



DELAWARE HEALTH AND SOCIAL SERVICES  
Division of Public Health  
Public Health Preparedness Section

# 800 MHz Radio Training



**Portables**



**Base Station**



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# **Advantage of 800 MHz Radio System**

## **Definitions and Concepts**

### **Radio Etiquette**

### **Plain Language**

# Advantages of 800 MHz Radios

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- **Allows DPH to communicate with staff, other state agencies, and hospitals**
- **Can create zones by putting select talk groups together**





# Definitions and Concepts

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- ***Talk Group***—New term for channel
  - May need to change talk group to talk with other partners
- ***Zone***—Contains up to 16 talk groups (channels) usually with a common theme, e.g. Public Health, Fire Service, EMS, National Guard
  - May need to change talk group to talk with other partners
- ***Site***—Location of a radio tower
  - The closer you are to a tower the better your radio reception and transmissions should be





# Definitions and Concepts

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- ***Encryption***—Electronic method of scrambling a radio signal for privacy





# Scanning

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- **Why**
  - Scanning allows you to listen to more than one talk group at a time.
- **Who**
  - During an emergency, the Logistics Section will designate who can scan.
  - For example, the EMS Group in the Operations Section may be allowed to scan to get an idea of patient load in hospitals and the types of emergencies (trouble breathing, chest pains, stomach problems, etc.) being taken to the hospitals.
- **Why not Everyone**
  - The problem with scanning is you can miss a message.
  - The Logistics Section assigns you a talk group during an emergency.
  - You need to stay on this talk group unless you are told to change to talk to other partners.





# Talking on a Radio

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- **Think before you speak**
  - Compose your message before you speak
  - Makes for shorter and quicker transmissions
- **Talk slowly**
  - Words can become garbled when speaking fast
  - May be asked to repeat message if it is not understood
  - May tie up a talk group (channel) longer than necessary if message is not understood





# Talking on a Radio

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- **Enunciate your words**
  - Not enunciating words can cause confusion
  - Letters like "P" and "B;" "C" and "S" may sound the same when transmitted on a radio
  - Spell words to clarify, if necessary
  - Repeat numbers over 9 as single digit numbers, e.g., 152 would be repeated as one, five, two
- **Always sound professional**
  - You never know who is listening







# Talking on a Radio

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- **Use radio designations**
  - A radio designation typically assigned by a person's position
  - If person is relieved, you could call the wrong individual





# Talking on a Radio

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- **More about radio designations**
  - A radio designation may be assigned for daily (normal) use, e.g., DPH 5, Preparedness 20, etc.
  - During an emergency, a radio designation is typically assigned based a person's position not his/her normal use, e.g., Preparedness 20 may become EMS Group Supervisor, PHPS Base may become SHOC Base, etc.
- **Do not say, "Preparedness 20 to Preparedness 21, Tim." Person should know his/her radio designation.**





# Talking on a Radio

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- **No slang**
  - Slang terms are not consistent throughout the country
  - Using slang can cause confusion when giving a message



# Plain Radio Language Responding

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- Use plain language to avoid confusion
- Examples:
  - *Responding*—Going to an assigned location or emergency scene
  - *En Route*—Going to a scene or location
  - *On Location*—At assigned location
  - *Prepare to Copy*—Prepare to copy a message or assignment
  - *Received*—Acknowledgement that a message has been received





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# Removing and Installing the Battery





# Battery Installation

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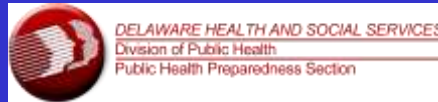


- Turn radio upside down
- At a slight angle, push top of battery into top of radio
- Push bottom of the battery down until it clicks in place





# Battery Removal



## Operating Your XTS 3000 Portable Radio

radio  
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- Pull battery out





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# IMPRES Adaptive Charger System





# IMPRES Adaptive Charger System

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- **A fully automated battery care system**
- **Pocket accommodates either a radio with battery attached or battery alone**
- **Charger can drain and recharge the battery at the same time**
- **Charger can determine the life left in the battery**





# Parts of a Charger

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1. Indicator Light
2. Pocket



2

1



# Charging the Battery

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- **Battery charges best at room temperature**
- **Prior to charging the battery attached to a radio, turn the radio off**





# Initialization

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- **Data contained in the IMPRES battery must be fully initialized by the charger *the first time the battery is charged***
- **Process is indicated by the *Steady Yellow* light on the charger**





# Initialization (Cont.)

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- **Process is automatic, including:**
  - **Initial reconditioning of the battery**
  - **Automatically begins recharging upon completion of reconditioning**
  - **Time to initialize the battery takes approximately 12 hours to complete**
    - **Do not remove the battery from the charger until the *Steady Green* light is on**





# Charging Procedure

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- Plug the charger end of the power supply cord (1) into the back of the charger (2)



# Charging Procedure (Cont.)

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- **Insert IMPRES battery, or a radio with battery attached (Note: Remember to turn off radio) into the charger's pocket by:**
  - **Aligning the groove on each side of the battery with the corresponding raised rail on each side of the charger pocket**



# Charging Procedure (Cont.)

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- Pressing the battery toward the rear of the pocket
- Sliding battery into charger pocket ensuring complete contact between the charger and battery contacts
- To remove a radio or IMPRES battery use two hands to remove a radio or battery from the charger pocket
  - One hand to hold and support the charger
  - One hand to remove the battery or radio







# Charging Indicators

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- **Battery properly seated into the pocket when the charger indicator illuminates**
  - **Indicates charger recognized the presence of battery**
- **Next slide defines the meaning of each indicator light**





# ***Charging Indicators (Cont.)***

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- ***Single Green Blink***
  - **Charger successfully powered up**
- ***Steady Red***
  - **Battery in rapid charge mode**
- ***Blinking Green***
  - **Battery completed rapid charge (>90% available capacity)**
  - **Battery in Top-Off charge (trickle charge)**





# ***Charging Indicators (Cont.)***

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- ***Steady Green***
  - **Battery fully charged**
- ***Blinking Yellow***
  - **Battery recognized by charger and waiting to charge**
    - **Either the battery voltage is too low or the battery temperature is too low or too high**
    - **When condition corrected, the batter automatically begins charging**





# Charging Indicators (Cont.)

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- ***Blinking Red***
  - Battery cannot be charged
  - Battery not making proper contact in the pocket
- ***Steady Yellow***
  - Battery in recondition or initialization mode
  - Length of time the battery remains in the charger depends upon the state of charge remaining in the battery





# ***Charging Indicators (Cont.)***

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- ***Steady Yellow (Cont.)***
  - Fully charged batteries require more time to recondition (8 to 12 hours) than fully discharged batteries
- ***Blinking Red/Green***
  - Battery fully charged
  - Battery continues to be usable, but may be nearing the end of its rated service life





# ***Charging Indicators Note***

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- ***Blinking Red/Green***
  - **Contact the Public Health Preparedness Logistics Section at 302-857-5900 to request a battery replacement**





# Troubleshooting

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- ***No charger LED indication***
  - **What it means**
    - **Charger contact is not being made.**
    - **No power to the charger**
  - **What to do**
    - **Check that the radio with battery, or the battery alone, is inserted correctly**
    - **Make sure that the power cord is securely plugged in, and that there is power to the outlet**
    - **Replace fuse (in back of charger) Contact PHPS 302-857-5900 for assistance**





# Troubleshooting (Cont.)

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- ***Blinking Red Indication***
  - **What it means**
    - **Charger contact is not being made.**
    - **Battery is not chargeable**
  - **What to do**
    - **Remove and reseal the radio with battery or battery into the charger pocket.**
    - **Remove power from the battery charger and, using a clean *dry* cloth, clean the gold metal charging contacts of both the battery and the charger**
    - **Replace battery**







# Troubleshooting (Cont.)

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- ***Blinking Yellow Indication***
  - **What it means**
    - **Battery is waiting to charge. The battery temperature may be below 5°C (41°F) or above 40°C (104°F) or the battery voltage may be lower than the predetermined threshold level for rapid charging.**
  - **What to do**
    - **When the condition is corrected, the battery will begin charging automatically.**





# **Troubleshooting (Cont.)**

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- **Experience problem you cannot solve or need radio and/or battery replacement, contact the Public Health Preparedness, Logistics Branch at 302-857-5900**





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# Common Portable Radio Controls



# Common Portable Radio Controls Top

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- **1—On/Off/Volume Knob**
- **2—Talk Group Selector**
- **3—A-B-C Switch**
- **4—Encryption On/OFF Switch**
- **5—Orange Button**





# Common Portable Radio Controls

## Left Side Key and Buttons

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- 1—Not used
- 2—Turns light on and off on display screen
- 3—Used to find a tower with the best signal (Hold until radio is done searching)
- 4—Push-to-Talk button



# Transmitting on Portable Radio



4



5

- 4—Press the large black push-to-talk (PTT) switch
- Wait for a "beep" sound
  - Steady tone is a busy signal
  - Hold the PTT switch until you hear a "beep," then speak
- Talk about 2" to 3" away from the grated (#5) area just above the display screen
- Release PTT when done talking





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# XTS 3000 Portable Radio Screen



# XTS 3000 Portable Radio Screen and Soft Keys



- **A**—Indicates zone and talk group (channel)
  - First two letters indicate zone
  - Group of letters after zone indicates talk group (channel)
- **Key 1**—Used to change zones
- **Key 2**—Turns the “MUTE” on and off (Note: The microphone is not muted)
- **Key 3**—Used to lock or unlock onto a specific radio tower
- **Keys 4 & 6**—Used to move to different zones
- **Key 5**—Used to lock into a zone







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# Operating Your XTS 5000 Portable Radio



# XTS 5000 Portable Radio Keys

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1

2

3

- **1**—Used to lock into a zone
- **2**—Navigation wheel used to move between zones
- **3**—Not used



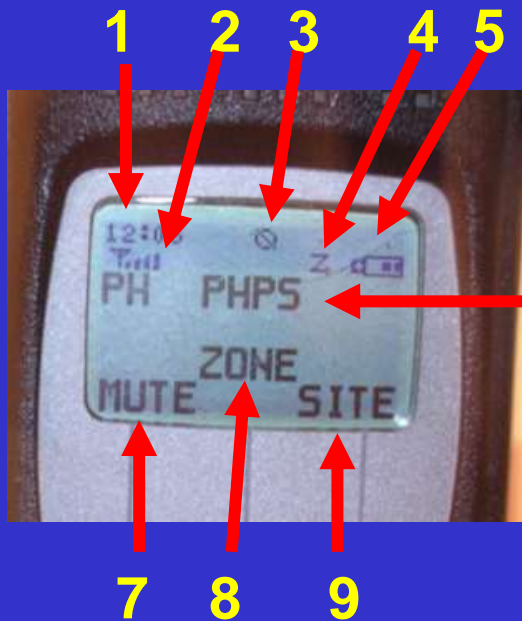
# XTS 5000 Portable Radio Screen



- 1—Time of day
- 2—Signal strength (not reliable)
- 3—Encryption on/off (circle with a line through it indicates encryption on)
- 4—Indicates radio scanning
- 5—Indicates battery strength



# XTS 5000 Portable Radio Screen



- **6**—Indicates zone and talk group (channel)
  - First two letters indicate zone
  - Group of letters after zone indicates talk group (channel)
- **7**—Turns “MUTE” on and off (Note: Does not silence the microphone)
- **8**—Allows the zone to be changed
- **9**—Used to lock or unlock onto a specific radio tower





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# Using a Speaker/Mic





# Types of Speaker/Mics

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**Standard**



**Command**





# Standard Speaker/Mic

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- **No**
  - Volume Control
  - Talk Group (channel) Selector
  - Orange Button
- **1—Microphone**
- **2—Push-to-Talk (PTT) Switch**
- **3—Speaker**





# Command Speaker/Mic

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- 1—Volume Down
- 2—Volume Up
- 3—Talk Group (channel) Selector (not interconnected with talk group (channel) selector on radio)
- 4—Orange Button (Not Used)
- 5—Speaker
- 6—Microphone







# Command Speaker/Mic

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- **1—Push-to-Talk button**
- **2—Turns light on and off on display screen**
- **3—Used to find a tower with the best signal (Hold until radio is done searching)**



# Transmitting Using Speaker/Mic

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- Press the black (PTT) on the side of the microphone.
- Wait for a "beep" sound
  - Steady tone is a busy tone
  - Hold the PTT button until you hear "beep," then talk
- Talk about 2" to 3" away from the front of the speaker/mic
- Release PTT when done talking



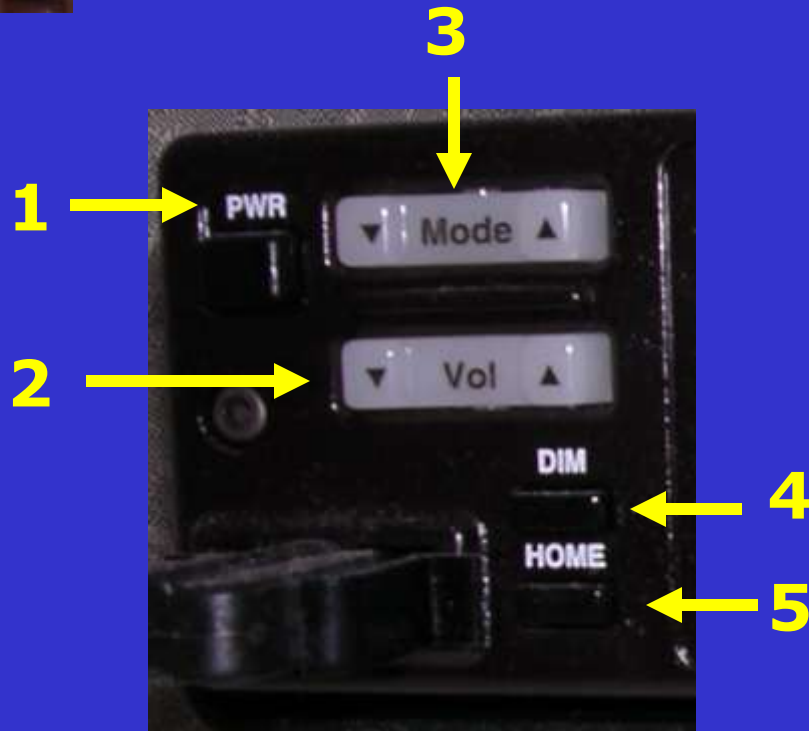


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# Operating Your Base Station/Mobile Radio



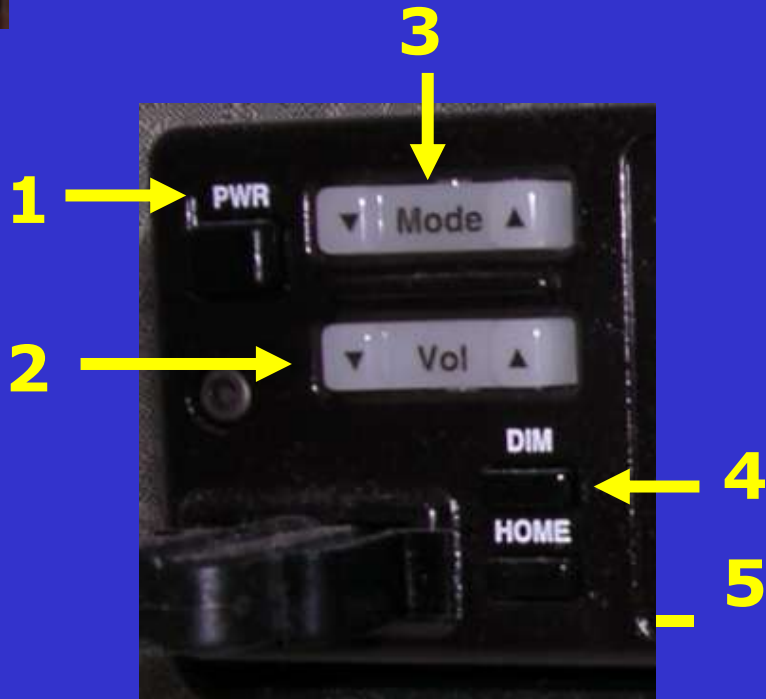
# Base Station/Mobile Radio Controls



- 1—Push the button with “PWR” over it to turn radio on
- 2—Set the “VOL” by pressing the up arrow to increase or down arrow to decrease
- 3—Use the “MODE” button to change the talk group by pressing the up or down arrow



# Base Station/Mobile Radio Controls



- 4—Push “DIM” to dim the display on the screen
- 5—Push “HOME” to lock a zone in place



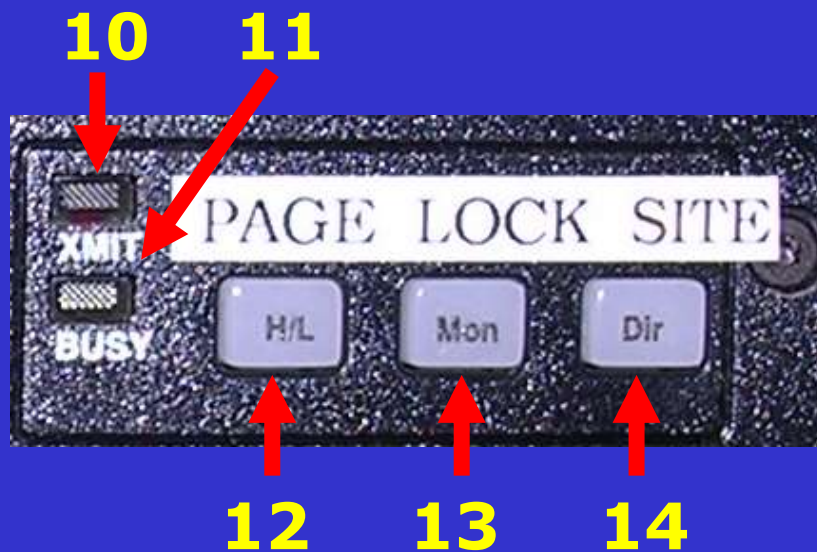
# Base Station/Mobile Radio Controls



- 6—Sets radio to assigned zone by pressing the “ZN DN” or the “ZN UP” button
- 7—Sets the radio to “SCAN”
- 8—Turns encryption on and off (“On” indicated by arrow under button)
- 9—Selects talk group (channel) when setting up scan



# Base Station Radio Controls



- 10—Light indicting radio is transmitting
- 11—Light indicates a busy signal
- 12—Horn/Lights—Not Used
- 13—Squelch Control—Not Used
- 14—Site Lock—Not Used



# Transmitting on a Base Station/Mobile Radio

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- Face the front of the microphone
- Press and hold the key with lightning bolt (red circle)
- Wait for a "beep" sound
  - Steady tone is a busy signal
  - Hold the lightning bolt key until you hear a "beep" then speak
- Talk towards the top of the microphone about 2" to 4" away (blue circle)
- Release the lightning bolt key when done talking







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# Using the Belt Clip

# Connecting Belt Clip to Battery—Battery Orientation

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**Front**



**Back**





# Connecting Belt Clip to Battery

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1

- 1—Belt clip battery lock

2

- 2—Belt clip tabs

- 3—Battery slots



3





# Connecting Belt Clip to Battery

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1

2 (Tab A)



3 (Slot A)

- 1—Slide Tab A into Slot A
- 2—Push belt clip down until you hear the belt clip lock onto the battery





# Removing Belt Clip From Battery

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1

2 (Tab A)

- 1—Push metal tab at the top of the battery
- 2—Pull the belt clip up until it completely slides out of Slot A



3 (Slot A)





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# Troubleshooting the Radio

# Portable Radio Out of Range Signal

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- **Check the site is not “Locked”**
  - “Unlock” site if it is
  - Keep radio in “Unlocked” status unless directed otherwise during an event
- **Radio may be out of range of Delaware’s 800 MHz system**
  - May occur between 20 and 25 miles from Delaware borders



# Portable Radio

## Low Hum Signal

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- **No talk group (channel) programmed in that part of a zone**





# Portable Radio “Chirp” Signals

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- **Battery low**
  - Recharge or replace battery





**Thank You for Attending**

