

# North Dakota State Radio Frequency Migration Requirements and Guidelines for VHF Mobiles, Portables, and Base Stations

January 23, 2006

The information in this document contains guidelines and requirements for programming of radios for use during State Radio's migration to new frequencies.

This migration does not necessarily require replacement of radios at this time. Existing radios that meet the requirements in this document may be used during this transition period and thereafter. The scan priority requirements are identical to the present requirements.

At this time and for the foreseeable future State Radio ***will continue to operate in the analog mode. It is for this reason that digital mode programming information is not being provided at this time.*** State Radio will only broadcast in the analog mode.

After State Radio has migrated equipment at all sites to the new frequencies, old Channel 1 and Channel 2 information may be removed from radios. Notification will be given when this migration is completed.

If your current State Radio frequency usage is limited to Channel 3 (155.475), no changes are required to the radio.

State Radio will continue use of 154.905 but as a paging only frequency. Channel 1 will continue to transmit voice and paging traffic on 154.935.

Radios that do not meet the migration requirements shall be replaced with radios that are capable of operation on or upgradeable to the P-25 digital platform for future conventional operation on the State Radio system. These radios should also be upgradeable to function on a P-25 trunked VHF radio system. New digital radios must also be capable of analog operation.

**NORTH DAKOTA STATE RADIO  
LAW ENFORCEMENT VHF MOBILE/PORTABLE  
FREQUENCY/SCAN GUIDELINES**

January 23, 2006

Mobile/portable units assigned throughout the system shall have a minimum of sixteen channels transmit and receive capability. These shall contain frequency-determining elements and sequential monitoring capability as indicated below. In the sequential monitoring mode, one channel shall have priority over the other; i.e., at any time there is a signal present on both channels, the radio shall be programmed to select the designated priority channel for reception. **The new frequencies, present (old) frequencies, and related priority channels are designated below (priorities being underlined and bolded).**

The following are the frequencies and channel placement for a field subscriber unit (radio) with both the new and old State Radio frequencies.

- The Channel 1 position will transmit on frequency 151.460. Channel 1 position will receive frequency 154.935 and 151.460 with priority on **154.935**.
- The Channel 2 position will transmit on frequency 159.225. Channel 2 position will receive frequency 154.695 and frequency 159.225 with priority on **154.695**.
- The Channel 3 position will transmit and receive on frequency 155.475 (simplex).  
**COMMON EMERGENCY SYSTEM**

**RECOMMENDED LAW ENFORCEMENT CHANNEL CONFIGURATION**

<u>CHANNELS</u>	<u>TRANSMIT</u>	<u>RECEIVE</u>	<u>Tx PL</u>	<u>Rx PL</u>
1 SRTWR1	151.460	<b><u>154.935</u></b> /151.460	192.8	192.8
2 SRTWR2	159.225	<b><u>154.695</u></b> /159.225	192.8	192.8
3 SRTWR3	155.475	155.475/Simplex	none	CSQ
4				
5				
6				
7 SRMOB1	N/A	151.460 Priority 2 for Ch 1	N/A	192.8
8 SRMOB2	N/A	159.225 Priority 2 for Ch 2	N/A	192.8
9 OLDTW1	155.430	<b><u>154.935</u></b> /155.430	192.8	CSQ
10 OLDTW2	155.505	<b><u>154.905</u></b> /155.505	192.8	CSQ
11 OLDMB1	N/A	155.430 Priority 2 for Ch 9		
12 OLDMB2	N/A	155.505 Priority 2 for Ch 10		
13				
14				
15				
16				

\* **Frequencies 154.935, 154.695 and 154.905 shall not be programmed as transmit frequencies in mobiles or portables.**

**NORTH DAKOTA STATE RADIO  
LAW ENFORCEMENT VHF MOBILE/PORTABLE  
FREQUENCY/SCAN GUIDELINES**

**(continued)**

**January 23, 2006**

- All mobile radios should have a minimum of 100 Watts of transmitter power.
- All mobile units are required to have a transmitter time-out timer set for no more than 120 seconds.
- The common emergency system (CHANNEL 3) will be available to every high band mobile radio unit on the state law enforcement system including the large city police departments. The mode of operation will be simplex. The system will be reserved for emergencies and special operations for vehicles normally assigned to other systems. Such operations will be conducted at the discretion of the dispatchers at State Radio or upon request from a department having a valid need.

**Note:**

The above channel placement recommendations are intended for an older radio with single zone channel placement capability. In newer radios that have multiple channel zone capability the radio may be programmed with the new frequencies/channels in one zone and the old frequencies/channels in another zone. **It is important to understand the potential need or use of both the old or present State Radio frequencies and the new State Radio frequencies.** Both sets of frequencies will be required for radios that roam from one tower coverage area to another during the migration or installation stage of the new radio equipment and related frequencies. This is due to the fact not all equipment and frequencies can be changed simultaneously at each site. The new radio equipment and frequencies will be installed one tower site at a time based on sub networks and related geographic areas.

**NORTH DAKOTA STATE RADIO  
MOBILE/PORTABLE FIRE TRUCK GUIDELINES  
FOR THE USE OF 155.475**

January 23, 2006

The State Radio Communications Department approved the official use of 155.475 for all fire trucks in North Dakota. This was done to provide communication interoperable capabilities between State Radio and fire trucks after being dispatched by State Radio to the scene of an emergency such as a serious fire, hazardous materials spill, etc. Fire trucks may also use this frequency to communicate with other emergency services at the scene of an emergency such as an ambulance or police car.

Some of the requirements for the use of this frequency are:

- The radio must have a minimum of four channels.
- All mobile units are required to have a transmitter time-out timer set for no more than 120 seconds.
- That 155.475 be placed in the Channel 3 position of the fire trucks radio. This is a standard requirement for all public safety radios in North Dakota.
- That this frequency be used only in emergencies to communicate with State Radio or other public safety agencies at the scene of the emergency.
- Before installing this frequency in a fire truck, you must first receive a permit from the State Radio Communications Department. For information regarding permits call State Radio Communications at 701-328-8100.
- That the State Radio permit number assigned to the fire truck identifies all radio transmissions. Your state permit is not valid unless the following channel configuration is followed:

CHANNEL 1 - County (LG) Repeater	
CHANNEL 2 – Repeater Bypass	
CHANNEL 3 – 155.475	155.475
CHANNEL 4 – 154.295	154.295

**NOTE: Channel 4 is the Statewide Common Fire Frequency**

Many fire trucks do not have a home base station and ask for recommendations regarding channel configurations for new fire truck radios. If this is the case, we recommend the above configurations.

**155.475 will not be allowed in fire department base stations.**

**NORTH DAKOTA STATE RADIO  
AMBULANCE/RESCUE GUIDELINES**

January 23, 2006

- All mobile radios shall have a minimum of 100 Watts transmitter power.
- All mobile units are required to have a transmitter time-out timer set for no more than 120 seconds.
- When programming ambulance radios for use on the State Radio system, keep in mind that the ambulance has a need to communicate with hospitals without any interference from State Radio base stations. The scan priority should follow the selector switch at all times, which means the chosen channel is always the priority.

**STATE AMBULANCE/RESCUE CHANNEL CONFIGURATIONS**

<b><u>CHANNELS</u></b>	<b><u>TRANSMIT</u></b>	<b><u>RECEIVE</u></b>	<b><u>Tx PL</u></b>	<b><u>Rx PL</u></b>
1 SRTWR1	151.460	154.935/ <b><u>151.460P</u></b>	192.8	192.8
2 SRTWR2	159.225	<b><u>154.695P</u></b> /159.225	192.8	192.8
3 SREMG3	155.475	<b><u>155.475P</u></b> /Simplex	None	CSQ
4 Common EMS	155.340	<b><u>155.340P</u></b>	210.7	CSQ
5 Local Hosp.Local Hosp.		<b><u>Local Hosp-P</u></b>	Local	CSQ
6 County LGRCounty Channel		<b><u>County Channel-P</u></b>	Local	Local
7 SRMOB1	N/A	154.935 Priority 2 for Ch 1		192.8
8 SRMOB2	N/A	159.225 Priority 2 for Ch 2		192.8
9 OLDTW1	155.430	<b><u>154.935</u></b> /155.430	192.8	CSQ
10 OLDTW2	155.505	<b><u>154.905</u></b> /155.505	192.8	CSQ
11. OLDMB1	N/A	155.430 Priority 2 for Ch 9		CSQ
12. OLDMB2	N/A	155.505 Priority 2 for Ch 10		CSQ

**NORTH DAKOTA STATE RADIO  
SCHOOL BUS GUIDELINES FOR THE USE OF  
155.475**

January 23, 2006

The State Radio Communications Department approved the official use of 155.475 for all school buses in North Dakota. This was done to provide communications capabilities between State Radio and school buses in emergencies. School buses can also use this frequency to communicate with other emergency services at the scene of an emergency such as an ambulance or police car.

Some of the requirements for the use of this frequency are:

- THAT ALL RADIOS MUST HAVE A MINIMUM OF 4 CHANNELS.
- That 155.475 be placed in the Channel 3 position of the school bus radio. This is a standard requirement for all public safety radios in North Dakota. Other State Radio frequencies cannot be installed in school buses.
- That this frequency be used only in emergencies to communicate with State Radio or other public safety agencies at the scene of the emergency.
- Before installing this frequency in a school bus you must first receive a permit from the State Radio Communications Department.
- All mobile units are required to have a transmitter time-out timer set for no more than 120 seconds.
- That the State Radio permit number assigned to the school bus identify all radio transmissions. Your state permit is not valid unless the following channel configuration is followed:

CHANNEL 1 – County (LGR) Repeater  
CHANNEL 2 – Repeater Bypass  
CHANNEL 3 – Tx 155.475      Rx 155.475  
CHANNEL 4 – Schools Private Channel

**155.475 will not be allowed in school base stations**

**NORTH DAKOTA STATE RADIO  
BASE STATION GUIDELINES  
January 23, 2006**

Base stations shall be programmed identical to mobiles and portables for State Radio Channels 1, 2 and 3.

Frequencies 154.935, 154.695 and 154.905 shall not be programmed as transmit frequencies in base stations except for the use of 154.905 for paging purposes.

***It is important to note that with the addition of PL tones on each transmit frequency, State Radio Dispatch will now hear base station transmissions. Therefore it is important that base stations do not use channel 2 for local traffic.***