

South Dakota
Emergency Communications Manual
05-16-2006



2006

South Dakota Interagency Communications System

Statewide Digital Trunked Radio System

INTENT

To describe the basic radio communications procedures for South Dakota statewide digital trunked radio system. The goal of the procedure is to assure consistent, clear radio communication for routine operation and effective standardized emergency incident communications.

Exceptions to the established protocols must be submitted to the System Administrator to be forwarded to the SDPSCC (Dakota Public Safety Communications Council) .

AUTHORITY

SDCL Chapter 1-13 authorized the Bureau of Information & Telecommunications (BIT) to fund, operate, and maintain the radio system, and shall be regarded as the system owner. Failure to comply with the protocols set below may result in the following course(s) of action:

1. Written notice of violation to agency by System Administrator.

(If there is no resolution of the violation)

2. Referral to the South Dakota Public Safety Communications Council (SDPSCC) for further action.

(If there is no resolution of the violation)

3. Referral to the Commissioner of BIT for possible suspension of system access.

System usage complaints shall contain details of the violation, the name and contact information of the reporting party. Anonymous complaints will not be considered.

System usage complaints shall be directed in writing to:

System Administrator
State Radio Communications
1302 East Highway 14
Pierre, SD 57501

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I. Introduction

On October 23, 2002, the South Dakota Interagency Communications System was made available for use by any governmental agency in South Dakota with public safety ties.

Dating back to the 1940's the state has had a communications system based upon lowband technology (39mhz). The characteristics of lowband provide for excellent range, but lowband is very susceptible to outside interference, and with the advent of the electronic age, was fast becoming obsolete. The lowband system also had regional coverage only, and very limited car-to car communications, limiting its effectiveness for wide-area emergencies.

In the 1960's and 1970's, local governments began the migration away from lowband to other spectrum such as VHF-Highband (150 MHz), UHF (450 MHz), and to a very small degree 800 MHz. These various bands of spectrum allow for repeater use, extending the car-to-car range, and are much less prone to outside interference. Created in this process, however, was the "interoperability challenge", that came from entities using different bands of the spectrum, which made it difficult to communicate between systems without maintaining multiple radios in vehicles.

The state began the process of upgrading its infrastructure in 1999, with the caveat that the system would be available to all levels of government, irregardless of their affiliation. After a review process, a digital trunked radio system operating on VHF-Highband was selected, and in September of 2001 construction was initiated.

The current system consists of tower sites across the state networked to a controller located in Pierre. "Roaming" is allowed between sites with the use of intelligent radios and networking. Roaming allows the user to traverse the state without losing communications, and the system allows individual agencies to maintain private communications with agency "talkgroups". The digital aspects of the system allow for clear communications over 90% of the geographic area of the state.

A backup "conventional" system is to be implemented statewide in 2006 that will allow conventional VHF radios access to the system via dispatcher patch

II. Glossary of Terms

Affiliate -- Radios on the trunked system will send a signal with radio ID and the talkgroup selected to the central controller in Pierre. This occurs when the radio is turned on, when a new talk group is selected, or when the radio selects a new site by checking RSSI levels of tower sites.

Alert Tones:

- Busy tone similar to phone busy signal. This tone is heard when a user attempts to transmit a message on a trunked talkgroup when all frequencies are in use.
- 4 short beeps received after a busy tone. Automatic Callback – A frequency is now available for you to transmit. Press PTT and begin the transmission.
- 4 beeps every six seconds. Call Alert has been received by the radio.
- 1 beep followed by 5 beeps. The Emergency button has been pressed and was acknowledged by the system.
- 3 short rapid beeps when the “PTT” is pressed. **Talk permit tone** – The user must wait for these tones before talking on a trunked talkgroup.
- A continuous tone when pressing the PTT. **Talk prohibit** – Occurs when pressing PTT and radio is out of range of the trunked system or system is out of service.
- A continuous tone. Time out timer – This continuous tone indicates your transmission is approaching 60 seconds, and will be discontinued at the 60-second point.
- Momentary higher pitched tone. **Valid key chirp** – This tone confirms that you have selected a valid, programmed button.
- A low pitched tone every 10 seconds. **Failsoft** – Trunked system failure where multiple agencies share a conventional channel.
- Momentary lower pitched tone. **Invalid Chirp** – Indicates that you have selected an un-programmed function.
- High pitched chirp. Low battery - Portable radio’s battery needs charging.

Alias -- An identifier that is displayed on dispatch’s screen when a radio is transmitting on a talkgroup that is being monitored. The Alias corresponds with a specified subscriber ID.

Analog Signals -- Analog radio systems continuously transmit radio waves that are usually modulated by a voice. A typical analog voice radio consists of a transmitter and receiver.

BKLHT -- Backlight button, illuminates display.

Central Controller -- The network management equipment that directs all activities of the radio system.

Channel -- Conventional (analog) frequency.

Control Channel -- Dedicated channel on each tower site that passes information between the radio and the controller in Pierre.

Digital Signals -- A combination of zeros and ones that are transmitted. These signals must be converted by digital radios (computers) into sound that can be heard and understood.

DOT -- Department of Transportation.

Duplex Repeater -- A repeater system that uses different transmit and receive frequencies.

Frequency – Frequency is defined as the number of cycles that occur each second. Thousands of radio wave cycles usually repeat themselves each second, so engineers have adopted the practice of writing kilohertz (shortened to KHz), which means 1,000 cycles per second, megahertz (MHz), which means 1 million cycles per second, or gigahertz (GHz), which means 1 billion cycles per second, when they refer to radio frequency. Thus, 10 million cycles per second can also be written as 10 MHz. The South Dakota system is in the 150MHz range (VHF).

HP—Highway Patrol.

MON—Monitor button allows the radio to receive analog signals without protection tones.

Out of range – Indication of no service available to radio. Accompanied by a long tone at regular intervals.

Project 25 – A non-proprietary standard for public safety radio communications. Allows manufacturers to build equipment that is compatible.

Queue - Circumstance where user keys up on a site that is fully utilized. As all resources are in use, radio system puts the user in a "queue", or waiting line for the first open resource. User will first hear the "busy" signal followed by a chirp when a resource is available to transmit on. If system is extremely busy, each additional keying of the push-to-talk button will reset the user to the bottom of the queue.

RF - Radio frequency.

Roaming - The ability of a radio on a trunked radio system to move from site to site without any interaction by the user.

RSSI—Radio Signal Strength Indication.

RWS—Radio Wide Scan. Only scan in EF Johnson radios that can scan both analog and digital.

SCAN—Allows radios to search programmed channels/talkgroups for activity.

SDPSCC – South Dakota Public Safety Communications Council (PSCC).

Simplex - Non-trunked radio channel that uses the same frequency for receive and transmit.

Site busy - Indication that no repeater resources are available at the tower the radio is affiliated at. Accompanied by short repeated tones, much like telephone busy signal.

Site lock - Action by radio user to "lock" radio on a particular site, preventing the radio from roaming.

Site Trunking - Indication that site connectivity to network central controller has been lost. Radio will be operational only in the coverage area of the tower affiliated on.

SRC - State Radio Communications, State 24hr dispatch: Huron, Pierre, Rapid City.

Subscriber ID – Number that system uses to identify individual radios on a trunked system. No two radios should use the same subscriber ID number.

System Administrator - State of South employee responsible for the day to day operations and management of the radio network.

Talkgroup - An electronic grouping of users. Talkgroups are an electronic sectoring of users, allowing private communications for a group of radios users. This may be referred to as the conventional system equivalent of a channel.

Talk group busy - Circumstance where user keys up on a talkgroup that is already in use. Indication on EF Johnson radio is "feature disable".

Trunked - Trunking permits a large number of users to share a relatively small number of communication paths or trunks. This sharing of communication paths is managed automatically by a computer. Channel selections and other decisions normally handled by the radio user are made by a computerized switch in the central controller. Thus, the user needs only to pick up the radio and talk, just as one does an ordinary telephone. Channel assignment is automatic and completely transparent to the individual user.

Zone - A group of 16 channels/talkgroups in EF Johnson radios. All EF Johnson Radios have 16 zones. Depending upon model, Motorola radios can range from 128 to 256 talkgroups in flexible zones.

III. Frequency, Channel, and Talkgroups

Understanding Radio Terms

A. Frequency

This is a technical term used to describe a specific radio wave. Radio signals are electromagnetic waves and frequency is the measure of how many waves cross a point in a given time. Often people use frequency to indicate where in the radio spectrum a radio transmits in. Radios do not transmit on a single frequency; they use a part of the spectrum on either side as well. This entire group of frequencies is called the bandwidth.

B. Channel

Channel is the term used to describe the spectrum used by a radio to transmit and receive. This is the entire bandwidth not just the frequency. In some systems such as duplex repeaters, the channel includes two frequencies with bandwidth. The key point to remember is that channels are what the radio transmission uses. A channel is defined by but not the same as the frequency.

On the new state system this means that channels are related to the towers, and the internal workings of the radios, **not** the “Channel Selector” on the radio as with a typical analog radio. The number of channels is limited, even if your radio can have up to 256 positions.

C. Talkgroup

A talkgroup is often referred to as the electronic equivalent of a channel on a trunked system. This is a good definition for the basic user if the system is only trunked. The state system allows trunked talkgroups as well as non-trunked (analog and digital) channels.

A talkgroup is an identification of an electronic location where users may communicate to each other. This is very similar to chat rooms on the internet. They have a name and a method to connect, but they have no real existence in space or radio spectrum. They make use of another system controlled by a computer to actually connect the users.

In the state radio system this method would be the “Channels” on each tower. So like in a chat room when too many people attempt to use a chat room or several rooms; other users may get a slow response or be not allowed in.

IV. Radio Technology Overview

Radio technology is full of confusing terms that come straight from a physics book. Sometimes when you ask a radio engineer a question, you even get an answer that is a formula. The authors of this manual have tried to simplify the terms as much as possible to allow you to get a good handle on the concepts. The goal in this section is not to turn you into radio experts, but, it is hoped that you'll be able to understand the experts a little better when they talk to you.

A. South Dakota System Radios

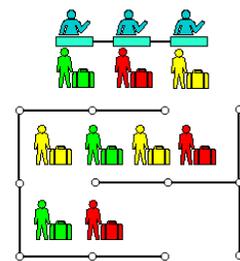
Each trunked radio on the South Dakota system is a computer with a receiver and transmitter attached. All traffic on the new system is data, or a series of 1's and 0's directed between radios. The computer also allows each radio to have a unique ID that allows the **Central Controller** to identify that radio and which talkgroup is selected on the radio. Each radio is in constant communication with the tower through the **control channel** at the tower site. This control channel passes on such information such as surrounding site information and site status. The radio also samples the signal strength or **RSSI** of the control channel and compares it with others that the radio is receiving and at preset levels will switch from one tower to another. This allows the radio to roam between sites without user action.

Each tower is in continuous communications with the **Central Controller**, passing on site status information, user registration information and of course, the voice traffic. A very important concept that needs to be understood about the system is **Affiliation**. Registration or affiliation occurs when a radio is turned on, when a new talkgroup is selected, or when the radio selects a new site through its RSSI level. When a radio affiliates with a tower, it sends the radio ID and the talkgroup selected to the **Central Controller**. Deregistration occurs when the radio is powered down, or leaves a coverage area.

The user radio equipment can be used on several existing radio system as well as the new state wide system. To understand these radios a little better we will discuss the radio system types that are in use currently.

B. Trunked (The new state radio system)

The basic premise behind trunking in radio systems is to efficiently utilize the radio frequency (rf) spectrum, and allow many users to operate on a few frequencies. Trunking allows the sharing of these resources by having the decision process of which site "repeater" is used left to the system, rather than the user having to select an individual frequency. When a radio user presses their push to talk button, the system assigns a repeater, tells the radio which channel to go to, and passes that traffic to other radios in the system that are selected up on the same talkgroup. We use the term radio "talkgroup" as opposed to radio "channel" for the digital portion of the radio. The new radios operating on this system are capable of both digital and analog operation, and the user needs to recognize that a "talkgroup" is an electronic grouping of radio users, whereas a "channel" is frequency related. This is important because an analog "channel" is area specific, where talkgroups can be statewide.



One can relate radio trunking to how a check-in line might work at an airport. There is a counter (tower) with three ticket agents (3 repeaters), each agent may assist a customer (user radio) as needed and there is a single line of customers. For example, if agents #1 and #2 are busy, a supervisor (central controller) will designate #3 as the next ticket agent to assist the next customer in line. If #1 and #3 are busy, the supervisor will designate #2 for the next customer. In this way, ticket agents do not stand vacant and the agents are more fully and effectively used.

Two technological breakthroughs have made trunked radio systems possible: 1) the development of microprocessors and personal computers, with their associated software and 2) synthesized frequency generators. Microprocessors allow the logical selection of frequencies for the repeaters. Frequency synthesizers at the repeater and mobile and portable stations allow the radios to set up individual transmitting and receiving frequencies as designated by the base station microprocessor called the "central controller."

The way that sites inform the central controller that there is a need for a repeater is a dedicated data control channel (repeater) at each site which monitors mobiles and handheld for activity. If a user desires to speak with another user or a group of users, he or she initiates a transmission on the data control channel by pressing the push to talk button, which sends his or her ID number and requests that he or she talk with another user or a group of users. The control channel repeater relays the information to the central controller, which determines which repeaters are available at the site and commands the initiating radio and the target radios to change their operating frequencies to that of the assigned repeater. Typically within 1/4 second, a voice conversation may then take place. After the conversation, the radios return to monitoring the control channel and the central controller determines that the repeater is now available for other use. Note that these systems are totally software driven.

C. Analog Radio Systems

Analog radio systems continuously transmit radio waves that are usually modulated by a voice. A typical analog voice radio consists of a transmitter and receiver.

D. Digital Radio Systems

People do not usually understand digital signals. Our senses are analog oriented and can only respond to continuous signals or impressions. Therefore, we must hear voice transmissions on a loudspeaker or a set of headphones and see visual signals, on either a video monitor or a printer, as words and pictures.

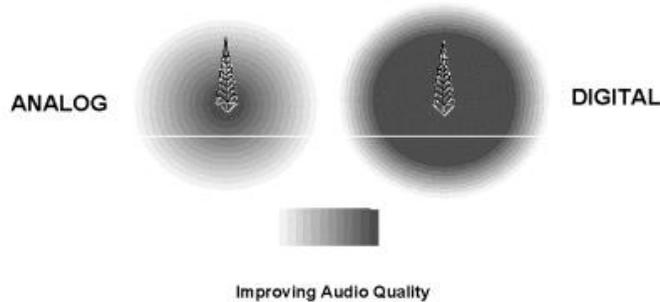
Voice transmissions may be sent over digital radio systems by sampling voice characteristics and then changing the sampled information to ones and zeros to modulate the carrier. This is done using a circuit called a voice coder, or “vocoder.” At the receiver, the process is reversed to convert the digital voice samples back into analog voice.

E. Transmission Differences

Analog and digital radio systems have vastly different transmission characteristics. As you move away from an analog radio transmitting site, the signal quality decreases gradually while noise levels increase. The signal becomes increasingly more difficult to understand until it can no longer be heard as anything other than static. A digital signal has fairly consistent quality as it moves away from the transmitter until it reaches a threshold distance. At this point, the signal quality takes a nose dive and can no longer be understood. A comparison of the transmission differences between analog and digital signals is shown below.

DIGITAL VOICE QUALITY

☐ Digital offers superior system-wide audio



F. Duplex (Repeated) Channel Usage

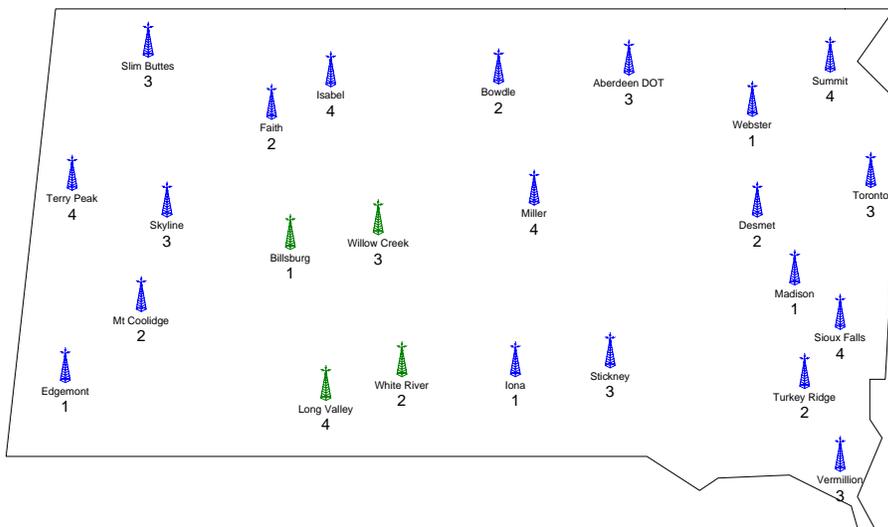
The general purpose of a duplex (repeated) system is to provide communications over a longer distance. The radio signal generally goes through a repeater or network system on a fixed repeater frequency pair. The transmit distance may be extended, as much as 30 miles or more, but can be affected by terrain and other conditions.



State Aid

State Aid Channels are analog backup system for the trunked radio system. State Aid channels are repeated but may not be networked and are for local operations only. This system is now partially online. These channels will be monitored by State Radio dispatch and can be console patched into digital talkgroups.

State Aid Ch 1,2,3,4
Conventional Mutual Aid
Network



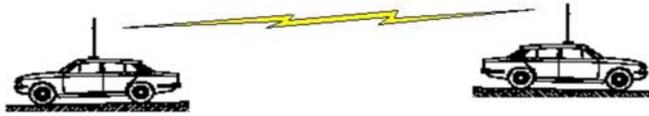
TX 150.550 RX 156.015 Tone 1=118.8 Tone 2=136.5 Tone 3=100.0 Tone 4=151.4

Local Repeaters

Each local agency may maintain their local highband repeaters. These highband frequencies may be programmed into the new digital radios.

G. Simplex (Non-Repeated) Channel Usage

The general purpose of a simplex (non-repeated) is to provide communications over a shorter distance direct handheld to handheld, mobile-to-mobile, or handheld-mobile communications. Generally the transmit distance is less than 2 miles, but maybe longer or shorter depending on terrain and other conditions.



The radio signal generally does not go through any repeater or network system. The transmit and receive frequency are the same. The channel generally is not monitored by any central dispatch system.

These channels are generally used as on scene operations to provide direct communications between the incident commander and various operating branches.

National Law channels – Analog frequency generally known as Nat. Law. This channel is generally used as an on scene operations channel. National Law may be used anywhere in the United States by Law Enforcement officers and dispatch. This channel may be used to communicate with enforcement officers in adjoining states if those officers have this channel selected or if they scan it.

State Fire Mutual Aid channels – Analog frequencies generally known as SD Mutual Aid 1 and SD Mutual Aid 2 channels. SD Mutual Aid 1 & 2 should not be used outside SD as they are only licensed for use within the state of South Dakota.

National Fire – Analog frequency generally known as Nat. Fire. This channel is generally used as an on scene operations channel. National Fire may be used anywhere in the United States by fire departments.

EMS- Analog frequencies generally known as EMS or MED. These channels are generally used as on scene operations channels and ambulance to hospital communication.

Digital Simplex – Would be similar to analog simplex channels as described above except digital.

H. Mobile Data Subsystem

The system has the capabilities of mobile data traffic. Data will begin to be phased in during calendar year 2006. Initial access will be granted to public safety. Further applications beyond public safety will be reviewed on a case by case basis by the state Control Terminal Officer (CTO), System Administrator, and the PSCC review committee.

The data system will be a low-speed data (9600bps). All applications not presently residing on the South Dakota Law Enforcement Telecommunications System (SDLETS) will need to go through a review process for compatibility.

V. RADIO USER INFORMATION

A. How It Works

Each radio is a computer with a receiver and transmitter attached. The computer allows each radio to have a unique ID that enables the Central Controller to identify that radio, and which talkgroup is selected. Each radio is in constant communication with the tower through the control channel at the tower site. This control channel passes on information such as surrounding site information, and site status.

The radio also samples the signal strength or RSSI of the control channel and compares it with others that the radio is receiving, and at preset levels will switch from one tower to another. This allows the radio to roam between sites without user action, similar to a cell phone.

- **Sounds:**
 - Listen for other radio traffic before attempting to transmit.
 - Wait until the quick chirp is done before you begin talking.
 - If a continuous beep is heard, radio is not affiliated with tower.
 - Two longer beeps indicate local site is busy, wait, and the system will give you the quick beeps indicating when access is ready.

- **If a “busy tone” is received.** The user should wait until receiving a talk permit tone. At this time the radio will key up for a few seconds. Do not continue to push the Push-to talk button.

- **Alert Tones:**
 - Busy tone similar to phone busy signal. This tone is heard when a user attempts to transmit a message on a trunked talkgroup when all frequencies are in use.
 - 4 short beeps received after a busy tone. Automatic Callback – A frequency is now available for you to transmit. Press PTT and begin the transmission.
 - 4 beeps every six seconds. Call Alert has been received by the radio.
 - 1 beep followed by 5 beeps. The Emergency button has been pressed and was acknowledged by the system.
 - 3 short rapid beeps when the “PTT” is pressed. Talk permit tone – The user must wait for these tones before talking on a trunked talkgroup.
 - A continuous tone when pressing the PTT. Talk prohibit – Occurs when pressing PTT and radio is out of range of the trunked system or system is out of service.
 - A continuous tone. Time out timer – This continuous tone indicates your transmission is approaching 60 seconds, and will be discontinued at the 60-second point.
 - Momentary higher pitched tone. Valid key chirp – This tone confirms that you have selected a valid, programmed button.
 - A low pitched tone every 10 seconds. Failsoft – Trunked system failure where multiple agencies share a conventional channel.
 - Momentary lower pitched tone. Invalid Chirp – Indicates that you have selected an un-programmed function.
 - High pitched chirp. Low battery - Portable radio’s battery needs charging.

- **Radio usage outside of Normal Operating Area:**
 - Your talkgroup works across the entire state.
 - To contact local units, turn to the closest Interagency Talkgroup and call. ie; “Metro-OEM5 on SF Interagency”.

B. USER PRIORITIES

Digital System access priority can be designated by the network administration. There are different levels of system access from 1-Emergency (highest) to 10 (lowest). The access priority affects the position in a queue (if in effect). The queue is the order in which system access is granted in the case when all tower resources are occupied.

- The order in which user priority is assigned is as follows:
 - 1 - Emergency—Highest priority, when emergency button, if so equipped, is activated.
 - 2 - State Radio, local 911 answering points, and other public safety communications centers
 - 3 - Law enforcement/Parole Agents/Inmate transport
 - 4 - Fire/rescue, emergency management
 - 5 - EMS/Health
 - 6 - Support agencies/Public Works/NWS/DOT
 - 7 -
 - 8 -
 - 9 - Other Public Service Agencies
 - 10 - Transit and other Transportation

C. ID and ALIAS ADMINISTRATION

Each agency or entity will be responsible for maintaining a current list of radio serial numbers, radio ID's and alias. A master list of Radio User Aliases and IDs will be created and maintained on a web based database. This will be readily accessible for all who have rights on that part of the system. Each agency will be responsible for updating and maintaining their information on the database, as alias names are created and approved. The web based database will be available for all appropriate parties for operations and planning.

The State Radio Communications System Administrator will be responsible for ensuring that all subscribers utilizing the system have complied with these requirements.

The State Radio Communications System Administrator will also furnish, upon request, new subscriber ID's for radios that authorized agencies need to add to the system. In addition to this the System Administrator will also coordinate additional alias needs with the requesting agency.

- The current configuration has the alias displayed on calls received by dispatch centers that are networked.
- Every Radio User ID in the system has to be unique; there can be no duplicated IDs.
- System limitation is 14 characters.
- The only figures that the system will accept are: Upper Case Alpha, Numeric, Period, Dash, Forward slash, and number sign.
- The system Administrator is responsible for seeing that the defined Naming Standard is followed and maintained.

D. CALL SIGN ASSIGNMENTS

Call Signs of any agency or entity, subscribing to the system must be obtained or approved by the SRC System Administrator. All Call Signs must conform to the structure specified as follows.

- State Agencies:
 - State Agencies will format call signs beginning with a phonetic designator that is indicative of the agency they are associated with, followed by a number designator, i.e. DOT###, HP###, GF###, DOH###, DCI###, ISB###, OEM###, etc.
- Local/Federal Agencies:
 - Agencies outside of state government will continue to maintain current call sign numbering systems in day to day operations within the agency

- Public Service Agencies:
 - Agencies outside of state government will continue to maintain current call sign numbering systems in day to day operations within the agency
- New Agencies on System (Without numbering system):
 - Agencies applying for access on the system need to have call sign numbering system approved by the System Administrator.
- Emergency/Interagency Radio Traffic:
 - Call signs for initial emergency or interagency communications on the digital radio system will need to be descriptive of calling agency, i.e. Rapid City PD#, Meade County SO#, FBI#, US Marshall#, Philip Ambulance #.
 - Once Incident Command has been established, radio plan will be developed identifying call signs & communications procedures. Agencies outside of state government will continue to maintain current call sign numbering systems in day to day operations within the agency.

Each agency will have a person designated as a Point of Contact (POC) that will maintain a current call sign registry. Also a record of radio serial numbers and unit designation shall be maintained. Any additions or deletions to inventory or call sign registry must be communicated to the SRC System Administrator (State Network Manager). (www.state.sd.us/bit/tele/stateradio/application_form.htm)

VI. - Failure Modes

A. Description

Trunking system failures may occur due to software problems or equipment failures. Additionally, storms, vandalism, and other events can damage system equipment and support. Radio operations under the most significant Failure Mode are described below.

All system failures create significantly increased demand for radio airtime on the available channels as well as limitations in power and coverage. Radio discipline must be maintained at a high level. Radio use will be limited to emergency related and resource management traffic only during Failsoft and System Failure conditions.

B. Site Trunking Failure

Event: Failure of the communications link to a trunked site. Radio displays "SITE TRUNKING".

Limited to coverage of the tower where affiliated.

Action:	Remain on current assigned channel. Follow local Communications Center direction.
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VII. OPERATIONAL PROTOCOL SUMMARY

A. ROUTINE TRAFFIC

1. All radio communication should be brief and to the point. Radio system traffic shall be limited to official business only. Agency heads are responsible for the appropriate use of the system in accordance with adopted standard protocols. Proper radio etiquette is expected on any communications system. Agency protocols will dictate operation locally.
2. Radio messages will be made and received in the following manner:
 - Caller waits for clear air time on selected talkgroup.
 - When initiating communication on the statewide radio system, the following format will be used.
“Receiving agency/unit—sending unit— on talkgroup used”.
i.e “*Metro-HP20 on SF Interagency*”.
 - Receiver acknowledges by stating their state assigned/approved call sign.
 - When utilizing private agency talkgroups, call sign protocol is at agency discretion.
 - All radio traffic must be conducted in a professional manner.
 - State-recognized 10 codes (Attachment 1) or clear speech will be used on system.
3. Local Operation:
 - Normal operations will be conducted on assigned agency talkgroups.
 - Interagency traffic will be conducted on the State Interagency Talkgroup for that geographic area.
 - Interagency talk groups are not to be used for normal dispatch.
 - Special Operations and State Fire 2 & 3 talkgroups must be requested and authorized by State Radio for events or incidents.
4. Operation outside of local area.
 - Users traveling outside their normal operating area will switch from their local talkgroup to the appropriate Interagency talkgroup for the geographic area you are currently in. This is needed to prevent radios from unnecessarily tying up system resources.
 - The digital trunked radio system is not currently set up to limit talkgroups to particular sites. This configuration allows necessary communications outside of the normal service area of an agency, often made necessary by prisoner transports, EMS & fire support outside of area.
 - The drawback to this wide area operation is that when a talkgroup is transported to another area of the state, all traffic associated with that talkgroup is then repeated over the local tower that the user is affiliated on. This can cause an overload situation for the local tower, especially if a large number of users are affiliated on their home talkgroups on a single tower. This may result in a busy condition for not only the local users where the outside talkgroups are brought into, but a potential talkgroup busy back in the home area of the user.
 - The system is designed for this purpose, but within capacity limitations. Use home talkgroups outside of normal service area only when necessary.
5. Monitoring of talkgroups outside of home area for non-service related business is prohibited.
 - The affect on system same as outlined above in Section V., Item A4.
 - Monitoring is defined as the physical affiliation of the radio on the talkgroup selected.
 - Non-selected talkgroups being scanned do not have the same impact on system.

B. EMERGENCIES

An emergency is defined as a non-scheduled significant incident that requires the coordinated response and interoperability of multiple agencies or jurisdictions. To include incidents that move between jurisdictions.

1. When situation dictates coordinated resources from agencies without common talkgroups, communications will be on the State Interagency Talkgroup for that geographic area.
2. All responding units will monitor the Interagency talkgroup designated by the requesting agency for additional information and the initial report on conditions.
3. Special Operations talkgroup(s) will be assigned for the duration of the emergency upon request.
 - For fire operations, the Incident Commander may request additional State Fire talkgroup(s).
4. State Radio dispatch will be notified by requesting agency or Incident Commander when the requested talkgroup will no longer be needed.

C. PLANNED/SCHEDULED EVENTS

Any event, known in advance, that requires additional communications resources.

1. Special Operations talkgroup(s) will be assigned as available for the duration of the event upon request. Talkgroup assignment is subject to pre-emption if required for reassignment to an emergency incident.
 - Special Operations talkgroups should be scheduled as far in advance as possible.
2. State Radio dispatch will be notified by requesting agency or Incident Commander when the requested talkgroup will no longer be needed.

D. HEAVY RADIO TRAFFIC CONDITIONS

1. If a Communications Center or an Incident Commander feels that excessive non-essential radio traffic is impacting dispatch operations or incident operations, the Incident Commander or Communications Center will make a radio traffic restriction announcement. This announcement will be made on appropriate talkgroup(s). The radio traffic restriction announcement will normally be, "All Units and Stations with non-essential radio traffic stay off the air."
 - An alternate agency talkgroup can be assigned by Communications Center for non-incident related communications.
2. When the condition is over, the Communications Center or an Incident Commander will broadcast a message announcing resumption of normal radio traffic conditions.

E. USE OF EQUIPMENT IN ELECTRONICALLY SENSITIVE AREAS

Radio equipment generates RF Interference (RFI) that may interfere with the operation of medical or other sensitive electronic equipment. Caution needs to be observed when operating radio equipment in such areas.

VIII. Talkgroups

A. STATEWIDE TALKGROUPS

The following is a list of Statewide Talkgroups. It is recommended that these talkgroups be programmed as a Standardized Block within the appropriate radios to assure uniformity and interoperability across the State.

1. SRC (State Radio Communications) talkgroups — are intended for any law-enforcement communications between mobile and State Radio dispatch. All law enforcement field units will be programmed with these talkgroups. These talkgroups shall be labeled as follows:

<u>Talk Group</u>	<u>Radio Display</u>
SRC Sioux Falls	SRC SF
SRC Turkey Ridge	SRC TKR
SRC Vermillion	SRC VERM
SRC TRIPP	SRC TRIP
SRC MITCHELL	SRC MIT
SRC BROOKINGS	SRC BRK
SRC WATERTOWN	SRC WTN
SRC WEBSTER	SRC WEB
SRC Isabel	SRC ISAB
SRC ABERDEEN	SRC ABR
SRC REDFIELD	SRC RED
SRC HURON	SRC HUR
SRC MILLER	SRC MIL
SRC CHAMBERLAIN	SRC CHAM
SRC WINNER	SRC WIN
SRC PIERRE	SRC PIER
SRC MOBRIDGE	SRC MOB
SRC PHILLIP	SRC PHIL
SRC MARTIN	SRC MAR
SRC BISON	SRC BISN
SRC RAPID CITY	SRC RC
SRC S. HILLS	SRC SH
SRC N. HILLS	SRC NH
SRC FAITH	SRC FATH

2. INT (Interagency) talkgroups – are intended for any interdepartmental radio communications. Due to the potential for high volume usage of these talkgroups, they are not intended as primary day-to-day routine dispatch operations. All multi-jurisdictional/multi-agency incidents should be initiated on the Interagency talkgroups and then moved to an operational or user-specific talkgroup. Every radio on the system will be programmed with the 24 Regional Interagency Talkgroups. These talkgroups shall be labeled as follows:

Talkgroup	Radio Display	Intended Use
Sioux Falls Interagency	SF INT	Interagency Traffic
Turkey Ridge Interagency	TKR INT	Interagency Traffic
Vermillion Interagency	VERM INT	Interagency Traffic
Tripp Interagency	TRIPP INT	Interagency Traffic
Mitchell Interagency	MIT INT	Interagency Traffic
Brookings Interagency	BRK INT	Interagency Traffic
Watertown Interagency	WTN INT	Interagency Traffic
Webster Interagency	WEB INT	Interagency Traffic
Isabel Interagency	ISAB INT	Interagency Traffic
Aberdeen Interagency	ABR INT	Interagency Traffic
Redfield Interagency	RED INT	Interagency Traffic
Huron Interagency	HUR INT	Interagency Traffic
Miller Interagency	MIL INT	Interagency Traffic
Chamberlain Interagency	CHAM INT	Interagency Traffic
Winner Interagency	WIN INT	Interagency Traffic
Pierre Interagency	PIER INT	Interagency Traffic
Mobridge Interagency	MOB INT	Interagency Traffic
Phillip Interagency	PHIL INT	Interagency Traffic
Martin Interagency	MAR INT	Interagency Traffic
Bison Interagency	BIS INT	Interagency Traffic
Rapid City Interagency	RC INT	Interagency Traffic
Southern Hills Interagency	SH INT	Interagency Traffic
Northern Hills Interagency	NH INT	Interagency Traffic
Faith Interagency	FATH INT	Interagency Traffic

3. SP OPS (Special Operations) talkgroups – are requested talkgroups for non-routine operations. Requests for these talkgroups will be directed towards one of the three State Radio dispatch centers. All radios on the system will be programmed with these talkgroups. These talkgroups shall be labeled as follows:

TALKGROUP	RADIO DISPLAY	INTENDED USE
Special Operations 1	SP OP 1	Communications During Disasters and Special Events
Special Operations 2	SP OP 2	Communications During Disasters and Special Events
Special Operations 3	SP OP 3	Communications During Disasters and Special Events
Special Operations 4	SP OP 4	Communications During Disasters and Special Events
Special Operations 5	SP OP 5	Communications During Disasters and Special Events
Special Operations 6	SP OP 6	Communications During Disasters and Special Events
Special Operations 7	SP OP 7	Communications During Disasters and Special Events
Special Operations 8	SP OP 8	Communications During Disasters and Special Events
Special Operations 9	SP OP 9*	Communications During Disasters and Special Events
Special Operations 10	SP OP 10**	Communications During Disasters and Special Events

* Some radios labeled HP

** Some radios labeled SRC

- The Special Operations talkgroups were designed to allow for incident management communications off of the normal operating talkgroups, freeing up those talkgroups for normal operations. These are designated to be operated on in either a proactive manner, or a reactive manner, depending upon the situation.

- Special Operations talkgroups can be used for either scheduled events or emergencies, but must be reserved. Scheduled events assignments may be pre-empted by emergency situations. Special Operations talkgroups are request-only talkgroups, with request made to State Radio Dispatch via radio over any Interagency Talkgroup, or by telephone to one of the following dispatch centers:

Pierre-- 605-773-3536

Huron-- 605-353-7132

Rapid City-- 605-393-8121

4. State Fire (ST FIRE 2 and 3 only) talkgroups -- are intended for use as a request-mutual-aid fire talkgroup. All radios will be programmed with these talkgroups. These talkgroups shall be labeled as follows:

TALKGROUP	RADIO DISPLAY	INTENDED USE
State Fire 1	STFIRE-1	Interagency Fire related contact with Great Plains Dispatch Center in Rapid City*
State Fire 2	STFIRE-2	State Mutual Aid Fire – Special Operations Channel
State Fire 3	STFIRE-3	State Mutual Aid Fire – Special Operations Channel

- *Note that State Fire 1 is intended for interagency fire-related communications with Great Plains Dispatch Center in Rapid City and IS NOT intended for Special Operations Request-Mutual Aid from resources other than Great Plains.

- The State Fire 2 and 3 talkgroups are request-only talkgroups, with requests being made to State Radio Dispatch via radio over any Interagency Talkgroup, or by telephone to one of the following dispatch centers:

Pierre-- 605-773-3536

Huron-- 605-353-7132

Rapid City-- 605-393-8121

5. NWS Talkgroups – The NWS talkgroups are a direct link to the National Weather Service Offices in Rapid City, Aberdeen, and Sioux Falls. These Talkgroups are to be used for communications with NWS when relaying weather spotter, fire conditions and other weather related information from the field. All radios on the system will be programmed with these talkgroups. These talkgroups shall be labeled as follows:

TALKGROUP	RADIO DISPLAY	INTENDED USE
National Weather Service	NWS-W	Weather Related Reporting to NWS – Western, South Dakota
National Weather Service	NWS-C/NE	Weather Related Reporting to NWS – Central/Northeastern South Dakota
National Weather Service	NWS-SE	Weather Related Reporting to NWS – Southeastern, South Dakota

6. EMS (Hospital) Talkgroups

This public safety radio system is in place to support the day-to-day operations of South Dakota’s various public safety agencies. Law Enforcement, Fire Departments, Ambulance Services, and Department of Transportation are but a few of the many different agencies that will be using this technology to complete their tasks.

South Dakota’s facilities are included in this plan for three primary reasons.

1. Ambulance services throughout the state will be using this technology to communicate with hospitals to obtain online medical control, and relay pertinent patient information.
2. Helicopter air ambulances will be equipped with the technology to:
 - a. provide air to ground communications during emergencies

- b. provide communications to referring facilities during inter-facility transport.
 - c. provide contact for dispatch/communications centers during flight following procedures when traditional duplex communication is not possible.
3. Hospital laboratories that are designated by the State as surge laboratories must have access to the system during bio-terror threats, or other mass casualty events for surveillance purposes.

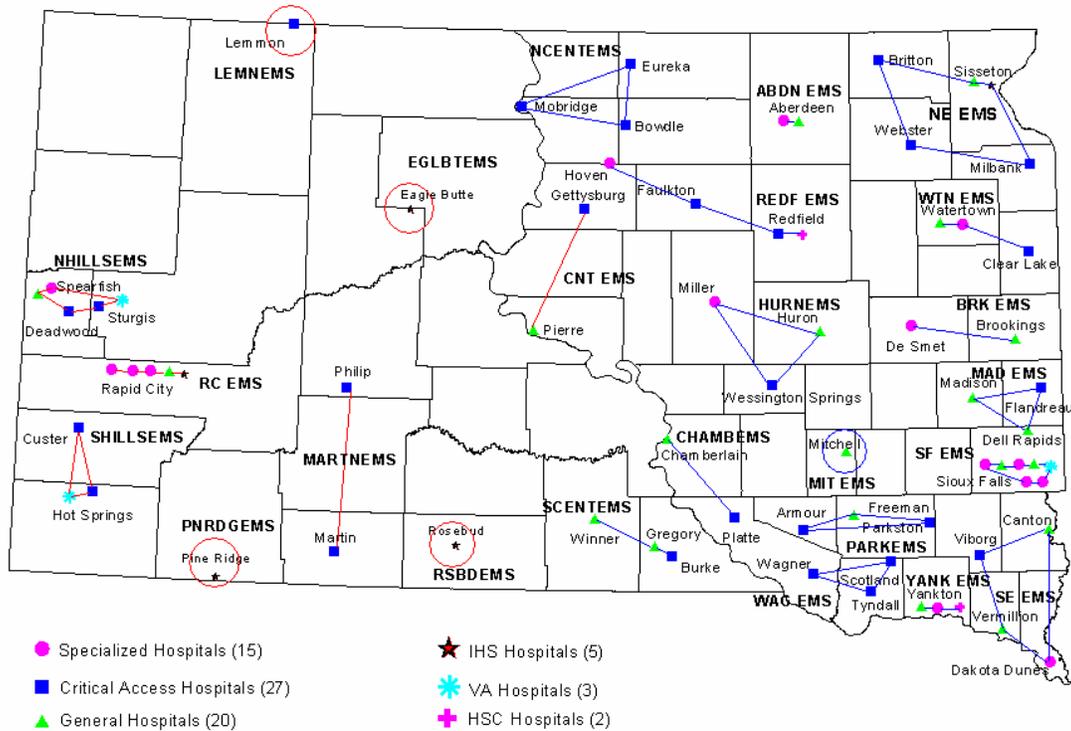
Procedure:

Radios provided by the South Dakota Department of Health to facilities in the state have been pre-programmed with various local and regional talkgroups. These Talkgroups are in place so public safety agencies (primarily ambulance services) would be able to predict the talkgroup the receiving facility would be operating when transporting a patient. This principle will apply to all hospitals in the state that have obtained the state public safety radio system. Hospitals should monitor the talkgroup of which they are a member according to the following map entitled "SOUTH DAKOTA HOSPITAL TALKGROUPS"

Example:

According to the following map, hospitals in Madison, Flandreau, and Dell Rapids are connected on the MAD EMS talkgroup. This must be the talkgroup monitored by these facilities since ambulances coming from other areas will expect to contact them here. Hospitals in Spearfish, Deadwood, and Sturgis are connected on the NHILLS EMS talkgroup. Public safety agencies need to be able to contact these facilities in emergencies, and a statewide plan that can be predicted by all agencies will be the most effective. Hospitals in Parkston, Freeman, and Armour are connected via the PARK EMS talkgroup; a helicopter responding to a call to transport needs to be able to contact these facilities, and when the plan is followed, can predict which talkgroup the facility will be monitoring. If the hospital in Faulkton has a patient to be transferred, a helicopter called to transport would be able to select the REDF EMS talkgroup in order to make landing arrangements, and so on. If an ambulance is called to transport a patient from Phillip to a hospital in Rapid City, that ambulance would be able to select the RC EMS talkgroup to relay pertinent information to the receiving facility in Rapid City.

SOUTH DAKOTA HOSPITAL TALK GROUPS



B. AGENCY TALKGROUPS

Each agency is considered as "owner" of the private talkgroup assigned to them. Agencies are expected to use the talkgroups assigned to the department for all interdepartmental traffic. Policies and procedures for the use of the agency talkgroup are at the discretion of the department, within the technical limitations set forth in Section V item A4.

C. Requests for Additional Talkgroups

Requests for new talkgroups will be submitted to the System Administrator using Attachment A.

Authorization of private talkgroups for operations and monitoring of other agencies will be processed through the System Administrator. Attachment A will be filled out for each authorization, a copy kept on file, and another copy sent to:

State Radio Communications
Attn: System Administrator
1302 East Highway 14
Pierre, SD 57501

Or Faxed To: 605-773-4629

D. Authorization/Revocation for Sharing of Talkgroups

To access non-agency talkgroups, authorization from the "owner" of that talkgroup must be obtained using attachment 3 in this document. Authorization of private talkgroup to operate/monitor on that talkgroup may be rescinded by the talkgroup "owner" by written notice.

IX. AUTHORIZED SYSTEM ACCESS

Access will be granted to public safety. Further applications beyond public safety will be reviewed on a case by case basis by the System Administrator and the PSCC review committee.

A. Public Safety

Law Enforcement

- Any agency recognized by the SD Attorney General, and their associated dispatch/911 operations
- Any agency recognized by US Attorney General
- Any agency recognized as a tribal law-enforcement agency

Fire Departments

- Any agency recognized by state Fire Marshals Office
- Any federally recognized fire agency/department
- Any tribal fire agency/department

EMS

Ambulance:

- Any licensed ambulance service

Facilities:

- Any hospital or facility recognized by the state Department of Health

Emergency Management

- Any emergency management agency recognized by the state Department of Public Safety

B. Public Service

Transportation

- State transportation units
- Local administrative only(not for daily use)
- Transit systems(by request & review process)

Support Agencies

- Agencies authorized by state statute such as Red Cross, Salvation Army, and like agencies that support in times of emergency. To include communications service agencies that support radio maintenance or operations

NWS

- 3 current weather services offices

Public Works

Court Services/Corrections

Regulatory

Other Governmental Agencies

○

C. Applying for System Access

Agencies or entities wishing to be granted access to the State-wide Radio Network System fill out the System Access application (Attachment 2) and submit it to the SRC System Administrator.

- The SRC System Administrator will recommend approval or denial and forward the applicant information to the PSCC.
- The PSCC will review the application and will give written notice of approval or denial within 45 days.
 - If the requesting agencies application is denied, the PSCC will provide the requesting agency with the necessary stipulations of compliance to obtain system access, or a written explanation of the decision to deny access to the system.
 - A copy of the notice of approval or denial will be forwarded to the PSCC and the Commissioner of BIT.

D. Revocation of Privileges

The objective of this procedure is to describe the consequences of non-compliance. These consequences will be spelled out for varying degrees and duration of non-compliance.

The PSCC is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among the users of the shared state-wide public safety radio system.

The ability to communicate between full participants and non-participants in the statewide system is possible due to the inter-operational hardware and software being developed. The improper use of this hardware can have minor to grave consequences. These standards, policies and procedures have been set forth to describe how and under what conditions the statewide radio system will be used. This is essential in order to maximize service to the citizens of the state and minimize potential negative consequences. Responsible management of this resource, therefore, requires that standards, protocols and procedures be enforced and that consequences of non-compliance be developed and implemented.

- Recommended Protocol/ Standard: Consequences of failure to comply with these standards, protocols and procedures fall into two categories of non-compliance.
 - **Moderate to high** potential for serious adverse affect on participants and/or non-participants of the Backbone System.
 - **Low** potential for adverse affect on participants and/or non-participants of the Backbone System.
 - The SRC System Administrator will be the first to review the complaint for discovery or report of non-compliance.
 - The PSCC will then review the complaint for discovery or report of non-compliance.
 - The Commissioner of BIT will be the final review of the complaint for discovery or report of non-compliance.
- SDCL Chapter 1-13 authorizes the Bureau of Information and Telecommunications (BIT) to fund, operate, and maintain the radio system, and shall be regarded as the system owner. Failure to comply with the protocols may result in the following actions:

Moderate to high

<ul style="list-style-type: none"> ▪ First violation 	<p>Written order to immediately stop the non-compliant practice. Either the SRC System Administrator, PSCC, owner agency of affected Systems/Sub-System may send this letter, with a copy to the all affected parties. The governing body of the violating agency shall be notified of the violation.</p>
<p>Failure to correct problem and respond within 30 days <u>or</u> 2nd offense within 180 days</p>	<p>Suspension of user privileges on the Backbone System to the extent of time recommended by the PSCC and executed by the Commissioner of BIT with prior notification to the affected agencies.</p>
<ul style="list-style-type: none"> ▪ Failure to respond within 60 days <u>or</u> 3rd offense within 180 days 	<p>Revocation of user privileges on the Backbone System. This action must be recommended by the PSCC and executed by the Commissioner of BIT.</p>

Low

<ul style="list-style-type: none"> ▪ First violation 	<p>Written warning calling attention to the non-compliant practice. The violator is asked to stop the non-compliant practice(s). The SRC System Administrator or owner agency may send the warning with a copy to the PSCC and affected parties. The governing body of the violating agency shall be notified of the violation.</p>
<ul style="list-style-type: none"> ▪ Failure to respond within 30 days <u>or</u> 2nd offense within 180 days 	<p>Written order to immediately stop the non-compliant practice or be subject to suspension or revocation of user privileges. The SRC System Administrator or the owner agency may send this letter with a copy to the affected agencies and the PSCC.</p>
<ul style="list-style-type: none"> ▪ Failure to respond within 60 days <u>or</u> 3rd offense within 180 days 	<p>Suspension or revocation of user privileges on the Backbone system. The specific penalty must be recommended by the PSCC and executed by the Commissioner of BIT.</p>

- Recommended Procedure for non-compliance may come to the attention of various personnel as a result of routine monitoring, an audit, a report or complaint from radio users, to name a few of the possible alternatives.
- Regardless of how the issue arises, as soon as there is awareness of non-compliance:
 - The individual discovering non-compliance is obliged to immediately report it to their respective system manager or administrator. If local management fails to resolve the situation within a reasonable time the manager will notify the SRC System Administrator.
 - System Usage Complaints shall be directed in writing to:

System Administrator, State Radio Communications
 1302 East Highway 14
 Pierre, SD 57501

- Concurrently, the System Administrator will notify the Point of Contact of the agency not in compliance, the PSCC and the Commissioner of BIT.
- If the matter is determined to be urgent by the SRC System Administrator, PSCC or Commissioner of BIT, it will be placed on the next PSCC meeting agenda.

- Should immediate action be required the SRC System Administrator will notify the non-compliant agency of:
 - ✓ The required action. This will include a request to explain the reason for non-compliance.
 - ✓ The date the matter will come before the PSCC, or before the Commissioner of BIT.
 - ✓ Their rights to appeal.
- The SRC System Administrator and the PSCC will hear the issue and recommend corrective action or consequences.
- These will be communicated to the violator within 10 days.
- The SRC System Administrator will follow up to ensure that all next steps and or corrective action have been completed within the time frame.
- The SRC System Administrator and the PSCC, acting on behalf of the radio users, will manage this process. Any action taken by staff shall be reported to the SRC System Administrator and shall be subject to review and/or appeal.

Appeals

All users of the State-wide Radio Network System, whether full participants or conventional users connecting by means of inter-operational infrastructure, have the right to appeal a procedure, a decision or a sanction set forth. In the event of a dispute regarding the outcome of non-compliance procedures, an aggrieved party may file a written appeal to reverse recommendations or sanctions within 30 days of issuance of directives or sanctions.

- In the event of a dispute regarding the outcome of non-compliance procedures, an aggrieved party may file a written appeal to reverse recommendations or sanctions within 30 days of issuance of directives.
- Within ten days of receiving a request for appeal, the PSCC shall provide written notice of the request to all involved parties and set a date for an appeal hearing by the Commissioner of BIT within 45 days.
- DECISION – The Commissioner of BIT, after a hearing on the matter, shall make a decision regarding the dispute within 60 days and transmit an order to all parties involved. The action called for shall be implemented in accordance with the order. Copies of the order will be mailed to all affected parties, the PSCC and the State Radio Communications System Administrator.

X. Attachments

1. 10 codes
2. Authorization for New Talkgroup or System Access
3. Authorization to Use Talkgroups Not Owned By Requesting Agency
4. Ownership of System
5. Site Location Maps
6. Motorola Mobile Operation
7. Motorola Portable Operation
8. EF Johnson Mobile Operation
9. EF Johnson Portable Operation
10. Coverage Maps
11. National Weather Service/Interagency Operations Areas
12. Dealer/Contact List

Attachment 1

		"10 SIGNALS"	
10-1	RECEIVING POORLY	10-33	EMERGENCY TRAFFIC, ALL STAND BY
10-2	RECEIVING WELL	10-34	CLEAR TO COPY
10-3	ETA LANDLINE RESIDENCE	10-35	CONFIDENTIAL INFORMATION
10-4	OK, AFFIRMATIVE	10-36	CORRECT TIME
10-5	RELAY/J1 PERSON/J2 PROPERTY	10-37	WHO IS OPERATOR ON DUTY
10-6	BUSY/STAND BY	10-39	YOUR MESSAGE DELIVERED
10-7	OUT OF SERVICE	10-40	CLEAR FOR LOCAL DISPATCH
10-8	IN SERVICE	10-41	PERMISSION GRANTED FOR 10-40
10-9	REPEAT	10-42	OFFICER NOW AT HIS RESIDENCE
10-10	OUT OF SERVICE SUBJECT TO CALL	10-44	STOPPING (DESCR & LICENCE OF VEHICLE)
10-12F	FEMALE VISITOR OR OFFICIAL PRESENT	10-45	PATROL WITH 2 OFFICERS
10-12M	MALE VISITOR OR OFFICIAL PRESENT	10-50	USE CAUTION
10-13	WEATHER AND ROAD CONDITIONS	10-50M	MEDICAL PROBLEMS
10-14	CONVOY OR ESCORT	10-53	REQUEST BACKUP- NON EMERGENCY
10-15F	FEMALE PRISONER IN CUSTODY	10-54	REQUESTING BACKUP- EMERGENCY
10-15M	MALE PRISONER IN CUSTODY	10-57A	GENERAL HUNTING LICENSE CHECK
10-16	NCIC CHECK	10-57B	BIG GAME LICENSE CHECK
10-16H	HIT ON NCIC	10-57C	CITATIONS/VIOLATIONS CHECK
10-19	RETURN TO YOUR STATION	10-58	CHECK FOR DRIVER LICENSE AND RECORD
10-20	LOCATION	10-59	DRIVER LICENSE STATUS ONLY
10-21	CALL THIS STATION BY TELEPHONE	10-60	NEXT CASE NUMBER
10-22	TAKE NO FURTHER ACTION LAST INFO	10-70	IS THERE TRAFFIC FOR THIS UNIT/STATION
10-23	STATUS CHECK	10-71	SEND CORONER
10-24	MAKE PERSONNEL CONTACT, TIME/PLACE	10-78	FOR YOUR INFORMATION. INFO ITEM
10-25	DO YOU HAVE CONTACT WITH	10-78P	PROTECTION ORDER
10-28	CHECK FULL REGISTRATION	10-78S	SEX OFFENDER
10-29	CHECK FOR RECORD OR WANTED	10-80	ANY NARCOTICS INFORMATION
10-29H	LOCAL WANTS WARRANT HIT	10-82	REQUEST ROOM RESERVATIONS, ETA
10-29W	WANTED CHECK ONLY	10-88	WHAT NUMBER SHALL I CALL TO MAKE STATION TO STATION CONTACT WITH
10-30	DOES NOT CONFORM TO RULES AND REGS	10-89	UNIT IS OFF THE AIR NEEDS SERVICE
10-31	SEND WRECKER TO	10-90	CIVIL DISTURBANCE
10-32	SEND AMBULANCE TO	10-97	ARRIVED AT THE SCENE
		10-98	ASSIGNMENT COMPLETED
		10-99	EMERGENCY, ALL UNITS & STATIONS COPY
			RADIO SIGNALS FOR LAW ENFORCEMENT
			1. ACCIDENT AT...PERSONAL INJURY
			2. ACCIDENT AT... PROPERTY DAMAGE
			6. DROWNING AT...
			7. DRUNK AT...
			8. DRUNK DRIVER...
			11. FIRE AT...
			15. MURDER AT...
			16. DEATH AT...UNKNOWN CAUSE
			20. SUICIDE AT...

Attachment 2

South Dakota Interagency Communications System
AUTHORIZATION FOR NEW TALKGROUP OR SYSTEM ACCESS

Date: _____

Requesting Agency: _____

Type of Request New Talkgroup Request
 New User
 Other _____

Type of Agency **Public Safety**
 Law Enforcement
 Fire Department
 Emergency Medical Service
 Emergency Management
 Other _____

Public Service
 Transportation
 Support
 Weather Service
 Public Works
 Court Services
 Regulatory
 Other _____

IV. Reason for Request

(Attach supporting documentation)

Name of individual completing application _____

Address _____

Phone _____

E-mail address _____

State Radio Communications
Attn: System Administrator
1302 East Highway 14
Pierre, SD 57501
Fax 605-773-4629

Attachment 3

South Dakota Interagency Communications System
**AUTHORIZATION TO USE TALK GROUPS
 NOT OWNED BY THE REQUESTING AGENCY**

Date: _____

Requesting Agency: _____

Authorizing Agency: _____

Reason for Request Add Talk Group(s) to Radios
 Scan Talk Group(s)
 Other _____

I. Request permission to ADD the following talk groups

Talk Group	To Be Installed in: (i.e., Portable, Mobile, Command Post)	For the following Work Units:

II. Request permission to SCAN/ MONITOR the following talk groups

Talk Group	To Be Installed in: (i.e., Portable, Mobile, Command Post)	To be monitored by the following positions:	Request for Receive Only

III. Other Request/ Requirements (Explain)

IVI. Reason for Request

(Attach supporting documentation)

Name of individual completing application _____

Address _____

Phone _____

E-mail

address _____

This Side for Authorizing Agency use Only

South Dakota Interagency Communications System
AUTHORIZATION TO USE TALK GROUPS
NOT OWNED BY THE REQUESTING AGENCY

Request Approved_____ Approved with Conditions_____ Denied_____

Conditions:

Authorized Signature: _____

Name of Authorizing Individual _____

Address _____

Phone _____

E-mail address _____

State Radio Communications
Attn: System Administrator
1302 East Highway 14
Pierre, SD 57501

Fax 605-773-4629

Attachment 4

Ownership of System

34-45-33. State to integrate telecommunications functions and facilities -- Bureau of Information and Telecommunications to develop plan. The State of South Dakota shall by July 1, 2001, integrate telecommunications functions and facilities of those state agencies, which currently operate their own systems, into one cohesive and integrated network. These agencies currently include State Radio Communications; the Bureau of Information and Telecommunications; the Division of Emergency Management in the Department of Military and Veterans Affairs; Public Broadcasting in the Bureau of Information and Telecommunications; the Department of Game, Fish and Parks; the Department of Transportation; the Division of Forestry in the Department of Agriculture; and the Highway Patrol in the Department of Public Safety. The Bureau of Information and Telecommunications shall be responsible for development of a state agency integration plan by November 1, 1999.

1-13-2. Towers, repeater stations, and subheadquarters authorized. The Bureau of Information and Telecommunications may locate, construct, establish, equip, and maintain such towers, repeater stations, and subheadquarters as may be necessary, and for such purpose may acquire by purchase, lease, or condemnation all necessary sites and locations in order to install, establish, and operate a state communications system as provided by this chapter.

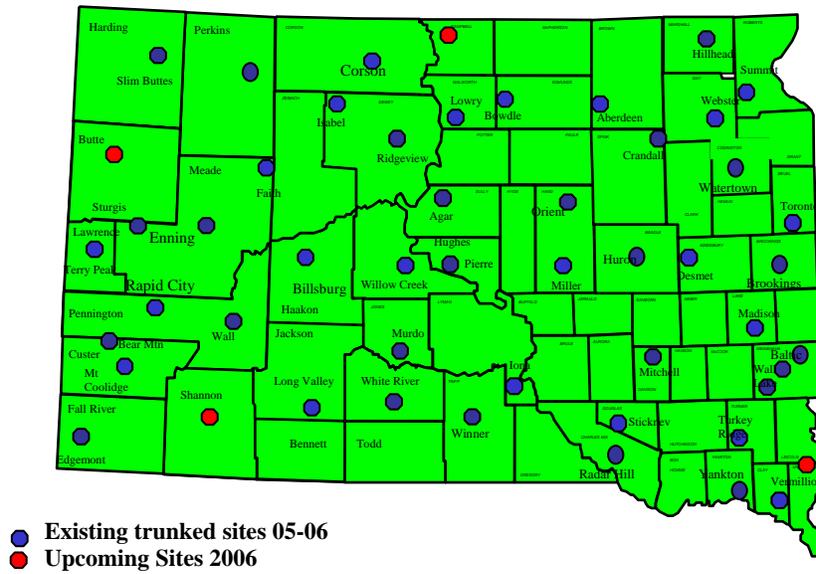
1-13-3. Employment of personnel and equipment -- Maintenance and operating costs. The Bureau of Information and Telecommunications may employ such operators and assistants and such equipment necessary to carry out the provisions of this chapter. The costs of maintaining and the operation of a state communications system and all receiving sets owned or operated by the bureau shall be paid out of the appropriation for the bureau.

1-13-5. Federal funds -- Acceptance and use. The Bureau of Information and Telecommunications may apply for, accept, and expend on behalf of the state communications system any appropriations, grants, matching funds, or moneys allotted to the State of South Dakota by the federal government pursuant to any act of Congress of the United States. The funds so received by the State of South Dakota shall be administered and expended under the supervision of the bureau to purchase the necessary apparatus and equipment for new construction and equipment improvements in the state communications system. Such funds shall be deposited in the state treasury to be paid out on warrants drawn by the state auditor on vouchers approved by the commissioner of the bureau.

The State of South Dakota division of Bureau of Information and Telecommunications is responsible for funding, operation, and maintenance of the SDICS by the statutes listed above, and will be regarded as the system owner. Exceptions from the ownership include:

- Subscriber equipment distributed to local agencies.
- Subscriber equipment purchased by other state agencies.
- Subscriber equipment purchased by local/federal agencies.
- Local dispatch equipment purchased by local/federal agencies.
- Site equipment purchased by local agencies with federal or other funding that requires local ownership.

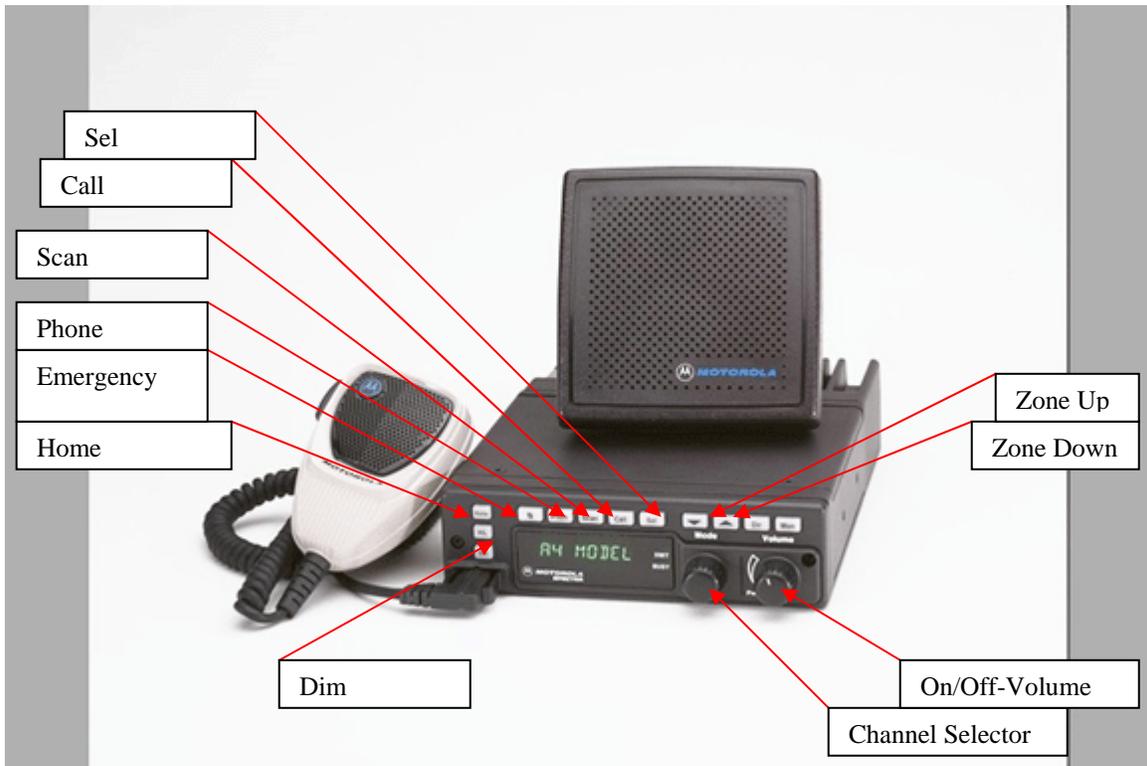
Current Radio Network



The current radio network has 50 towers, including the 3 site simulcast system in Sioux Falls. 2006 expansion plans include Porcupine, Butte County, Campbell County, and Union County.

Attachment 6

Motorola Mobile (W4 Model) Write in options programmed into your radio



Radio buttons:

Emergency (only used on law enforcement radios) - Sends an emergency message back to dispatch. They will automatically know that it was your radio that sent the message. To engage emergency alarm temporarily push the emergency button, your radio will flash emergency and send it to dispatch. Note: radios that have been reprogrammed recently are set up so you need to hold the emergency button for .5 seconds to activate it. To disable an emergency call hold your emergency button in until an alert tone sounds, your radio should quit flashing emergency at this time, and dispatch will be able to reset their end.

Site/phon - tells you the number of the site you are on, it also tells the RSSI (receive signal strength indicator). A RSSI of 87 is max signal, most vehicles should work down into the forties or below however.

Scan- press the scan and you should see a triangle below the scan button, this means you're scanning. There can be up to 10 channels in each scan list. To see what channels are programmed into the scan list for a certain channel, select that channel and hold the scan button, your radio will beep then you will see n pri in the top of the display, then turn your channel / mode selector to other channels any one that you see the n pri on is in that scan list.

Call - This button can be used to see your radios unit id. To do this press the call button then turn the mode knob until you see my id, your radio will then flash a 6 digit number always starting with a 7. This is your radios unit id in the system.

Del/sel - allows you to temporarily delete a channel from your scan list. This channel will be back in your scan list if you either turn scan off & on, turn your radio on & off, or change channels. To delete a channel from the scan list push this button while receiving traffic on the undesired channel.

Zone up/ Zone down - allows you to select other groups of channels that are called zones.

Home- returns your radios to the most commonly used channel.

H / L - we do not use this.

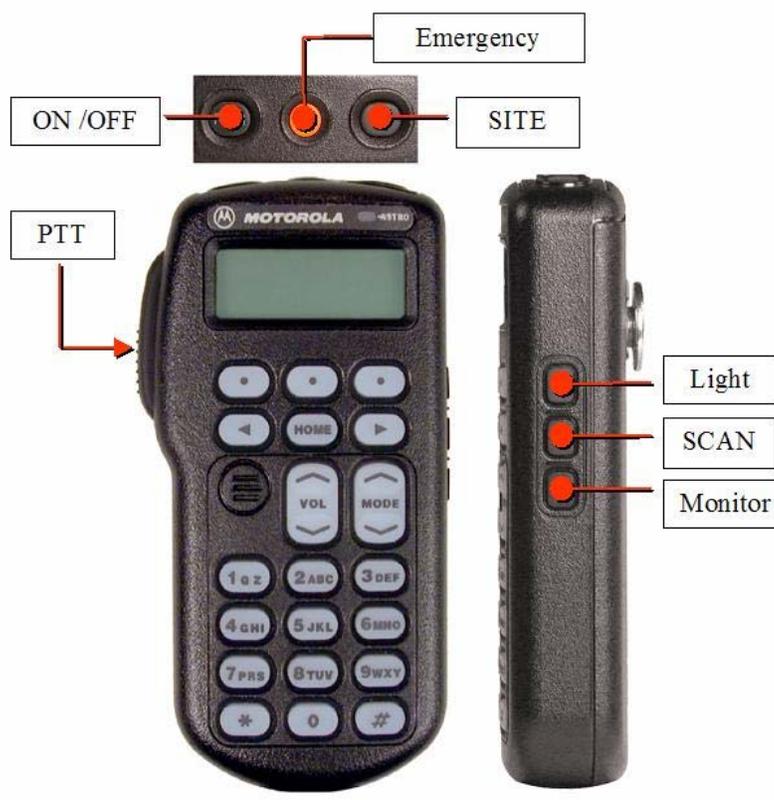
Dim- display dim, there are four different levels, the lower intensity levels for nighttime are the only ones that will light you're top buttons.

Note: The following features are only available on radios with the Motorola siren/PA option such as the HP radios.

To adjust PA volume - press PA button then turn the volume knob on your radio, you will see PA volume then the level number in your radio display.

To operate external radio- press external radio, then press your siren button.

Motorola Mobile (W-3 Model) Write in options programmed into your radio



Top buttons:

Left – On/off – momentarily press to turn radio on or off

Center - (orange) – emergency - An emergency signal will be sent after holding this button for .5 seconds.

Right – site display/search - A momentary press of this button will display the current number of the site that the radio is tracking and it will also display the RSSI (receive signal strength indicator), with 87 being max signal. Holding this button until the display shows scanning will cause the radio to search for a different site.

Side buttons: (right hand side)

Upper – display light

Middle – scan – Turns scan on and off. There will be a Z with an arrow on the bottom in the top of the display when scan is on.

Bottom – Currently not used for our system.

Large side button: (left hand side)

PTT or transmit button

To change channels:

Channels can be changed with the mode up/down rocker switch.

To change zones: (groups of channels)

Press the soft key (single dot) below ZONE in the radio display. You can then either use the left/right arrow keys or the mode up/down rocker switch to select the zone you need. When you have selected the zone you need momentarily press the home button to escape from zone selection.

To turn up the volume:

Pressing the volume up/down will cause a volume set tone to be heard it will increase or decrease in volume to give you an indication of the volume setting. The display will also show a volume level indication. A volume level setting of 7 would be a good pace to start.

Home button operation:

To return the radio to the most commonly used channel hold the home button until the radio beeps.

To view the radios unit ID:

Press the soft key (single dot) below CALL in the radio display, and then press the left arrow key. The display should now show MY ID: and a six digit number that starts with 7. This number is this radios unit id.

To view the scan list that is used with the currently selected channel:

Press the soft key below VIEW in the radio display. Note: If you do not see the item that you want in the bottom of the display use the left/right arrow keys until you see it. After pressing the soft key below view next press the soft key below scan in the radio display. Now use the left < and right > arrow keys to display the channels in the current scan list.

When finished momentarily press the home key to return to normal operation.

The number keys on the bottom of the handset are currently note used

Motorola Handheld Radio Operation

Write in options programmed into your radio



Example of typical programming in some radios. Your radio configuration may be different. Please consult your service provider for your programming configuration.

Top controls:

- Left knob – volume control
- Rotary switch (center)- zone selection
- Two position concentric switch (under rotary switch) – scan on and off Note: there will be a Z with an arrow in the display when scan is on.
- ABC switch - position C locks the keypad

Side buttons:

- Large purple button- volume set tone Note: to set the volume hold this button in and adjust the volume to desired level.
- Side button 1 (single dot) – display light
- Side button 2 (two dot) – site display/search. A momentary press of the site button shows the current site the radio is tracking and the RSSI (received signal strength indicator), and a RSSI of 87 is max signal. You can also force the radio to look for a different site by holding the site button until the display says scanning.

Menu selected items:

Note: if you do not see the desired item in your menu selections use the arrow keys until it is displayed

- CHAN – to select a channel press the [-] key below CHAN and then use your arrow keys to change channels, when you get to the channel you want momentarily press the home key to get out of the channel selection mode.

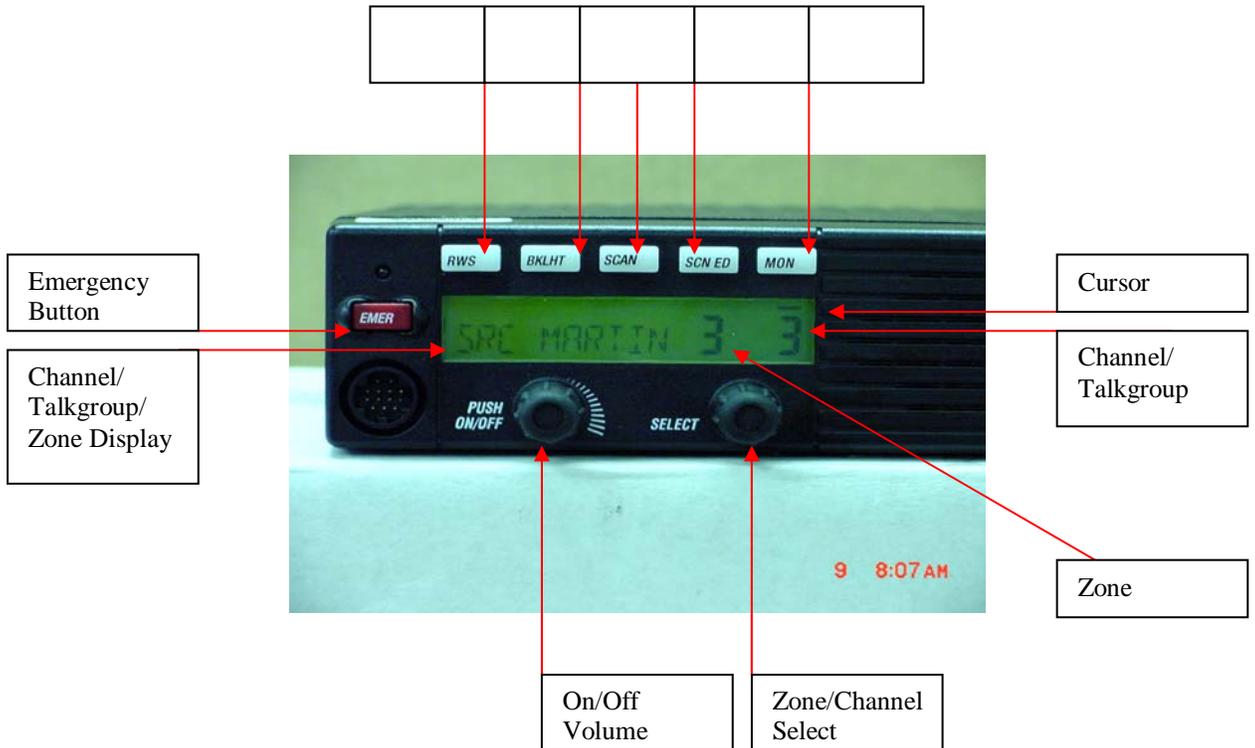
Note: the HOME key has two functions , a momentary press of the HOME key gets you out of the current operation (like an escape key) , and holding down the home key will return the radio to the programmed home channel.

- PWR – you can turn your radio down to low transmit power to extend battery life. To do this press the [-] key below PWR, the radio will then display the current power setting in the top of the display. To switch to low power press the [-] key below low in the lower left portion of the display, or if you were on low power and want to return to high power press the [-] key below high.
- Page – you can select an individual radio to page, this will cause the receiving radio to beep and flash [PAGE RECEIVED]. This allows an individual to know if someone has tried to call them even if they are away from the radio, or can be useful in high noise environments. To use this feature press the [-] key below PAGE, then use the arrow keys to select the call sign of the radio you want to page, when you have selected the one you want key the radio. The receiving radio can later see who was trying to call them by pressing the page button and the unit id of the radio that had tried to call them will be displayed.
- Mute – mutes the tones that are normally produced when keypad buttons are pressed. To Mute them push the [-] below MUTE, then press the [-] below off.
- NUIS – nuisance channel delete, if you do not wish to hear a channel that you are scanning press the [-] and that channel will temporarily be taken out of your scan list. To put the channel back in your scan list turn scan off and on or turn the radio off and on.

Attachment 8

EF Johnson 5300

The EF Johnson 5300 radio is a 50-watt dual mode VHF analog/trunked mobile radio, capable of 256 channels/talkgroups. **Write in options programmed into your radio.**



On/Off-Volume--Press knob in to turn radio on/off. Rotate for volume control.

Zone/Channel Select--Press knob in to move cursor over zone or channel. Rotate knob to select zone/channel.

Zone Display--A zone is a group of channels or talkgroups, radio has capability of 16 zones with 16 channels each.

Channel Display--Displays selected conventional channel or trunked talkgroup.

Cursor--Displays over which position the selector knob is active. Zone or channel/talkgroup.

Monitor Button(Conventional)--Enables/disables tone protection on conventional channels.

Scan List Select(Trunked)--Displays user editable scan lists(up to 16) when in trunked operation.

Scan Edit Button--Enables user to edit 16 scan lists of 16 channels each. By list either trunked or conventional.

Scan List Select(Conventional)--Displays user editable scan lists(up to 16) when in conventional operation.

Scan Button(Trunked & Conventional)--Enables/disables scan function on radio.

Backlighting--Allows user to change display lighting.

RWS(Radio-Wide Scan)--The only scan list that will scan both conventional and trunked channels. 16 ch fixed.

Emergency Button(Man down button)--Alerts dispatch centers and surrounding radio units of an emergency.

Display--Visual indication of channel/talkgroup/zone name presently selected.

Attachment 8

EFJ 5300 Operating Instructions

RADIO TURN-ON

TO TURN ON THE POWER, PRESS THE ON/OFF VOLUME SWITCH. THE VERSION, FOLLOWED BY THE ZONE AND CHANNEL NUMBER WILL BE DISPLAYED.



CHANGING CHANNELS/TALKGROUP

TO SELECT TALKGROUP OR CHANNEL WITHIN THE ZONE SELECTED, ROTATE SELECT KNOB



CHANGING ZONES-2

TO CHANGE ZONES, PRESS THE SELECT BUTTON(1) & Rotate(2)
THE SELECTED ZONE WILL SHOW FOR 5 SECONDS--



CHANGING ZONES-3

AND THEN THE TALKGROUP/CHANNEL WITHIN THAT ZONE WILL SHOW, ROTATE TO CHANNEL/TALKGROUP DESIRED.



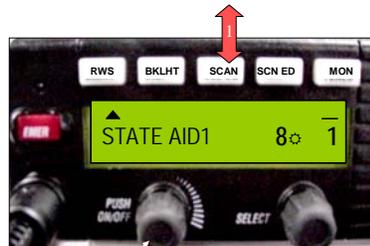
RADIO-WIDE-SCAN(RWS)

PRESSING THE RWS BUTTON WILL ENABLE A PRESET SCAN LIST OF 16 CHANNELS/TALKGROUPS. THE ONLY SCAN THAT WILL SCAN BOTH ANALOG AND TRUNKED



NUISANCE CHANNEL DELETE

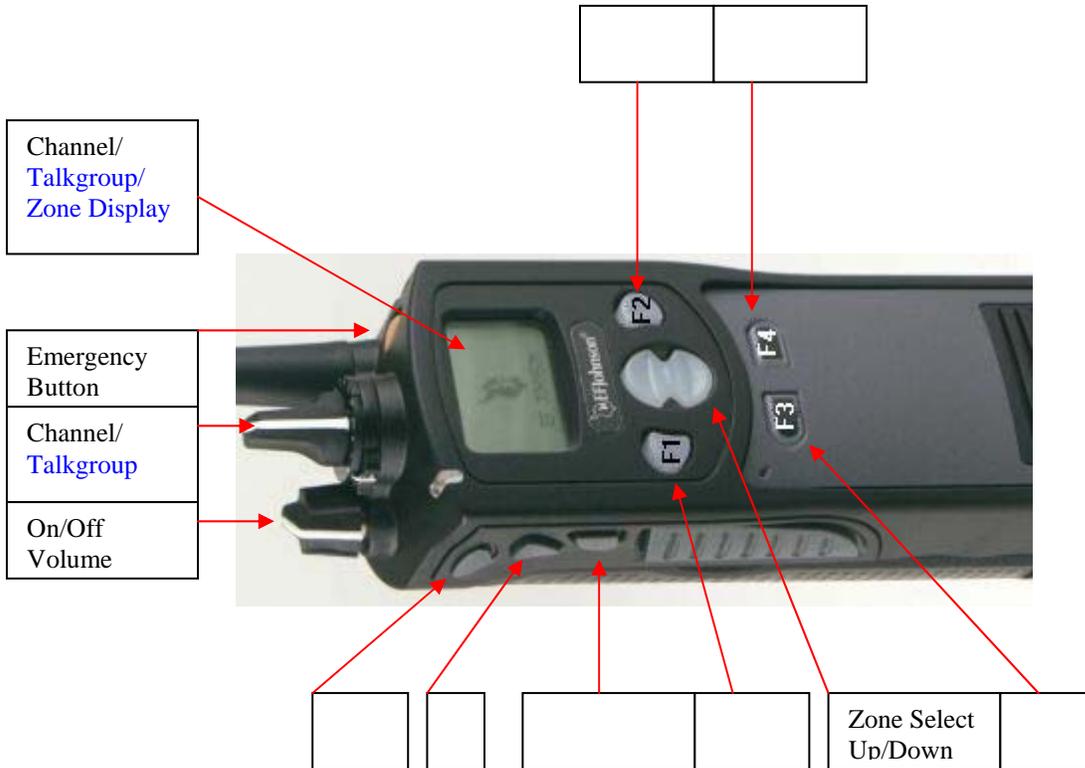
1. AS NUISANCE CHANNEL IS ACTIVE, PRESS SCAN AND HOLD SCAN BUTTON FOR 3 SECONDS



Attachment 9

EF Johnson 5100

The EF Johnson 5100 radio is a dual mode VHF analog/trunked portable radio, capable of 256 channels/talkgroups. **Write in options programmed into your radio**



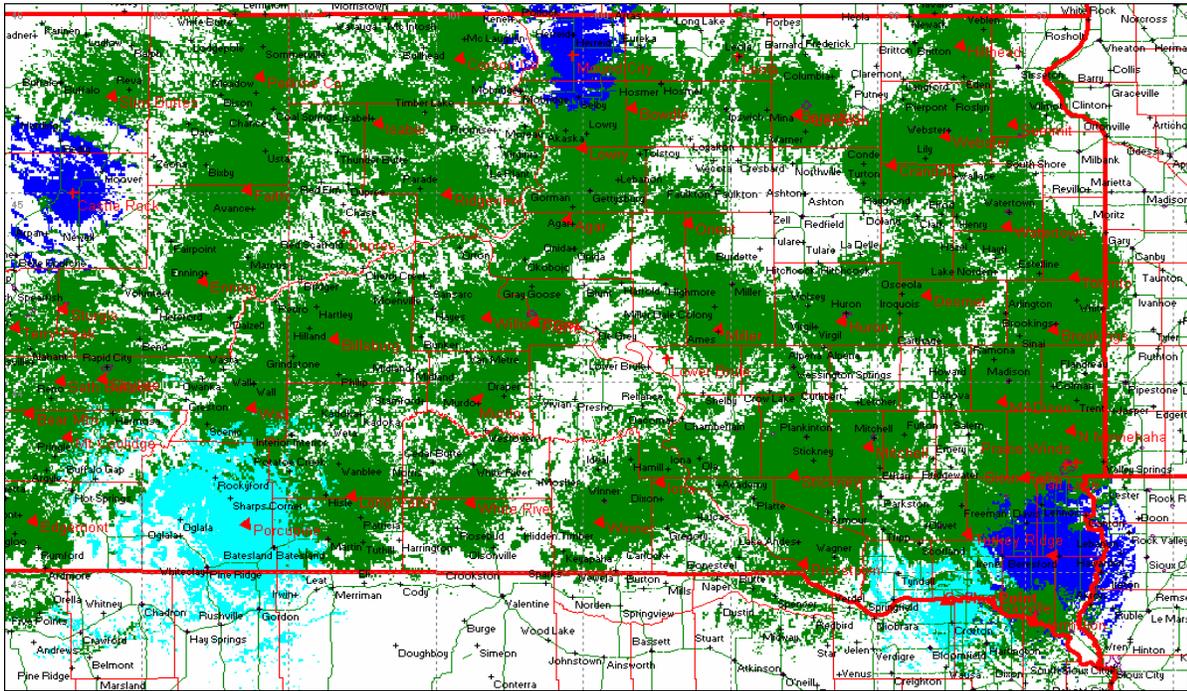
On/Off-Volume--Rotate knob in to turn radio on/off. Rotate for volume control.

Zone Select--Press up/down to select zone. Rotate knob to select channel/talkgroups.

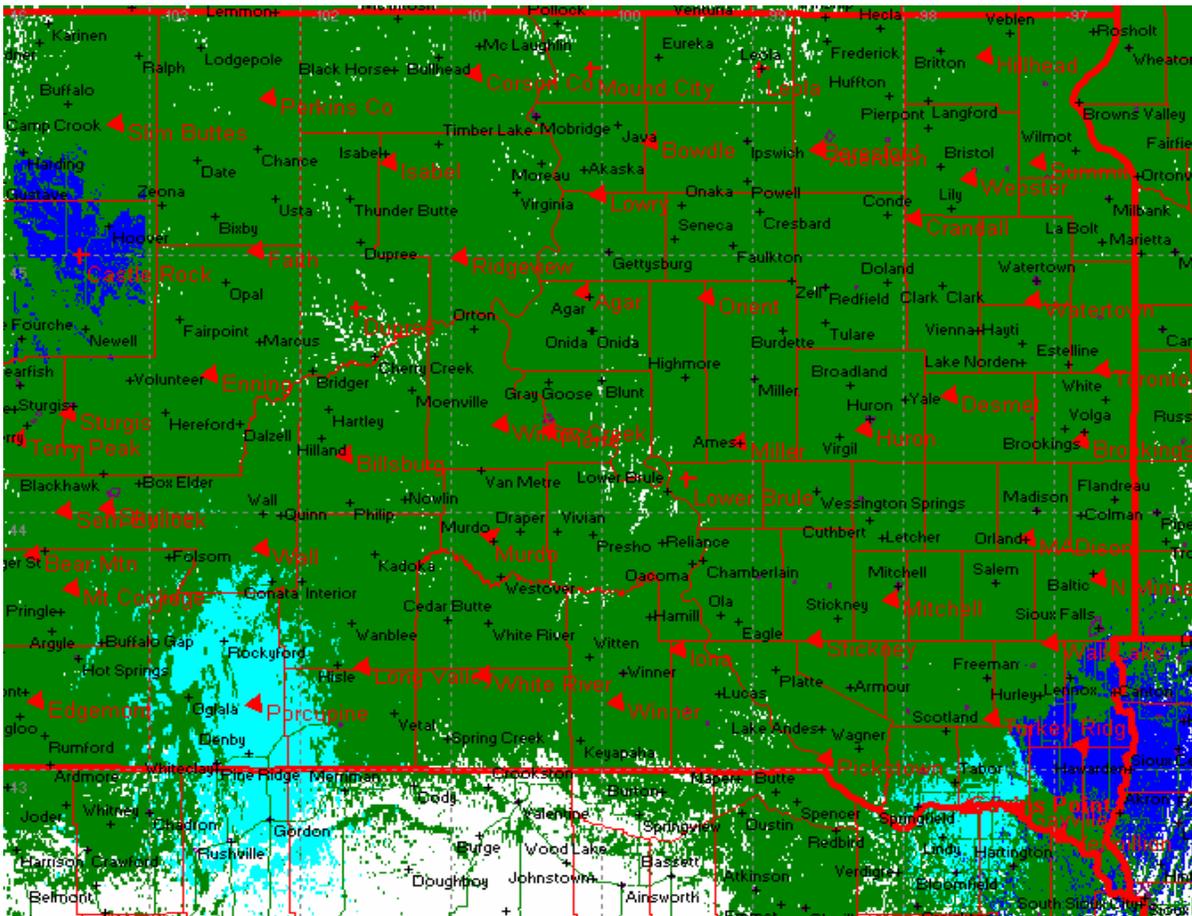
Emergency Button-- Alerts dispatch centers and surrounding radio units of an emergency.

Display--Visual indication of channel/talkgroup/zone name presently selected.

Attachment 10 Portable Coverage



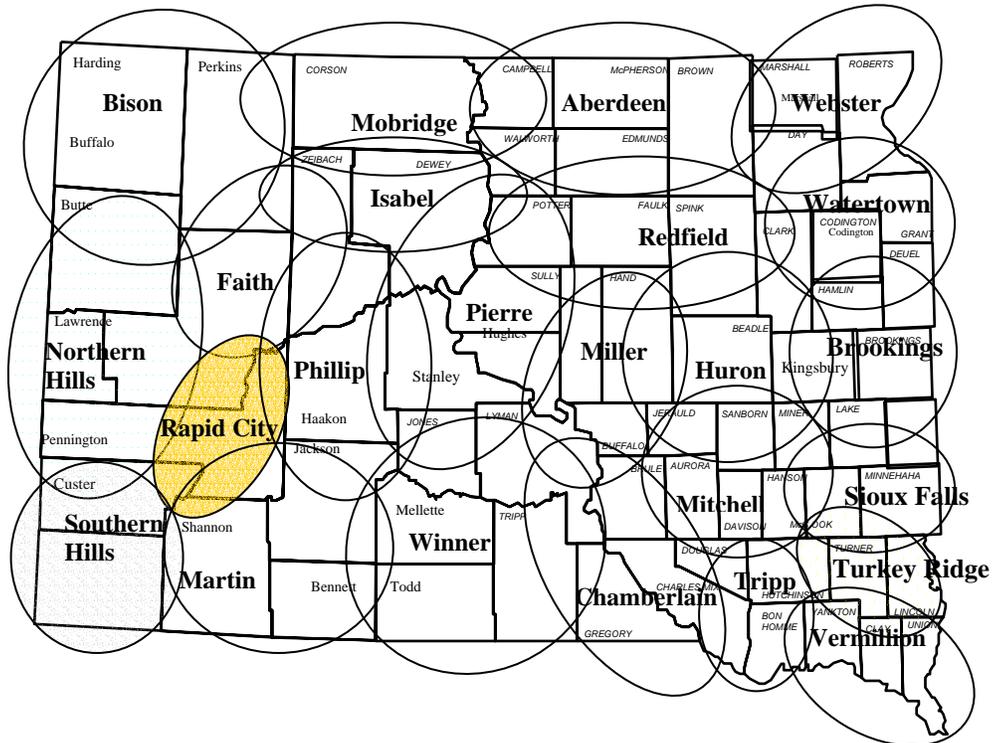
Mobile Coverage



South Dakota National Weather Service Areas



Rough Guide For Interagency Talkgroups



Attachment 12

Dealer/Contact List

Dakota Two-Way
1001 Hotrod Rd.
Mitchell, SD 57301
bvp@dakotainet.net
Bryan VanderPol

Sioux Falls Two-Way
700 E. 3rd St.
Sioux Falls, SD 57103
sftw700@pfire.net
Dan Horner - Jerry Johnson

Rushmore Communication
1715 Cambell
Rapid City, SD
ddupre@rushele.com
Doobie Dupre

Dakota Electronics
424 County Road 19
Aberdeen, SD 57401
dakel@nvc.net
Rolly Moerke

Communication Center
1520 North Garfield
Pierre, SD 57501
jchadwick@iw.net
James Chadwick

System Administrator
Todd Dravland
1302 East Highway 14
Pierre, SD 57501
605-773-4635
fax: 605-773-4629
todd.dravland@state.sd.us