METRO REGION
800 MHz Trunked Regional Public Safety Radio System
Standards, Protocols, Procedures

Document Section:	**3 - Interoperability Guidelines**	Radio TOC Recommendation:
Sub-Section:	**METRO 3.13.0**	Date: 5/24/01
Procedure Title:	**Nationwide 800 MHz Conventional Interoperability– 8CALL, 8TACs**	
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1. Purpose or Objective

To establish procedures for the use of 800 MHz conventional mobile relay (two-frequency repeater) radio channels for intercommunications between radio users on different 800 MHz radio systems.

2. Operational Background:

- **Capabilities**

There are **five 800 MHz mobile relay frequency pairs that the FCC has assigned exclusively for interoperability communications between radio users on different 800 MHz radio systems.** One of these frequency pairs is reserved by the FCC as a calling channel, and the other four are reserved for intercommunications between radio users. The calling channel is named 8CALL90 and the other four channels are named 8TAC91, 8TAC92, 8TAC93, and 8TAC94. These frequency pairs are to be used with analog modulation in a 20 kHz bandwidth, mobile relay (repeater) mode and/or direct radio-to-radio "talk around" mode for scene of action interoperability. These frequency pairs may be licensed for use in any or all separate 800 MHz radio systems. The digital modulation radios that will be used in the new regional 800 MHz trunked radio system are capable of operating with analog modulation of 4.0 kHz.

The regional 800 MHz trunked radio system has **two mobile relay stations** each operating on one of these five frequency pairs with those stations located at the City Center site for maximum coverage area. One of those stations is on the calling frequency pair 8CALL90, and the other is 8TAC91. In addition to the region-wide mobile relay stations on 8CALL90 and 8TAC91, there is a sub-regional mobile relay station within Hennepin County on 8TAC94 consisting of 8 receiver sites and a transmitter site at Plymouth, MN. 8TAC94 is hardwired into a VHF/ UHF/ 800 MHz tri-band nationwide TAC channel system which can be soft patched to ARMER 800 MHz trunked talkgroups. This will facilitate not only communications among different 800 MHz users within Hennepin County, but cross band among and between VHF and UHF users as well. There will also be transportable mobile relay stations on the other two frequency pairs.

- **Constraints**

If one or more of these frequency pairs is selected in a mobile or portable radio in the regional radio system, the radio user will lose the priority revert feature as part of the talk group scanning function.

The 8CALL90 and 8TAC radio frequencies are in the NPSPAC band of 800 MHz frequencies and mobile and portable radios must be able to function in compliance with NPSPAC specifications to use these channels.

There is only one transmitter on the 8CALL90 and one transmitter on the 8TAC91 channel located at the City Center Building site. There are 18 receivers scattered over nine counties with the best audio selected in a voting comparator on the receive side of the mobile relay. Therefore, the receive coverage geographic area is greater than the talk out geographic area. 8TAC94 coverage is generally limited to the areas in and immediately around Hennepin County.

Once a patchable resource is included in a manual (soft) patch, then that resource is not available for patching again. Only the dispatch operator who set up the manual patch can add or delete additional members to or from the manual patch.

3. Operational Context:

These 800 MHz interoperability frequency pairs may be used for day to day interagency coordination, for urgent or emergency mutual aid situations, and/or for task teams or for other purposes where coordination between radio users on separate 800 MHz radio systems must intercommunicate to perform assigned duties.

These frequency pairs shall not be used for intercommunications between radio users who are on the same radio system infrastructure.

4. Recommended Protocol/ Standard:

8CALL90 - FCC Calling Channel

TG Requirements	For Whom?
Highly Recommended	None
Recommended	All
Optional	None
Not Allowed	None

Cross Patch Standard	YES / NO	To Talk Group(s)
Soft Patch	Yes	Permitted Resources
Hard Patch	No	NA

8TACs Channels

TG Requirements	**For Whom?**
Highly Recommended	None
Recommended	All
Optional	None
Not Allowed	None

Cross Patch Standard	**YES / NO**	**To Talk Group(s)**
Soft Patch	Yes 8TAC91 through 4	Permitted Resources
Hard Patch	No	NA

- 8TAC94 may be temporarily (soft) patched to the HCOMMON talkgroup or another selected talkgroup so that trunked radio users can scan that channel without losing the priority revert feature.

- 8TAC91 shall not be included in a permanent (hard) patch in order to provide the ability to place 8TAC91 into a manual (soft) patch by any dispatch console operator as detailed later in this document

- It is recommended that all radio users on other 800 MHz radio systems have the 8CALL90, 8TAC91, 8TAC92, 8TAC93 and 8TAC94 channels in selector slots on all of the mobile and portable radios used by law enforcement, fire and EMS personnel. It is recommended that public service personnel using these other 800 MHz radio systems also have 8CALL, and 8TAC91 programmed into the radios used.

- Agencies using the regional 800 MHz radio system may also have the conventional 8CALL90 and 8TAC91-94 mobile relay stations included in their fleet maps. These are for use when travelling outside the coverage area of the regional 800 MHz radio system but into another 800 MHz system with base radio facilities on those channels.

- The Primary PSAP regional dispatch centers shall monitor the 8CALL90 channel at all times and be equipped to transmit on these channels. The 8CALL90 channel may be monitored in any other dispatch center and/or by as many dispatch center operators as the system manager responsible for managing the center selects.

- The 8CALL90 and 8TAC91 conventional mobile relay stations shall be recorded. For details see *Section 3.1f Recording Interagency Talk Groups.*

- Transportable mobile relay stations on the 8TAC92 and 3 conventional channels may be installed in mobile command posts. **No agency shall utilize a transportable mobile relay station on 8CALL90, 8TAC91 or 8TAC94 to avoid interference with the fixed stations on those channels.**

- Any government entity using an 800 MHz radio system may add a repeater talk around radio channel in radios on the 8TAC conventional channels.

- The talk around 8TAC radio channels are also available for use with on scene cross band repeat or cross band patch operations such as VHF to 800 MHz or UHF to 800 MHz.

5. Recommended Procedure:

Most of the time, an event that requires agency coordination will begin on the main dispatch radio channel of one of the public safety dispatch centers. **The dispatch center operator that handles the event initially shall become the responsible dispatch operator and shall provide dispatch service to all personnel in all units participating in the event activities.**

- **If that dispatch center is on the regional 800 MHz radio system, and coordination is required with personnel in units on another 800 MHz radio system**, the responsible dispatch center operator shall tell the units in his or her agency that are involved in the event to switch to the 8TAC91 trunked talk group and initiate a manual (soft) patch between the talk group and the 8TAC91 conventional repeater channel. The dispatch center operator that set up the soft patch shall be responsible for breaking the soft patch when there is no further need for the patch.

- **If the responsible dispatch center operator is on a VHF or UHF radio system, and personnel in units on multiple 800 MHz radio system are also involved**, either**:**
  - ✓ The responsible dispatch center operator shall soft patch a VHF/UHF mutual aid channel to the conventional 8TAC91 mobile relay station, or
  - ✓ Ask a dispatch center operator in another dispatch center with the capability to create the soft patch, and proceed as described in the above paragraph.

- **If agency coordination is required for a time period longer than a few hours**, or if the area where the 800 MHz to 800 MHz agency coordination is needed **does not have good network coverage,** one of the transportable mobile relay stations in a mobile communications van shall be sent to the area of the event operations. Communications shall then be reassigned from 8TAC91 to 8TAC92 or 3.

- **If a government radio user from outside the metropolitan Minneapolis-St. Paul geographic area that is using an 800 MHz radio system comes into the area and needs assistance**, that outside radio user may call on the 8CALL90 channel. The called unit and/or State Patrol dispatch center operator shall respond to that call.
  - ✓ If the requested PSAP does not respond to the 8CALL90 call, a Hennepin County Sheriff's dispatch or any other dispatch center operator shall respond and serve the caller.

6. Management

Any 800 MHz radio system user may obtain a license for mobile and portable radio use of the 8CALL90 and 8TAC radio channels.

Dispatch center managers for 800 MHz radio systems with access to the 8TAC91 channel, or a talk group patchable to that channel, shall prepare procedures for use of the 8TAC91 channel that is consistent with this procedure.

Dispatch center managers shall prepare and conduct initial and continuing training for dispatch center operators on the procedures that are established for use of the 8CALL90 and 8TAC channels that are consistent with this procedure.

Responsibility for monitoring the use of and for recommending modifications to this procedure shall be a function of the Radio Technical Operations Committee.