MINNESOTA
PUBLIC SAFETY MOBILE RADIO CROSS SPECTRUM INTEROPERABILITY SYSTEM TRAINING PLAN
Version 2.0

May 23, 2012

Version History

Version Number	Implemented By	Revision Date	Approved by	Approval Date	Description of Change
1.0	Federal Engineering	April 10, 2012	Project Steering Committee	April 20, 2012	Initial Draft
1.1	Federal Engineering	April 27, 2012	SRB Interoperability Committee		Final Draft
2.0	Federal Engineering	May 23, 2012			Final

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1. Introduction

The Statewide Radio Board (SRB), operating as the State Interoperability Executive Committee (SIEC), is responsible for governance of the ARMER system, development of statewide standards and guidelines for interoperability, as well as coordinating the use of interoperability frequencies in all frequency bands assigned to public safety users in Minnesota. The primary system for providing public safety radio interoperability in Minnesota is the Allied Radio Matrix for Emergency Response (ARMER). ARMER is a 700/800 MHz, trunked, Project 25 (P25) standards-based shared radio system offering the highest level of interoperability to state, local, and regional agencies that join ARMER. Aside from 700/800 MHz, public safety entities in Minnesota and adjacent states operate in the Very High Frequency (VHF) 150-174 MHz band. In recognition of this, the SRB approved a supplemental interoperability plan utilizing the ARMER backbone to support additional interoperability infrastructure in the VHF band.

The Minnesota Department of Transportation (MnDOT) is implementing 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. *This overlay will work seamlessly in conjunction with the existing Metro Region VHF system. While enhancing access to users outside of the Metro Region, it is not physically connected to the metro system and does not extend the current coverage experienced by metro users.* The Cross Spectrum Interoperability System or 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 will provide other potential options for enhanced local or regional interoperable communications.

The *Cross Spectrum Interoperability System Operations Plan* (Operations Plan) outlines the Interop System operational policies and procedures, and defines how the various elements of the Interop System provide cross-spectrum interoperability for public safety agencies throughout the state. This document, the *Cross Spectrum Interoperability System Training Plan* (Training Plan), provides the basis of the initial training for public safety users in Minnesota to promote an understanding of the effective and appropriate use of the Interop System and its components.

2. Approach

Because deployment of the Interop System was still underway during development of this plan, the primary goal of the Training Plan is to provide the tools necessary for initial training of public safety users on the operational use of the Interop System and to identify additional tools needed to deliver or enhance future training. As deployment of the Interop System expands and users explore its capabilities, the discovery of new interoperability connections is likely to occur. These new connections may require revisions to both the Operations Plan and the Training Plan.

Detailed descriptions of the Interop System, found in the Operations Plan, are the basis for development of the Training Plan. The Training Plan's train-the-trainer approach provides for training of selected representatives from each ARMER region to enable them to provide training to other users in their respective regions. These ARMER representatives will receive training exercises at facilitated train-the-trainer sessions at two separate locations in the state. The *Cross Spectrum Interoperability System Operations Training Manual*, provided separately, includes additional materials to support the Training Plan.

Upon completion of the train-the-trainer sessions, trainers should have a thorough understanding of the following subject areas and be able to translate this knowledge to dispatchers and field users in their respective regions:

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 and local VHF interoperability channels
3. Processes and procedures that should be utilized to make certain that Interop System resources are used properly

The Training Plan assumes that Interop System users are familiar with the use of their own radio system equipment including dispatch consoles. Section 7 of this report provides a list of suggested additional training courses for Motobridge™ dispatch console operations.

3. Training Plan Contacts

Table 1 shows the primary points of contact within the Minnesota Department of Public Safety (DPS) division of Emergency Communication Networks (ECN) for questions regarding the Training Plan.

Table 1 – Training Plan Contacts

Position	Name	Phone	Email
Statewide Interoperability Program Manager	Thomas M. Johnson	651-201-7552	Tom.M.Johnson@state.mn.us
Standards/Training Coordinator	Cathy Anderson	651-201-7548	Cathy.Anderson@state.mn.us
Southern Regional Interoperability Coordinator	Steve Borchardt	507-398-9687	Steven.Borchardt@state.mn.us
Northern Regional Interoperability Coordinator	Bill Bernhjelm	218-792-5051	William.Bernhjelm@state.mn.us
Central/Metro Regional Interoperability Coordinator	John Tonding	763-587-8234	john.tonding@state.mn.us

4. Cross Spectrum Interoperability System Technical Overview

ARMER remains the primary interoperability system in Minnesota and deployment of the Interop System only supplements or enhances that system's capabilities. The Department of Homeland Security (DHS) Interoperability Continuum lists the five facets of complete interoperability down the left side of Figure 1; Governance, Standard Operating Procedures, Technology, Training and Exercises, and Usage . Each element has four or five levels of compliance, listed left to right from lowest to highest. ARMER provides the highest level of voice systems interoperability, Level 5, as defined by DHS in the Interoperability Continuum.

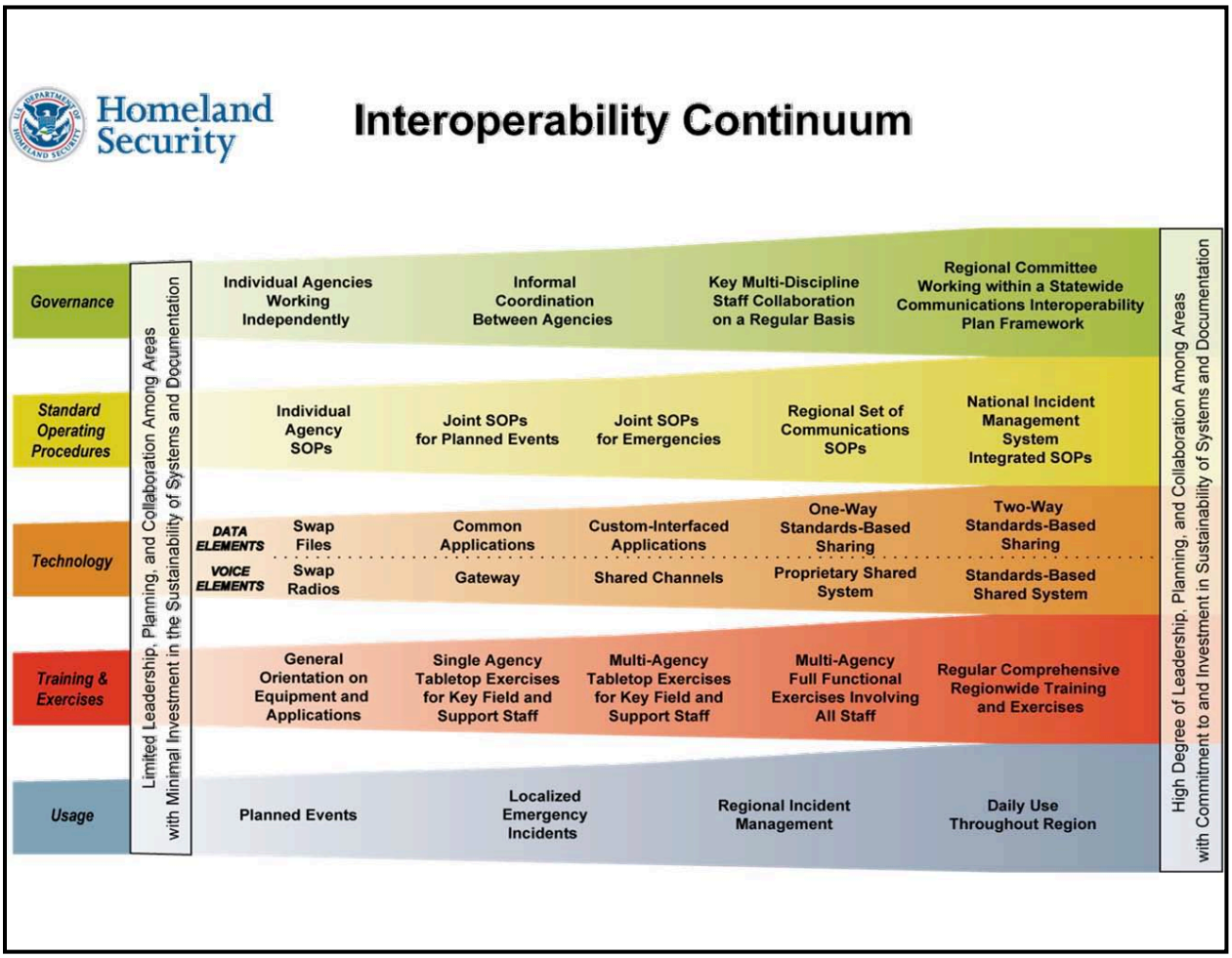


Figure 1 – SAFECOM Interoperability Continuum

The Interop System provides a hybrid level of technological interoperability incorporating Level 2 components, i.e., gateways, as well as Level 3 components, shared (VHF) channels. Previous deployment of ARMER control stations to each non-

metro public safety answering point (PSAP) in Minnesota further augments the interoperability capabilities provided by ARMER and the Interop System. Appendix A contains a guide to operations for users operating outside their normal areas but remaining on ARMER.

The Interop System comprises multiple elements, classified in the Operations Plan as shown in the following sections.

4.1 VLAW31 Stations

MnDOT will deploy VHF base stations at 109 non-metro ARMER sites on the national VHF Interoperability channel, VLAW31. Primarily used 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.

Appendix B of this report provides VLAW31 site locations and console naming conventions while Appendix C provides a condensed user guide for operations on VLAW31. Appendix J contains maps of the Interop System Sites planned for each ARMER region.

Many county dispatch centers may also have existing VLAW31 base stations used for interoperable communications that are not part of the Interop System. It is important to note that the widespread deployment of VLAW31 base stations significantly expands the range over which communications on this channel may be heard by other adjacent locations and counties. Appendix K provides examples of the potential base-to-mobile and base-to-base coverage provided by lower powered variable frequency stations at a single Interop System site in each of the ARMER regions. Base-to-base coverage from the higher-powered VLAW31 stations would typically be even greater that that shown. These examples are provided for illustration purposes only and do not necessarily reflect actual coverage provided by each site.

4.2 VHF Variable Frequency Stations

MnDOT will also deploy VHF variable frequency base stations (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 serve both discipline-specific needs using the VLAW31, VFIRE23, VMED28, and MNCOMM

channels or cross-discipline communications using the VCALL or VTAC channels. Appendix I provides a cross reference to the frequencies, squelch codes and channel names of the VHF interoperability channels programmed into the VFS units.

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 VCALL10 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. Appendix D provides a list of the VFS sites and their respective naming conventions. Appendix E provides a condensed user guide for operations on the VFS channels, and Appendix F lists the appropriate hailing channel per VFS site.

Maps of the Interop System Sites planned for each non-metro ARMER region are located in Appendix J. The maps also denotes those sites where use of the national VCALL10 and VTAC91-94 channels is restricted due to adjacent channel issues in Canada.

Many dispatch centers have existing equipment operating on VFIRE23, VMED28, and MNCOMM channels for interoperable communications even though they are not part of the Interop System. It is important to note that the widespread deployment of VFS base stations significantly expands the range over which communications on these channels may be heard by other adjacent locations and counties. Appendix K provides examples of the potential base-to-mobile and base-to-base coverage provided by a single Interop System site in each of the ARMER regions. These examples are provided for illustration purposes only and do not necessarily reflect actual coverage provided by each site.

4.3 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. Appendix G provides a list of 800 MHz national mutual aid sites in the state and their respective naming conventions. Appendix H provides an operations guide for the 800 MHz national mutual aid channels deployed in the Interop System. Appendix J also provides a graphic of the planned locations for deployment of the 8CALL90 and 8TAC9X stations in the Interop System.

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.

4.4 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 therefore not included in the current Operations Plan.

4.5 Dispatch Resources

These Interop System dispatch resources consist of ARMER consoles capable of accessing the VLAW31, 8CALL90 and 8TAC9X stations and Motobridge™ dispatch positions capable of accessing the VLAW31, 8CALL90, 8TAC9X, and VFS 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.

Figure 2 provides a high-level overview of the Interop System and its various components.

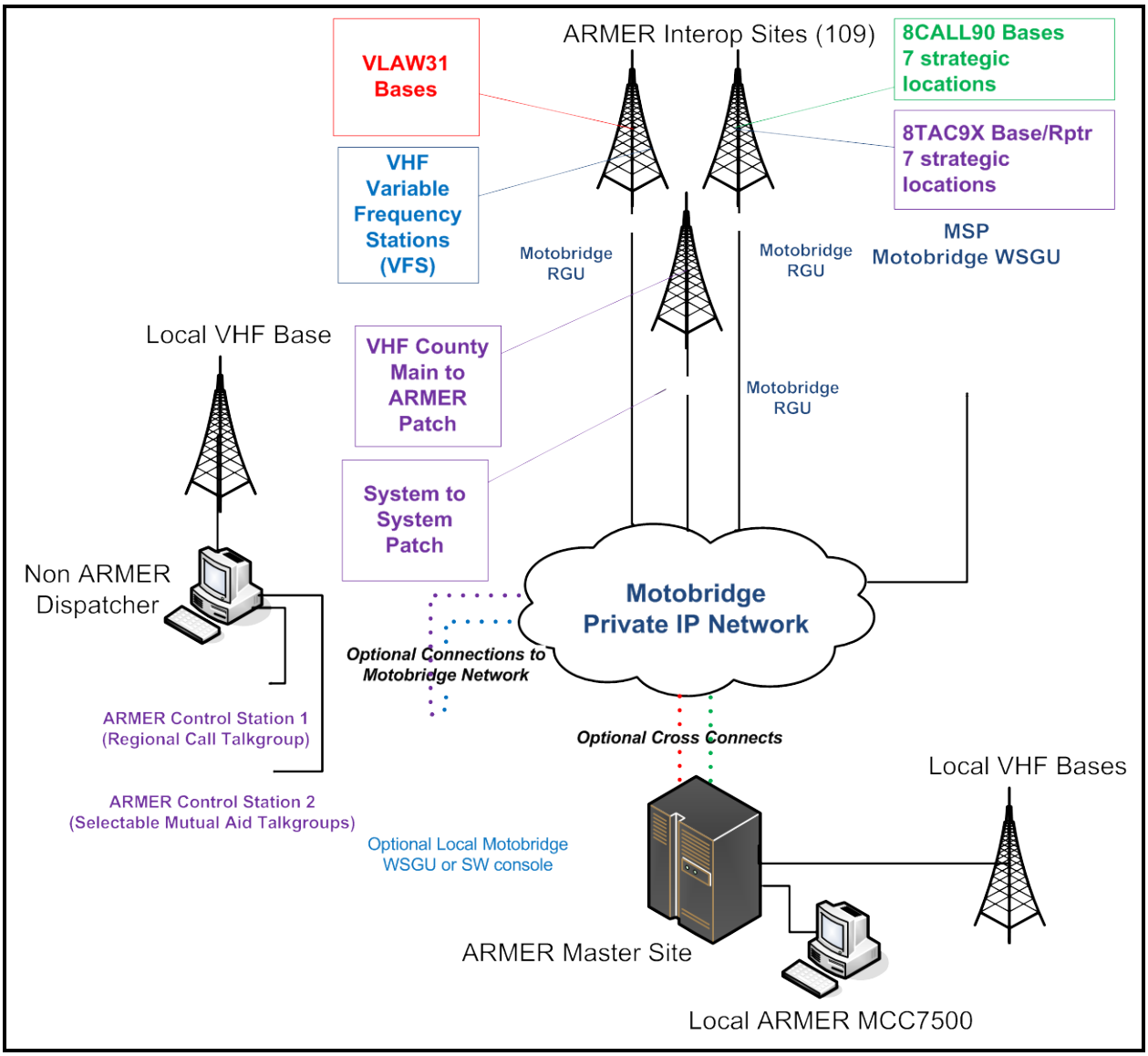


Figure 2 - Interop System Diagram

The *Cross Spectrum Interoperability System Operations Plan* contains further description of technical aspects of the Interop System.

5. Existing Standards and Interoperability References

Users of the Interop System and the VHF and 800 MHz interoperability channels included in this system should be familiar with existing ARMER standards governing the use of these resources including:

- *Standard 1.1.2, Criteria for the Installation of Base Stations and General Operations on MINSEF*[1]
- *Standard 3.5.0, National/Statewide VHF Interoperability Resources (VLAW31, VMED28, VFIR23, MIMS)*
- *Standard 3.31.0, ARMER System StatusBoard Application Talkgroup or Channel Minimum Requirements*
- *Standard 3.32.0, Statewide Interoperable Plain Language Policy*
- *Standard 3.44.0, Statewide Pursuit Communications*

New ARMER standards specific to Interop system resources are listed below.

- *Standard 3.16.4, Cross Spectrum Interoperability System VLAW31 Resources*
- *Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources*
- *Standard 3.16.3, Cross Spectrum Interoperability System 800 CALL90 and 8TAC9X Resources*

The following plans provide additional information on the use of VHF interoperability channels in Minnesota and adjacent states:

- *Minnesota Public Safety Mobile Radio VHF Interoperable Frequency Plan*
- *Minnesota Fire Frequency Utilization Plan*
- *Minnesota Hospitals Communications Best Practice Guide*

The American National Standards Institute (ANSI) standards document, *APCO/NPSTC ANS 1.104.1-2010, Standard Channel Nomenclature for Public Safety Interoperability Channels* includes standardized channel names and programming parameters for all national interoperability channels.

[1] Now VLAW31

6. Supplemental Training Materials List

The *Cross Spectrum Interoperability System Operations Training Manual* includes additional materials to support the Training Plan. ARMER representatives who attend train-the-trainer sessions receive this manual and other authorized personnel may receive this manual by contacting the Training Plan contacts listed in Section 3.

The *MOTOBRIDGE™ IP Interoperable Solution Dispatch Application User Guide* provides an overview of how to use the Dispatch Application to operate and manage radio, dispatch, and conference connections. More in depth training on Motobridge™ using various delivery methods, including onsite, classroom, or online training, is available directly from Motorola Solutions, Inc.

Alexandria Technical College provides web-based training courses designed specifically for ARMER users on topics such as:

- *Basic Online Courses:*
    - Radio 101
    - History of ARMER
    - Interoperability 101
- *Dispatcher Courses:*
    - MCC 7500 Dispatch Console
    - CENTRACOM Gold Elite
    - ARMER Control Stations
    - Computer Basics For Dispatchers
- *Radio Specific Courses:*
    - XTS2500 Model II Part 1-4

Appendix A – ARMER Standard Operations Guide

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 Incident Command System (ICS) protocols. Figure A.1 shows the standard interoperability configuration for ARMER users operating in a county that has not migrated to ARMER.

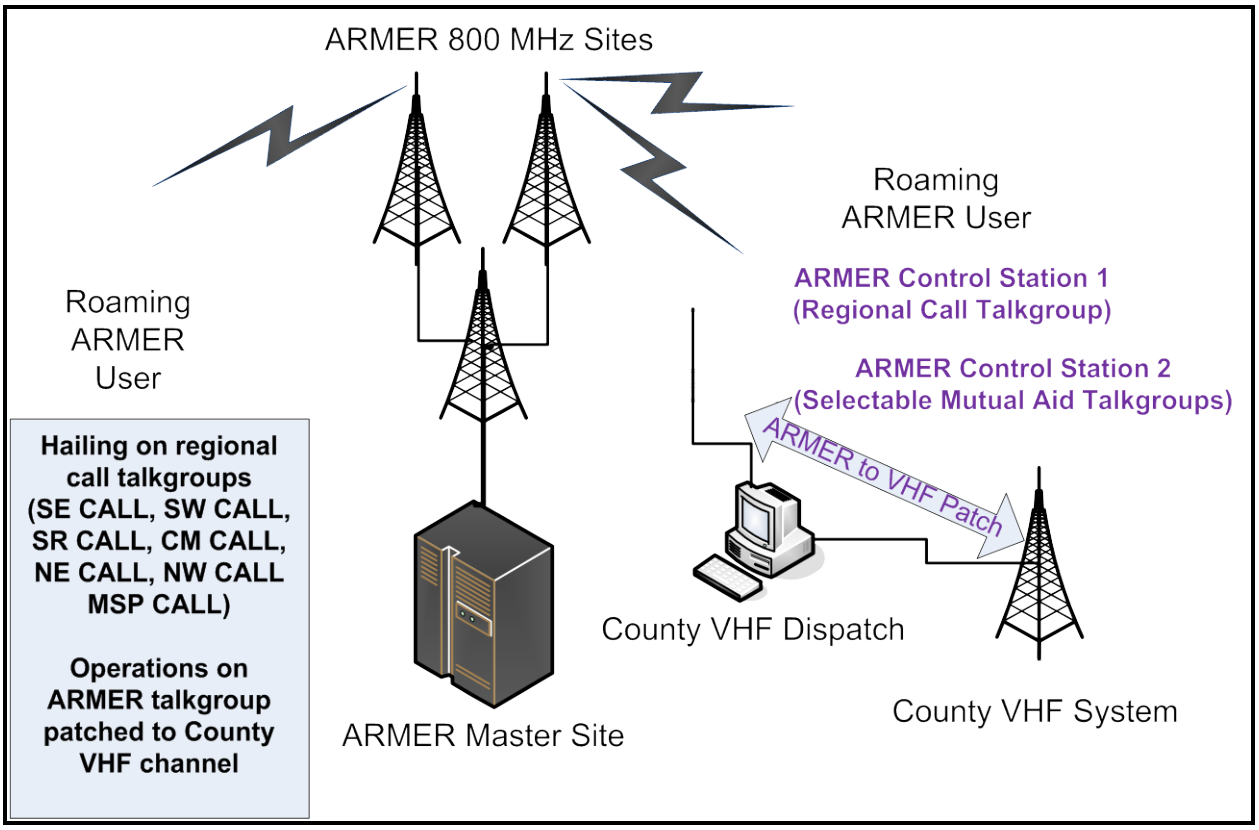


Figure A.1- ARMER Standard Interoperability Configuration

Table A.1 lists the regional hailing talkgroups for each ARMER region:

Table A.1 – Regional hailing talkgroups by region

ARMER Region	Regional Hailing Talkgroup
Metro	MSP CALL[2]
Northeast	NE CALL
Northwest	NW CALL
Central	CM CALL
South Central	SR CALL
Southwest	SW CALL
Southeast	SE CALL

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 indicate the resource they are hailing on, such as “NW Call”, “SW CALL”, etc.
5. Dispatchers may patch only one local resource in an area to one ARMER talkgroup per incident.

[2] 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 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.

Appendix B – VLAW31 Sites and Naming Conventions

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Benson	CM	CM-VLAW31-Bens	CM-VLAW31-Benson	CM-VLAW31-Benson
Browns Valley	CM	CM-VLAW31-Brow	CM-VLAW31-Browns	CM-VLAW31-Browns Va
Buffalo	CM	CM-VLAW31-Buff	CM-VLAW31-Buffal	CM-VLAW31-Buffalo
Eagle Lake	CM	CM-VLAW31-Eagl	CM-VLAW31-Eagle	CM-VLAW31-Eagle Lak
Erhard	CM	CM-VLAW31-Erha	CM-VLAW31-Erhard	CM-VLAW31-Erhard
Freedhem	CM	CM-VLAW31-Free	CM-VLAW31-Freedh	CM-VLAW31-Freedhem
Freeport	CM	CM-VLAW31-Free	CM-VLAW31-Freepo	CM-VLAW31-Freeport
Glenwood	CM	CM-VLAW31-Glee	CM-VLAW31-Gleenw	CM-VLAW31-Gleenwood
Hoffman	CM	CM-VLAW31-Hoff	CM-VLAW31-Hoffma	CM-VLAW31-Hoffman
Kent	CM	CM-VLAW31-Kent	CM-VLAW31-Kent	CM-VLAW31-Kent
Kimball	CM	CM-VLAW31-Kimb	CM-VLAW31-Kimbal	CM-VLAW31-Kimball
Litchfield	CM	CM-VLAW31-Litc	CM-VLAW31-Litchf	CM-VLAW31-Litchfiel
Long Prairie	CM	CM-VLAW31-Long	CM-VLAW31-Long P	CM-VLAW31-Long Prai
Morris New	CM	CM-VLAW31-Morr	CM-VLAW31-Morris	CM-VLAW31-Morris Ne
New London	CM	CM-VLAW31-New	CM-VLAW31-New Lo	CM-VLAW31-New Londo
Onamia	CM	CM-VLAW31-Onam	CM-VLAW31-Onamia	CM-VLAW31-Onamia
Parkers Prairie	CM	CM-VLAW31-Park	CM-VLAW31-Parker	CM-VLAW31-Parkers P
Schumacher	CM	CM-VLAW31-Schu	CM-VLAW31-Schuma	CM-VLAW31-Schumache
Sebeka	CM	CM-VLAW31-Sebe	CM-VLAW31-Sebeka	CM-VLAW31-Sebeka
St. Cloud	CM	CM-VLAW31-St C	CM-VLAW31-St Clo	CM-VLAW31-St Cloud
Wheaton	CM	CM-VLAW31-Whea	CM-VLAW31-Wheato	CM-VLAW31-Wheaton
Zimmerman	CM	CM-VLAW31-Zimm	CM-VLAW31-Zimmer	CM-VLAW31-Zimmerman
Alden	SE	SE-VLAW31-Alde	SE-VLAW31-Alden	SE-VLAW31-Alden
Alma	SE	SE-VLAW31-Alma	SE-VLAW31-Alma	SE-VLAW31-Alma
Amherst	SE	SE-VLAW31-Amhe	SE-VLAW31-Amhers	SE-VLAW31-Amherst
Caledonia	SE	SE-VLAW31-Cale	SE-VLAW31-Caledo	SE-VLAW31-Caledonia
Cannon Falls	SE	SE-VLAW31-Cann	SE-VLAW31-Cannon	SE-VLAW31-Cannon Fa
Dodge Center	SE	SE-VLAW31-Dodg	SE-VLAW31-Dodge	SE-VLAW31-Dodge Cen
Dresbach	SE	SE-VLAW31-Dres	SE-VLAW31-Dresba	SE-VLAW31-Dresbach
Elkton	SE	SE-VLAW31-Elkt	SE-VLAW31-Elkton	SE-VLAW31-Elkton
Lonsdale	SE	SE-VLAW31-Lons	SE-VLAW31-Lonsda	SE-VLAW31-Lonsdale
Oakland Woods	SE	SE-VLAW31-Oakl	SE-VLAW31-Oaklan	SE-VLAW31-Oakland W
Owatonna	SE	SE-VLAW31-Owat	SE-VLAW31-Owaton	SE-VLAW31-Owatonna
Red Wing	SE	SE-VLAW31-Red	SE-VLAW31-Red Wi	SE-VLAW31-Red Wing
Viola	SE	SE-VLAW31-Viol	SE-VLAW31-Viola	SE-VLAW31-Viola
Wilson	SE	SE-VLAW31-Wils	SE-VLAW31-Wilson	SE-VLAW31-Wilson
Arrowhead	NE	NE-VLAW31-Arro	NE-VLAW31-Arrowh	NE-VLAW31-Arrowhead
Baxter	NE	NE-VLAW31-Baxt	NE-VLAW31-Baxter	NE-VLAW31-Baxter
Border	NE	NE-VLAW31-Bord	NE-VLAW31-Border	NE-VLAW31-Border

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Cass Lake	NE	NE-VLAW31-Cass	NE-VLAW31-Cass L	NE-VLAW31-Cass Lake
Deer River	NE	NE-VLAW31-Deer	NE-VLAW31-Deer R	NE-VLAW31-Deer Rive
Duluth	NE	NE-VLAW31-Dulu	NE-VLAW31-Duluth	NE-VLAW31-Duluth
Effie	NE	NE-VLAW31-Effi	NE-VLAW31-Effie	NE-VLAW31-Effie
Ely	NE	NE-VLAW31-Ely	NE-VLAW31-Ely	NE-VLAW31-Ely
Emily	NE	NE-VLAW31-Emil	NE-VLAW31-Emily	NE-VLAW31-Emily
Gheen Hill	NE	NE-VLAW31-Ghee	NE-VLAW31-Gheen	NE-VLAW31-Gheen Hil
Grand Portage	NE	NE-VLAW31-Gran	NE-VLAW31-Grand	NE-VLAW31-Grand Por
Gunflint East	NE	NE-VLAW31-Gunf	NE-VLAW31-Gunfli	NE-VLAW31-Gunflint
Kabetogama	NE	NE-VLAW31-Kabe	NE-VLAW31-Kabeto	NE-VLAW31-Kabetogam
Lawler	NE	NE-VLAW31-Lawl	NE-VLAW31-Lawler	NE-VLAW31-Lawler
Leader	NE	NE-VLAW31-Lead	NE-VLAW31-Leader	NE-VLAW31-Leader
Little Fork	NE	NE-VLAW31-Litt	NE-VLAW31-Little	NE-VLAW31-Little Fo
Maple Hill	NE	NE-VLAW31-Mapl	NE-VLAW31-Maple	NE-VLAW31-Maple Hil
Margie	NE	NE-VLAW31-Marg	NE-VLAW31-Margie	NE-VLAW31-Margie
Nashwauk(County)	NE	NE-VLAW31-Nash	NE-VLAW31-Nashwa	NE-VLAW31-Nashwauk(
Nickerson	NE	NE-VLAW31-Nick	NE-VLAW31-Nicker	NE-VLAW31-Nickerson
Northome	NE	NE-VLAW31-Nort	NE-VLAW31-Northo	NE-VLAW31-Northome
Pine City	NE	NE-VLAW31-Pine	NE-VLAW31-Pine C	NE-VLAW31-Pine City
Quadna	NE	NE-VLAW31-Quad	NE-VLAW31-Quadna	NE-VLAW31-Quadna
Schroder	NE	NE-VLAW31-Schr	NE-VLAW31-Schrod	NE-VLAW31-Schroder
Shaw	NE	NE-VLAW31-Shaw	NE-VLAW31-Shaw	NE-VLAW31-Shaw
Soudan	NE	NE-VLAW31-Soud	NE-VLAW31-Soudan	NE-VLAW31-Soudan
Tofte	NE	NE-VLAW31-Toft	NE-VLAW31-Tofte	NE-VLAW31-Tofte
Virginia	NE	NE-VLAW31-Virg	NE-VLAW31-Virgin	NE-VLAW31-Virginia
Wales	NE	NE-VLAW31-Wale	NE-VLAW31-Wales	NE-VLAW31-Wales
Whyte	NE	NE-VLAW31-Whyt	NE-VLAW31-Whyte	NE-VLAW31-Whyte
Woodland	NE	NE-VLAW31-Wood	NE-VLAW31-Woodla	NE-VLAW31-Woodland
Ada	NW	NW-VLAW31-Ada	NW-VLAW31-Ada	NW-VLAW31-Ada
Bagley	NW	NW-VLAW31-Bagl	NW-VLAW31-Bagley	NW-VLAW31-Bagley
Bemidji	NW	NW-VLAW31-Bemi	NW-VLAW31-Bemidj	NW-VLAW31-Bemidji
Crookston	NW	NW-VLAW31-Croo	NW-VLAW31-Crooks	NW-VLAW31-Crookston
Dorothy	NW	NW-VLAW31-Doro	NW-VLAW31-Doroth	NW-VLAW31-Dorothy
Greenbush	NW	NW-VLAW31-Gree	NW-VLAW31-Greenb	NW-VLAW31-Greenbush
Hawley	NW	NW-VLAW31-Hawl	NW-VLAW31-Hawley	NW-VLAW31-Hawley
Lake Bronson	NW	NW-VLAW31-Lake	NW-VLAW31-Lake B	NW-VLAW31-Lake Bron
Mahnomen	NW	NW-VLAW31-Mahn	NW-VLAW31-Mahnom	NW-VLAW31-Mahnomen
Mantrap	NW	NW-VLAW31-Mant	NW-VLAW31-Mantra	NW-VLAW31-Mantrap
Mentor	NW	NW-VLAW31-Ment	NW-VLAW31-Mentor	NW-VLAW31-Mentor
Middle River	NW	NW-VLAW31-Midd	NW-VLAW31-Middle	NW-VLAW31-Middle Ri
Northcote	NW	NW-VLAW31-Nort	NW-VLAW31-Northc	NW-VLAW31-Northcote
Roosevelt	NW	NW-VLAW31-Roos	NW-VLAW31-Roosev	NW-VLAW31-Roosevelt

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Thorhult	NW	NW-VLAW31-Thor	NW-VLAW31-Thorhu	NW-VLAW31-Thorhult
Warren	NW	NW-VLAW31-Warr	NW-VLAW31-Warren	NW-VLAW31-Warren
Waskish	NW	NW-VLAW31-Wask	NW-VLAW31-Waskis	NW-VLAW31-Waskish
Winter Silo	NW	NW-VLAW31-Wint	NW-VLAW31-Winter	NW-VLAW31-Winter Si
Wolf Lake	NW	NW-VLAW31-Wolf	NW-VLAW31-Wolf L	NW-VLAW31-Wolf Lake
Biscay	SC	SC-VLAW31-Bisc	SC-VLAW31-Biscay	SC-VLAW31-Biscay
Blue Earth	SC	SC-VLAW31-Blue	SC-VLAW31-Blue E	SC-VLAW31-Blue Eart
Gaylord	SC	SC-VLAW31-Gayl	SC-VLAW31-Gaylor	SC-VLAW31-Gaylord
Janesville	SC	SC-VLAW31-Jane	SC-VLAW31-Janesv	SC-VLAW31-Janesvill
La Salle	SC	SC-VLAW31-La S	SC-VLAW31-La Sal	SC-VLAW31-La Salle
Mankato MSU	SC	SC-VLAW31-Mank	SC-VLAW31-Mankat	SC-VLAW31-Mankato M
Nicollet	SC	SC-VLAW31-Nico	SC-VLAW31-Nicoll	SC-VLAW31-Nicollet
Sherburne	SC	SC-VLAW31-Sher	SC-VLAW31-Sherbu	SC-VLAW31-Sherburn
Brewster	SW	SW-VLAW31-Brew	SW-VLAW31-Brewst	SW-VLAW31-Brewster
Canby	SW	SW-VLAW31-Canb	SW-VLAW31-Canby	SW-VLAW31-Canby
Chandler	SW	SW-VLAW31-Chan	SW-VLAW31-Chandl	SW-VLAW31-Chandler
Danube	SW	SW-VLAW31-Danu	SW-VLAW31-Danube	SW-VLAW31-Danube
Granite Falls	SW	SW-VLAW31-Gran	SW-VLAW31-Granit	SW-VLAW31-Granite F
Hardwick	SW	SW-VLAW31-Hard	SW-VLAW31-Hardwi	SW-VLAW31-Hardwick
Lake Benton	SW	SW-VLAW31-Lake	SW-VLAW31-Lake B	SW-VLAW31-Lake Bent
Madison	SW	SW-VLAW31-Madi	SW-VLAW31-Madiso	SW-VLAW31-Madison
Morton	SW	SW-VLAW31-Mort	SW-VLAW31-Morton	SW-VLAW31-Morton
Rushmore	SW	SW-VLAW31-Rush	SW-VLAW31-Rushmo	SW-VLAW31-Rushmore
Russell	SW	SW-VLAW31-Russ	SW-VLAW31-Russel	SW-VLAW31-Russel
Tracy	SW	SW-VLAW31-Trac	SW-VLAW31-Tracy	SW-VLAW31-Tracy
Wanda	SW	SW-VLAW31-Wand	SW-VLAW31-Wanda	SW-VLAW31-Wanda
Windom	SW	SW-VLAW31-Wind	SW-VLAW31-Windom	SW-VLAW31-Windom
Woods	SW	SW-VLAW31-Wood	SW-VLAW31-Woods	SW-VLAW31-Woods

Appendix C – VLAW31 Operations Guide

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 that operate 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 C.1 shows a high-level diagram of the Interop System's VLAW31 configurations.

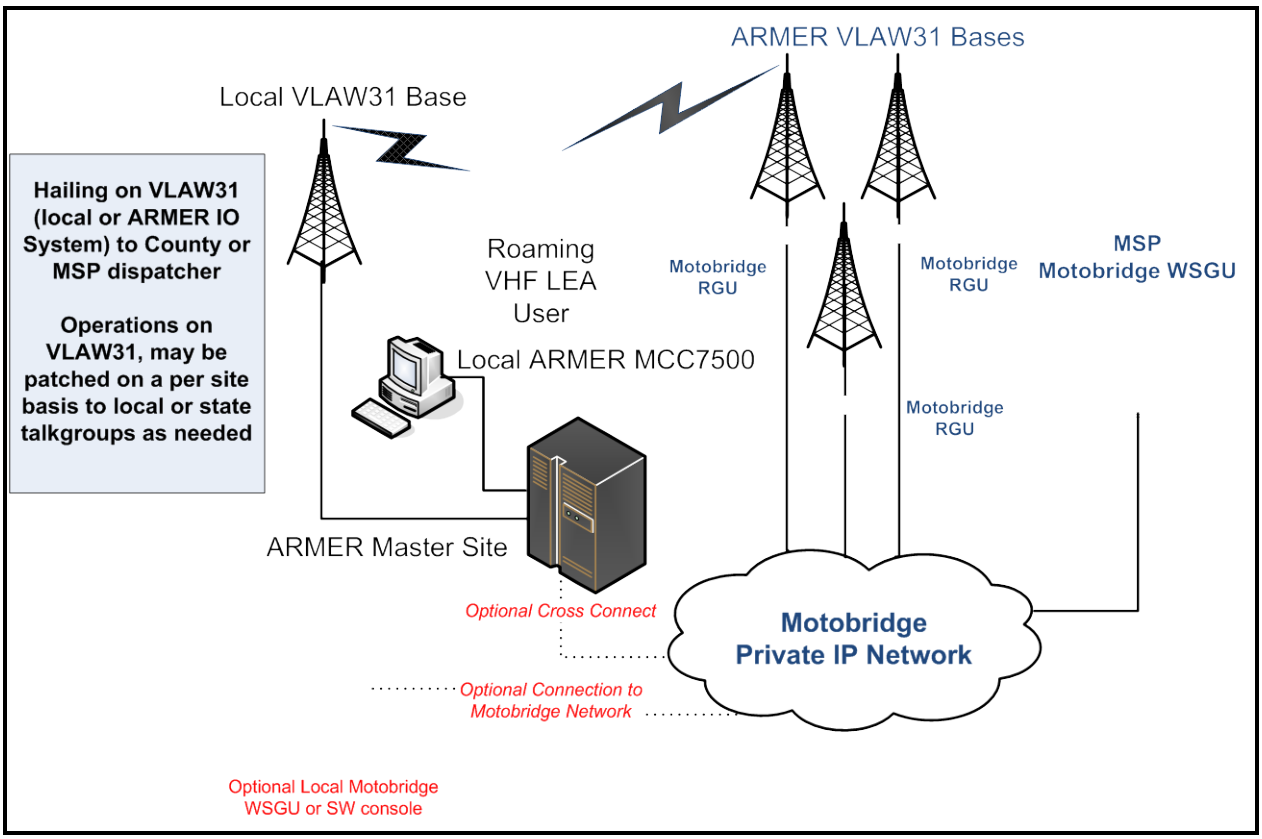


Figure C.1 Interop System VLAW 31 Stations

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 indicate 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 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.

Appendix D - VFS Sites and Naming Conventions

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Benson	CM	CM-VFS-Benson	CM-VFS-Benson	CM-VFS-Benson
Browns Valley	CM	CM-VFS-Browns	CM-VFS-Browns Va	CM-VFS-Browns Valle
Buffalo	CM	CM-VFS-Buffalo	CM-VFS-Buffalo	CM-VFS-Buffalo
Eagle Lake	CM	CM-VFS-Eagle L	CM-VFS-Eagle Lak	CM-VFS-Eagle Lake
Erhard	CM	CM-VFS-Erhard	CM-VFS-Erhard	CM-VFS-Erhard
Freedhem	CM	CM-VFS-Freedhe	CM-VFS-Freedhem	CM-VFS-Freedhem
Freeport	CM	CM-VFS-Freepor	CM-VFS-Freeport	CM-VFS-Freeport
Gleenwood	CM	CM-VFS-Gleenwo	CM-VFS-Gleenwood	CM-VFS-Gleenwood
Hoffman	CM	CM-VFS-Hoffman	CM-VFS-Hoffman	CM-VFS-Hoffman
Kent	CM	CM-VFS-Kent	CM-VFS-Kent	CM-VFS-Kent
Kimball	CM	CM-VFS-Kimball	CM-VFS-Kimball	CM-VFS-Kimball
Litchfield	CM	CM-VFS-Litchfi	CM-VFS-Litchfiel	CM-VFS-Litchfield
Long Prairie	CM	CM-VFS-Long Pr	CM-VFS-Long Prai	CM-VFS-Long Prairie
Morris New	CM	CM-VFS-Morris	CM-VFS-Morris Ne	CM-VFS-Morris New
New London	CM	CM-VFS-New Lon	CM-VFS-New Londo	CM-VFS-New London
Onamia	CM	CM-VFS-Onamia	CM-VFS-Onamia	CM-VFS-Onamia
Parkers Prairie	CM	CM-VFS-Parkers	CM-VFS-Parkers P	CM-VFS-Parkers Prai
Schumacher	CM	CM-VFS-Schumac	CM-VFS-Schumache	CM-VFS-Schumacher
Sebeka	CM	CM-VFS-Sebeka	CM-VFS-Sebeka	CM-VFS-Sebeka
St. Cloud	CM	CM-VFS-St Clou	CM-VFS-St Cloud	CM-VFS-St Cloud
Wheaton	CM	CM-VFS-Wheaton	CM-VFS-Wheaton	CM-VFS-Wheaton
Zimmerman	CM	CM-VFS-Zimmerm	CM-VFS-Zimmerman	CM-VFS-Zimmerman
Alden	SE	SE-VFS-Alden	SE-VFS-Alden	SE-VFS-Alden
Alma	SE	SE-VFS-Alma	SE-VFS-Alma	SE-VFS-Alma
Amherst	SE	SE-VFS-Amherst	SE-VFS-Amherst	SE-VFS-Amherst
Caledonia	SE	SE-VFS-Caledon	SE-VFS-Caledonia	SE-VFS-Caledonia
Cannon Falls	SE	SE-VFS-Cannon	SE-VFS-Cannon Fa	SE-VFS-Cannon Falls
Dodge Center	SE	SE-VFS-Dodge C	SE-VFS-Dodge Cen	SE-VFS-Dodge Center
Dresbach	SE	SE-VFS-Dresbac	SE-VFS-Dresbach	SE-VFS-Dresbach
Elkton	SE	SE-VFS-Elkton	SE-VFS-Elkton	SE-VFS-Elkton
Lonsdale	SE	SE-VFS-Lonsdal	SE-VFS-Lonsdale	SE-VFS-Lonsdale
Oakland Woods	SE	SE-VFS-Oakland	SE-VFS-Oakland W	SE-VFS-Oakland Wood
Owatonna	SE	SE-VFS-Owatonn	SE-VFS-Owatonna	SE-VFS-Owatonna
Red Wing	SE	SE-VFS-Red Win	SE-VFS-Red Wing	SE-VFS-Red Wing
Viola	SE	SE-VFS-Viola	SE-VFS-Viola	SE-VFS-Viola
Wilson	SE	SE-VFS-Wilson	SE-VFS-Wilson	SE-VFS-Wilson
Arrowhead	NE	NE-VFS-Arrowhe	NE-VFS-Arrowhead	NE-VFS-Arrowhead
Baxter	NE	NE-VFS-Baxter	NE-VFS-Baxter	NE-VFS-Baxter
Border	NE	NE-VFS-Border	NE-VFS-Border	NE-VFS-Border

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Cass Lake	NE	NE-VFS-Cass La	NE-VFS-Cass Lake	NE-VFS-Cass Lake
Deer River	NE	NE-VFS-Deer Ri	NE-VFS-Deer Rive	NE-VFS-Deer River
Duluth	NE	NE-VFS-Duluth	NE-VFS-Duluth	NE-VFS-Duluth
Effie	NE	NE-VFS-Effie	NE-VFS-Effie	NE-VFS-Effie
Ely	NE	NE-VFS-Ely	NE-VFS-Ely	NE-VFS-Ely
Emily	NE	NE-VFS-Emily	NE-VFS-Emily	NE-VFS-Emily
Gheen Hill	NE	NE-VFS-Gheen H	NE-VFS-Gheen Hil	NE-VFS-Gheen Hill
Grand Portage	NE	NE-VFS-Grand P	NE-VFS-Grand Por	NE-VFS-Grand Portag
Gunflint East	NE	NE-VFS-Gunflin	NE-VFS-Gunflint	NE-VFS-Gunflint Eas
Kabetogama	NE	NE-VFS-Kabetog	NE-VFS-Kabetogam	NE-VFS-Kabetogama
Lawler	NE	NE-VFS-Lawler	NE-VFS-Lawler	NE-VFS-Lawler
Leader	NE	NE-VFS-Leader	NE-VFS-Leader	NE-VFS-Leader
Little Fork	NE	NE-VFS-Little	NE-VFS-Little Fo	NE-VFS-Little Fork
Maple Hill	NE	NE-VFS-Maple H	NE-VFS-Maple Hil	NE-VFS-Maple Hill
Margie	NE	NE-VFS-Margie	NE-VFS-Margie	NE-VFS-Margie
Nashwauk(County)	NE	NE-VFS-Nashwau	NE-VFS-Nashwauk(	NE-VFS-Nashwauk(Cou
Nickerson	NE	NE-VFS-Nickers	NE-VFS-Nickerson	NE-VFS-Nickerson
Northome	NE	NE-VFS-Northom	NE-VFS-Northome	NE-VFS-Northome
Pine City	NE	NE-VFS-Pine Ci	NE-VFS-Pine City	NE-VFS-Pine City
Quadna	NE	NE-VFS-Quadna	NE-VFS-Quadna	NE-VFS-Quadna
Schroder	NE	NE-VFS-Schrode	NE-VFS-Schroder	NE-VFS-Schroder
Shaw	NE	NE-VFS-Shaw	NE-VFS-Shaw	NE-VFS-Shaw
Soudan	NE	NE-VFS-Soudan	NE-VFS-Soudan	NE-VFS-Soudan
Tofte	NE	NE-VFS-Tofte	NE-VFS-Tofte	NE-VFS-Tofte
Virginia	NE	NE-VFS-Virgini	NE-VFS-Virginia	NE-VFS-Virginia
Wales	NE	NE-VFS-Wales	NE-VFS-Wales	NE-VFS-Wales
Whyte	NE	NE-VFS-Whyte	NE-VFS-Whyte	NE-VFS-Whyte
Woodland	NE	NE-VFS-Woodlan	NE-VFS-Woodland	NE-VFS-Woodland
Ada	NW	NW-VFS-Ada	NW-VFS-Ada	NW-VFS-Ada
Bagley	NW	NW-VFS-Bagley	NW-VFS-Bagley	NW-VFS-Bagley
Bemidji	NW	NW-VFS-Bemidji	NW-VFS-Bemidji	NW-VFS-Bemidji
Crookston	NW	NW-VFS-Crookst	NW-VFS-Crookston	NW-VFS-Crookston
Dorothy	NW	NW-VFS-Dorothy	NW-VFS-Dorothy	NW-VFS-Dorothy
Greenbush	NW	NW-VFS-Greenbu	NW-VFS-Greenbush	NW-VFS-Greenbush
Hawley	NW	NW-VFS-Hawley	NW-VFS-Hawley	NW-VFS-Hawley
Lake Bronson	NW	NW-VFS-Lake Br	NW-VFS-Lake Bron	NW-VFS-Lake Bronson
Mahnomen	NW	NW-VFS-Mahnome	NW-VFS-Mahnomen	NW-VFS-Mahnomen
Mantrap	NW	NW-VFS-Mantrap	NW-VFS-Mantrap	NW-VFS-Mantrap
Mentor	NW	NW-VFS-Mentor	NW-VFS-Mentor	NW-VFS-Mentor
Middle River	NW	NW-VFS-Middle	NW-VFS-Middle Ri	NW-VFS-Middle River
Northcote	NW	NW-VFS-Northco	NW-VFS-Northcote	NW-VFS-Northcote

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Roosevelt	NW	NW-VFS-Rooseve	NW-VFS-Roosevelt	NW-VFS-Roosevelt
Thorhult	NW	NW-VFS-Thorhul	NW-VFS-Thorhult	NW-VFS-Thorhult
Warren	NW	NW-VFS-Warren	NW-VFS-Warren	NW-VFS-Warren
Waskish	NW	NW-VFS-Waskish	NW-VFS-Waskish	NW-VFS-Waskish
Winter Silo	NW	NW-VFS-Winter	NW-VFS-Winter Si	NW-VFS-Winter Silo
Wolf Lake	NW	NW-VFS-Wolf La	NW-VFS-Wolf Lake	NW-VFS-Wolf Lake
Biscay	SC	SC-VFS-Biscay	SC-VFS-Biscay	SC-VFS-Biscay
Blue Earth	SC	SC-VFS-Blue Ea	SC-VFS-Blue Eart	SC-VFS-Blue Earth
Gaylord	SC	SC-VFS-Gaylord	SC-VFS-Gaylord	SC-VFS-Gaylord
Janesville	SC	SC-VFS-Janesvi	SC-VFS-Janesvill	SC-VFS-Janesville
La Salle	SC	SC-VFS-La Sall	SC-VFS-La Salle	SC-VFS-La Salle
Mankato MSU	SC	SC-VFS-Mankato	SC-VFS-Mankato M	SC-VFS-Mankato MSU
Nicollet	SC	SC-VFS-Nicolle	SC-VFS-Nicollet	SC-VFS-Nicollet
Sherburn	SC	SC-VFS-Sherbur	SC-VFS-Sherburn	SC-VFS-Sherburn
Brewster	SW	SW-VFS-Brewste	SW-VFS-Brewster	SW-VFS-Brewster
Canby	SW	SW-VFS-Canby	SW-VFS-Canby	SW-VFS-Canby
Chandler	SW	SW-VFS-Chandle	SW-VFS-Chandler	SW-VFS-Chandler
Danube	SW	SW-VFS-Danube	SW-VFS-Danube	SW-VFS-Danube
Granite Falls	SW	SW-VFS-Granite	SW-VFS-Granite F	SW-VFS-Granite Fall
Hardwick	SW	SW-VFS-Hardwic	SW-VFS-Hardwick	SW-VFS-Hardwick
Lake Benton	SW	SW-VFS-Lake Be	SW-VFS-Lake Bent	SW-VFS-Lake Benton
Madison	SW	SW-VFS-Madison	SW-VFS-Madison	SW-VFS-Madison
Morton	SW	SW-VFS-Morton	SW-VFS-Morton	SW-VFS-Morton
Rushmore	SW	SW-VFS-Rushmor	SW-VFS-Rushmore	SW-VFS-Rushmore
Russel	SW	SW-VFS-Russel	SW-VFS-Russel	SW-VFS-Russel
Tracy	SW	SW-VFS-Tracy	SW-VFS-Tracy	SW-VFS-Tracy
Wanda	SW	SW-VFS-Wanda	SW-VFS-Wanda	SW-VFS-Wanda
Windom	SW	SW-VFS-Windom	SW-VFS-Windom	SW-VFS-Windom
Woods	SW	SW-VFS-Woods	SW-VFS-Woods	SW-VFS-Woods

Appendix E – VFS Operations Guide

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, as designated in Appendix F.

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 E.1 provides a high-level diagram of the Interop System VFS station configuration.

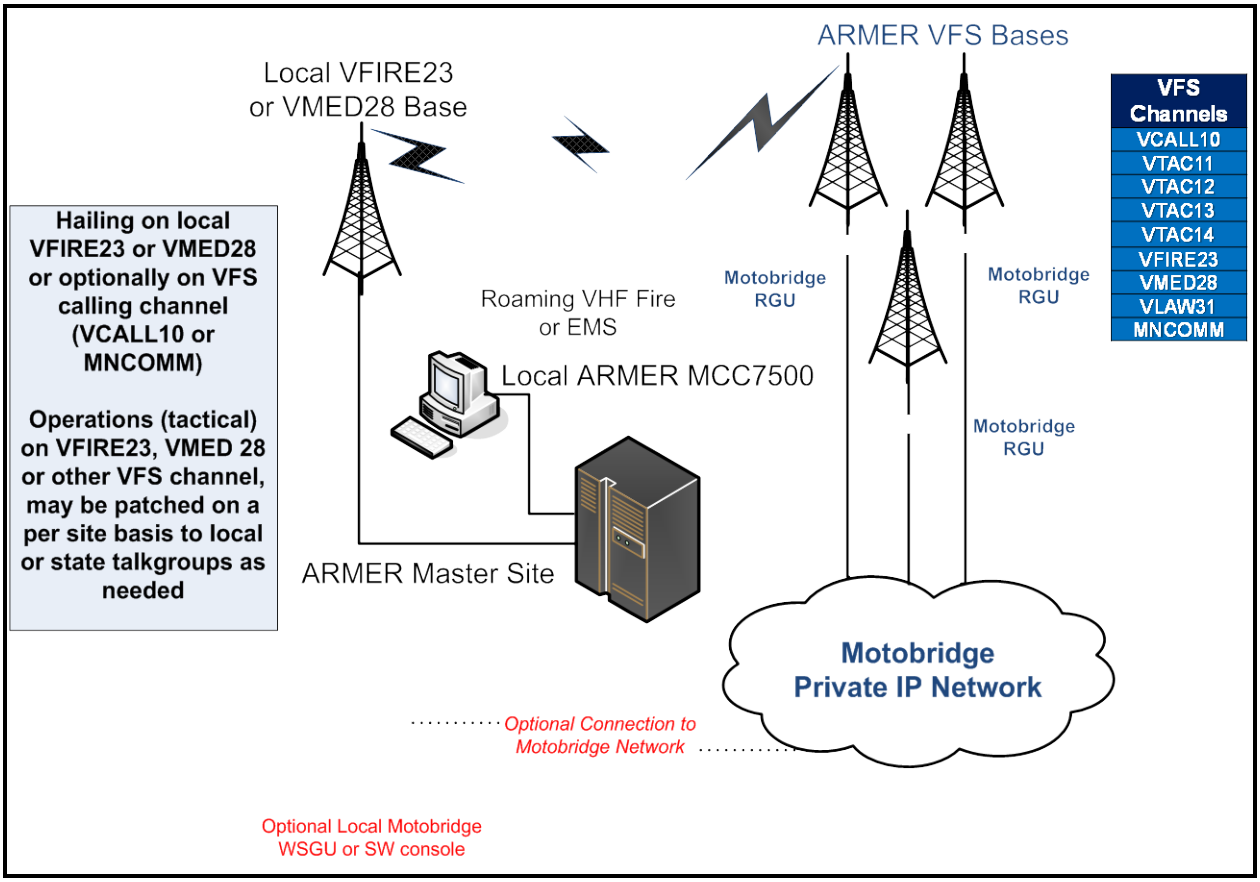


Figure E.1 – Interop System VFS Stations

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 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”.

4. Users should also indicate the resource they are hailing on, such as “VCALL10”, “MNCOMM”, “VMED28”, or “VFIRE23”.
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 take down 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. 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 VFS to 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 VCALL10 station ends, the local dispatcher must also release this resource on the ARMER System StatusBoard Application.

Appendix F – VFS Hailing Channels

Interop Site	RAC	Hailing Channel
Benson	CM	VCALL10
Browns Valley	CM	VCALL10
Buffalo	CM	VCALL10
Eagle Lake	CM	VCALL10
Erhard	CM	VCALL10
Freedhem	CM	VCALL10
Freeport	CM	VCALL10
Gleenwood	CM	VCALL10
Hoffman	CM	VCALL10
Kent	CM	VCALL10
Kimball	CM	VCALL10
Litchfield	CM	VCALL10
Long Prairie	CM	VCALL10
Morris New	CM	VCALL10
New London	CM	VCALL10
Onamia	CM	VCALL10
Parkers Prairie	CM	VCALL10
Schumacher	CM	VCALL10
Sebeka	CM	VCALL10
St. Cloud	CM	VCALL10
Wheaton	CM	VCALL10
Zimmerman	CM	VCALL10
Alden	SE	VCALL10
Alma	SE	VCALL10
Amherst	SE	VCALL10
Caledonia	SE	VCALL10
Cannon Falls	SE	VCALL10
Dodge Center	SE	VCALL10
Dresbach	SE	VCALL10
Elkton	SE	VCALL10
Lonsdale	SE	VCALL10
Oakland Woods	SE	VCALL10
Owatonna	SE	VCALL10
Red Wing	SE	VCALL10
Viola	SE	VCALL10
Wilson	SE	VCALL10

Interop Site	RAC	Hailing Channel
Arrowhead	NE	VCALL10
Baxter	NE	VCALL10
Border	NE	MNCOMM
Cass Lake	NE	VCALL10
Deer River	NE	VCALL10
Duluth	NE	VCALL10
Effie	NE	MNCOMM
Ely	NE	MNCOMM
Emily	NE	VCALL10
Gheen Hill	NE	MNCOMM
Grand Portage	NE	MNCOMM
Gunflint East	NE	MNCOMM
Kabetogama	NE	MNCOMM
Lawler	NE	VCALL10
Leader	NE	VCALL10
Little Fork	NE	MNCOMM
Maple Hill	NE	MNCOMM
Margie	NE	MNCOMM
Nashwauk(County Tower)	NE	VCALL10
Nickerson	NE	VCALL10
Northome	NE	MNCOMM
Pine City	NE	VCALL10
Quadna	NE	VCALL10
Schroder	NE	MNCOMM
Shaw	NE	VCALL10
Soudan	NE	*PENDING*
Tofte	NE	MNCOMM
Virginia	NE	VCALL10
Wales	NE	MNCOMM
Whyte	NE	MNCOMM
Woodland	NE	VCALL10
Ada	NW	VCALL10
Bagley	NW	VCALL10
Bemidji	NW	VCALL10
Crookston	NW	VCALL10
Dorothy	NW	VCALL10
Greenbush	NW	VCALL10
Hawley	NW	VCALL10
Lake Bronson	NW	VCALL10

Interop Site	RAC	Hailing Channel
Mahnomen	NW	VCALL10
Mantrap	NW	VCALL10
Mentor	NW	VCALL10
Middle River	NW	VCALL10
Northcote	NW	VCALL10
Roosevelt	NW	MNCOMM
Thorhult	NW	VCALL10
Warren	NW	VCALL10
Waskish	NW	MNCOMM
Winter Silo	NW	VCALL10
Wolf Lake	NW	VCALL10
Biscay	SC	VCALL10
Blue Earth	SC	VCALL10
Gaylord	SC	VCALL10
Janesville	SC	VCALL10
La Salle	SC	VCALL10
Mankato KMSU	SC	VCALL10
Nicollet	SC	VCALL10
Sherburn	SC	VCALL10
Brewster	SW	VCALL10
Canby	SW	*PENDING*
Chandler	SW	VCALL10
Danube	SW	VCALL10
Granite Falls	SW	VCALL10
Hardwick	SW	VCALL10
Lake Benton	SW	*PENDING*
Madison	SW	VCALL10
Morton	SW	VCALL10
Rushmore	SW	VCALL10
Russel	SW	VCALL10
Tracy	SW	VCALL10
Wanda	SW	VCALL10
Windom	SW	VCALL10
Woods	SW	VCALL10

Appendix G – 8CALL90/8TAC9X Sites and Naming Conventions

Interop Site	RAC	Gold Elite Name	MCC 7500 Name	Motobridge™ Name
Enfield	CM	CM-8CALL90-Enf	CM-8CALL90-Enfie	CM-8CALL90-Enfield
Enfield	CM	CM-8TAC9X-Enfi	CM-8TAC9X-Enfiel	CM-8TAC9X-Enfield
St. Cloud	CM	CM-8CALL90-St	CM-8CALL90-St Cl	CM-8CALL90-St Cloud
St. Cloud	CM	CM-8TAC9X-St C	CM-8TAC9X-St Clo	CM-8TAC9X-St Cloud
Duluth	NE	NE-8CALL90-Dul	NE-8CALL90-Dulut	NE-8CALL90-Duluth
Duluth	NE	NE-8TAC9X-Dulu	NE-8TAC9X-Duluth	NE-8TAC9X-Duluth
Moorhead	NW	NW-8CALL90-Moo	NW-8CALL90-Moorh	NW-8CALL90-Moorhead
Moorhead	NW	NW-8TAC9X-Moor	NW-8TAC9X-Moorhe	NW-8TAC9X-Moorhead
Mankato DOT	SC	SC-8CALL90-Man	SC-8CALL90-Manka	SC-8CALL90-Mankato
Mankato DOT	SC	SC-8TAC9X-Mank	SC-8TAC9X-Mankat	SC-8TAC9X-Mankato D
Red Wing	SE	SE-8CALL90-Red	SE-8CALL90-Red W	SE-8CALL90-Red Wing
Red Wing	SE	SE-8TAC9X-Red	SE-8TAC9X-Red Wi	SE-8TAC9X-Red Wing
Wilson	SE	SE-8CALL90-Wil	SE-8CALL90-Wilso	SE-8CALL90-Wilson
Wilson	SE	SE-8TAC9X-Wils	SE-8TAC9X-Wilson	SE-8TAC9X-Wilson

Appendix H – 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 (see Appendix G) 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 a Motobridge™ dispatch position or an ARMER system console as well as 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 H.1 provides a high-level overview of the 8CALL90/8TAC9X station configuration.

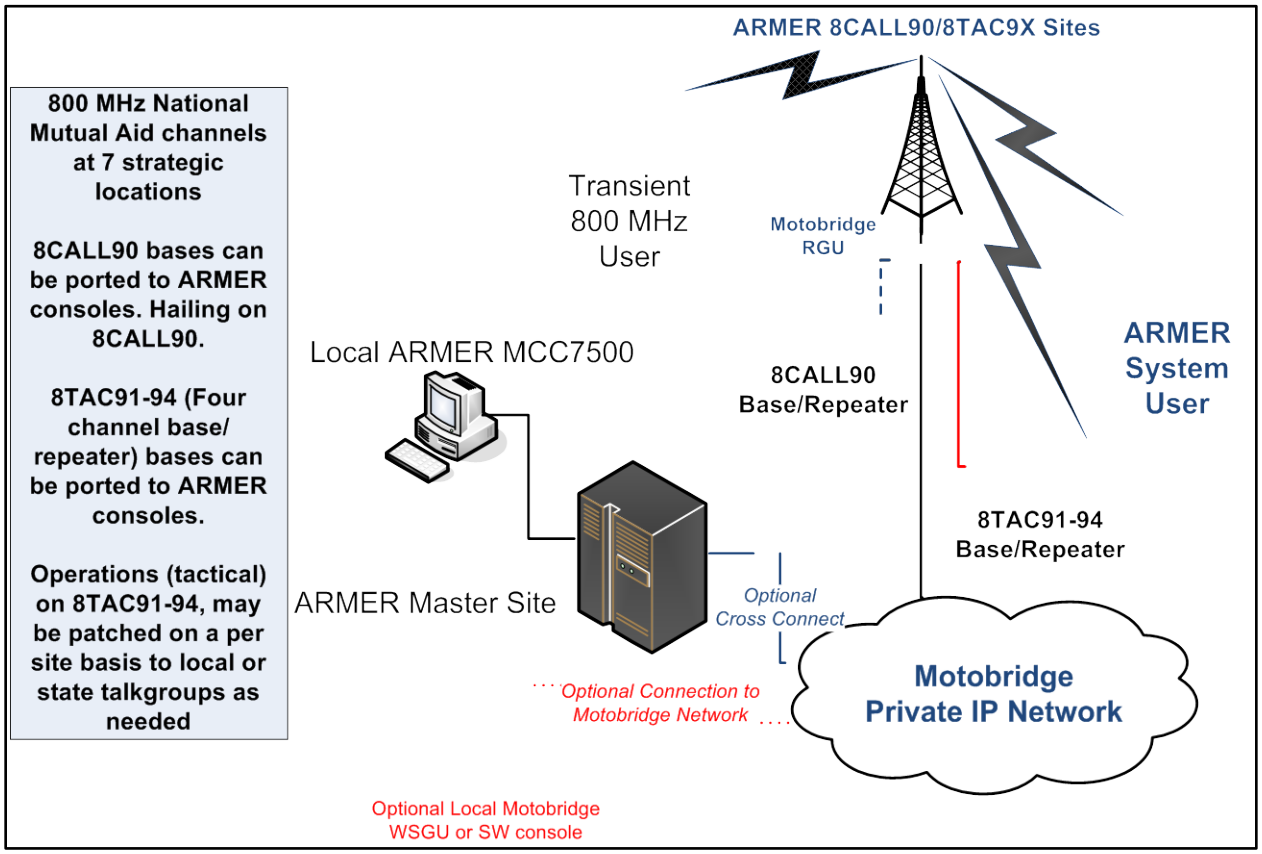


Figure H.1 – Interop System 8CALL90/8TAC9X Stations

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 indicate 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.

Hailed dispatcher: “Goodhue County, Iowa DOC 12, contact Incident Command on 8TAC91D”

Hailing user: “Iowa DOC 12, Goodhue County, copy, switching to 8TAC91D”

b. If a patch is necessary, the hailed dispatch center selects the appropriate 8TAC9X channel, 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”

Hailed Dispatcher: ““Goodhue County, Iowa DOC 12, go to 8TAC91D for incident command, you are patched to Goodhue Event 1”

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

Hailing unit: “Iowa DOC 12, Goodhue 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. 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.

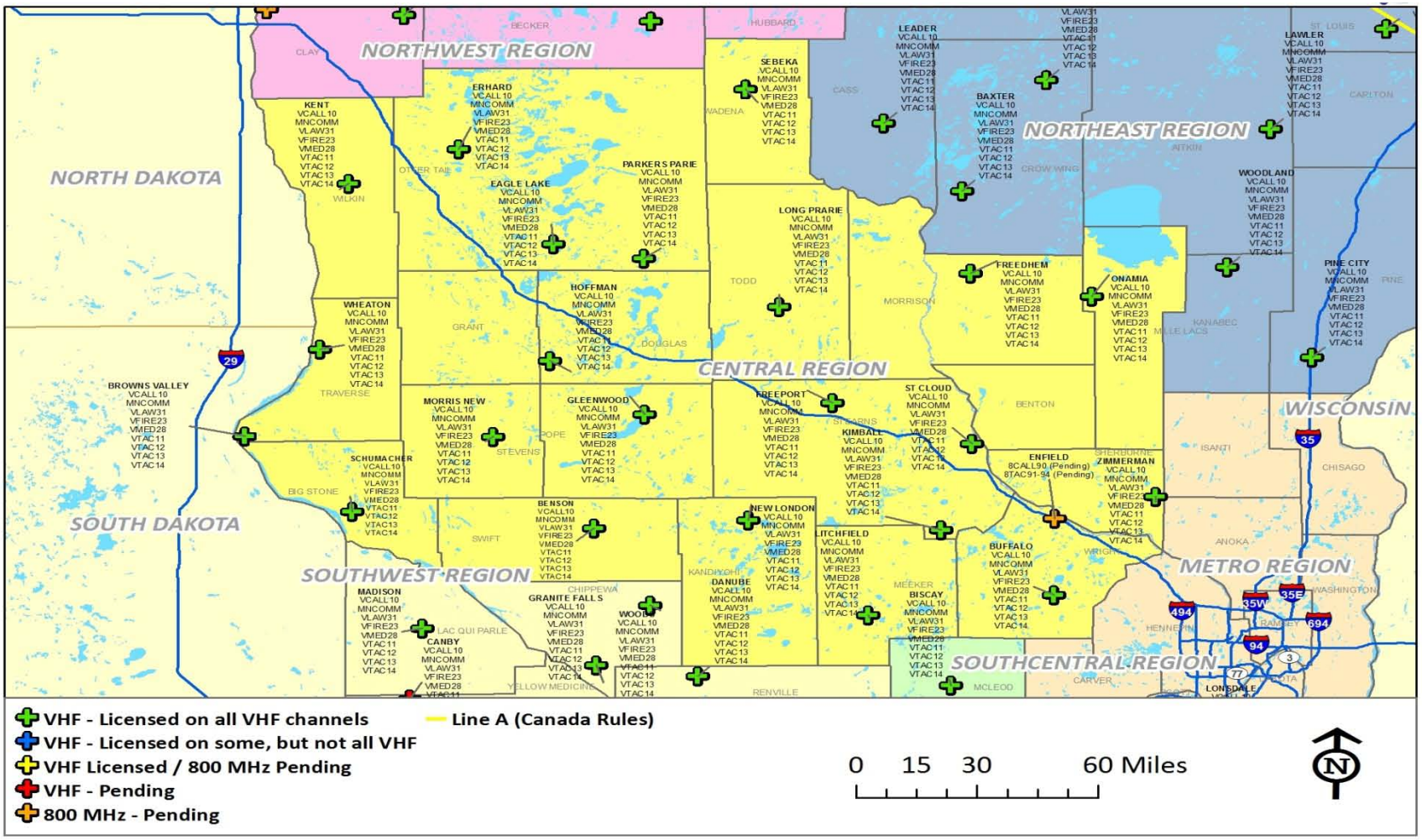
Appendix I – VHF Interoperability Channel Cross Reference

STD Name	Short Name	Mobile TX Freq	Mobile RX	TX/RX Mobile CTCSS[3]	Original Name	TX/RX Base CTCSS[4]
VCALL10	VCAL10	155.7525	155.7525	156.7/CSQ		156.7/156.7
VTAC11	VTAC11	151.1375	151.1375	156.7/CSQ		156.7/156.7
VTAC12	VTAC12	154.4525	154.4525	156.7/CSQ		156.7/156.7
VTAC13	VTAC13	158.7375	158.7375	156.7/CSQ		156.7/156.7
VTAC14	VTAC14	159.4725	159.4725	156.7/CSQ		156.7/156.7
MNCOMM	MNCOMM	155.3700	155.3700	156.7/156.7	MIMS	156.7/156.7
VFIRE23	VFIR23	154.2950	154.2950	156.7/156.7	SWFIREMA	156.7/156.7
VLAW31	VLAW31	155.4750	155.4750	156.7/156.7	MINSEF	156.7/156.7
VMED28	VMED28	155.3400	155.3400	156.7/156.7	EMS HEAR	156.7/156.7

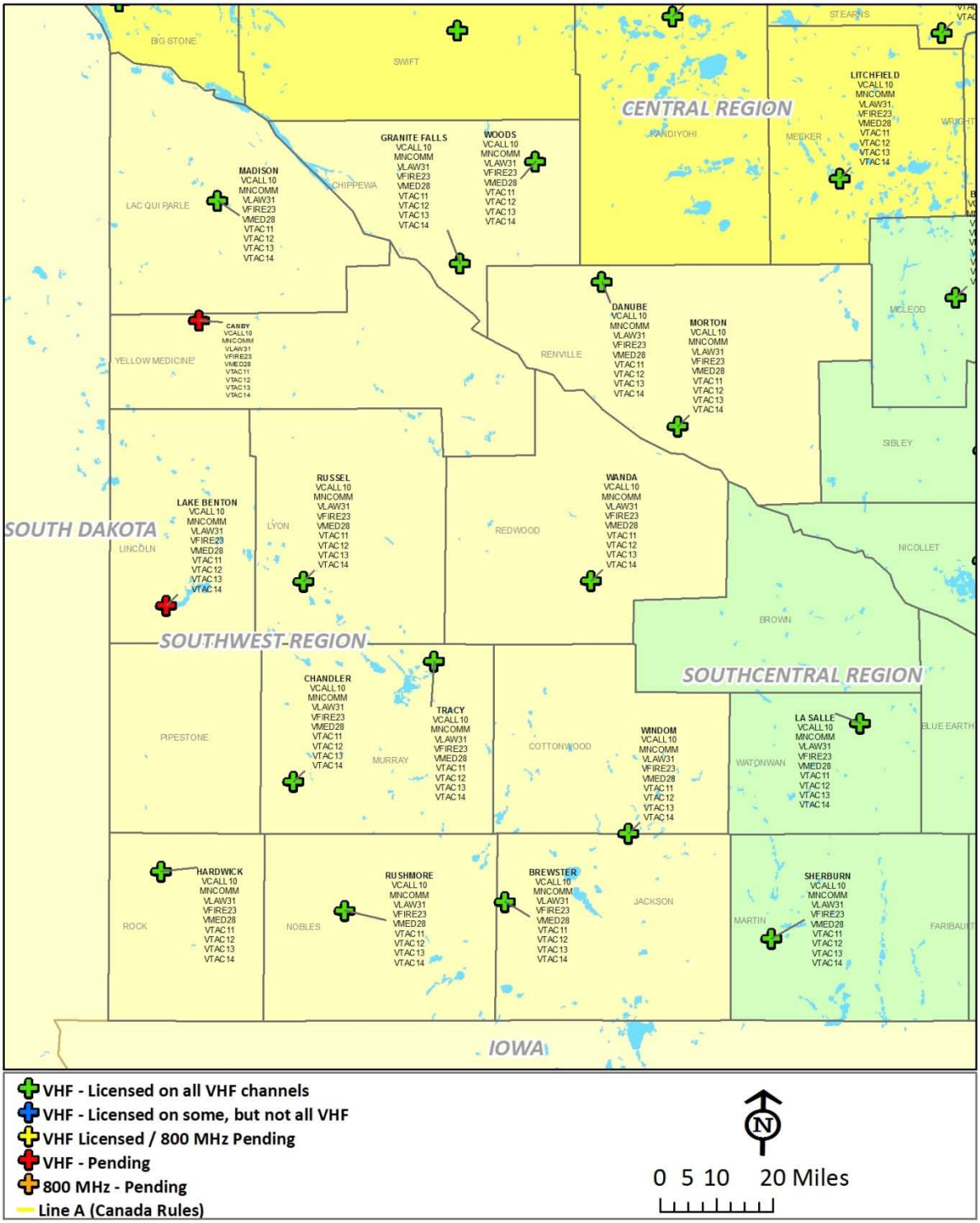
[3] CTCSS or NAC for subscriber radios. For VCALL10, VTAC11, VTAC12, VTAC13, and VTAC14, use receive CTCSS of 156.7 if needed to mitigate interference.
[4] CTCSS or NAC for fixed stations.

Appendix J – Interoperability Sites and Frequencies

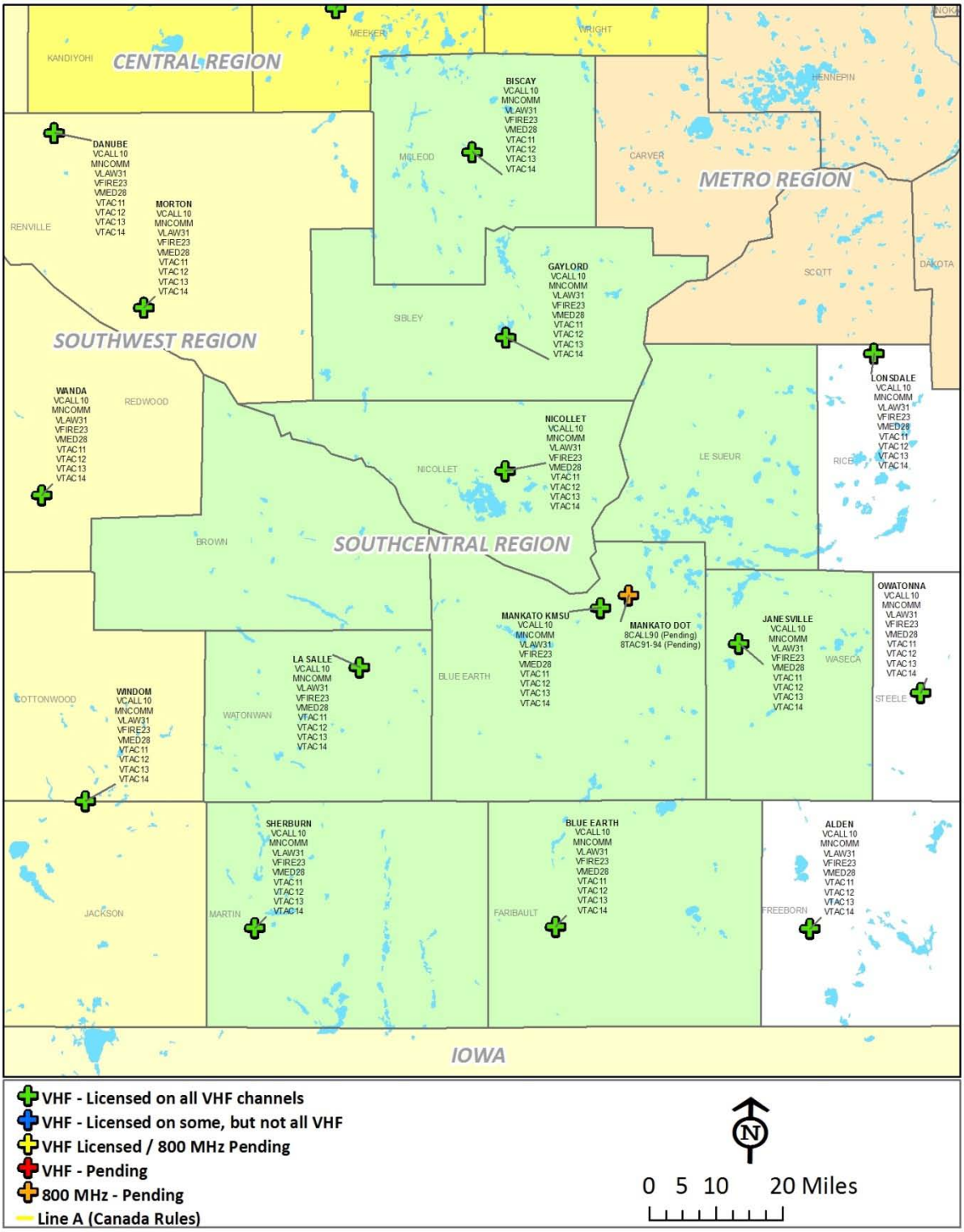
Central Region Interoperability Sites



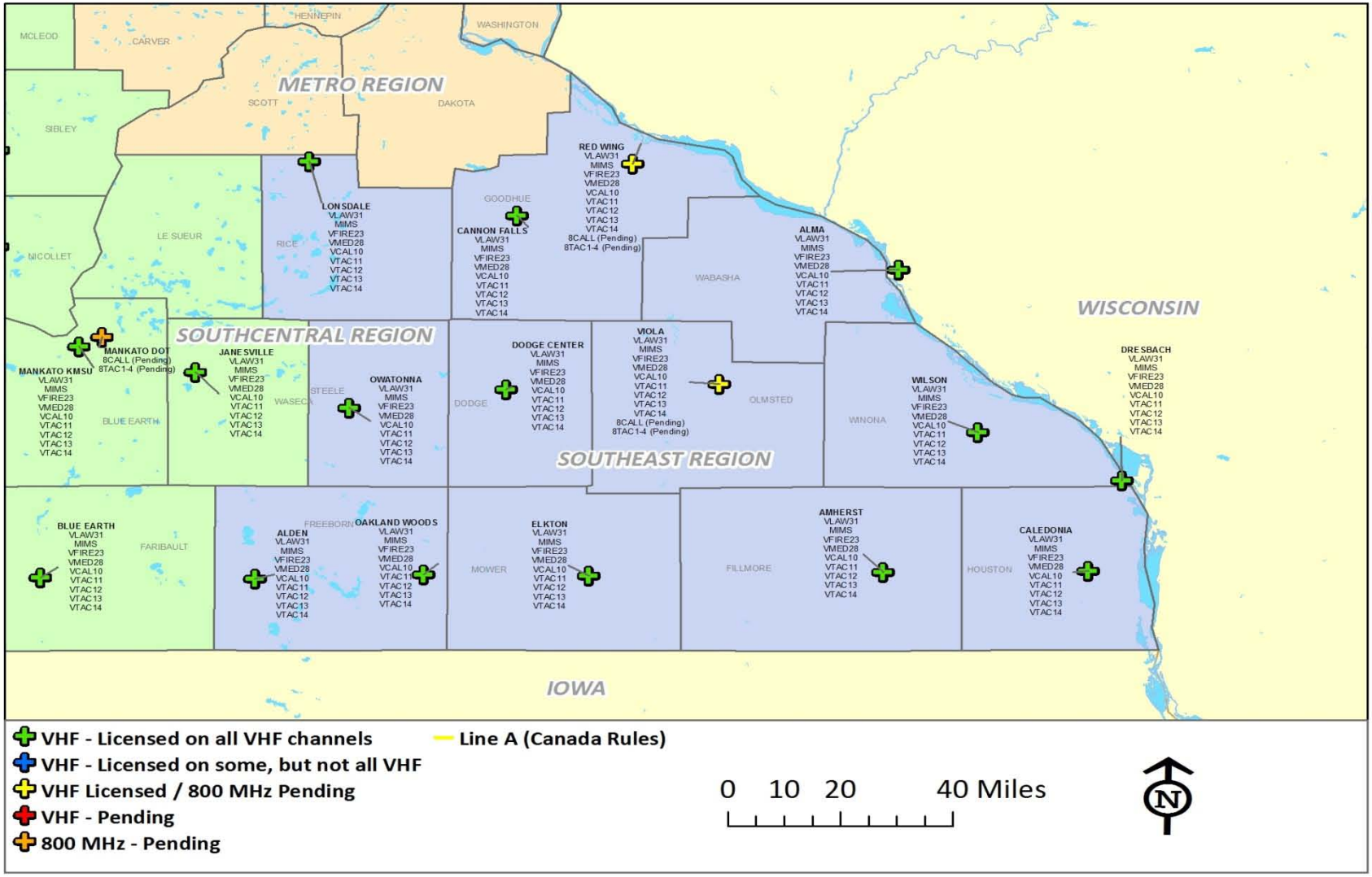
Southwest Region Interoperability Sites



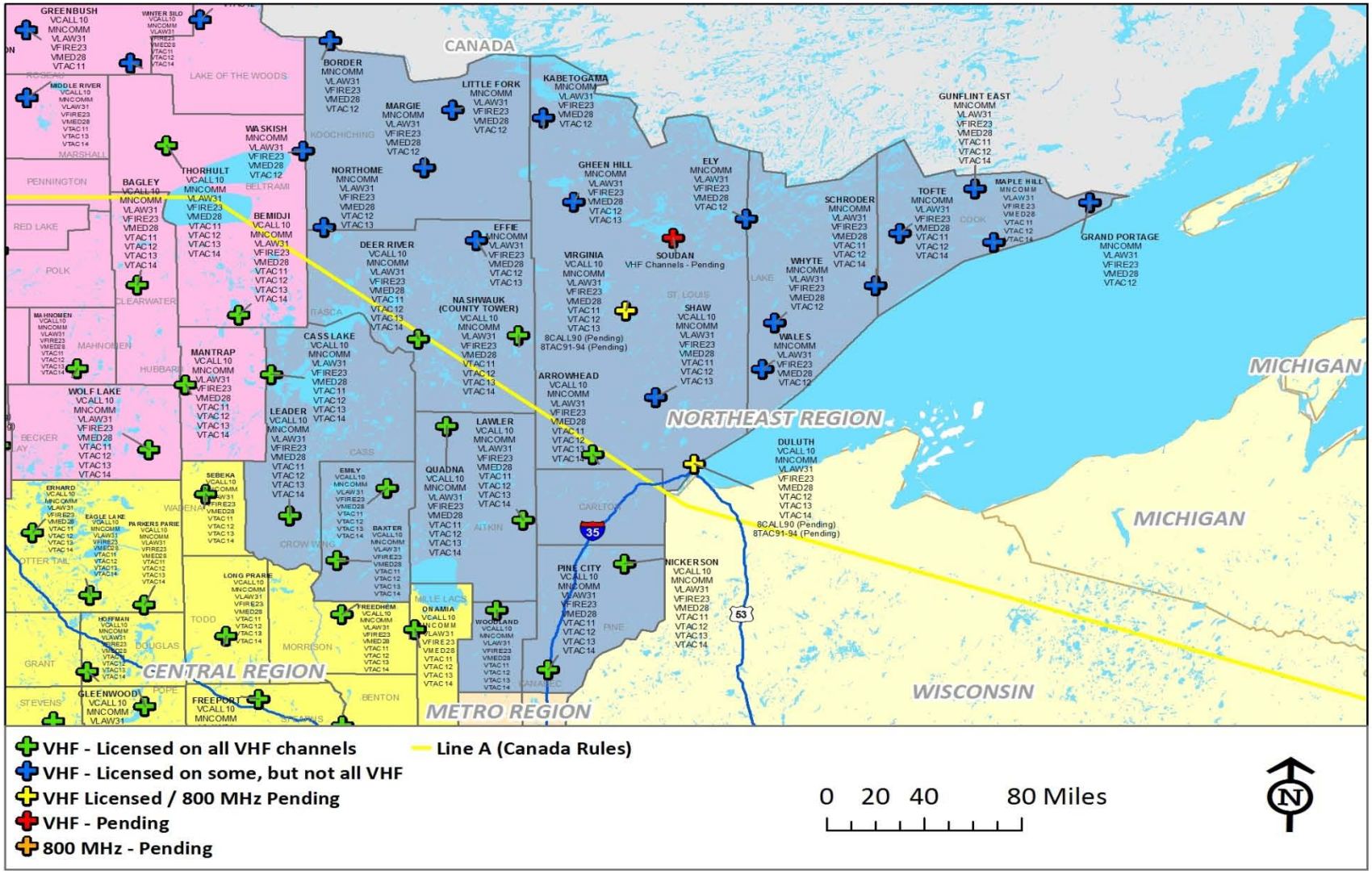
South Central Region Interoperability Sites



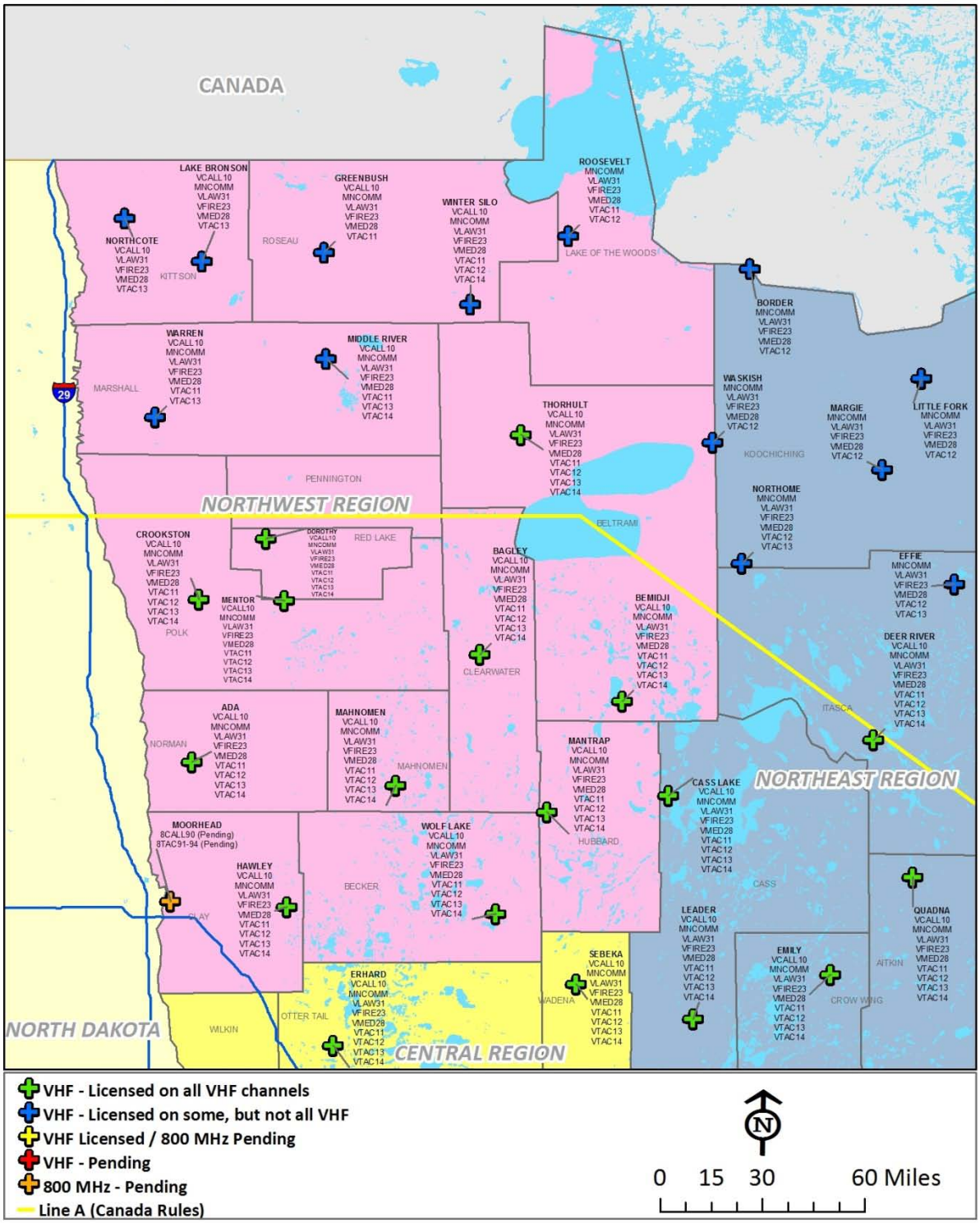
Southeast Region Interoperability Sites



Northeast Region Interoperability Sites

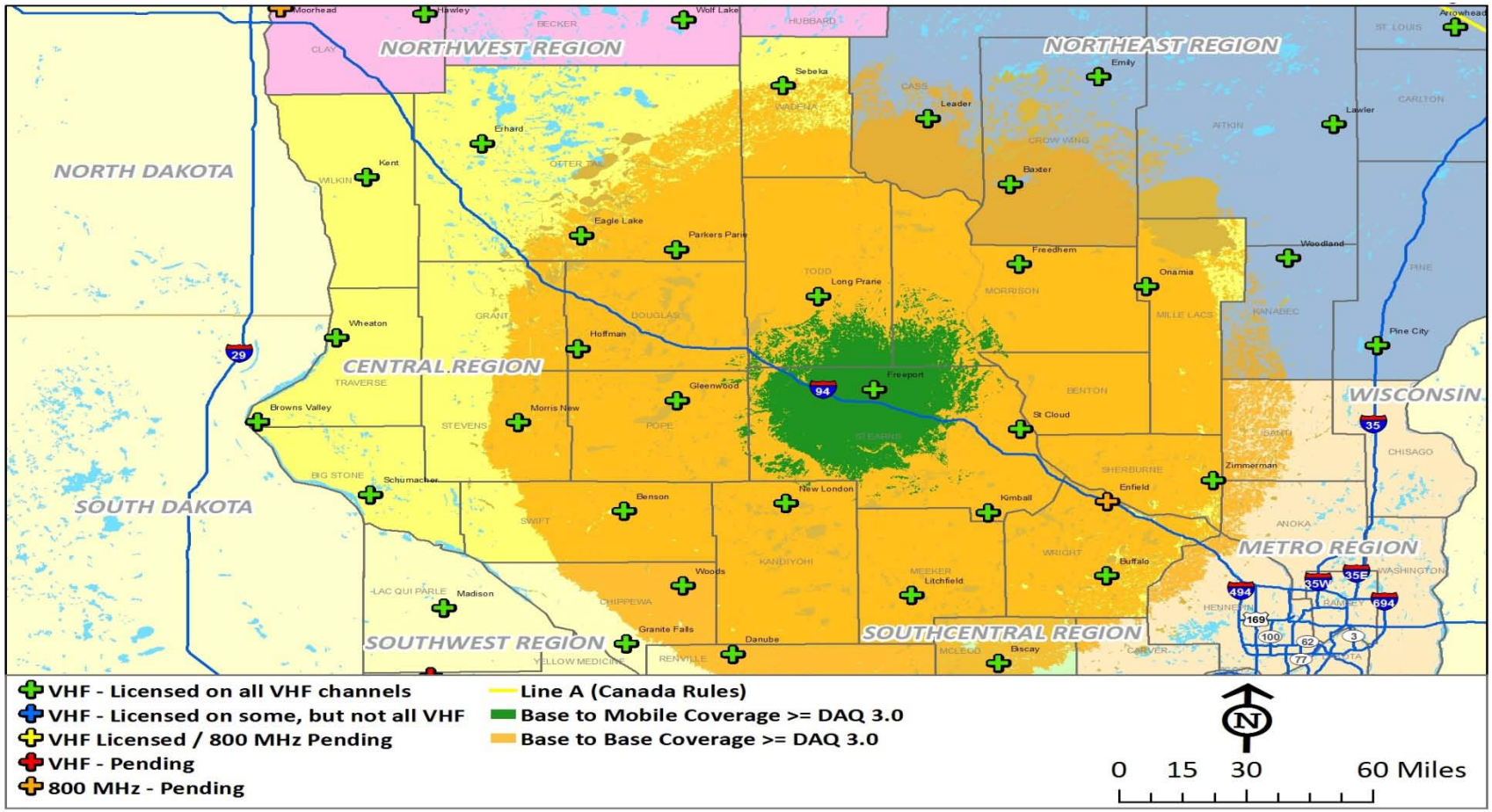


Northwest Region Interoperability Sites

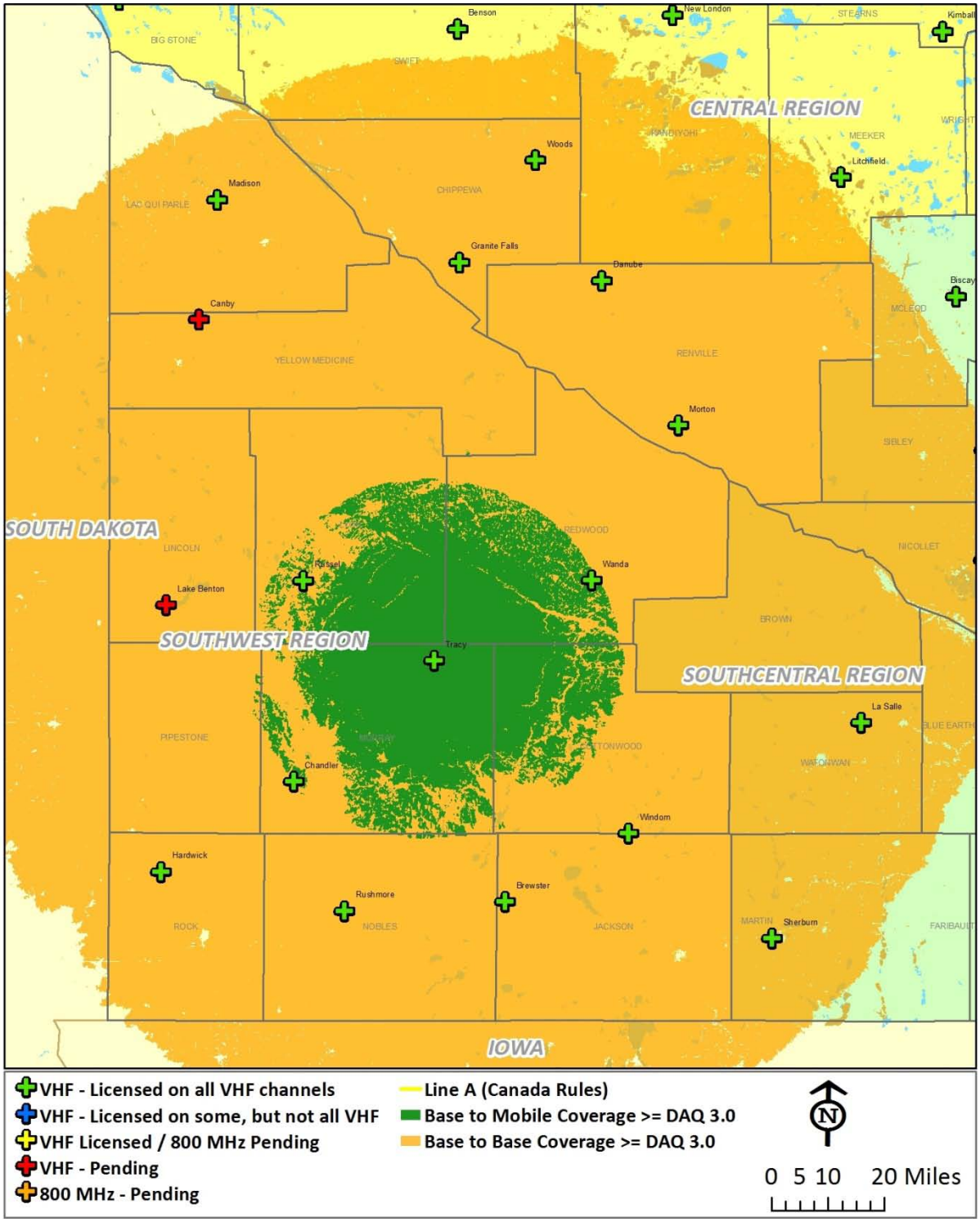


Appendix K – Interoperability System Coverage Examples

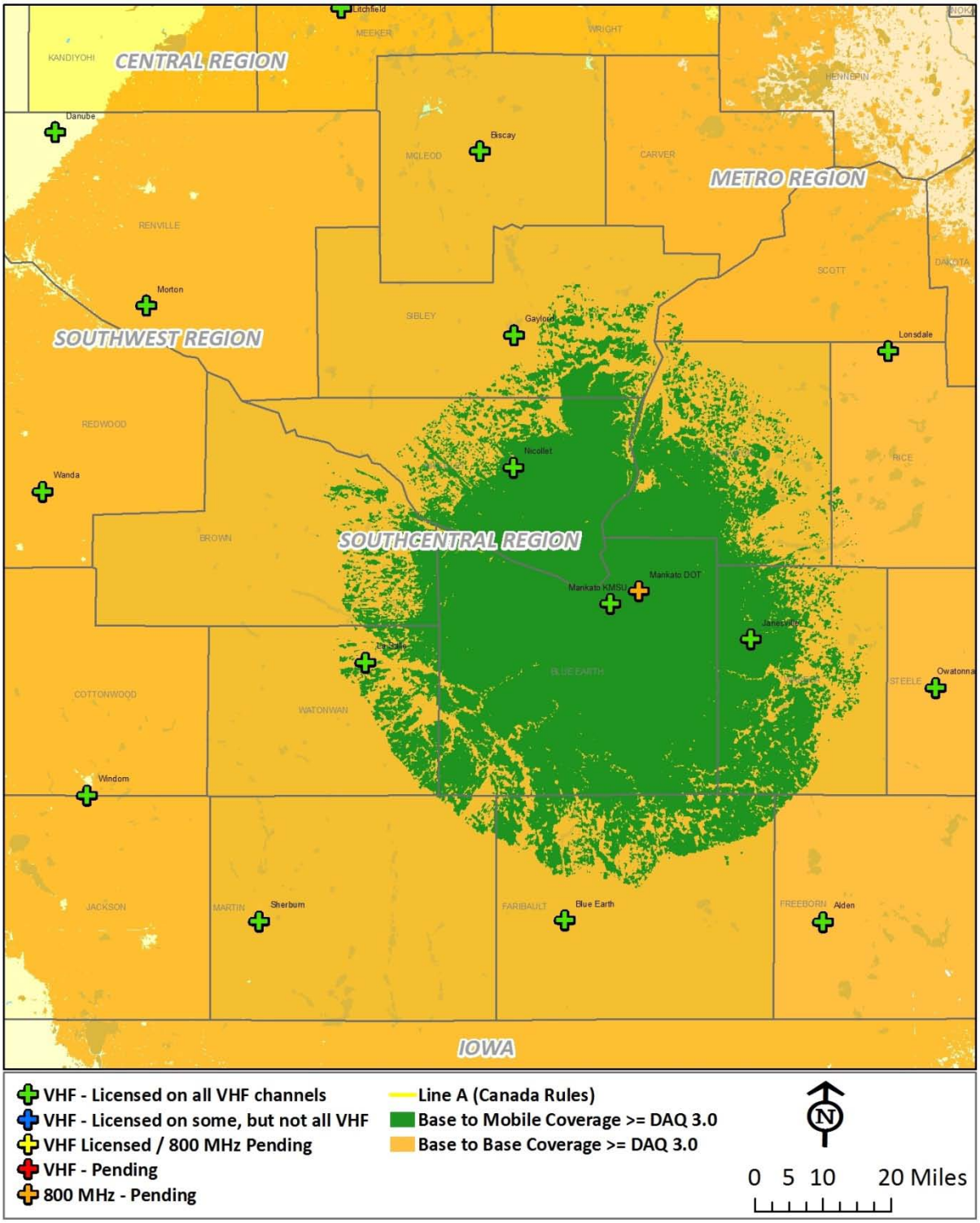
Central Region Sample VFS Coverage from Freeport Site



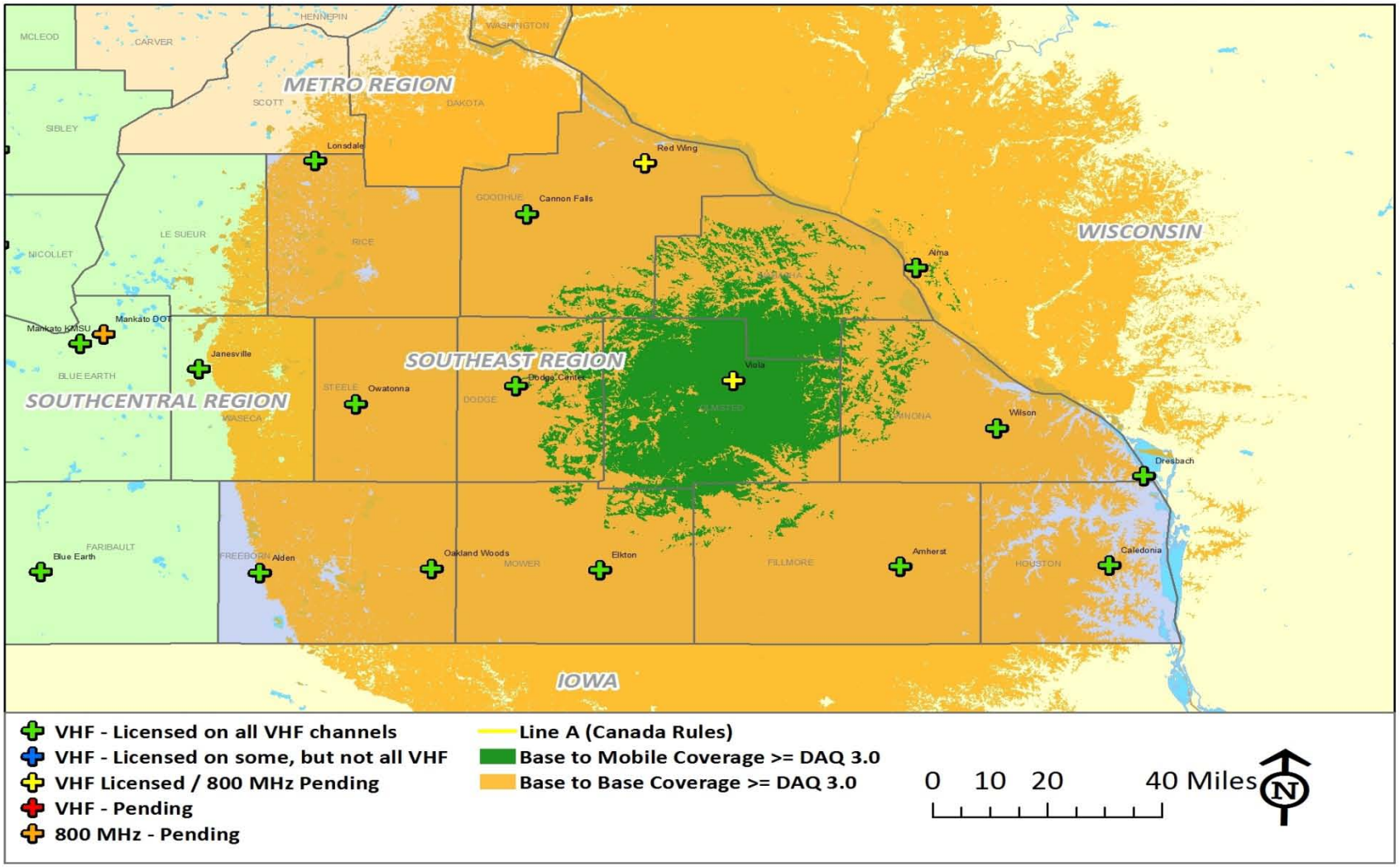
Southwest Region Sample VFS Coverage from Tracy Site



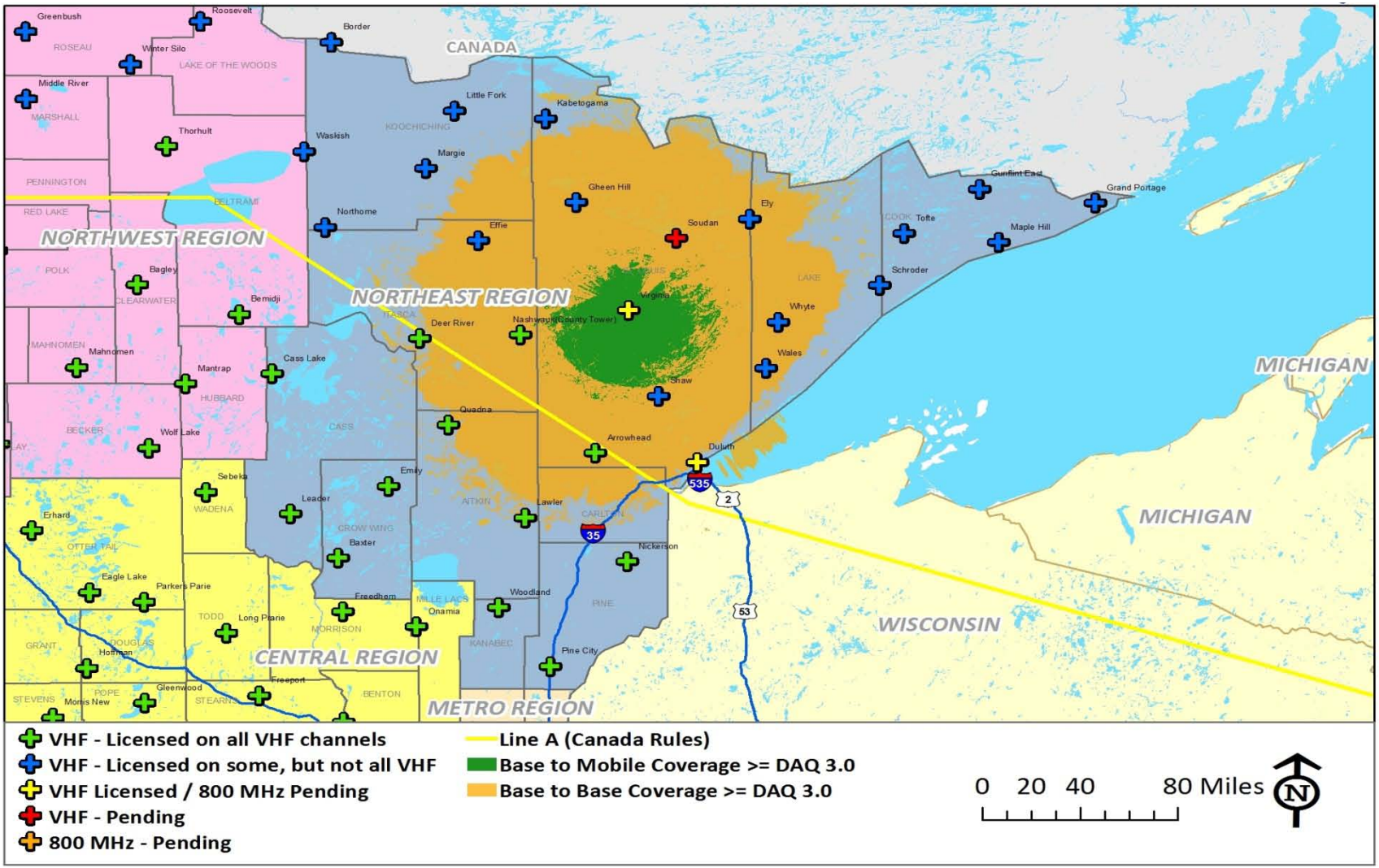
Central Region Sample VFS Coverage from Freeport Site



Southeast Region Sample VFS Coverage from Viola Site



Northeast Region Sample VFS Coverage from Virginia Site



- VHF - Licensed on all VHF channels
- VHF - Licensed on some, but not all VHF
- VHF Licensed / 800 MHz Pending
- VHF - Pending
- 800 MHz - Pending
- Line A (Canada Rules)
- Base to Mobile Coverage >= DAQ 3.0
- Base to Base Coverage >= DAQ 3.0

0 20 40 80 Miles

Northwest Region Sample VFS Coverage from Bagley Site