Allied Radio Matrix for Emergency Response (ARMER)
Standards, Protocols, Procedures

Document Section:	**3 – Interoperability Standards**	**Status:** Complete
Sub-Section:	**State 3.5.0**	
Procedure Title:	**National/Statewide VHF Interoperability Resources (VLAW31, VMED28, VFIR23, MIMS)**	
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SUNSET 1-1-2013 REFER TO STANDARD 3.16.5

1. Purpose or Objective

Establish procedures for use and patching of MINSEF (VLAW31, 155.475), National EMS (VMED28, 155.340), Statewide Fire (VFIR23, 154.295) and Minnesota Incident Management System (MIMS, 155.370) VHF interoperability radio frequencies for interagency communications.

2. Technical Background:

- **Capabilities**

Users of conventional radios may communicate with radio users on the ARMER 800 MHz trunked radio system. Many users have mobile and portable use of these frequencies with supporting infrastructure limited to a base station located in a dispatch center. This means that the channel is primarily a local on scene operating frequency with limited range. In some regions, large VHF radio systems are available for use by field personnel using VHF radio systems that need to coordinate with personnel from agencies on the ARMER 800 MHz trunked radio system. These VHF interoperability radio systems can be soft patched to ARMER 800 MHz trunked radio system talkgroups.

- **Constraints**

Conventional radio system users may only communicate on those common conventional radio channels that they are permitted to transmit on and available on an ARMER 800MHz console via a soft patch. An ARMER 800 MHz talkgroup can only be in one patch. Similarly, wide area regional VHF infrastructures can only be in one patch.

A patch between an ARMER 800 MHz talkgroup and a VHF interoperability frequency will result in high signal level radio coverage over a greater area. Therefore, whenever an ARMER 800 MHz talkgroup patch to a VHF interoperable frequency is in use, and depending on which transmitter site is selected at the time, no other practical use can be made of that VHF frequency in various portions of a geographic area.

When the VHF interoperability frequency is patched to an ARMER 800 MHz talkgroup, and when an 800 MHz radio user transmits thereby keying up a VHF base station, the VHF interoperability frequency may not effectively be re-used elsewhere in the region. This is true even on a VHF radio to VHF radio basis for local area communications between personnel of entities that are all on VHF radio systems because of the interference potential from the base station transmitter overriding the local users. This interference potential will vary depending on the location of base station selected for the ARMER 800 MHz patch and the location of the other local area VHF only users.

As mandated by the Federal Communications Commission, the VHF interoperability frequencies included in this standard must transition from wideband (25 kHz) to narrowband (12.5 kHz) operations by January 1, 2013. This compulsory transition provides an opportunity to standardize channel names and programming parameters for these channels as identified in the American National Standards Institute (ANSI) standards document. "APCO/NPSTC ANS 1.104.1-2010, Standard Channel Nomenclature for Public Safety Interoperability Channels." Prior to the narrowband transition, the VHF interoperability frequencies identified herein shall continue operations using current channel names and operating parameters. After the narrowband transition, these channels should only be operated as listed below (refer to the Minnesota EMS Statewide Communications Plan for hospital coding):

ANSI Standard Name	Mobile TX Frequency	ANSI STD TX/RX CTCSS	Mobile RX Frequency
VLAW31	155.475	156.7/CSQ	155.475
VFIRE23	154.295	156.7/CSQ	154.295
VMED28	155.340	156.7/CSQ	155.340
MIMS	155.370	156.7/CSQ	155.370

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3. Operational Context:

These communications pathways may be used for day to day coordination, for urgent or emergency mutual aid situations, for task forces, tactical teams, and for other purposes. No new equipment is required; existing conventional radios can be used.

Patches between the VHF interoperability frequencies and the corresponding ARMER 800 MHz radio system talkgroups should only be used when there is a need for communications between personnel that are on VHF radio systems and personnel that are users of the ARMER 800 MHz radio system. Use must be in compliance with the rules governing the VHF frequency, and be authorized by the Incident Command (IC) or Unified Command (UC) structure at the scene of the incident or planned event.

The VHF interoperability frequencies, **without** a patch to an 800 MHz talkgroup, are primarily used for interagency communications among personnel who are all on VHF radio systems.

A VHF interoperability frequency and an associated patched ARMER 800 MHz talkgroup may be used for short-term high intensity events, and for long-term extraordinary events.

4. Recommended Protocol/ Standard:

Cross Patch Standard	YES / NO	To Talkgroup(s)
Soft Patch	Yes	Dispatch Determine
Hard Patch	No	NA

5. Recommended Procedure:

An incident or planned event that requires interagency coordination generally begins on a main ARMER talkgroup or VHF channel. The use and patching of interoperable communication resources should be coordinated by the controlling dispatch center as authorized by the IC/UC or designee.

When it becomes apparent that interagency coordination of personnel from different agencies or disciplines will be needed, and coordinating agencies are on a VHF system, the IC/UC or designee may request that the controlling dispatch center coordinate conventional radio users to switch to a shared VHF resource. If the designated channel has not been installed in the mobile or portable radio being used, the radio user must inform the dispatch center. Dispatch centers may attempt to select another shared resource that the radio user has available.

If interagency communications is required between a VHF resource and an ARMER 800 MHz talkgroup, a soft patch between the VHF frequency and an ARMER talkgroup may be set up by a dispatcher on the ARMER system. The decision to use the VHF frequency patch to an ARMER talkgroup is done under the direction of the IC/UC or designee, and shall be the responsibility of the dispatch center controlling the incident or planned event.

Operators in dispatch centers on the metropolitan portion of the ARMER system may be able to steer outgoing messages on the VHF frequency to a specific transmitter. If the responsible dispatch center operator is on the metropolitan portion of the ARMER system, that operator may perform the transmitter steering function. If the responsible operator is on a radio system other than the metropolitan portion of the ARMER system, or does not have the capability, the responsible operator may request that a dispatch operator having the capability on the ARMER system perform the transmitter steering function.

6. Management

The development and management of statewide rules for use of the MINSEF (VLAW31, 155.475), National EMS (VMED28, 155.340), Statewide Fire (VFIR23, 154.295) and Minnesota Incident Management System (MIMS, 155.370) VHF interoperability radio frequencies is the responsibility of the Statewide Radio Board.

Responsibility for monitoring performance and for modifying this procedure shall be a function of the Statewide Radio Board.

The dispatch center managers for agencies on the ARMER 800 MHz radio system shall insure that there is a procedure for use of a patch between a VHF interoperability frequency and the ARMER 800 MHz talkgroup in the dispatch center for which they are responsible.

Dispatch center operators shall receive initial and continuing training on the use of this procedure.

SUNSET 1-1-2013 REFER TO STANDARD 3.16.5