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Instructions for Operating My Digital Rental Portable Radio on the MRA Network

Trunked digital repeater radios operating on a network are a most sophisticated form of repeater operation available today. Radios talk direct to the repeater and the repeater transmits to the other radio users. Trunked repeater systems contain multiple repeaters at each of the many locations within the network and your radio can automatically select the use any of them without user intervention. If the repeater infrastructure fails, no one can speak to anyone else through the system that failed because all transmissions are repeated by the repeater and there isn't any direct communications from one user radio to another user radio.

The following describes the use of a portable (hand-held) radio. To operate the radio:

1. Turn on the ON-OFF VOLUME control on top of the radio clockwise to turn on the radio and adjust the receive volume control to be the appropriate volume for your ambient noise condition. The volume has no effect on transmitting.
2. Turn the channel select knob on top of the radio to the proper talk group for operation. There are typically 3 talk groups and a simplex channel programmed into the radio. Some radios are programmed to select talk groups with the zone up and zone down buttons. If you attempt to select a channel or talk group that is not programmed, the radio will beep continuously and have "**********" on the display.
3. Pressing any button except the PTT button will light the backlight for 5 seconds.
4. The battery condition ICON is in the upper right corner of the display. Change batteries before the battery gets too low which creates intermittent operation.
5. The signal strength indicator (which works like a cell phone) is next to the battery condition ICON. The signal strength is always being displayed when using the network, however, when you switch to simplex, you will only see the signal strength when you are receiving a signal.
6. The radio logs into the network by finding a nearby control channel at the site that covers the area in which you are located, then sends a login request to the network. If the network recognizes your radio as valid, it sends a signal to the radio acknowledging the login. If your radio is not authorized, the network will send a rejection at which time you will receive a message that the login failed. On most digital radios, the site number for which your radio has accessed is displayed at the top left corner of the LCD display. If the network fails, your radios will not function at all. If a site in the repeater network fails, you will lose the coverage unique

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to that repeater site. If a repeater fails at a site, it will result in a reduction in traffic capacity, thus increasing the chance that you will receive a busy signal when you attempt to talk.

7. Press and hold the Push-To-Talk (PTT) button on the left side of the radio. The radio will briefly transmit a request to talk to the repeater. The repeater will respond with either a denial (low series of beeps) otherwise known as a "busy signal" which indicated that all channels are in use or it will respond with a channel assignment at which time your radio will give you a proceed tone (triple high pitched beep). This process takes approximately 0.5 seconds. Speak in a normal voice from about 1 inch from the microphone. Release the PTT button to hear a response from the party you have called. Do not yell or scream as it will only degrade your intelligibility.
8. If you are receiving a transmission from someone in your talk group, your radio is inhibited from transmitting. The radio displays the caller ID of the sending radio for 30 seconds before it times out and goes back to displaying the talk group name. When you press the PTT button, you will get an error tone until the transmission ceases at which time you will be able to transmit.
9. To place a private call between you and another user, press the INDCAL button, scroll through the list with the UP and DOWN arrows, then press the PTT button. If the user you selected is not in range, you will receive a NO REPLY message after 5 seconds. If their radio is turned off and logged out of the network, the NO REPLY will be immediate. If the user is available and in range, you will get a proceed tone to begin your transmission. To cancel the private call, press the HOME > or the EXIT button. If you receive a private call, the radio will respond in private call until the caller ID times out after 30 seconds.
10. All user radios from the same talk group that are turned on and in range of the trunked repeater system will switch to the same repeater in the trunked repeater system as your radio for the period of the transmission, provided they are registered onto the same site. They will then revert to the control channel after the transmission is finished. If they are registered on a different site, all the radios from your talk group will switch to the same channel on that site (which will be different than the channel on your site) to complete the call. The two sites are connected to each other, so anything said on one site is repeated on the other site. If there are more than two sites having radios registered from the same talk group, then all the sites are connected to each other that have units registered on the same talk group. Therefore, no matter how your fleet of radios on a given talk group spread out over the network, they will be connected to each other. No manual user intervention is required to switch sites, login or register on the network.
11. With digital trunked repeater operation, all transmissions go through the repeater. Therefore, when you talk, all the users (that are in range of the repeater) will hear your transmission with the same clarity if you are in range of the repeater. If you are not in range of the repeater, no one will hear you speaking. If you have a good signal into the repeater, everyone will hear you clearly. As the signal continues to degrade, eventually as the signal will be too weak and the repeater may stop entirely and not retransmit (otherwise known as dropping out of the repeater) your signal. Typical range is dependent upon the location of the repeaters in the network and how high the repeater antenna is located above ground. Consult our coverage maps to determine coverage area.
12. If you are on the simplex channel, each radio sends out its signal and the signal travels as far as it can directly to the other radios without the help from the repeater. Therefore, when you talk, some people will hear it and some will not hear you, depending upon where they are located. Typically, the people closer to you will hear you and the people further away may or may not hear you depending upon the distance and what obstructions are between you and them. As the signal continues to degrade, the signal may start to cut out at times and eventually the radio will

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no longer communicate. You will not get static in the reception of the radio signal, but you may get a digital / mechanical sound before it completely fails to communicate Typical range with portable radios is about 0.6 mile in the city and a mobile radio will be about 6 miles in the city. Typical range with a portable radio in rural areas is about 2.4 miles in the countryside and about 18 miles for a mobile radio in the same area. *Digital radios typically get about 20% better range than an analog radio with everything else being equal.*

13. When using the simplex channel, you will not be able to receive any calls from the network. You cannot scan between the network and a simplex channel. Therefore, you should let the office know that you are going onto the simplex channel and will not be able to be reached before you switch to simplex.

Battery and charger information for portable (hand-held) radios:

1. Most radios have a battery icon on the display to let you know the condition of the battery. If you do not have a battery icon, the radio will typically have a LED flash red whenever the battery is low. Some radios will have a different method of signaling a low battery which varies by radio model.
2. If your radio does not have a battery condition icon on the display, you need to pay more attention to how much you use the radio to have an idea of when to charge (or change) the battery.
3. Batteries that are very low can cause the radio to "reboot" whenever you press the PTT button or reboot continuously. Some radios will act very strangely and do things abnormally until the battery is charged or replaced.
4. When you are finished using the radio, turn it off and place it in the battery charger to recharge the battery. When the battery is fully charged, remove the radio from the charger if it will not be used for an extended period of time. Leaving the radio in the charger over night or over a weekend should not be a problem.
5. Most batteries have small, medium and/or large batteries which will determine the battery life for a particular radio. Typical numbers for small batteries are 8 hours use at 5-5-90 while large batteries are typically 12 hours at 10-10-80 which means 10% of the time you are transmitting, 10% of the time you are receiving a signal and 80% of the time your radio is in standby, meaning that it is turned on and awaiting for you to transmit or someone to call.
6. Transmitting takes the most power from the battery by a significant margin, so if you do not talk often, your battery will last significantly longer. Conversely, if you talk often, your battery will discharge more quickly.
7. If the radio has a HI / LOW power button, switching the radio to low power will extend the battery life, but it will reduce the range of your transmission.

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