Emergency Communications

Community Emergency Response Team
Module Learning Objectives

- Describe the importance of communications in emergency response
- Describe the various roles of CERT in communications during an activation
- Describe how to use a communications plan
Module Learning Objectives (cont’d)

- Identify communication modes used in emergency response
- Describe how to properly communicate using communications devices
- Use tactical call signs and pro-words to make and acknowledge a call
Introduction

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

- Communications in disasters
  - Hurricane Katrina
  - September 11th
  - Mineral, VA, earthquake
  - Local examples
Overview

- Role of CERT emergency communications during an activation
- Communications plans
- Communication modes
- Basic radio anatomy
- Communications operations
- Practical exercises
Role of CERT Emergency Communications

● Intra-team communications
  ▪ Allows volunteers to quickly and effectively communicate with each other
  ▪ Essential for functions such as light search and rescue and when dealing with large crowds
  ▪ Other examples?
Role of CERT Emergency Communications (cont’d)

- Communicating up to the next level
  - Tiers of communication
  - CERT volunteers are “eyes and ears”
Role of CERT Emergency Communications (cont’d)

● Effective communications promotes safety
  ▪ Calling for help when needed
  ▪ Reporting safety-related incidents or concerns
  ▪ Accountability – Team leader keeping track of team members
Communications Plan

- What is a communications plan?
  - Logistical emergency plan
  - Who communicates to whom
  - How information flows
Communications Plan (cont’d)

- Jurisdiction plan
  - How different emergency response groups interact
  - Role of CERT in jurisdiction plan
Communications Plan (cont’d)

● Jurisdiction plan
  ▪ Insert local specifics here
  ▪ Insert local specifics here
  ▪ Insert local specifics here
CERT Communications Plan

- How the CERTs are activated and volunteers are contacted
- How CERT members communicate with each other
- How CERT communicates to other emergency responders
- Fits into jurisdiction plan
Communications Plan (cont’d)

- **ICS 205**

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<th>INCIDENT RADIO COMMUNICATIONS PLAN</th>
<th>1. INCIDENT NAME</th>
<th>2. DATE/TIME PREPARED</th>
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5. PREPARED BY (COMMUNICATIONS UNIT)
Communications Plan (cont’d)
Communications Plan (cont’d)

Team A
- Leader

Team B
- Leader

Other Agencies

A1

A2

A3

B1

B2

B3

Command

Team A Leader

Team B Leader
Communications Modes

- Methods or technologies used in communications
- Advantages and disadvantages
- Runners, phones, radios, and computers
Communication Modes (cont’d)

- Runners
- Landline telephone
- Cell phone
- Two-way radio
- Computer communications
- Satellite phone
Runners

● Advantages
  ▪ Reliability
  ▪ Flexibility
  ▪ Familiar with environment
  ▪ Availability
  ▪ No special training
Runners (cont’d)

● Limitations
  ▪ Distance and time
  ▪ Requires written information for accuracy
  ▪ Availability
    ❖ Deplete your team
  ▪ Requires familiarity with the area
Landlines

● Advantages
  ▪ Familiarity
  ▪ Commonplace
  ▪ Enhanced 9-1-1
  ▪ Data transfer
Landlines (cont’d)

- Limitations
  - Not mobile
  - System overloads easily
  - Network can sustain physical damage
  - Power failure may/may not affect
    - Corded phones vs. cordless phones
    - Digital phones
    - Voice Over Internet Protocol (VOIP)
Cellular Phones

- Advantages
  - Familiarity
  - Mobility
  - Commonplace
  - Text messaging
    - Requires less bandwidth
      - may get through when voice will not
  - Camera phones

Image from: https://www.linkedin.com/pulse/20140625151115-13006814-4th-amendment-protects-cell-phones
Cellular Phones (cont’d)

- Limitations
  - Towers may fail due to power outage or damage
  - System overloads easily
  - Requires knowledge of phone numbers
  - May be dependent on landlines
Satellite Phones

● Advantages
  ▪ Always on
  ▪ Global operation

● Disadvantages
  ▪ Expensive
  ▪ Rare
  ▪ Requires visibility to sky, or building with compatible antenna

Image from: http://www.bluecosmo.com/satellite-phones
Computer Communications

- Advantages
  - May work when other systems are down
  - Provides electronic record
  - Versatile network connections
  - Relatively secure
  - Large amounts of information
  - Formatted/preformatted information
  - Thumb drives and discs do not require Internet
  - Information redistribution
● Limitations

- Equipment may not be mobile
- May require Internet connectivity
- Requires specific hardware
- Expensive
- Requires power source
Two-way Radio Communications

- What is it?
- Organizations
  - Federal Communications Commission (FCC)
  - Amateur Radio Relay League (ARRL)
  - Amateur Radio Emergency Service (ARES)
  - Radio Amateur Civil Emergency Service (RACES)
Two-way Radios

- How they work
  - Frequencies
  - Channels
  - Range
    - Antenna, power level, atmospheric conditions
    - Repeater vs. simplex
Two-way Radios (cont’d)

- **Family Radio Service (FRS)**
  - **Advantages**
    - Inexpensive
    - Widely used
    - No license required
    - Range up to 1 mile (varies with terrain)
    - 14 channels
    - Shared communication with GMRS radios
    - Best used for intra-team communications
Two-way Radios (cont’d)

● FRS

  ▪ Limitations
    ❖ Hard to find (most are hybrids)
    ❖ Handheld only
    ❖ Cannot alter radio (no antennas) = Limited range
Two-way Radios (cont’d)

- General Mobile Radio Service (GMRS)
  - Advantages
    - Inexpensive
    - Range of 2-5 miles (varies with terrain)
    - Best used for intra-team communications
    - Base station or mobile
    - Boost signal with external antennas or repeaters
Two-way Radios (cont’d)

● GMRS
  ▪ Limitations
    ❖ Requires a license (one per family)
      ▪ Intended for family use
      ▪ Some business licenses are grandfathered
    ❖ Limited availability (hybrids)
Two-way Radios (cont’d)

- FRS/GMRS Hybrid
  - Channels 1-7: Shared between FRS and GMRS (no license required when operating at lower power settings)
  - Channels 8-14: FRS-only channels; lower power
  - Channels 15-22: GMRS-only; higher power
    - Requires a license
FRS/GMRS Hybrids

- Advantages and limitations are the same as FRS radios and GMRS radios
- Widely available
- Handheld only
- Non-licensed users cannot operate on GMRS channels
Multiple-Use Radio Service (MURS)

- Advantages
  - Handhelds or base units available
  - 3-4 mile range for handhelds
  - Increase range with repeaters and external antennas
  - Transmit voice or data
  - No license required
Two-way Radios (cont’d)

- MURS
  - Limitations
    - Limited to 5 channels
    - Limited availability
    - More expensive than FRS/GMRS radios

Two-way Radios (cont’d)

● Citizen Band (CB)
  ▪ Advantages
    ❖ No license required
    ❖ 40 channels
  ▪ Disadvantages
    ❖ Casual conversation
    ❖ Not reliable
    ❖ Not recommended for CERT use
Two-way Radios (cont’d)

● Public Safety Bands
  ▪ Advantages
    ❖ Direct communication to emergency first responders, if authorized
    ❖ Extremely reliable
    ❖ Range up to 20 miles with simplex, 50 miles with Repeaters
    ❖ Handheld, mobile, or base units
Two-way Radios (cont’d)

- Public Safety Bands
  - Limitations
    - Requires authorization of jurisdiction
    - Expensive
    - Must be used with jurisdictional protocol
    - Licensed to municipality or government entity
Two-way Radios (cont’d)

● Amateur Radio (a.k.a. ham radio)
  ▪ Advantages
    ❖ Various data types (voice, text, data, photos, documents, e-mail, television)
    ❖ Range in excess of 100 miles with repeaters
    ❖ Operate using simplex or repeaters
    ❖ Good availability
    ❖ Moderately priced
    ❖ Handheld, mobile, and base stations available
Amateur Radio

- Advantages (cont.)
  - Reliability
  - Interoperability
  - More simultaneous conversations possible
  - Connect to computer
  - Connect to global positioning system (GPS) and automated position reporting system (APRS)
Two-way Radios (cont’d)

● Amateur Radio
   ▪ Limitations
     ❖ Requires license
     ❖ No business use
     ❖ Operators cannot be paid
     ❖ Complex radios
     ❖ Complex protocols

Image from: http://www.icomamerica.com/images/products/large/91A_91AD_1.jpg
Basic Radio Anatomy

- Volume & On/Off Switch
- Antenna
- Microphone
- Speaker
- Push-to-Talk Button (PTT)
Basic Radio Anatomy (cont’d)

- Battery Location
- Headset Input Jack
- Channel Monitor
- Scan Button
- Privacy Line (PL) Selector & Lock Settings
- Transmit Call Tone
- Channel Selector
Basic Radio Anatomy (cont’d)

● Battery Location
  ▪ Changing and charging batteries
  ▪ Radio unusable when charging
  ▪ Battery substitution
  ▪ Carry extra batteries
  ▪ Don’t overcharge

● SAFETY NOTE: Alkaline batteries are NOT rechargeable
Basic Radio Anatomy (cont’d)

- Privacy Line Selector
  - Privacy codes
  - Not really “private”
  - Not standard from model to model
  - Blocks who you can hear, not who can hear you
Net Operations

- Net Control Operator
  - Radio “traffic cop”
  - Coordinates radio traffic
  - Duties:
    - Direct you to call
    - Direct you to stand by
    - Prioritize calls based on nature of message
    - Direct you to a different channel
Tactical Call Signs

- Assigned by Net Control Operator
- Based on function and location
- Names are not needed
- Tactical call signs do not change for duration of assignment
Tactical Call Signs (cont’d)

● Making a call
● Acknowledging a call
● Transmitting a message
● Acknowledging receipt of message
● Terminating a call
● Amateur radio call signs
Radio Use

- Speak across the microphone
- “Echo principle”
- Keep antenna vertical
- Improving reception
  - Elevation
  - Moving around
  - Rotation
Radio Use (cont’d)

- Headsets with microphones
  - Hands-free use
- Keep radios on

Pro-Words

- “All before”
- “All after”
- “I spell”
- “Affirmative”
- “Negative”
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Practical Exercise – Role-playing

• Scenario: Injured Animal Encounter
  ▪ CERT: Willow Park
  ▪ Command: CERT Command
  ▪ CERT Leader: Ask for status
  ▪ Team 1: Nothing of note
  ▪ Team 2: Bridge damage
  ▪ Team 3: Nothing of note
  ▪ Team 4: Injured dog
Module Summary

- Communications is a key component of emergency response
- CERTs assist emergency response agencies by communicating through ICS
- Communication plans define how to communicate during emergency response
- Each communication mode has advantages and limitations
- Achieve effective communication by using radio operation, tactical call signs, pro-words, phonetic alphabet, and basic protocols
Emergency Communications

Thank you!
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Southwest CERT Command

NOTE: You are calling EOC. You will initiate the call.

- EOC, this is Southwest CERT Command, over.
- EOC, this is SW CERT Command. Send 22 stretchers to corner of 12th Street shelter near CVS, over.
- EOC, this is SW CERT Command, out.
EOC

NOTE: You are responding to a call from Southwest CERT Command. They will initiate the call.

- Southwest CERT Command, this is EOC, over.
- SW CERT Command, this is EOC, 22 stretchers at 12th Street shelter, over.
Small Scenario Role-playing Card

- Player 1: CERT Command
- Player 2: Southeast Team Leader

Southeast Team Leader has located an individual in need of medical transportation, and needs assistance (a wheelchair)
Small Scenario Role-playing Card

● Player 1: Info Team Leader
● Player 2: Info Team Member 1

● Info Team 1 is alerting citizens in the area of an evacuation notice. One family in the area lacks adequate transportation.
Small Scenario Role-playing Card

- Player 1: CERT Command
- Player 2: CERT Group Leader

CERT Command has been contacted by police, who are requesting that a CERT Group be dispatched to aid with crowd control at the corner of 5th Street and Oak Street.
Small Scenario Role-playing Card

- Player 1: CERT Search and Rescue 1
- Player 2: CERT Search and Rescue 2

- CERT Search and Rescue 1 is trying to help transport a citizen on a stretcher and needs assistance.
Small Scenario Role-playing Card

- Player 1: CERT Operations
- Player 2: CERT Fire Suppression Group Leader

CERT Operations has been alerted that CERT Fire Group should be redeployed to Light Search and Rescue on Grant Avenue.
Small Scenario Role-playing Card

- Player 1: CERT Community Center
- Player 2: CERT Logistics Coordinator

- CERT Community Center has seen an influx of citizens suffering from dehydration. They are running low on water at the community center.
Small Scenario Role-playing Card

- Player 1: CERT Sandbag # 1
- Player 2: CERT Command

- Floodwaters are rising, and the CERT Sandbag # 1 needs more bodies to help carry sandbags.
Small Scenario Role-playing Card

- Player 1: CERT Fire Suppression Group Leader
- Player 2: CERT Fire Suppression Team 2

- CERT Group Leader has been given directions from local office of emergency management to manually turn off power of homes on the block.
Small Scenario Role-playing Card

- Player 1: CERT Fire Suppression Team 1
- Player 2: CERT Fire Suppression Group Leader

CERT Fire Suppression Team 1, equipped with fire extinguishers, has found several small fires burning near homes on a residential street.
Small Scenario Role-playing Card

- Player 1: CERT Search and Rescue A
- Player 2: CERT Command

CERT Search and Rescue A is controlling bleeding on a survivor injured by a falling tree limb during a storm. Additional medical treatment and transportation may be required.