Community Communication Basics

Baofeng BTech Radio

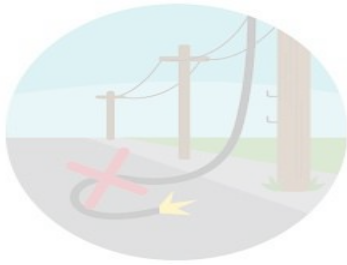## Midland GX1000 Radio

South Tillamook County Emergency Volunteer Corps (STCEVC)

Building a climate of Resiliency in South Tillamook County, Oregon

Gary Dunn, KI7BDW

October, 2022

There's an emergency!

What happened?

Will I be impacted?

How can I find out?

How do you receive information about emergencies?

And then!!

No Phone!
No Texting!
No Electricity!
No Internet!

When other methods fail, You can use your GMRS

RADIO for communications

Why have a GMRS Emergency Radio?

- Call for help when other communications fail

- Stay in touch with neighbors during an emergency

- Health and welfare checks

- Provide situation reports and request resources

- Monitor the Counties Emergency Services

- FM Radio Broadcast and Weather Monitoring

- Communications with Utilities during an emergency

Other Options

- Satellite

  - Satellite Telephone

  - Internet using Starlink (or Hughes Net)

- Become a Ham Operator

  - HF/UHF/VHF/EMail

Class Objectives

- BTech & Midland Radio Basics

- Starting to Talk

- STCEVC Communications Approach

- STCEVC NETS

- Next Steps

Radio Basics

Turning On - BTECH

On/Off/Volume Knob

You should hear "Channel Mode" and see channel names or frequencies

If you hear "Frequency Mode" and see numbers, turn your radio off, then Press and Hold the menu button while turning the radio on to get back to "Channel Mode"

6

Turning On - Midland

Rotate the POWER/VOLUME knob clockwise to turn the radio on and increase the volume level. Rotate the control counter-clockwise to reduce the volume level and to turn the radio off.

During Power On, the radio will beep 2 times with different tones, the LCD will display all icons for 1 second and the LCD display will indicate the last channel selected.
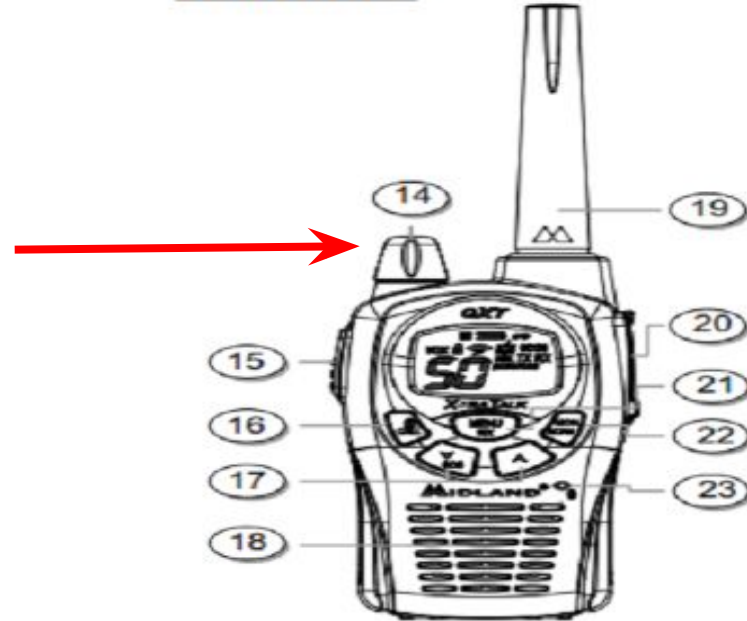
Navigating the Display - BTECH

Two line display

Each line shows:
- **channel name or frequency**
- **Arrow shows active channel**

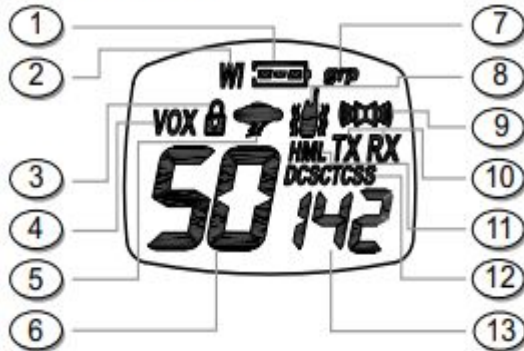**Exit/AB button switches between lines on display**
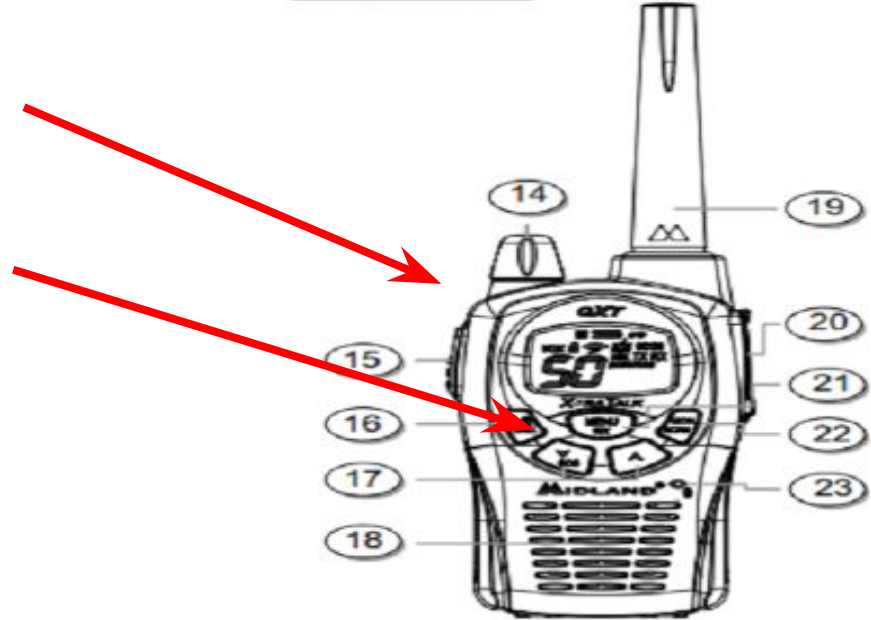
Up/Down Channel button

Navigating the Display - Midland

Current GMRS Channel Number

Up and Down Channel Button

LCD DISPLAY

Entering and Changing Channels - BTECH

Channel Numbers are 3 DIGITS!

1. **Select Row:**
   - **Exit/AB** button selects top or bottom line
   - **Arrowhead shows selected row**

2. **Enter New Channel:**
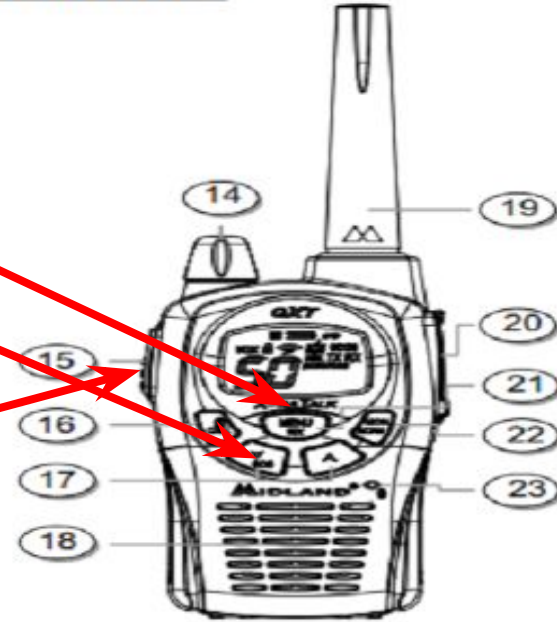   - **Enter 3 digit channel number using keypad**

Entering and Changing Channels - Midland

CONTROLS

Press the MENU button once, and then the UP/DOWN buttons to select one of the 50 channels.

To confirm the selection, press the PTT button or press the MENU button again to move to the next feature setting.

Push To Talk (PTT) - BTECH

Dual PTT Rocker Switch:

Large black buttons on left side of radio

Press PTT upwards to transmit on 'Top' Channel A

Press PTT downwards to transmit on 'Bottom' Channel B

When finished talking,
RELEASE the PTT button and LISTEN

Push to Talk (PTT) - Midland

CONTROLS

PTT Button – Press and hold to transmit voice communication

When finished talking, RELEASE the PTT button and LISTEN

Transmit/Receive Indicators - BTECH

Indicator light above A/B button

- **OFF:** **OK to press PTT and talk, channel is open**

- **RED:** **You are pressing PTT, no one else should talk**

- **GREEN: Someone else has pressed PTT, you do not talk**

Transmit/Receive Indicators - Midland

LCD DISPLAY
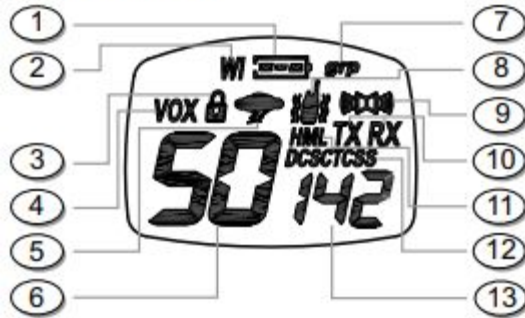
TRANSMIT (TX) / RECEIVE (RX) ICON – Indicates radio is transmitting (TX) a signal, or radio is receiving (RX) a transmission.

- **B̲oth OFF:** OK to press PTT and talk, channel is open

- **TX:** You are pressing PTT, no one else should talk

- **RX:** Someone else has pressed PTT, you <u>do not</u> talk

Transmitting and Receiving Calls

1. For maximum clarity, hold the radio 2 to 3 inches from your mouth.
2. Press and hold the PTT button and speak in a normal voice into the microphone.
3. To receive a call, release the PTT button.

ABOUT RANGE
GMRS radios are designed to give you maximum range under optimum conditions. You can expect to transmit and receive a call from under 1/4 mile, to upwards of 10 to 12 miles.

Power Levels - BTECH

Keypad Lock/ High-Low Transmit Power

The BTECH GMRS-V2 features a keypad lock that locks out all keys except for the three side keys.

Note: To enable or disable the keypad lock, press and hold the key for about two seconds.

This key will also select High or Low TX power on a quick press.

Note: BTECH Radios are programmed for High Power

Power Levels - Midland

LCD DISPLAY
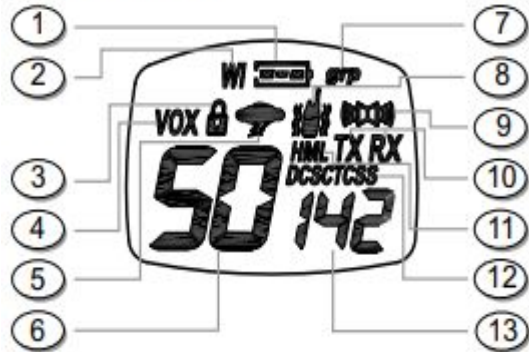
- Your radio has 3 power level settings.
- To select the power level on channels 1~7, 15~33 and 38~50, press the MENU button until a "Pr" icon will appear blinking on the display.
- Then press the UP/DOWN buttons to select TRANSMIT POWER LEVEL icon, "H" for high, "M" for medium, and "L" for low power.
- To confirm, press the PTT button or press the MENU button again to move to the next feature setting.
- When the Battery Meter drops to 1 bar , the TX Power will automatically switch from Hi(H) or Med(M) to Lo(L) level.

Scanning - BTECH

- Pre-Programmed Scanning
  - Scan a range of local channels to pickup multible broadcasts
  - To enable the scanner, press and hold the key for about two seconds.
  - Press any key to exit scanning mode

Scanning - Midland

CONTROLS
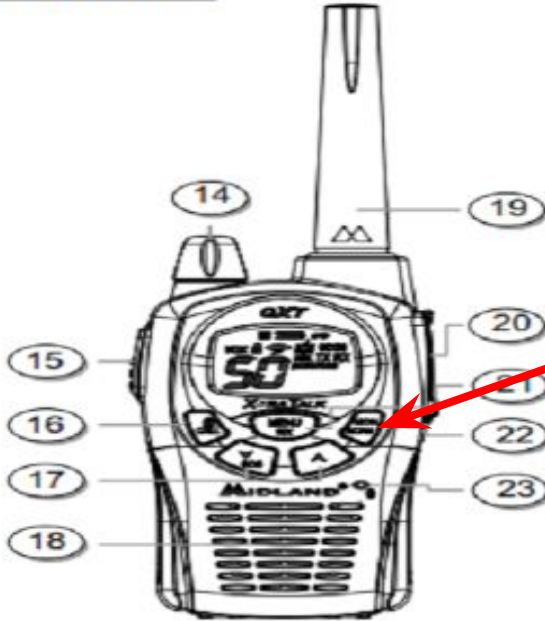
- **SCAN** Your radio can scan all 50 channels for activity. To enter, quickly press the SCAN button. Repeat the same procedure to exit. Your radio will rapidly scan each of the 50 channels and stop on any active channel.

NOAA Weather Alert

- **Your radio has NOAA WEATHER ALERT function, to enable you to automatically receive weather alerts from designated NOAA stations.**
- **The NOAA WEATHER (WX) ALERT is automatically on during NOAA WEATHER SCAN mode**

NOAA WEATHER (WX) FREQUENCY CHART
CH. No CH. Freq. CH. No CH. Freq.

CH. No	CH. Freq.	CH. No	CH. Freq.	
1	162.550	6	162.500	⟵ **Mount Hebo**
2	162.400	7	162.525	
3	162.475	8	161.650	
4	162.425	9	161.775	
5	162.450	10	163.275	

Cape Meares ⟶
Neahkahnie ⟶

* Channel 8, 9 and 10 are designated Canadian Marine Frequencies

NOAA - BTECH

- **NOAA Channels are Programmed into your Radio**
- **Change to NOAA Channel:**
  - **Enter 3 digit channel number using keypad**

106 162.4000 Simplex FM WX 1 High Skip NOAA Weather Channel
107 162.4250 Simplex FM WX NKN High Skip NOAA Weather Neahkahnie
108 162.4500 Simplex FM WX 3 High Skip NOAA Weather Channel
109 162.4750 Simplex FM WX MEA High Skip NOAA Weather Tillamook
110 162.5000 Simplex FM WX 5 High Skip NOAA Weather Florence
111 162.5250 Simplex FM WX HEB High Skip NOAA Weather Mount Hebo
112 162.5500 Simplex FM WX 7 High Skip NOAA Weather Newport

NOAA Weather Scan - Midland

- **Your radio also has a NOAA WEATHER SCAN function, to enable the user to scan all 10 channels of the NOAA WEATHER RADIO.**
- **To turn the NOAA WEATHER SCAN on, press and hold the MENU button for 5 seconds while in GMRS mode.**
- **The radio will go to WX Band mode and start scanning all 10 channels and stop on any active channel.**
- **When the channel becomes inactive for 10 seconds the radio will resume scanning.**
- **To turn the NOAA WEATHER RADIO off, Press the PTT button. The current GMRS radio setting will be displayed and the icon will go off.**

Manually Setting NOAA Channel - Midland

- **To stop the NOAA WEATHER (WX) SCAN and set the channel manually on the WX Band,**
  - **Press the MENU button during NOAA WEATHER (WX) SCAN.**
  - **The radio will stop scanning and the display will show the current WX Band channel setting and the icon.**
  - **While in WX Band mode press the UP/DOWN buttons to select one of the 10 NOAA WEATHER (WX) BAND channels.**
  - **To confirm, press the PTT button or press the MENU button to move to the next feature setting.**
- **To turn the NOAA WEATHER RADIO off,**
  - **Press the PTT button. The current GMRS radio setting will be displayed and the icon will go off.**

Additional Functionality

- FM Radio
  - 'F' Side Key
  - Press momentarily to start the FM broadcast
  - Another momentary press turns FM off
  - Press and hold turns alarm on and off

Additional Functionality

- **CALL ALERT** - Your radio can transmit a call alert for a fixed length of time.
- **SOS SIREN** - The icon will appear on the display, the radio will send out a loud siren sound and the display will flash
- **KEYPAD LOCK** To avoid accidentally changing the radio settings, press the LOCK button for 2 seconds.
- **DISPLAY ILLUMINATION** During Power on, the display illumination will activate for approx. 5 seconds. The display illumination can also be activated when the MENU, MON/SCAN, or s\t buttons are pressed.
- **DUAL WATCH FUNCTION** Your radio has a DUAL WATCH function, to enable user to scan 2 channels for any activity. The first channel will be the current channel setting and the second channel will be the selected channel on the MENU.

Additional Functionality

- **WHISPER FUNCTION** Your radio has a WHISPER function, to enable the user to transmit a high sound level even if he is whispering on the microphone.
- **EXTERNAL SPEAKER/MICROPHONE JACK** Your radio can be used with an optional external speaker/microphone or headset, freeing your hands for other tasks.

Troubleshooting

- Keypad not working

  ○ KEYPAD LOCK To avoid accidentally changing the radio settings, press the LOCK button for 2 seconds.
- Not Hearing What You Expected? Are You On the Right Channel?
  ○ Check display to make sure that you are on the Active Channel you want to be on.
- Lost of Confused
  ○ Turn the radio off and back on again if you get lost or confused, the display isn't showing what you expect, or you think you've missed a step. This will get you back to "Square One" and you can start over.

Battery and Antenna

- Once the radio's battery is charged, the battery should be removed from the charger to avoid damage

- You should turn your radio off when changing the antenna or adding an external mic

- Baofeng BTech Radio can be Programmed for STCEVC Channel List

Battery Maintenance

- Partially charge your battery before long-term storage to prevent damage from over- discharge. While lead acid must always be kept at full charge during storage, this radio uses a lithium-based battery and should be stored at around a 40 percent charge. This level minimizes age-related capacity loss while keeping the battery in operating condition and allowing self-discharge.

- To avoid severe capacity degradation of your battery while in long-term storage, please cycle the battery at least every six (6) months. Store your batteries in a cool and dry place, never above normal room temperatures

Starting to Talk

Having a Good Signal

- In our area, radio signals are blocked by lots of trees and hills
- For improved communication you can try
    - Keep antenna vertical
    - Find the highest point available
    - Move away from metal objects
    - Go outside/Get out of your car
    - Move a few feet in different directions
    - Difficult locations may need more power and an external antenna

Your Communications

THIS IS A RADIO, NOT A CELL PHONE!

- Conversations are BROADCAST to anyone listening on the channel

- Do not transmit private or sensitive info!

- Use your CallSign to minimize privacy risks

Be Courteous & Concise

- **Be brief and to the point**
  Plan what you want to say

- **Only one person can talk at a time**
  If the light is **Green**, <u>someone else is talking.</u>
  Green = Stop

- **Leave a few seconds between transmissions**
  Someone may need to "Break In"

CallSigns

- What is a CallSign?

    - They identify the radio user while maintaining an acceptable level of anonymity

- Different CallSigns are used by STCEVC members

    - STCEVC GMRS CallSigns

        - FirstName, First initial of LastName

    - CERT CallSigns:

    - Tactical call sign used at the time of an incident

    - HAM Call Sign, or FCC GMRS License Number

Starting to Talk

- **Listen** (wait for a break in talking)

- **Press PTT**

- **Take a Breath** (allow radio link to complete)

- **Talk approximately 1 to 2 inches from the Microphone**

- "**Hey You, It's Me**"
  - Say name of person you are calling ("**Hey You**")
  - Say your name ("**It's Me**")

- Say "**Out**" when ending a conversation

- **Release PTT** & Listen

Simple Community Radio Check-In

Set channel to your Zone's GMRS Channel

Net Control: JohnX, This is Net Control. Are you checking in Tonight?

GMRS Communicator: Net Control, this is JohnX.

Net Control: JohnX, this is Net Control. I copy your check in. Thanks.
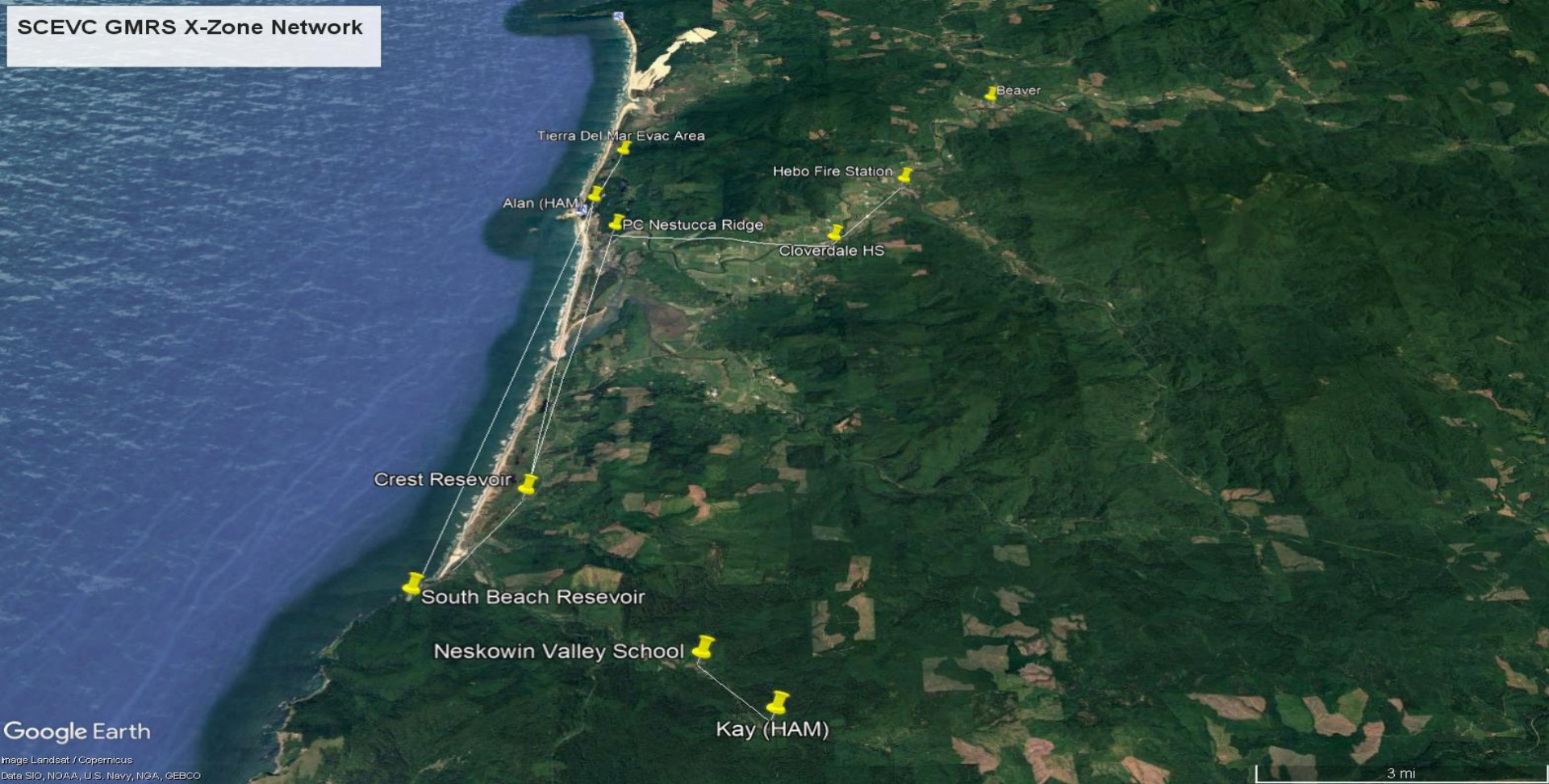
STCEVC Communications Approach

STCEVC Approach

- STCEVC Communications supports residents within the Nestucca Rural Fire Protection District

- Because of its size, we have broken the District up into Geographic areas called zones

- Within a zone, communications is supported by a network of GMRS communicators

- Across zones and out of area communications are coordinated by Ham operators, using Ham Radios

GMRS Radios

- Within a Zone, GMRS radios are used to form a community communications network

- Each Zone is assigned a primary and secondary channel

- Each Zone is managed by a Net Control

- Testing is required to ensure communications work from your location

- https://southtillamookcountyevc.org/communications-zones/

SCEVC GMRS X-Zone Network

Beaver

Tierra Del Mar Evac Area

Hebo Fire Station

Alan (HAM)

PC Nestucca Ridge

Cloverdale HS

Crest Resevoir

South Beach Resevoir

Neskowin Valley School

Kay (HAM)

Google Earth

Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

3 mi

STCEVC Zones and Channels

| Zones	Primary GMRS Radio Channel	Secondary GMRS Radio Channel
1 (Slab Creek)	018	022
2 (Neskowin)	015	021
3 (Pacific City)	016	020
4 (Tierra Del Mar)	017	019
5 (Cloverdale)	019	018
6 (Hebo)	020	017
7 (Beaver)	021	016
8 (Sand Lake)	022	015
(9) Blaine	018	022

Ham Operators

- HAM Operators are tested and licensed by the FCC. They can utilize Repeaters to increase the distance of local communications, and use more powerful equipment for Out of Area communications.

- STCEVC Hams assist with:

  - Developing an auxiliary communication strategy for South County

  - Coordinate Out of Area communications and communication within and across Zones

  - Provide help communicating with the Counties Emergency Operations Centers, Schools and Utilities

What's a Repeater?

Repeater

No signal through the hill
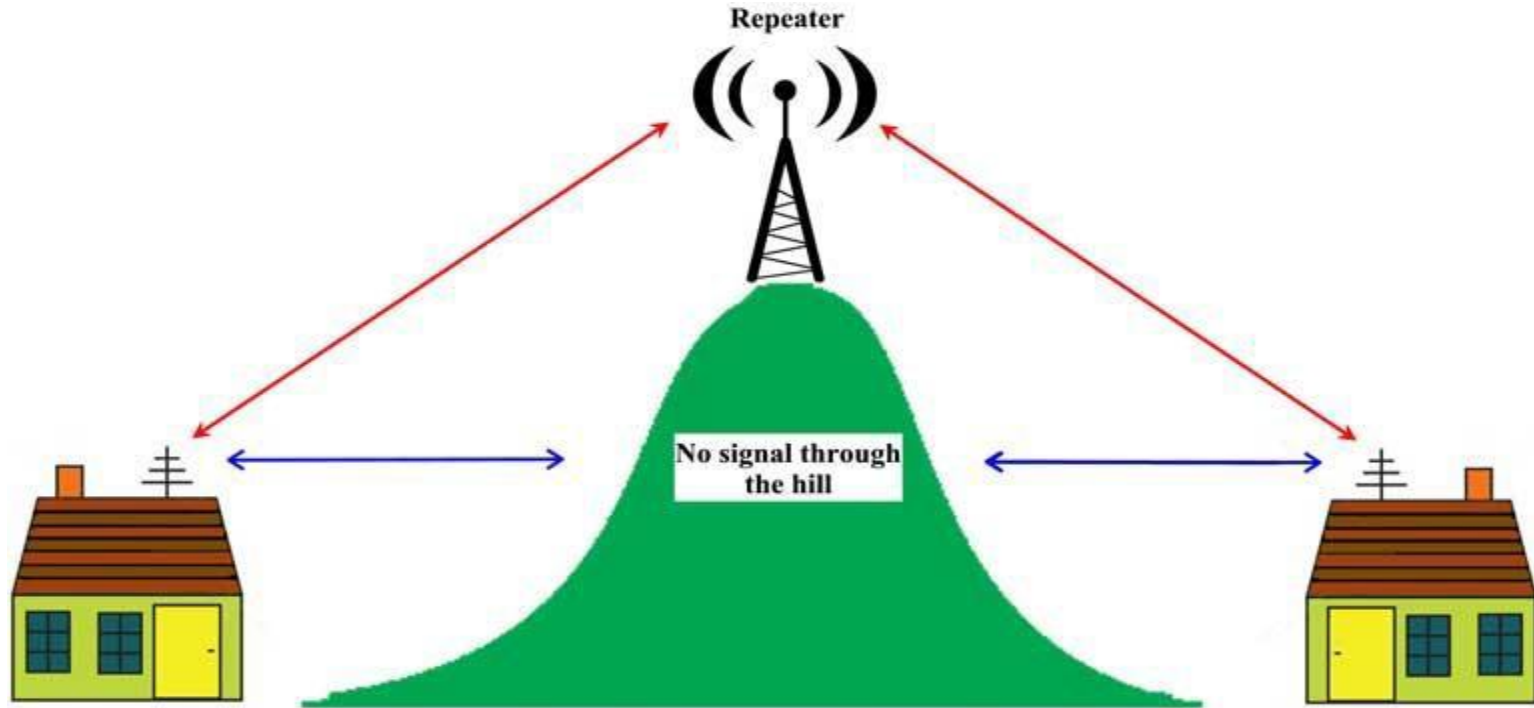
Communication only possible by bouncing the signal through the repeater

Zone Communication Rollup
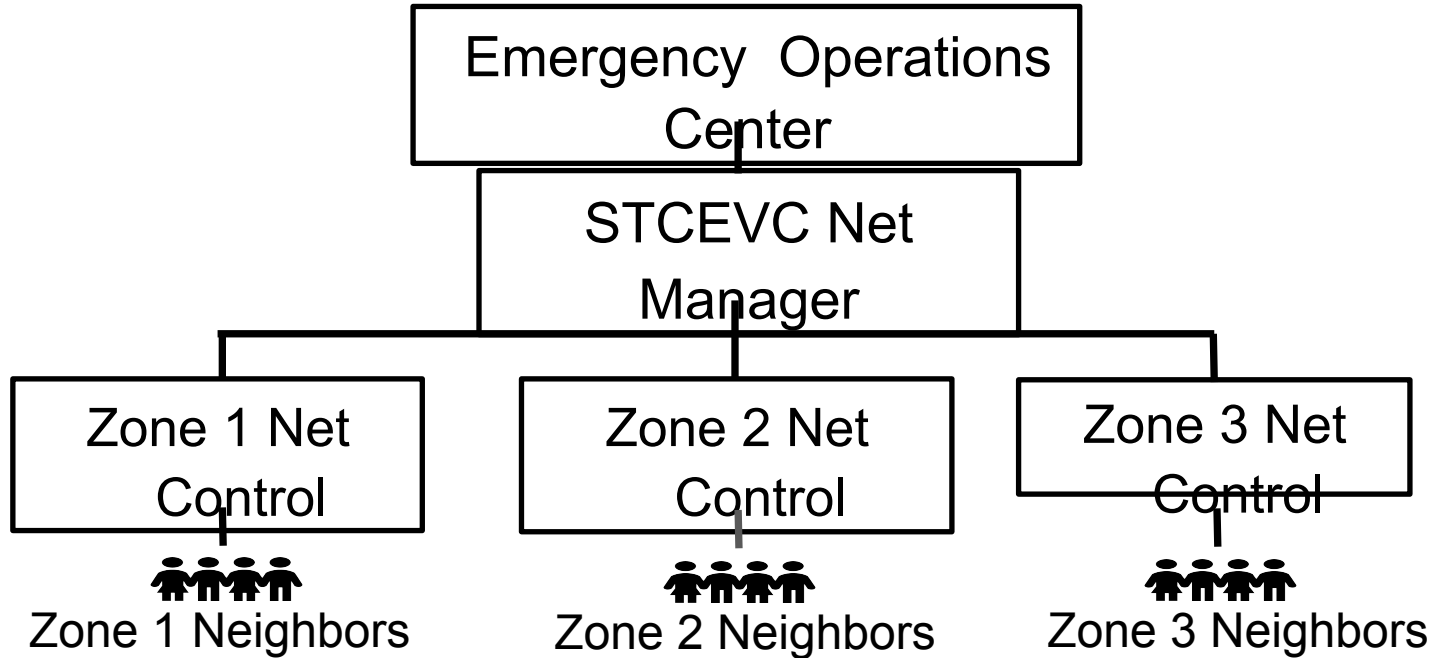
STCEVC NETS

What Is a NET?

- A group of radio users on the same channel exchanging information

- A system for managing radio communication to avoid chaos

What is Net Control?

- An individual on a Net who controls/ facilitates all communication on the Net

- A Gatekeeper - All communication on a Net must be directed through Net Control

Our Challenges

- We have many zones to coordinate
- We lack a communications presence in some zones
- During an emergency, we will have many people trying to communicate at the same time
- Talking slowly and clearly so we transmit accurate information
- Being prepared

STCEVC Net

- Coordinated by your Communities Net Control
- Focused on communications readiness and training
- Tune to your zone channel
- Net Control will call out for attendees
- Once checked into the Net, wait for further instructions from Net Control

Note: Not every Zone has a Net Control

Checking in to an Emergency Net

- Tune to your zone channel & listen
- Attempt to contact the Net
  - Net Control, this is (CallSign), Over
  - "Net Control this is (CallSign) checking in, Over"
- If no reply at first, keep trying!
- Once checked into the Net, you would wait for further instructions
- Let Net Control know when you leave
- If no Net Control, check for other Community members

If You Have Information for the Net:

1. **Listen for a Pause**

   Wait until no one is talking (no light)

2. **Identify Yourself to Net Control**

   "Net Control, this is (CallSign) with traffic, over"

3. **Net Control Acknowledges You**

   "Go ahead (CallSign), over"

   If Net Control doesn't acknowledge you, you weren't heard. Try again!

4. **Give Your Information**

Next Steps

Next Steps

- GMRS Radio Testing
  - o   Who can you communicate with?
- Identify your Net Control
  - o   They can help you test your radio
  - o   They can provide additional radio assistance
- Participate in your communities GMRS Community Radio Net
- Ham radio operators are very important to our emergency communication strategy. We encourage you to obtain your Ham License.
- Join the South County Communications Committee

Community Net Controls

Zone 1	Slab Creek		
Zone 2	Neskowin	Bill, Gary, Barry	whbusch@gmail.com, gary_billingsley@sbcglobal.net Barry.Simpson@sbcglobal.net
Zone 3	Pacific City	Gary, Chris	garyhanson.135@yahoo.com, chris@steaming-kettle.com
Zone 4	Tierra Del Mar	Dave	dave dgsears@hotmail.com
Zone 5	Cloverdale		
Zone 6	Hebo		
Zone 7	Beaver	Fred	fwhittlinger69@yahoo.com
Zone 8	Sand Lake		
Zone 9	Blaine		

GMRS Licensing

The FCC has clarified that a license is required to use radios on the GMRS frequencies.

STCEVC recommends that all GMRS Radio users obtain a License

A GMRS license
- Is good for ten years
- Is valid for the licensee's immediate family
- Cost is $35.
- No exam is required
- Instructions are posted to STCEVC Website
  - https://southtillamookcountyevc.org/gmrs-radio/

Accessories

- Nagoya NA-701C 8" Whip Antenna

- External Mike/Speaker Baofeng BF-S112 Two ~~Way Radio~~ or others are available

- Radio Batteries

  - BL-8L 3600 MAH Extended Battery

  - UV-82 AAA Battery Pack

  - UV-82 Battery Eliminator (Adaptor for car)

- Generator or Solar Panels for running or recharging your radio accessories

BL-8L 3600MAH EXTENDED BATTERY

BAOFENG UV-82 AAA BATTERY PACK

Some Additional Information

- STCEVC Website Communications Tab
  - https://southtillamookcountyevc.org/
  - STCEVC Communications Brochure
  - Instructions for Licensing
  - BTECH Channel List