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

Document Section:	**3 - Interoperability Guidelines**	Radio TOC Recommendation:
Sub-Section:	**METRO 3.9.0**	Date: 3/26/08
Procedure Title:	**Nationwide VHF and UHF Interoperability Channels VCALL, VTACs, UCALL, UTACs**	
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1. Purpose or Objective:

To establish procedures for the use of VHF and UHF conventional radio channels for intercommunications between radio users on these bands and with other bands.

2. Operational Background:

▪ **Capabilities**

There are five VHF and four UHF 12.5 KHz narrowband channels that the FCC has assigned exclusively for interoperability communications between radio users on these bands. One of these channels in each band is designated by the FCC as a calling channel, and the others are designated as tactical channels. The channels are available for use by all users. Neighboring states have added these channels to their interoperability plans and use of the channels is becoming more universal on a national basis.

In the VHF band the calling channel is named VCALL10 and the other four channels are named VTAC11, VTAC12, VTAC13, and VTAC14. These non-repeated simplex channels are to be used with analog narrowband or P25 digital modulation in a direct radio-to-radio mode for scene of action interoperability.

In the UHF band the calling channel is named UCALL40 and the other three channels are named UTAC41, UTAC42, and UTAC43. These frequency pairs are to be used with analog narrowband or P25 digital modulation in a mobile relay (repeater) or direct radio-to-radio mode for scene of action interoperability.

There is sub-regional infrastructure within Hennepin County utilizing one VTAC and one UTAC channel. VTAC11 and UTAC41 together with 8TAC94 are hardwired into a VHF/ UHF/ 800 MHz tri-band nationwide TAC channel system. This is an eight site voting receiver system with a transmitter located in Plymouth, MN. This resource facilitates communications among different

VHF, UHF and 800 MHz users within Hennepin County and can be soft patched to talkgroups on the ARMER system. The VHF channel is simplex, while the UHF and 800 MHz channels are mobile relay (repeater) stations. The Hennepin County sub-regional infrastructure is configured for 12.5 KHz narrow band ANALOG operation using the nationwide standardized CTCSS tone of 156.7 on all three bands.

▪ **Constraints**

There is currently only one transmitter on the VTAC11/UTAC41/8TAC94 nationwide TAC channel system located in Plymouth, MN. There are 8 receivers strategically located throughout Hennepin County with the best audio selected in a voting comparator on the receive side of the mobile relay. Therefore, the operational coverage for this system for portable radios is limited to areas within and relatively close to Hennepin County.

If a radio resource (either a conventional channel or a trunked talk group) is included in a manual (soft) patch, then that resource is not available for inclusion in an additional manual (soft) patch. Only the dispatch operator who set up the original manual patch can add or delete additional members to or from the manual patch.

3. Operational Context:

These VHF/UHF interoperability channels 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 VHF/UHF/800MHz radio systems must intercommunicate to perform assigned duties.

These channels shall not be used for internal day to day communications between radio users who are on the same radio system infrastructure.

4. Recommended Protocol/ Standard:

VCALL/UCALL - FCC Calling Channel

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

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

VTAC/UTAC Channels

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 VTAC11, UTAC 41,(8TAC94)	Permitted Resources using HCSO consoles only.
Hard Patch	No	NA

- It is recommended that all state and local radio users as well as all US Government users operating in the metro area on VHF and UHF radio systems have the VCALL/VTAC and/or UCALL/UTAC channels in all of the mobile and portable radios. If limited channel positions are available it is recommended that VTAC11 and UTAC41 be included at a minimum. An FCC license is not required for mobile and portable radio operation on these frequencies. FCC licensing is required for temporary or permanent fixed base or repeater station operation.

- Transportable base stations on the VCALL/VTAC conventional channels may be installed in mobile command posts pursuant to an FCC license.

- Transportable mobile relay stations on the UCALL/UTAC conventional channels may be installed in mobile command posts pursuant to an FCC license. **No agency operating within Hennepin County shall utilize a transportable mobile relay station on UTAC41 to avoid interference with the fixed station on that channel.**

- The VTAC channels and the talk around UTAC 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.

- All operations on the nationwide VTAC and UTAC channels must be 12.5 KHz narrowband only. Nationwide standardized CTCSS tone of 156.7 or P25 NAC code of $293 shall be used.

- Agencies utilizing P25 digital operation in subscriber radios or transportable repeaters shall configure those radios for mixed mode (analog/digital) operation for backward compatibility to analog only radios.

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 a VHF, UHF or another 800 MHz radio system within coverage range of the Hennepin County tri-band nationwide TAC channel 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 appropriate trunked talk group and initiate a manual (soft) patch between the talk group and the conventional tri-band system. If the dispatch center does not have access to the tri-band system, they may contact the Hennepin County Sheriff's Office dispatch center and have the patch initiated there. 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 agency coordination is required for a time period longer than a few hours, or if the area where the VHF/UHF/800 MHz agency coordination is needed does not have good network coverage, one or more of the transportable base station/mobile relay station in a mobile communications van shall be sent to the area of the event operations. Communications shall then be reassigned to frequencies compatible with the mobile resource.

6. Management:

Local users of these channels in the metro region who acquire and maintain radio equipment necessary for use including, but not limited to; cache radios, portable repeaters and portable gateways, will do so pursuant to an FCC license as necessary and will document these resources in the metro region Tactical Interoperable Communications Plan (TICP) managed by the Metropolitan Emergency Services Board. Planning for additional permanent infrastructure facilities throughout the state on the nationwide VCALL, VTACs, UCALL, and UTACs will be managed by the Statewide Interoperability Executive Committee.