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Preface

The Minnesota Department of Public Safety (DPS), Division of Emergency Communication Networks (DECN), sponsors the *Cross Spectrum Interoperability System Operations Training Manual* (Training Manual). The Cross Spectrum Interoperability System (CSIS) steering committee provided input, advice, and assistance for the production of this Training Manual, which provides participants with the necessary tools for their roles in conducting training on the operation of the Cross Spectrum Interoperability System (Interop System).

The CSIS training is an unclassified training exercise. Public sensitivity regarding the nature of the exercise rather than actual exercise content is the basis for control of the exercise information. Planners, facilitators, and evaluators have exclusive use of some exercise content but participants may view other materials necessary to their performance of the exercise. All exercise participants may view the Training Manual.

All training exercise participants should use appropriate measures to ensure proper control of information within their areas of expertise and protect this material in accordance with current jurisdictional directives. Public release of exercise materials to third parties is at the discretion of the DECN.
Handling Instructions

1. The title of this document is the *Cross Spectrum Interoperability System Operations Training Manual*.

2. DECN designates the information in this document *For Official Use Only* (FOUO). The information is sensitive and not for disclosure. Safeguarding, handling, transmitting, and storing of this document must comply with appropriate security directives. DECN prohibits reproduction of this document, completely or in part, without prior written approval from DECN.

3. At a minimum, dissemination of the attached materials is strictly on a need-to-know basis. When unattended, these materials will be stored in a locked container or area that offers sufficient protection against theft, compromise, inadvertent access, and unauthorized disclosure.

4. For more information about the training manual, please consult the following points of contact (POCs):

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1. Introduction

The Minnesota DECN developed this training manual and supporting materials to educate users on the capabilities and limitations related to operations of the Interop System. This manual outlines the standards, plans, policies, procedures, and resources that users must be aware of when using the Interop System for day-to-day or incident-based communications. Multiple scenarios, presented to the session participants, describe the use of the Interop System. Participants will discuss the policies, procedures, and resources utilized to respond to each scenario as well as the problems presented by the facilitator in response to participant’s questions and answers.

The purpose of this training is solely to assist public safety trainers in developing the level of understanding necessary that enables them to provide field training to public safety users in their respective ARMER regions on the proper and effective use of the Interop System. The training focuses strictly on the operational aspects of the Interop System and does not provide detailed information on the use of the specific equipment or applications.
2. Approach

Upon completion of the train-the-trainer sessions, trainers should have a thorough understanding of the following aspects of the Interop System and be able to translate this knowledge to dispatchers and field users:

1. Operational capabilities and limitations of the various Interop System components
2. Potential impact of the use of Interop System components to other Interop System components or local VHF interoperability channels
3. Processes and procedures that should be utilized to ensure proper use of Interop System resources

Understanding the above information is critical to make certain that the Interop System and its components do not impair interoperable communications through inadvertent improper use.

The Cross Spectrum Interoperability Operations Training Manual assumes that Interop System users are familiar with the use of their own radio system equipment including dispatch consoles. The Cross Spectrum Interoperability System Training Plan provides a list of suggested training courses for Motobridge™ dispatch console operations. Additional localized training to address specific local needs or applications may also be necessary.
3. Training Manual Contacts

Table 1 lists the primary points of contact within the DPS division of Emergency Communication Networks for questions regarding the Training Manual.

Table 1- Training Plan Contacts

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
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</tbody>
</table>
4. Training Overview

This training is a structured, discussion-based, informational exercise guided by a facilitator. The Minnesota DECN will use scored evaluation forms containing feedback from the participants, evaluators, and the facilitator to determine the success of this training initiative. This feedback may affect future training at the local, regional, and state level.

4.1 Roles and Responsibilities

4.1.1 Participants

The role of participants is to respond to scenarios presented during the training using, the Interop System information provided to them at the beginning of the session and any knowledge of the system they gained prior to participating in the training. During the exercise, some participants may have more active or less active roles. This depends on their real-world jurisdictional proximity to, or involvement in, the scenario as presented. However, all participants are encouraged to participate fully and to think through the potential ramifications of the scenario to their agency.

4.1.2 Evaluator

Evaluators do not participate in the training sessions but shall take written notes of the jurisdictional, training, and technological interoperability gaps noted during facilitated discussions. They should be prepared to provide their input to the group during the debriefing that follows the exercise. Federal Engineering (FE) consultants or DECN assigned personnel will be the evaluators for the exercise.

4.1.3 Facilitator

The facilitator provides basic information regarding the Interop System and communication scenarios, manages information exchanges, and moderates dialog among participants. The facilitator also provides additional information, resolves questions as they arise and keeps the exercise participants focused.

4.2 Training Process

This training will be a multimedia, facilitated exercise. During the exercise, participants receive examples of typical communications using different components of the Interop
System. Each scenario will begin with a PowerPoint slideshow that summarizes key Interop System capabilities for exploration during each scenario. The facilitator summarizes and reviews the information with the participants before proceeding with a step-by-step discussion for each stage of each communications scenario. The facilitator also presents questions during each stage of the scenario. Following the completion of the exercise, participants and evaluators will have the opportunity to provide thoughts and feedback during a debriefing session.

Following the completion of the exercise, the facilitator will develop an After-Action-Report (AAR) based on information gleaned from discussion and comments during the exercise, and feedback from the debriefing session. The facilitator will then provide the AAR to DECN.

Recommended follow-up activities include a functional exercise to demonstrate use of equipment, and involvement in a full-scale field exercise. These activities allow the field-testing and validation of the Interop System components deployed in each ARMER region.

**4.3 Exercise Guidelines**

Exercise participants should follow these general guidelines:

1. This exercise will be held in an open, low-stress, no-fault environment. Varying viewpoints, even disagreements, are expected.

2. Participants should note gaps between communications capabilities needed and communications capabilities not available.

3. Suggestions and recommended actions that could improve Interop System operations and training are encouraged.

4. Participants should recognize that there is not necessarily a single correct solution for any issue.
4.4 Assumptions and Artificialities

In any exercise, assumptions and artificialities may be necessary to complete the exercise in the time allotted. During this exercise, the following apply:

1. The scenario is plausible, and events occur as presented.
2. There are no hidden agenda items or trick questions. All participants receive information at the same time.
5. Schedule/Agenda

DECN conducted two train-the-trainer sessions at the following facilities:

**Session One**
May 7, 2012
St Cloud Police Department
Training Room
101 11th Avenue North
St Cloud, MN 56303

**Session Two**
May 9, 2012
Blue Earth County
Justice Center
401 Carver Road
Mankato, MN

The following was the anticipated schedule for each session:

- **7:30 – 08:00** Registration (Participants must be registered and ready to begin the exercise by 08:00)
- **8:00 – 08:15** Introduction / pre-briefing
- **08:15 – 09:15** Review of Interop System configuration
- **09:15 – 09:30** Break
- **09:30 – 10:00** Standard ARMER interoperable communications
- **10:00 – 11:30** VLAW31 communications
- **11:30 – 13:00** Lunch
- **13:00 – 14:00** Variable Frequency Station (VFS) communications
- **14:00 – 14:45** 8CALL90/8TAC9X communications
- **14:45 – 15:00** Break
- **15:00 – 15:30** County Main to ARMER communications
- **15:30 – 16:00** System to System Communications
- **16:00 – 16:30** Exercise conclusion/evaluation
6. Interop System Communication Scenarios

The following sections outline the capabilities of the Interop System, provide examples of communications scenarios, and issues for follow up discussions related to each scenario.

6.1 Interop System Overview

The Interop System uses a Motorola Radio over Internet Protocol (RoIP) network (Motobridge™) to connect an overlay of VHF interoperability radio equipment at 109 non-metro ARMER radio sites to support the SRB’s interoperability plan. The Interop System will provide a “lifeline” level of coverage to VHF users operating outside their normal operational areas including areas that have migrated to ARMER and provides other potential options for enhanced local or regional interoperable communications.

The Interop System is comprised of multiple elements, classified as follows:

**VLAW31 Stations**

These VHF base stations, deployed at 109 non-metro ARMER sites on the national VHF Interoperability channel, VLAW31, are primarily for law enforcement communications. These stations are accessible via Motobridge™ dispatch consoles at Minnesota State Patrol and ARMER consoles that have sufficient capacity to access the VLAW31 stations in their area. ARMER and non-ARMER dispatch centers may also purchase their own Motobridge™ dispatch positions and connect them to the Interop System resources subject to technical and administrative requirements provided by MnDOT and the SRB.

**VHF Variable Frequency Stations**

MnDOT will also deploy frequency selectable VHF base stations or VFS units at 109 non-metro ARMER sites, programmed with the national VCALL10 and VTAC91-94 channels as well as VLAW31, VFIRE23, VMED28 and MNCOMM. These resources can be used for both discipline specific needs using the VLAW31, VFIRE23, VMED28, and MNCOMM channels or cross-discipline communications using the VCALL or VTAC channels. The “home” or default hailing channel for these stations will be VCALL10 in most areas unless cross border coordination concerns with Canada render this channel unusable. In those areas where VCALL 10 is unusable, MNCOMM will be the “home” or default hailing channel. Since these VFS stations may operate on multiple channels,
access to them requires a Motobridge™ dispatch position connected to the Interop System.

**Locality Specific Resources**

Locality specific resources include interoperability equipment and patches deployed to meet communication needs in a specific area. Two examples of this type of resource are the deployment of 800 MHz national mutual aid channels in certain targeted areas and the provision for permanent hard patches of a non-ARMER county’s main VHF channel to a specific ARMER talkgroup.

The Interop System will include a limited deployment of base stations on the national 800 MHz calling channel (8CALL90) and another set of 800 MHz variable frequency stations, designated as 8TAC9X resources, capable of operating on one of the four national 800 MHz tactical channels (8TAC91-94) at a time. The 8CALL90 and 8TAC9X stations may be accessible on ARMER dispatch consoles and Motobridge dispatch positions.

Non-ARMER counties will primarily use a direct patch from their main VHF channel to a specific ARMER talkgroup for communications between county and state law enforcement agencies. Operations on these connections will also be subject to specific guidelines jointly developed by the participating entities, MnDOT and the SRB. Therefore, operations guides for these connections are not included in the Operations Plan. In the absence of specific local operational policies, existing ARMER standards stipulate use of standard language for these resources.

**System-to-System Resources**

These resources include interoperable connections between disparate systems via either patched radio links or RoIP gateway-to-gateway connections. Operation plans and procedures for these types of connections will require coordination and agreements with entities in other areas outside the jurisdiction of the Minnesota SRB. Each agreement and connection of this type will likely have different procedural and technical configurations and operations guides for this type of resource are also not included in the current Operations Plan.

**Dispatch Resources**

These Interop System’s dispatch resources consist of ARMER consoles capable of accessing the VLAW31, 8CALL90, and 8TAC9X stations and Motobridge™ dispatch
positions that are capable of accessing the VLAW31, VFS, 8CALL90, or 8TAC9X resources. Motobridge™ dispatch positions may include locally deployed Motobridge™ Workstation Gateway Units (WSGU) or software only deployments of the Motobridge™ dispatch application. In either case, the Motobridge™ dispatch position must also have a secure connection to the private Motobridge™ IP network used by the Interop System.

Motobridge™ dispatch positions have multiple capabilities while connected to the Interop System including but not limited to the following:

1. Accessing and communicating with radios connected to the Interop System
2. Accessing and communicating with other Motobridge™ dispatch operators
3. Patching Interop System resources together to create communications between users on separate systems and/or radio channels

Figure 1 provides a high-level overview of the Interop System and its various components.
Figure 1 - Interop System Diagram

6.2 ARMER Standard Operations

The standard mode of interoperability for an ARMER user moving outside their normal operational area would be to remain on ARMER. The roaming ARMER user would hail the local county on the appropriate regional hailing talkgroup. The local dispatcher would then direct the roaming user to the applicable local, regional, or statewide...
talkgroup as determined by the local dispatcher, incident commander, or incident communications plan. The local dispatcher may patch the operational, assigned talkgroup to a local radio resource, if needed, in accordance with current ARMER standards, NIMS, and ICS protocols. Figure 2 shows the standard interoperability configuration for ARMER users operating in a county that has not migrated to ARMER.

![Figure 2 - ARMER Standard Interoperability Configuration](image)

Figure 2 - ARMER Standard Interoperability Configuration

Table 2 lists the regional hailing talkgroups for each ARMER region:
Table 2 – Regional hailing talkgroups by region

<table>
<thead>
<tr>
<th>ARMER Region</th>
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<td>Metro</td>
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<td>NE CALL</td>
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<tr>
<td>Northwest</td>
<td>NW CALL</td>
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<tr>
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<td>CM CALL</td>
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<td>South Central</td>
<td>SR CALL</td>
</tr>
<tr>
<td>Southwest</td>
<td>SW CALL</td>
</tr>
<tr>
<td>Southeast</td>
<td>SE CALL</td>
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Based on ARMER standards as well as procedures outlined in the National Incident Management System (NIMS) and Incident Management System (IMS), all users shall utilize the following operational policies and conventions for conducting interoperable communications:

1. All users shall use plain language at all times.

2. Users should initially identify themselves in the following manner: agency name, followed by service branch or function designation, followed by call sign or unit number, such as "North EMS 512", "Elk River Police 512", "Stearns County Public Works 512", "State Patrol 512".

3. Users hailing a dispatch center outside their normal operational area should also identify the dispatch center or agency they are attempting to communicate with, such as “State Patrol”, “Lake County SO”, “Elk River PD”. The order of identifications, initiator and hailed party, may vary since law enforcement, fire and EMS agencies typically use different conventions.

4. Users should also identify the resource they are hailing on, such as “NE CALL”, “SE CALL”, etc.

5. Dispatchers may patch only one local resource in an area to one ARMER talkgroup per incident.

¹ MSP CALL is monitored by State Patrol
6. All participating entities shall use the ARMER System StatusBoard Application to track the use and patching of ARMER shared talkgroup resources for anything other than short-term incidents such as a rapidly moving chase.

7. The setup and take down of patches are the responsibility of the dispatch center controlling the incident or event. The dispatch center should take down patches as soon as practical after the incident ends or migrates to another jurisdiction. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

The following are typical operations using standard ARMER interoperability resources:

1. An ARMER user moves into a region or county outside of their normal operational area.

2. An ARMER user hails the local dispatch center on the appropriate hailing talkgroup and requests instructions. The order of identifications, initiator and hailed party, may vary since law enforcement, fire and EMS agencies typically use different conventions.
   a. Example: ARMER user hails on NW CALL
   b. “ITASCA SO 512, BELTRAMI SO on NW CALL”

3. The local dispatch center responds to the ARMER user, determines the nature of the incident, and determines if a patch to a local radio channel is necessary. If ARMER Interoperability Pool Talkgroups are to be used during an incident, the local dispatcher must “check out” this resource using the ARMER System StatusBoard Application.
   a. Example: Beltrami dispatcher advises ARMER user to go to LTAC1 for task force communications and patches LTAC1 to BELTRAMI SO VHF radio channel.
      Dispatcher: “Beltrami SO, ITASCA 512, go to LTAC 1”
      User: “ITASCA 512, BELTRAMI SO on LTAC1”
      Dispatcher: “ITASCA 512 you are patched to Beltrami SO MAIN, go ahead”

4. The local dispatch center takes down the patch upon direction from an IC or COML or when the patch is no longer needed to support the incident if not originally requested by an IC or COML:
Dispatcher: “BELTRAMI SO, ITASCA 512, LTAC1 to Beltrami SO main patch is terminated, please return to NW CALL”

User: “ITASCA 512, copy, returning to NW CALL”

5. Once an incident using an ARMER Interoperability Pool Talkgroup ends, the local dispatcher must also release this resource on the ARMER System StatusBoard Application.

6.2.1 ARMER Standard Interop Discussion

The following questions are a guide to a moderated discussion:

1. What are the limitations of this interoperability resource?
   a. Coverage (discuss overlapping coverage among bases)
   b. Availability:
      i. Who can access this resource? Field users, dispatchers, etc.
   c. Use by public safety discipline?
2. What is the initial hailing channel or talkgroup for this interoperability resource?
   a. Which dispatch centers have access to this channel or talkgroup?
3. Who can patch this resource to other local resources?
   a. What are the limitations of patched/gateway based communications?
   b. Who can request a patch?
   c. Who can initiate a patch?
   d. Who can terminate a patch?
4. How should use of this resource be properly coordinated?
   a. What resources are available to coordinate these resources?

6.3 VLAW31 Operations

A non-ARMER (VHF) law enforcement agency (LEA) unit moving into an area that has transitioned to ARMER would utilize either local (county owned) VLAW31 resources or the VLAW31 resources provided in the Interop System to communicate with LEA users operating on the ARMER system. Minnesota State Patrol (MSP) will monitor the VLAW31 resources provided in the Interop System. Links to the Interop System VLAW31 resources are also available to local ARMER system consoles (Motorola Gold Elite or MCC7500) in each county where sufficient console resources are available to do so. Figure 3 shows a high-level diagram of the Interop System’s VLAW31 configurations.
FOR OFFICIAL USE ONLY

Figure 3 - Interop System VLAWS 31 Stations

Based on ARMER standards as well as procedures outlined in the National Incident Management System (NIMS) and Incident Management System (IMS), all users conducting interoperable communications on the Interop System shall utilize the following operational policies and conventions:

1. Users shall use plain language at all times.
2. Users should initially identify themselves in the following manner: agency name, followed by service branch or function designation, followed by call sign or unit number, such as "North EMS 512", "Elk River Police 512", "Stearns County Public Works 512", "State Patrol 512".
3. Users hailing a dispatch center outside their normal operational area should also identify the dispatch center or agency they are attempting to communicate with, such as “State Patrol”, “Lake County SO”, “Elk River PD”. The order of identifications, initiator and hailed party, may vary since law enforcement, fire and EMS agencies typically use different conventions.
4. Users should also identify the resource they are hailing on, such as “VLAW31”.

5. Dispatchers may patch only one VLAW31 channel in an area to one ARMER talkgroup per incident.

6. All participating entities shall use the ARMER System StatusBoard Application to track the use and patching of VLAW31 and ARMER talkgroup resources to maximize the visibility of the use of such resources for anything other than short-term incidents such as a rapidly moving chase.

7. The setup and take down of patches are the responsibility of the dispatch center controlling the incident or event. Dispatchers should take down patches between VLAW31 and ARMER talkgroups or local radio resources as soon as practical after the incident ends or migrates to another jurisdiction. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

The following are typical operations using VLAW31 interoperability resources:

1. The VHF LEA user moves into a region or county operating on ARMER.

2. The VHF LEA user would hail the appropriate agency (local, county, or MSP) on VLAW31 and request assistance or instructions.
   a. Examples: VHF LEA user hails on VLAW31
      Hailing unit to local dispatcher: “BELTRAMI SO 512, ITASCA SO on VLAW31”
      Hailed unit to State Patrol: “BELTRAMI SO 512, State Patrol”

3. The hailed dispatch center would respond to the VHF LEA user and determine the nature of the incident, or request for assistance. The hailed dispatch center would also determine which radio resources are necessary and patch those resources to the VLAW31 channel if needed. If Interop System VLAW31 stations or ARMER Interoperability Pool Talkgroups are to be used during an incident, the local dispatcher must also “check out” this resource using the ARMER System StatusBoard Application.
   a. Examples: Hailed dispatch center advises unit to proceed with communications on local VLAW31 channel. This may be sufficient if the ARMER agency retained VHF radios or uses dual mode (VHF/800 MHz) radios, in which case a patch to ARMER may be unnecessary:
Local dispatcher: “ITASCA SO, Beltrami 512, go ahead on VLAW31”

State Patrol dispatcher: “State Patrol, Beltrami 512, go ahead on VLAW31”

b. Hailed dispatch center patches local or Interop System VLAW31 channel to an ARMER talkgroup and advises units to proceed with communications:

Local dispatcher: “ITASCA SO, Beltrami 512, you are patched to ITASCA SO, go ahead on VLAW31”

State Patrol dispatcher: “State Patrol, Beltrami 512, you are patched to State Patrol 1, go ahead on VLAW31”

4. The local dispatch center takes down the patch upon direction from an IC or COML or when the patch is no longer needed to support the incident if not originally requested by an IC or COML:

a. Local dispatcher: “ITASCA SO, Beltrami 512, patch to ITASCA SO is terminated”

Hailing unit: “Beltrami 512, copy, returning to Beltrami County primary”

b. State Patrol dispatcher: “State Patrol, Beltrami 512, patch to State Patrol 1 is terminated”

Hailing unit: “Beltrami 512, copy, returning to Beltrami County primary”

5. Once an incident using an ARMER Interoperability Pool Talkgroup or Interop System VLAW31 station ends, the local dispatcher must also release this resource on the ARMER System StatusBoard Application.

6.3.1 VLAW 31 Operations Discussion

The following questions are a guide to a moderated discussion:

1. What are the limitations of this interoperability resource?
   a. Coverage (discuss overlapping coverage among bases)
   b. Availability
      i. Who can access this resource? Field users, dispatchers, etc.
      c. Use by public safety discipline?

2. What is the initial hailing channel or talkgroup for this interoperability resource?
   a. Which dispatch centers have access to this channel or talkgroup?

3. Who can patch this resource to other local resources?
   a. What are the limitations of patched/gateway based communications?
   b. Who can request a patch?
   c. Who can initiate a patch?
d. Who can terminate a patch?

4. How should use of this resource be properly coordinated?
   a. What resources are available to coordinate these resources?

### 6.4 VFS Operations

The Interop System VFS resources or locally operated stations on VFIRE23 and VMED28 primarily provide interoperability between VHF fire users or VHF EMS users moving into a county operating on ARMER. In either case, a VHF fire or EMS user would hail the appropriate dispatch center and that dispatch center would then determine the appropriate link for ongoing communications based on current ARMER protocols and standards as well as local conditions. Initial hailing should occur on the designated hailing channel for that area, either VCALL10 or MNCOMM.

A dispatch center with access to an Interop System VFS, using a Motobridge™ WSGU or software only dispatch application, may also select one of the national VHF interoperability channels, VTAC11-VTAC14. Dispatchers can select these non-discipline specific channels on each VFS and use them for interagency communications as part of an incident communications plan.

Figure 4 provides a high-level diagram of the Interop System VFS station configuration.
Based on ARMER standards as well as procedures outlined in the National Incident Management System (NIMS) and Incident Management System (IMS), all users conducting interoperable communications on the Interop System using VFS resources shall utilize the following operational policies and conventions on local VFIRE23, or local VMED28 resources.

1. Users shall use plain language at all times.

2. Users should initially identify themselves in the following manner: agency name, followed by service branch or function designation, followed by call sign or unit number, such as "North EMS 512", "Elk River Police 512", "Stearns County Public Works 512", "State Patrol 512".

3. Users hailing a dispatch center outside their normal operational area should also identify the dispatch center or agency they are attempting to communicate with, such as “State Patrol”, “Lake County SO”, “Elk River PD”.

Figure 4 – Interop System VFS Stations
4. Users should also identify the resource they are hailing on, such as “VCALL10”, “MNCOMM”, “VMED28”, “VFIRE23”, etc.

5. Dispatchers may patch only one VFS channel or local VFIRE23 or VMED28 station in an area to one ARMER talkgroup per incident, regardless of whether the use of a channel on the VFS or a local VFIRE23 and VMED28 channel is for interoperable communications.

6. All participating entities shall use the ARMER System StatusBoard Application to track the use and patching of VFS channels, local VFIRE23 or VEMD28 channels, and ARMER talkgroup resources to maximize the visibility of the use of such resources.

7. The setup and take down of patches are the responsibility of the dispatch center controlling the incident or event. Dispatchers should dissolve patches between VFS or local resources and ARMER talkgroups as soon as practical after the incident ends or migrates to another jurisdiction. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

8. The dispatcher should always return the VFS resource to the designated home channel, either VCALL10 or MNCOMM, when dissolving a patch.

Several potential operational scenarios for use of either the VFS resources, or local VFIRE23 or VMED28 stations may be appropriate. The following are some sample scenarios.

VHF radio user operating in an ARMER county with local VFIRE23 or VMED28:

1. The VHF radio user moves into a region or county operating on ARMER.

2. The VHF radio user would hail the appropriate agency on VFIRE23 or VMED28 and request assistance or instructions.
   a. Examples: VHF radio user hails on VFIRE23
      
      Hailing user: “BELTRAMI Fire 12, ITASCA County on VFIRE23"

3. The hailed dispatch center would respond to the VHF radio user and determine the nature of the incident, or request for assistance. The hailed dispatch center would also determine which radio resources are necessary and patch those resources to an ARMER talkgroup if needed. If Interop System VFS channels or ARMER Interoperability Pool Talkgroups are to be used during an incident, the
local dispatcher must also “check out” this resource using the ARMER System StatusBoard Application.

a. Example: Hailed dispatch center advises unit to proceed with communications on local VFIRE23 channel. This may be sufficient if the ARMER agency has retained VHF radios or is using dual mode (VHF/800 MHz) radios, in which case a patch to ARMER may not be necessary.

   Hailed dispatcher: “ITASCA County, Beltrami Fire 12, go ahead on VFIRE23”

b. If a patch is necessary, the hailed dispatch center patches the local VFIRE23 channel to an ARMER talkgroup and advises units to proceed with communications.

   Hailed dispatcher: “ITASCA, Beltrami Fire 12, you are patched to ITASCA Fire North, go ahead on VIFRE23”

4. Upon termination of the incident, the hailed dispatch center takes down the patch. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

   Hailed dispatcher: “ITASCA, Beltrami Fire 12, patch to ITASCA Fire North terminated”

   Hailing unit: “Beltrami Fire 12, copy, returning to Beltrami County primary”

VHF radio user operating in an ARMER county with access to VFS resources:

1. The VHF radio user moves into a region or county operating on ARMER.

2. The VHF radio user would hail the appropriate agency on either VCALL10 or MNCOMM and request assistance or instructions.

   a. Examples: VHF radio user hails on VCALL10

      Hailing unit: “BELTRAMI Fire 12, ITASCA County on VCALL10”

3. The hailed dispatch center would respond to the VHF radio user and determine the nature of the incident, or request for assistance. The hailed dispatch center would also determine which radio resources are necessary and patch those resources to an ARMER talkgroup if needed. If an ARMER Interoperability Pool Talkgroup or Interop System VFS channel is to be used during an incident, the local dispatcher must also “check out” this resource on the ARMER System StatusBoard Application.
a. Examples: Hailed dispatch center advises unit to proceed with request on VCALL10 channel:

Dispatcher: “ITASCA County, Beltrami Fire 12, go ahead on VCALL10”

b. Once the hailed dispatcher determines the nature of the request, the hailed dispatch center directs the unit to proceed to an operations channel, patches that channel to an ARMER talkgroup, and advises units to proceed with communications.

Dispatcher: “ITASCA, ITASCA Incident Command, VTAC11 patched to ITASCA event 1 for incoming responder Beltrami Fire 12”

Local Unit: “ITASCA Incident Command, Copy”

Dispatcher: “ITASCA, Beltrami Fire 12, go to VTAC11 for incident command. You are patched to ITASCA Event 1.”

Hailing unit: “Beltrami Fire 12, ITASCA, copy, selecting VTAC11 for incident command”

Hailing unit: “Beltrami Fire 12, ITASCA Incident Command”

Local Unit: “ITASCA Incident Command, Beltrami Fire 12, proceed to command post for further instructions.”

Hailing unit: “Beltrami Fire 12, copy, proceeding to command post”

4. Upon termination of the incident, the hailed dispatch center takes down the patch, notifies users and returns the VFS to the VCALL10 or MNCOM home channel. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

Dispatcher: “ITASCA, Beltrami Fire 12, ITASCA Incident Command, patch of VTAC11 to ITASCA Event 1 terminated”

Hailing unit: “Beltrami Fire 12, copy, returning to Beltrami County primary”

Local unit: “ITASCA Incident Command, copy”

Dispatcher unit: “ITASCA to all units, returning station to VCALL10”

5. Once an incident using an ARMER Interoperability Pool Talkgroup or Interop System VLAW31 station ends, the local dispatcher must also release this resource on the ARMER System StatusBoard Application.
6.4.1 VFS Operations Discussion

The following questions are a guide to a moderated discussion:

1. What are the limitations of this interoperability resource?
   a. Coverage (discuss overlapping coverage among bases)
   b. Availability:
      i. Who can access this resource? Field users, dispatchers, etc.
   c. Use by public safety discipline?
2. What is the initial hailing channel or talkgroup for this interoperability resource?
   a. Which dispatch centers have access to this channel or talkgroup?
3. Who can patch this resource to other local resources?
   a. What are the limitations of patched/gateway based communications?
   b. Who can request a patch?
   c. Who can initiate a patch?
   d. Who can terminate a patch?
4. How should use of this resource be properly coordinated?
   a. What resources are available to coordinate these resources?

6.5 8CALL90/8TAC9X Operations Guide

The Interop System 800 MHz national mutual aid stations primarily provide interoperability between an 800 MHz radio system user that cannot access ARMER trunked system resources or to move 800 MHz radio users onto a separate radio channel for a specific incident. System Links to the Interop System 8CALL90 resources in specific areas are available to local ARMER system consoles (Motorola Gold Elite or MCC7500) in those counties where sufficient console resources are available to do so. An 800 MHz user moving into these specific areas would hail the local dispatcher on 8CALL90.

A local dispatcher with an ARMER system console or Motobridge™ dispatch position and access to the 8TAC9X station in their area may also select one of the national 800 MHz tactical channels, 8TAC91-8TAC94, for use during an incident or operation. Dispatchers can select these channels on an 8TAC9X station and use them for specific interagency communications as part of an incident communications plan. The local dispatcher may patch one of these channels to an ARMER talkgroup according to applicable ARMER protocols and standards.

Figure 5 provides a high-level overview of the 8CALL90/8TAC9X station configuration.
Based on ARMER standards, the Region 22 Plan for use of 800 MHz public safety channels, as well as procedures outlined in the National Incident Management System (NIMS) and Incident Management System (IMS), all users on the 800 MHz national interoperability channels shall utilize certain operational policies and conventions.

1. Users shall use plain language at all times.

2. Users should initially identify themselves in the following manner: agency name, followed by service branch or function designation, followed by call sign or unit number; such as "North EMS 512", "Elk River Police 512", "Stearns County Public Works 512", "State Patrol 512".

3. Users hailing a dispatch center outside their normal operational area should also identify the dispatch center or agency they are attempting to communicate with, such as “State Patrol”, “Lake County SO”, “Elk River PD”.

4. Users should also identify the resource they are hailing on, such as “8CALL90”.
5. A dispatcher may patch only one 8TAC9X channel in an area to one ARMER talkgroup per incident.

6. All participating entities shall use the ARMER System StatusBoard Application to track the use and patching of 8TAC9X channels ARMER talkgroup resources to maximize the visibility of the use of such resources.

7. The setup and take down of patches are the responsibility of the dispatch center controlling the incident or event. Dispatchers should take down patches between 8TAC9X and ARMER talkgroups as soon as practical after the incident ends or migrates to another jurisdiction. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

There are several potential operational scenarios where use of the 8CALL90 and 8TAC9X resources may be appropriate. The following are some sample scenarios.

800 MHz conventional radio user operating in an area with access to the 8CALL90 /8TAC9X stations:

1. The 800 MHz conventional radio user moves into a region with 8CALL90 /8TAC9X stations.

2. The 800 MHz conventional radio user would hail the appropriate agency on 8CALL90 and request assistance or instructions.
   a. Examples: 800 MHz conventional user hails on 8CALL90
      Hailing user: “Iowa DOC 12, Goodhue County on 8CALL90”

3. The hailed dispatch center would respond to the 800 MHz conventional radio user and determine the nature of the incident, or request for assistance. The hailed dispatch center would also determine which radio resources are necessary and patch those resources to an ARMER talkgroup if needed. If an ARMER Interoperability Pool Talkgroup or Interop System 8TAC9X channel is to be used during an incident, the local dispatcher should “check out” this resource on the ARMER System StatusBoard Application.
   a. Examples: Hailed dispatch center advises unit to proceed with communications on the assigned local 8TAC9X channel. This may be sufficient if the incident operations are solely using the direct side of the one of the 8TAC9X channels, in which case a patch to ARMER may not be necessary.
b. If a patch is necessary, the hailed dispatch center selects the appropriate 8TAC9X channel and patches the selected channel to an ARMER talkgroup, and advises units to proceed with communications.

Hailed Dispatcher: “Goodhue County, Goodhue Incident Command, 8TAC91 patched to Goodhue Event 1 for incoming responder IOWA DOC 12”

Local Unit: “Goodhue Incident Command, Copy”

Hailing unit: “Iowa DOC 12, Goodhue County, copy, selecting 8TAC91 for incident command”

Local Unit: “Goodhue Incident Command, Iowa DOC 12, proceed to command post for further instructions.”

Hailing unit: “Iowa DOC, copy, proceeding to command post”

4. Upon termination of the incident, the hailed dispatch center takes down the patch and notifies the users. Patches requested by an Incident Commander (IC) or Communications Unit Leader (COML) should not be taken down until such action is authorized by these personnel.

Dispatcher: “Goodhue County, Iowa DOC 12, Goodhue Incident Command, patch of 8TAC91 to Goodhue Event 1 terminated”

Hailing unit: “Iowa DOC 12, copy, returning to 8CALL90”

Local unit: “Goodhue Incident Command, copy”

5. Once an incident using an ARMER Interoperability Pool Talkgroup or Interop System 8TAC9X channel ends, the local dispatcher should also release this resource on the ARMER System StatusBoard Application.

6.5.1 8CALL90/8TAC9X Operations Discussion

The following questions are a guide to a moderated discussion:
1. What are the limitations of this interoperability resource?
   a. Coverage (discuss overlapping coverage among bases)
   b. Availability:
      i. Who can access this resource? Field users, dispatchers, etc.
   c. Use by public safety discipline?

2. What is the initial hailing channel or talkgroup for this interoperability resource?
   a. Which dispatch centers have access to this channel or talkgroup?

3. Who can patch this resource to other local resources?
   a. What are the limitations of patched/gateway based communications?
   b. Who can request a patch?
   c. Who can initiate a patch?
   d. Who can terminate a patch?

4. How should use of this resource be properly coordinated?
   a. What resources are available to coordinate these resources?

6.6 County Main Patch to ARMER

Counties that do not migrate to ARMER may elect to have MnDOT deploy a hard patch from their primary VHF county radio system through the Interop System to an ARMER talkgroup designated for that particular county. This can be accomplished by a direct connection from the primary VHF county base or repeater. This is also possible by using a radio control station on the primary VHF county radio channel cross-connected through the Interop System to an ARMER control station at an ARMER site in that county. ARMER users working in that county can contact the local dispatcher and monitor local VHF traffic through this link to the designated ARMER talkgroup if desired. The primary purpose for this link would typically be to provide direct communications between local LEA and MSP. MnDOT technical staff will configure and maintain this type of patch.

Figure 6 depicts the potential connections of this type that are available, assuming that the local county, MnDOT, DPS, and the SRB concur with the arrangement.
6.6.1 County Main to ARMER Patch Operations

The primary purpose for this type of connection would typically be to provide direct communications between local law enforcement and MSP. As this is a connection between MSP and the local entity, individual operational guidelines and procedures for each link may vary slightly to ensure effective use of the connection. Absent such conditions, the following ARMER standard provides guidelines for the use of the local resources when patched to ARMER system talkgroups:

- Standard 3.32.0, Statewide Interoperable Plain Language Policy

Based on ARMER standards, as well as procedures outlined in the National Incident Management System (NIMS) and Incident Management System (IMS), all users operating on a local system to ARMER talkgroup patch shall utilize certain operational policies and conventions:
1. Users shall use plain language at all times.

1. Non-local radio users should initially identify themselves in the following manner: agency name, followed by service branch or function designation, followed by call sign or unit number, such as "North EMS 512", "Elk River Police 512", "Stearns County Public Works 512", "State Patrol 512".

2. Users hailing a dispatch center outside their normal operational area should also identify the dispatch center or agency they are attempting to communicate with, such as “State Patrol”, “Lake County SO”, “Elk River PD”.
# Appendix A – Evaluation Tools

## A.1 Training Evaluation Form

**Class Name:** Cross Spectrum Interoperability Training

**Class Date:**

**Name:**

**Agency:**

**Role:**  
Player ___  Evaluator ___  Facilitator ___

Please rate, on a scale of 1 to 5, your overall assessment of the training relative to the statements provided below, with 1 indicating **strong disagreement** with the statement and 5 indicating **strong agreement**.

<table>
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<tr>
<th>Assessment Factor</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
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<tr>
<td>1. The training was well structured and organized.</td>
<td>1 2</td>
<td>3 4 5</td>
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<td>2. The communication scenarios were plausible and realistic.</td>
<td>1 2</td>
<td>3 4 5</td>
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<td>3. The facilitator(s) was knowledgeable about the subject matter and kept the exercise on target.</td>
<td>1 2</td>
<td>3 4 5</td>
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<td>4. The documentation provided to assist in preparing for and participating in the training was useful.</td>
<td>1 2</td>
<td>3 4 5</td>
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<td>5. Participation in the training was appropriate for someone in my position.</td>
<td>1 2</td>
<td>3 4 5</td>
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<td>6. This training improved my ability to relate the capabilities and operations of the Interop System to my agency / jurisdiction.</td>
<td>1 2</td>
<td>3 4 5</td>
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<td>7. Was the facility adequate for the exercise?</td>
<td>1 2</td>
<td>3 4 5</td>
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A.2 Training Feedback

Please provide any recommendations on how this training could be improved or enhanced.

Facility

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Documentation

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Discussions

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General Comments

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Thank you for taking the time to provide us with your input!
Appendix B – Interop System Train the Trainer Session Participants

Session Location: Date:

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