WASHINGTON STATE DEPT OF
NATURAL RESOURCES

BKR 5000 User's Manual

Display
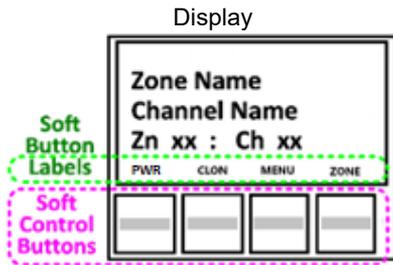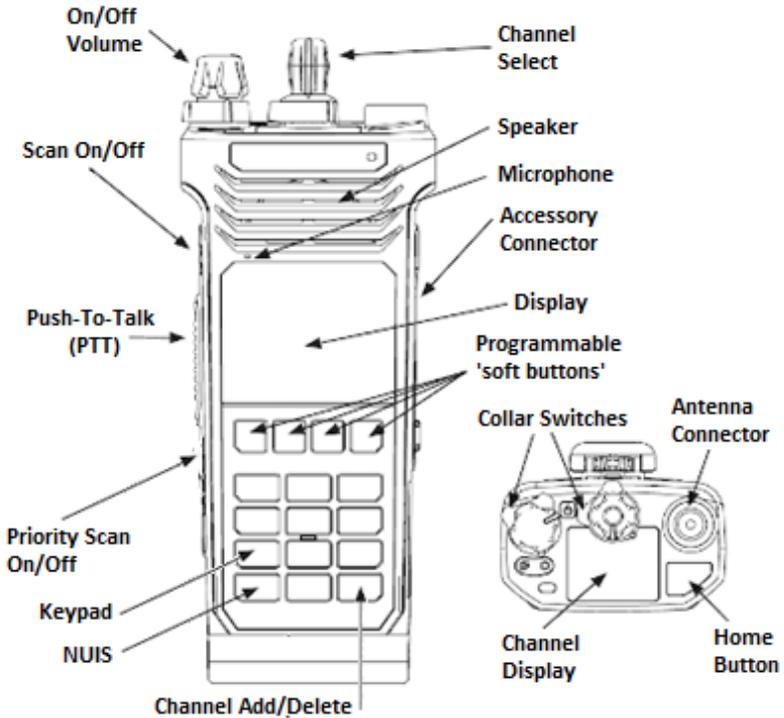
DNR managed BKR control configuration may not match that used by other agencies.

As with the 150s series, the battery may either be a **rechargeable** (**black**) or a **clamshell** (orange). The BKR's clamshell holds **12 AA** size alkaline cells (it is recommended to use the rechargeable battery whenever possible). The clamshell does not need to be removed from the radio to change AA's.

Battery Installation and Removal

NOTE: For safety reasons, rechargeable battery packs are shipped uncharged or only partially charged. Therefore, a rechargeable battery pack should be properly charged in an approved battery charger before use.
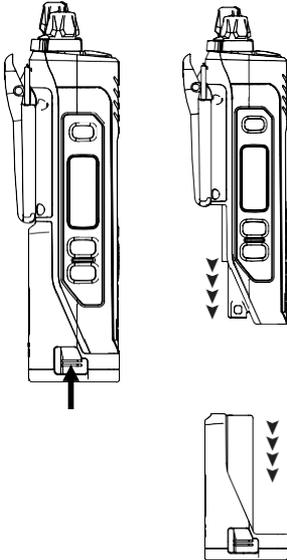
Only BK Technologies approved batteries should be used to insure proper operation and specifications.

Installing the Battery
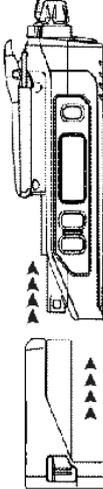
1. Turn the radio off.
2. Align the battery with the radio as shown.
3. Push the battery upwards into the radio until release tabs "click" into place.

Removing the Battery

1. Push in the release tabs on each side of the battery.
2. Pull the battery downwards away from the radio.

NOTE: All information programmed into the radio is maintained even when the battery pack is removed.

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2.   Battery Care and Maintenance

BKR5000 battery packs are available in a variety of capacities and types for special applications. Rechargeable battery packs can be charged separately or while attached to a radio.

Periodically check the contacts on the battery pack for dirt or debris that could prevent a good electrical contact with the charging base.

WARNING!

DO NOT DROP A BATTERY PACK INTO FIRE. AN EXPLOSION MAY OCCUR.

IF STORING AN EXTRA BATTERY SEPARATE FROM RADIO, BE AWARE OF EXPOSED TERMINALS ON TOP AND PROTECT FROM SHORT CIRCUIT.

RADIO CONTROLS

Hard Controls

Hard controls have fixed functions. WA DNR radios have the following Hard Controls:

- **Push to Talk Button (Side)**
- **Clone Zone ABCD Collar Switch**

- **Scan Button (Side Top)**
- **Numeric Keypad (Front)**

- **Priority Scan Button (Side Middle)**
- **Home Button (Orange)**

- **(Bottom Side Button) unassigned**
- **Control Lock Collar Switch (Below Volume Knob)**

SOFT CONTROLS

Soft controls change function depending on the mode of operation or the menu selected.

WA DNR radios have the following Soft Controls:

- **Transmit Power (PWR)**
- **Zone (ZONE)**

- **Cloning (CLON)**
- **Nuisance Chan Delete** ✳

- **Menu (MENU)**
- **Copy Channel #**
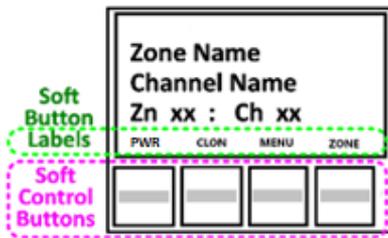
The labels above each soft button will change to indicate the function of the button in a given mode.

Channel Display Screen

The display screen provides channel information in two forms: the text name of the zone + channel, and the zone + channel number. The zone + channel numbers will aid you in navigating the large number of available channels.

Indicators

PWR or **PWR**	**PWR** = Low Power, **PWR** = High Power (see details below)
Y.ıl	Receive Signal Level (present only while receiving a signal)
	GPS Enabled (when this option was purchased)
⫿⫿⫿⫿⫿⫿	Battery Level (present only with rechargeable battery)
RXA or **RXD**	Received Signal — A = analog, D = digital (not typically used)
TXA or **TXD**	Transmitting — A = analog, D = digital (not typically used)
L , **H**	Low or High Transmit Power
✓	Indicates a Channel that is in the Scan List
ᶜZ	Channel Scanning Mode Active
ₚZ	Priority Scan is Enabled
P1	Designated Priority Channel

MENU NAVIGATION

Many configuration options are available through a menu system. Below is a glossary of items. Soft button labels will change depending on the menu function selected. Shortcut buttons have been configured to provide quick access to common functions.

Note: Most keys respond to a momentary press but ignore being held.

NUIS	Nuisance Channel Delete (see details below)
ZONE	Enters Zone Selection Menu (see details below)
MENU	Opens Menu of Configuration Options (see details below)
ESC	Escape returns to Next Higher Menu Level
PREV	Navigate UP Through Menu Choices
NEXT	Navigate DOWN Through Menu Choices
ENT	ENTER – Accepts Currently Selected Option

+/−	Toggles Currently Selected Option
CLR	Clear the Current Entry (see "keypad programming" below)
EDIT	Allows you to Edit the Current Entry.

ON/OFF/VOLUME

1. Rotate the **Volume** knob to turn the radio **on** or **off**.

2. Rotate the **Volume** knob to the desired setting.

VERSION AND RADIO INFO SCREENS

This option in the main menu may be ignored unless a technician asks you for this information when reporting a radio problem.

CONTROL LOCK

Rotating the **Control Lock Collar Switch (Below Volume Knob)** locks the keypad against accidental control activation. This does not inhibit the **Push-to-Talk, Volume**, or **Channel** controls.

Pressing a locked control will result in a beep and the display will indicate "Keypad Locked."

Reverse to unlock.

TRANSMIT POWER

Transmit power may be selected. Low Power is 2 Watts; High Power is 6 Watts.

Press the **PWR** soft key to switch **PWR** = Low Power, **PWR** = High Power

Use Low Power whenever possible to extend battery life. Use High Power only when extended range is required.

NOTE: The default setting for most channels is High Power.

ZONE SELECTION

Channels are arranged in zones of 16 channels each. Not all zones are in use and maybe labeled **Blank, Clone** or **Command**. Empty zones will only have DNR COM in channel 1 and may be ignored.

1. Press the **ZONE** soft key; "Select Zone" should appear on the screen.

2. Enter the desired zone number on the keypad –**OR**– use the **PREV , NEXT** buttons to select the desired zone. Choose the desired zone then hit **ENT**.

3. Press the **ENT** button to save the selection and exit the menu.

CHANNEL SELECTION

Rotate the **Channel Select** knob to change to the desired channel. Observe the selection on the channel knob or on the display.

The channel switch has 16 positions with stops at position #1 and position #16.

HOME BUTTON (ORANGE).

The Home button is defaulted to Zn 1 Ch 1. Users can assign a different channel to the home button.

1. Go to the Zone and Channel you want to set as your Home channel.

2. Press and HOLD the orange Home Button for 2 seconds. Main screen will display "Home Channel Set to Zn # and Ch ##"

3. Note: Pressing the Home Button will go to the selected Home channel, however pressing it again will take the user back to the previous zone and channel.

SCAN OPTIONS

Channel Scan

The radio can scan through a "Scan List" of up to 16 channels. Scanned channels must all be in the same zone.

Scan speed slows as more channels are added to the list. A large scan list increases the odds of missing an important message; therefore, a limit of 4 channels in a Scan List is recommended.

NOTE: When radios are reprogrammed or Cloned the scan list is cleared and the user will have to re-create the list.

Caution: Scan lists and Priority channels are a parameter that is transferred from the Source Radio to the Target Radio during a Clone.

NOTE: Regardless of which channel the radio stops on during scan, it will always transmit on the channel currently selected by the **Channel Select** knob.

Enabling Channel Scan Mode

1. Press the **SCAN** side button.

2. The **"Channel Scan On"** and a ^{c}Z symbol will appear on the display.

Program the Scan List

There are two methods of editing a Scan List:

1. Select the Zone that contains the desired channels.

2. Scroll through the channels using the **Channel Select** knob.

3. Press and hold the **SCAN** side button to select or deselect a channel. A ✓ will appear on selected channels.

<u>OR</u>

1. Select the Zone that contains the desired channels.

2. Press the **MENU** soft key.

3. Select "**Chan Scan List,**" then press **ENT.**

4. Scroll through the channels using the **PREV , NEXT** buttons.

5. Press the **+/−** button to select or deselect each channel. Channels marked with the ✓ to the left of the channel name are in the scan list.

6. When finished, press the **ESC** to exit.

You may verify that channels are included in the scan list:

1. Turn off scan by pressing the **SCAN** button. The ᶜZ indicator will not be on the display.

2. Rotate the channel selector and verify that the ✓ indicator appears on the primary display for channels in the scan list and off for channels not in the scan list.

PRIORITY SCAN

Priority Scan helps avoid missing messages on the primary channel. When enabled, Priority Scan checks the priority channel for messages while receiving on any other channel. The radio will switch to the priority channel even if receiving on another channel. Two channels can be designated as priority channels. Priority 1 (**P1**) and Priority 2 (**P2**).

Enabling Priority Scan Mode

1. Press the **SCAN** side button <u>AND</u> the **PRI** side button.

2. The **P1** ᶜZ ᴾZ symbols will be on the display.

Program the Priority Channels

1. Press the **MENU** soft key.

2. Scroll down to **Priority Chans** and press **ENT.**

3. Select either **System P1 Chan** or use **Zone # P1 Chan**.

4. If **System P1 or P2 Chan** is selected a submenu will appear with these options. Note: System P1 or P2 assigns a priority channel across all zones.

    a. **OFF -** Disables priority channels.

    b. **Use Main -** Utilizes the selected channel as the priority channel. This changes the Priority as you change channels, following the **Channel Select** knob.

    c. **Select** – Assigns a specific channel as the priority channel.

    d. The display will return to the main Priority Channel Select menu.

5. Selecting a zone-specific priority channel. Highlight **Zone # P1 or P2** and press **ENT.** A submenu will appear with these options.

    a. **OFF** – Disable priority scan

    b. **Use Main** – Utilizes the selected channel as the priority channel.

    c. **Select** – Assigns a specific channel as the priority channel.

    d. To assign a specific channel as a Zone Priority Channel, highlight **Select** and press **ENT**.

    e. The channel selection menu will be displayed.

    f. Highlight the desired channel and press **ENT**.

    g. The display will return to the main Priority Channel Select menu.

Nuisance Channel Delete

A channel can be temporarily removed from the scan list. This may be desirable when the channel has excessive or irrelevant traffic. Multiple channels may be removed if desired.

1. Press the **NUIS** soft key ✱ while scan has stopped on the channel that you want to remove from scan.

2. The radio will temporarily removal from the scan list.

To restore the channel(s) to the scan list, switch **Scan** off then back on. The scan list will also be restored when the radio is turned off and back on.

DISPLAY BACKLIGHT

The displays and main keypad have a backlight which helps the user while using the radio day or night.

DISPLAY BACKLIGHT ADJUSTMENT

Display screen Backlight may be adjusted as follows:

1. Press the **MENU** soft key.

2. Use the **PREV , NEXT** buttons to navigate to **Backlight.**, then press **ENT**.

3. Several options will be available **Auto, Off, Dim, Medium, Bright, Custom**

4. Select the desired option, then press **ENT.** If selecting **Custom** a slider control will appear on the screen. Use the **+/-** buttons to move the slider left or right. Adjust for desired level.

5. Press **ENT** to save the setting.

6. Press **ESC** to returned to the main menu and to exit.

SQUELCH SETTINGS

Squelch silences the receiver when it is not receiving. The squelch threshold may either be a preset value or user selectable. The preset value should be used unless you find yourself in an area where high RF noise is needlessly opening the squelch.

Squelch may be adjusted as follows:

1. Press the **MENU** soft key to enter the menu.

2. Use the **PREV , NEXT** buttons to navigate to **Squelch Adjust**, then press **ENT**

3. To adjust the level, navigate to **Adjust** and press the **ENT** button.

4. Options will appear – **Selected Channel** (this will adjust the squelch for the current channel the radio is on), **Selected Zone** (this will adjust the squelch for all of the channels in the current zone), **All Channels** (adjusts the squelch for all of the channels programmed into the radio). Choose your selection and press the **ENT** to move forward or **ESC** to return to the previous screen.

5. A slider control will appear on the screen.

6. Use the **+/-** buttons to move the slider left or right. Moving the adjustment to the left lowers the squelch threshold, allowing weaker signals to open the squelch of the receiver. Moving the adjustment to the right raises the squelch threshold, only allowing stronger signals to open the receiver.

7. Press **ENT** to save the setting and exit the menu.

COPY CHANNEL - COMMAND ZONE

Command Zones, are similar to a Favorites Menu on a computer. Any channel in a Standard Zone in the radio can be copied to a Command Zone for convenience. As with any other zone, channels in a Command Zone can be entered into a Scan List or Cloned into another radio.

Note: the first several zones are a combination of command/clone zones and are labeled as "clone #". These are the zones that can be utilized for this purpose.

Adding a Channel to a Command Zone [#]

Make sure the radio is currently on the channel you want to add (copy) to the custom zone.

1. Press the **#** button

2. Select the Command Zone you would like to copy the channel into by scrolling up or down with the **PREV , NEXT** buttons and press **ENT**. **Note:** the radio will only show zones that are configured as Command Zones.

3. Select which channel position within the Command Zone you would like the copied channel to reside (1-2-3-4 etc.) by scrolling up or down with the **+/-** button or by typing in the channel number with the keypad (note if you want to overwrite an existing channel in a Command Zone you *will* need to remove it first) press **ENT.**

Editing a Command Zone [#]

When operating in a Command Zone, press **"#"** button to remove the selected channel from a zone.

When a channel is deleted, the display momentarily shows "Channel Deleted"

DTMF ENABLE

The BKR portable radio can be field programmed to send DTMF tones manually via the keypad. If the radio is DTMF Live Data enabled globally, the alphanumeric keys are used to transmit DTMF tones while holding PTT. The soft keys at the bottom of the display are used to send A,B,C and D characters.

To enable DTMF Globally use the following steps:

1. Press the **MENU** soft key to enter the menu.

2. Use the **PREV, NEXT** buttons to navigate to **Keypad Prog**, then press **ENT.**

3. Enter the Password **000000** and press **ENT**.

4. One option will appear – **Keypad** press the **ENT** to move forward or **ESC** to return to the previous screen.

5. Four options will be available. Select **Global** and press **ENT.**

6. Use the **PREV, NEXT** buttons to navigate to **DTMF Live Dial** and press **ENT**.

7. Use the **PREV, NEXT** to select **On** and press **ENT** to save the setting.

8. Press the **ESC** soft button repeatedly to return exit the menu.

CLONING

Cloning is the process of transferring frequency information from a **Source** radio to a **Destination (Target)** radio. This can be done by users in the field, eliminating the need for a radio tech.

Caution: Certain zone specific parameters clone from the Source radio to the Target radio affecting how the radio operates.

e.g. Scan lists and Priority channels are a parameter that is transferred from the Source radio to the Target radio during a Clone.

BKR 5000 radios allow for three cloning options:

- **Clone Active Zone** – (Source Radio) Copies the information in the Source Radio's active zone to the Target radio's active zone.

- **Clone Picklists -** *This should not be used.*

- **Enter Dest Clone –** (Target Radio) Prepares the Target Radio to receive a program from a Source Radio in it's active zone. Note: Be sure the Target Radio is in a cloning zone, as the information that is overwritten during the cloning process is unrecoverable.

BKR 5000 to KNG P150/KNG2 Cloning
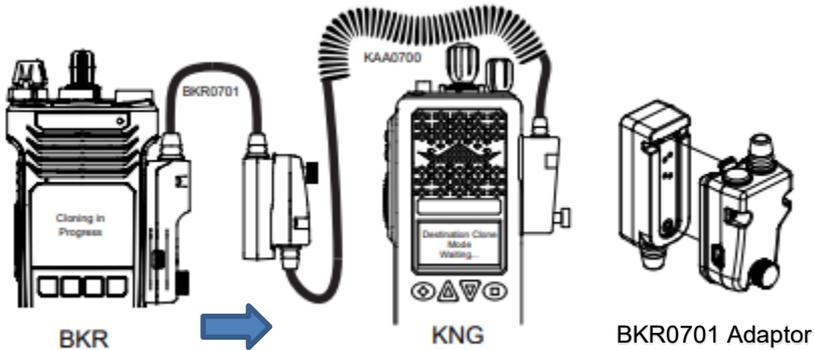
BKR   KNG   BKR0701 Adaptor

Connect the KAA0701 (or KAA0700) Cloning Cable to the BKR0701 side connector adaptor. Connect the BKR0701 to the BKR source and connect the KAA0701 to the KNG target radio and power up both radios. Use the thumb screws to secure the connectors. Avoid pulling or twisting the cable at the connectors; they are fragile and expensive.

On the Target KNG radio:
1. Switch to the Zone that is to receive the clone.
2. Press the **Menu** soft key.
3. Select **Cloning** and press **ENT.**
4. Select "**Enter Dest Clone**" and press **ENT**
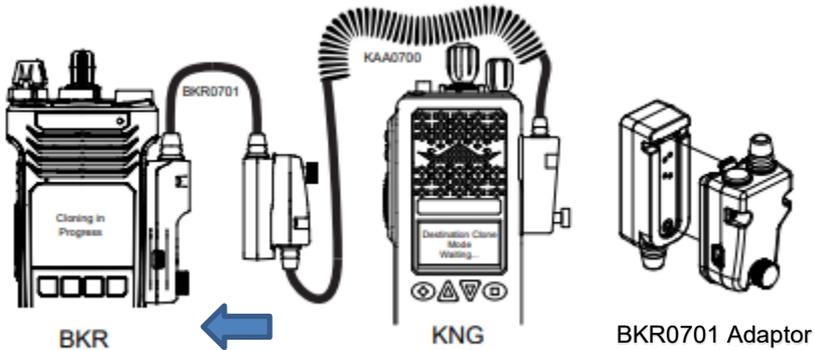
On the Source BKR radio:
1. Switch to the Zone that is to be sent.
2. Press the **MENU** soft key.
3. Select **Cloning** and press **ENT**
4. Select **Clone Active Zone** and press **ENT**.

A message "**Active Zone Successfully Cloned**" indicates success.

Error Messages
► The message "**Clone Failed: Target Zone Locked**" indicates that the destination zone is programmed to not accept clones. You must change to a different zone.
► The message "**Clone Failed: "No Device Found**" indicates a cabling problem or a problem with the destination radio. Check connections and settings, then try again

KNG P150/KNG2 to BKR 5000 Cloning

BKR   KNG   BKR0701 Adaptor

Connect the KAA0701 (or KAA0700) Cloning Cable to the BKR0701 side connector adaptor. Connect the BKR0701 to the BKR target radio and connect the KAA0701 to the KNG source radio and power up both radios. Use the thumb screws to secure the connectors. <u>Avoid pulling or twisting the cable at the connectors; they are fragile and expensive.</u>

On the Target BKR radio:

1. Switch to the Zone that is to receive the clone.

2. Press the **Menu** soft key.

3. Select **Cloning** and press **ENT.**

4. Select **Enter Destination Clone** and press **ENT.**
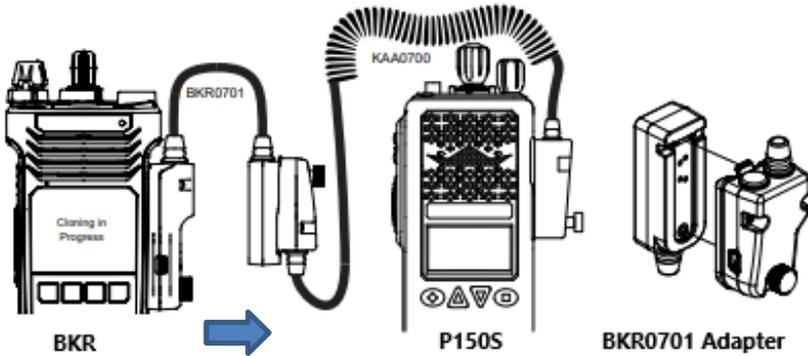
On the Source KNG radio:

5. Switch to the Zone that is to be sent.

6. Press the **MENU** soft key.

7. Select **Cloning** and press **ENT**

8. Select **Clone Active Zone** and press **ENT**.

A message "**Active Zone Successfully Cloned**" indicates success.

Error Messages

► The message "**Clone Failed: Target Zone Locked**" indicates that the destination zone is programmed to not accept clones. You must change to a different zone.

► The message "**Clone Failed: "No Device Found**" indicates a cabling problem or a problem with the destination radio.

BKR 5000 to Legacy P150S or DPH

Connect the KAA0701 (or KAA0700) Cloning Cable to the BKR0701 side connector adaptor. Connect the BKR0701 to the BKR source and connect the KAA0701 to the P150S or DPH target radio and power up both radios. Use the thumb screws to secure the connectors. Avoid pulling or twisting the cable at the connectors; they are fragile and expensive.

On the Target P150S or DPH radio:

    1.   Switch to the Group that is to receive the clone.

On the Source BKR radio:
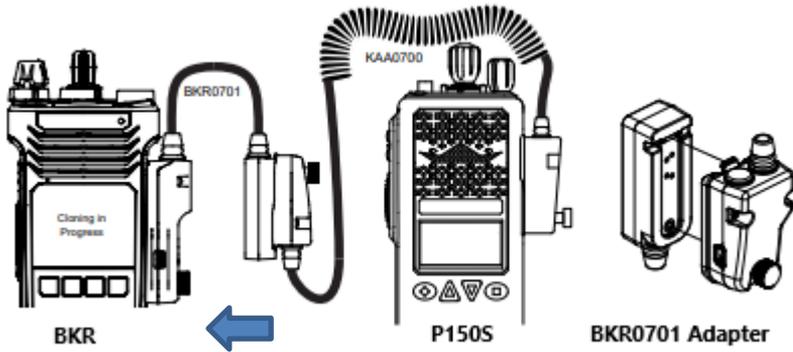
    2.   Switch to the Zone that is to be sent.

    3.   Press the **MENU** soft key.

    4.   Select **Cloning** and press **ENT**

    5.   Select **Clone Active Zone** and press **ENT**.

A message "**Active Zone Successfully Cloned**" indicates success.

    Error Messages
► The message "**Clone Failed: Target Zone Locked**" indicates that the destination zone is programmed to not accept clones. You must change to a different zone.

► The message "**Clone Failed: No Device Found**" indicates a cabling problem or problem with the destination radio.

► The message "**Buad Rate Error"** mean the two radios had a communication failure. This is a common cloning failure between modern BKR, KNG2 and KNG P150 Source radios and Legacy P150S and DPH Target radios. Try cloning again until successful.

Legacy DPH or P150s to BKR 5000 Instructions

KAA0700

BKR0701

Cloning in Progress

BKR   P150S   BKR0701 Adapter

Connect the KAA0701 (or KAA0700) Cloning Cable to the BKR0701 side connector adaptor. Connect the BKR0701 to the BKR Target radio and connect the KAA0701 to the P150S or DPH Source radio and power up both radios. Use the thumb screws to secure the connectors. <u>Avoid pulling or twisting the cable at the connectors; they are fragile and expensive.</u>

On the Target BKR radio:
1. Switch to the Zone that is to receive the clone.
2. Press the **Menu** soft key.
3. Select **Cloning** and press **ENT.**
4. Select **Enter Destination Clone** and press **ENT.**

On the Source P150S or DPH radio:
5. Switch to the Zone that is to be sent.
6. Press the **MENU** soft key.
7. Select **Cloning** and press **ENT.**
8. Select **Clone Active Zone** and press **ENT.**

A message "**Active Zone Successfully Cloned**" indicates success.
Error Messages
► The message "Clone Failed: Target Zone Locked" indicates that the destination zone is programmed to not accept clones. You must change to a different zone.

► The message "**Clone Failed: No Device Found**" indicates a cabling problem or problem with the destination radio.

PROGRAMMING OF RADIOS

FCC rules authorize DNR to only program radio frequencies according to the licenses authorized by the Commission.

> *Except for frequencies used in accordance with §90.417, **no person shall program into a transmitter, frequencies for which the licensee using the transmitter is not authorized.*** [§90.427 (b)]

Shared Use of Radio Systems

One exception to this limitation is the sharing of radio systems, as authorized under §90.179. That section requires a written agreement before other agencies may program DNR radio frequencies and before DNR may program frequencies licensed to another agency.

DNR maintains agreements with federal, state, and local agencies that provide for the shared use of radio systems. Information about channels authorized for shared use is included in the annual radio channel information documents, from the local Radio Technicians, and from Region and District managers.

KEYPAD PROGRAMMING (HAND PROGRAMMING)

The user can make changes to certain configuration parameters via the keypad. For example: Removing the requirement for a receive tone on DNR Common or creating a custom zone. It also enables the user to view information such as frequencies or tones.

There are several parameters that if changed will produce undesirable results. It is important that you limit changes to only the parameters described below.

Note that changes will be lost whenever a technician re-programs the radio or the zone is cloned over.

Entering Programming Mode:

1. Press the **MENU** soft key.

2. Select "**Keypad Prog**" and press **ENT.** "Enter Password" will be displayed.

3. Enter password: 000000 and press **ENT.**

4. **"Keypad"** should be highlighted. Press **ENT.**

5. Select **Global, System, Zone,** or **Channel** followed by **ENT**, and follow the corresponding directions below.

Edit Channel:

Select **"Channel"** in the submenu and press **ENT.**

1. Select the desired Zone and press **ENT**.

2. Select the desired Channel and press **ENT**.

3. Select the desired parameter and press **ENT** to view the present setting. **CLR** will clear the old value and allow you to enter changes. **EDIT** will allow you to make changes to the current information. If no changes are desired hit **ESC** or press **ENT** to save your changes.

4. **Chan Label** - Use the phone style keypad to toggle through characters. **"0"** toggles between 0 and a blank space. "*****" or "**#**" toggles through various symbols. Hit **ENT** when done.

5. **RX Freq** – Press **EDIT** or **CLR** then key in the frequency and hit **ENT**. Prior to that, you can abort changes by hitting **ESC**.

6. **RX Mode** – Normally choose **Analog.**

7. **RX Guard** – Enter a tone as 4 digits.

   - **OFF** means no tone required.

   - **Tone:** 4 digit CTCSS Tone. For example 103.5

   - **Digital:** Use 3 digits to enter DCS code. State repeaters use DCS codes. For example D261 is entered as 261 and will appear as D261 after pressing **ENT**

8. **TX Freq** - Press **EDIT** or **CLR** then key in the frequency and hit **ENT**. Prior to that, you can abort changes by hitting **ESC**

9. **TX Mode** - Normally choose **Analog.**

10. **Bandwidth** – Normally 12.5 kHz (Narrowband)

11. **TX Guard** - Enter a tone as 4 digits.

    - **OFF** means no tone required.

    - **Tone:** 4 digit CTCSS Tone. For example 103.5

    - **Digital:** Use 3 digits to enter DCS code. State repeaters use DCS codes. For example D261 is entered as 261 and will appear as D261 after pressing **ENT**

Zone Parameters:

Select **"Zone"** in the submenu.

1. Select the desired Zone and hit **ENT**.

   A submenu will appear with three options:

1: Edit Zone – Allows you to change specific operational features of the selected zone.

2: Add Zone – Allows you to add a new standard zone or a command zone to the code plug.

3: Delete Zone – Allows you to remove a zone from the code plug.

2. **Zone Label** - Use the phone style keypad to toggle through characters. **"0"** toggles between 0 and a blank space. "*****" or "**#**" toggles through various symbols. Hit **ENT** when done.

Global Parameters:

Caution: These parameters affect all zones and should only be changed by experience radio users.

System Parameters:

Caution: These parameters affect all zones and many of these functional features are transferred during a clone. For example, TX on Priority 1.

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Washington Department of Natural Resources

Enterprise Services

Radio Operations Program

360-902-1480

radio@dnr.wa.gov

Updated

March 15, 2024

More information at

WWW.DNR.WA.GOV/RADIO