** ccuracy
 - **B** revity
 - **C** larity
- 📻 Think about priorities and what you will say before getting on the air
- 📻 Listen before talking
- 📻 25 words or fewer
- 📻 Remember, radio transmissions are NOT secure and may be heard by many people!