

MOTOBIDGE

INTEROPERABLE COMMUNICATIONS SYSTEM



SYSTEM DESCRIPTION AND STANDARD OPERATING PROCEDURES

V. 1.1
May, 2012

This document is a product of the Kansas Office of
Emergency Communications through a partnership with:

The Kansas Statewide Interoperability Executive Committee
The Kansas Department of Transportation
And
The Kansas Highway Patrol



INDEX

1. Introduction	4
2. Background	4
3. System Overview	5
4. Usage	7
4.1 Patch Request Procedure.....	7
4.2 Patch Notification Procedure.....	8
4.3 Patch Discontinuation.....	8
4.4 License Requirements.....	9
4.5 Signaling.....	9
5. NIMS Compliance	10
5.1 Plain Language.....	10
5.2 Incident Command System (ICS) Support.....	10
6. Training and Exercise	11
7. System Administration and Trouble Reporting	11
8. Equipment Requirements Quick Reference	12
DOCUMENT APPROVAL	14
APPENDIX SECTION	15
APPENDIX A- POINTS OF CONTACT	16
APPENDIX B- MOTOBRIDGE FREQUENCIES	17
APPENDIX C- MOTOBRIDGE TACTICAL MAPS	19

1. Introduction

For many years, Kansas emergency responders have identified the lack of readily available interoperable communications as a shortfall during a multi-disciplinary or multi-jurisdictional response. One step toward improvement of interoperable communications was the creation of a statewide fixed-site (stationary transmitters located on permanent tower sites) communications interoperability gateway that would be available upon demand, when needed, and as authorized. This system is known as MOTOBRIDGE.

These MOTOBRIDGE Standard Operating Procedures were developed to provide a description and common reference of operational protocols for the system. The contents were developed using multi-jurisdictional and multi-disciplinary input from emergency responders throughout Kansas.

2. Background

In May of 2008, a joint planning session including the Statewide Interoperability Executive Committee (SIEC) and the Communications Advisory Committee was held in Salina, Kansas to develop the Standard Operating Procedures for the MOTOBRIDGE System. 59 multi-jurisdictional and multi-disciplinary public servants attended the planning session. Core participation included representatives from the following disciplines:

- Law Enforcement (State and Local)
- Fire
- EMS
- Emergency Management (State and Local)
- Communications (State and Local)
- Transportation
- Medical
- Military

After reviewing the technical operation of the MOTOBRIDGE System, participants engaged in a question and answer process to determine the desired operational protocol. After the planning session, the SOP's were developed by the Kansas Office of Emergency Communications (KS-OEC) and approved by the SIEC.

3. System Overview

MOTOBIDGE is a fixed-site interoperability gateway that is located on 76 tower sites owned by the Kansas Department of Transportation (KDOT). Figure 1 is a map of the State of Kansas with red dots indicating each of the 76 tower sites. Like with any other radio system, actual coverage depends on issues such as terrain, frequency band, antenna height, weather, and functionality of the end-user radio equipment.

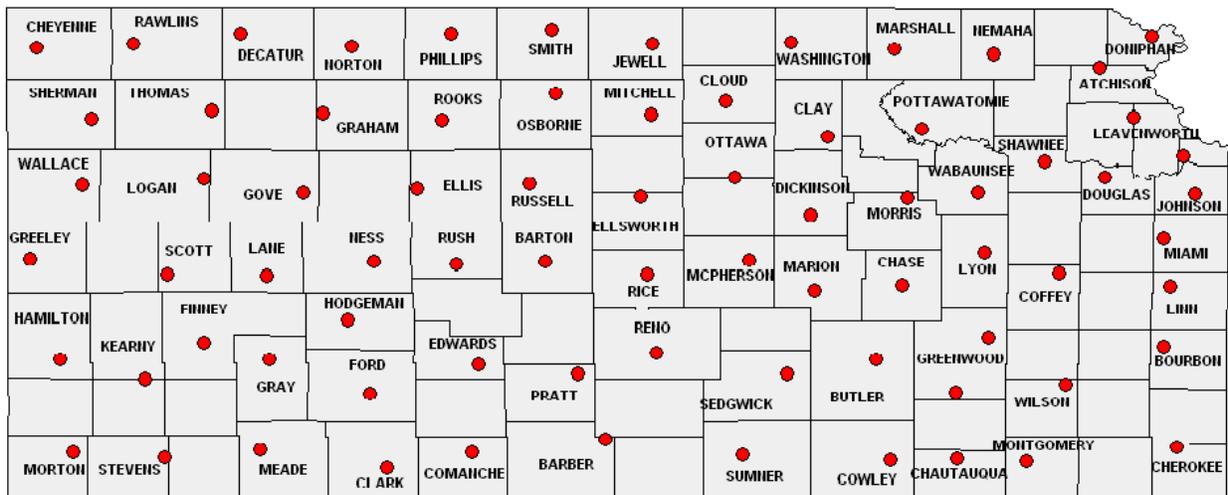


Figure 1 – KDOT / MOTOBIDGE tower sites

Using both national and state interoperability channels, **MOTOBIDGE** can connect or “patch” pre-determined channels between disparate radio systems. This can be accomplished on a single site (Bourbon VHF patched to Bourbon UHF) or across multiple sites (Bourbon VHF patched to Sumner 800 MHz). Appendix C lists the call-in, tactical, and digital trunked channel names and frequencies used on the **MOTOBIDGE** System including:

- VHF Low Band (State channels)
- VHF High Band (National Channels)
- UHF (National Channels)
- 800 MHz (National Channels)
- KHP Event Talkgroups (Kansas Statewide Interoperable Communications System (KSICS) users)

A channel patch is managed through an Operator at the Kansas Highway Patrol (KHP) Communications center by manipulating a software-based MOTOBRIDGE console.

One national or state call-in channel has been designated for each band of radio spectrum. The call-in channels are used to make requests for a MOTOBRIDGE patch and are monitored by KHP on each site at all times.

Like the call-in channels, a number of tactical channels have been established to promote shared-channel interoperability. These tactical channels are assigned in a checker-board fashion at all MOTOBRIDGE sites throughout the state. These tactical channels are patched through the MOTOBRIDGE System to provide cross-band and/or multi-site communications systems. Repeaters are utilized for tactical channels in the UHF and 800 MHz bands. Although the tactical channels are not continuously monitored by KHP Dispatch, following the general usage guidelines in Section 4, the tactical channels are available for use 24 hours a day, 7 days a week.

For users of KSICS, a KHP Event Talkgroup has been assigned to each site. These talkgroups can be used for both patch requests and tactical connections. Figure 2 is a map providing an example of tactical channel assignments at several tower sites.

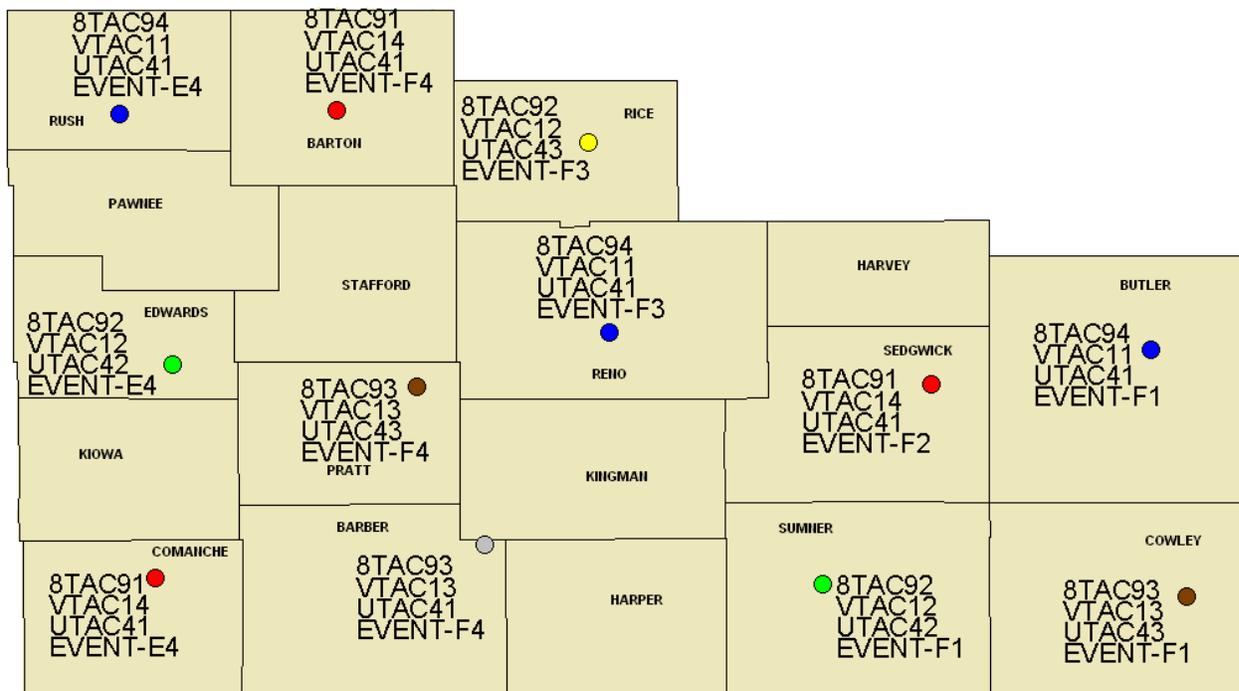


Figure 2 – Tactical channel assignment per site

4. Usage

MOTOBIDGE is intended for multi-disciplinary or multi-jurisdictional use when other common means of radio communications are not available. Generally, the system should be used by responders and critical facilities during activities that directly impact life safety and/or the preservation of property.

MOTOBIDGE channels may be temporarily used by agencies that have unexpectedly lost local communications infrastructure due to external forces. If the system is being used for this purpose, KDOT and KHP should be notified in order to avoid disruptions (such as maintenance) of service.

4.1 Patch Request Procedure

A MOTOBIDGE patch can be requested in a variety of ways including:

- Radio by using a call-in channel**
- Telephone by calling KHP Dispatch at (785) 827-4437 or *47 from a cell phone**
- Teletype to KHP from a PSAP**

Some basic information is required in any situation when requesting a MOTOBIDGE patch. The person asking for the patch, also known as a “requestor”, must identify themselves, provide their location, and provide the site(s) and radio bands to be patched. If a requestor does not know which site(s) will best suit their location, KHP Operators will evaluate the location and determine the site which provides the best coverage.

Use the following procedure to initiate a MOTOBIDGE patch via radio:

- Contact “KHP Dispatch” on the designated call-in channel and identify by using home city/county + radio number (Logan County 601) or agency/facility name (Logan County Hospital). The requestor should also indicate their current location by county.**
- Once KHP answers, request a MOTOBIDGE patch then provide the bands and location(s) of the patch.**

- Remain on the call-in channel. As a courtesy, KHP will notify the requestor that the patch is ready and the appropriate tactical channels to be used. Once complete, users will switch to the tactical channels to communicate.

An example:

“Logan County 601 to KHP Dispatch from Wallace County”

“KHP Dispatch.... go ahead”

“Request MOTOBRIDGE patch”

“Go ahead with request”

“Patch Wallace UHF to Wallace VHF”

“Wallace VTAC12 and Wallace UTAC42 are patched and ready”

The KHP Operator may request additional contact information from the requestor at the time of the patch request. This information may be necessary to check the status of the patch or to verify a request to discontinue the connection.

4.2 Patch Notification Procedure

In many cases, end users of a MOTOBRIDGE patch will be aware that the patch is being connected. This is accomplished by on-scene coordination through word of mouth or by other electronic means such as telephone or teletype. Every effort to coordinate a patch in the field should be taken.

In some cases, a patch may be requested without the targeted user’s knowledge. Generally, this applies when a requestor does not have the means to notify or coordinate with the target user. This is known as a “cold call”. In the event of a cold call, KHP Dispatch will make every effort to notify the target user. To do so, KHP Operators will need guidance from the requestor such as the agency, name or radio number of the target, and their agency contact information, if available. Unless notified of a cold call situation at the time of request, KHP Dispatch will assume that the patch has already been coordinated in the field. It is the responsibility of the requestor to ask for a cold call notification.

4.3 Patch Discontinuation

A MOTOBRIDGE patch will remain active until a request is made to KHP Dispatch to discontinue. In situations where a patch would be considered short-term, typically measured in minutes or hours, KHP

Operators will verify the continued need for the patch in four hour intervals from the time of the original request to ensure that a patch is still being utilized. During a large-scale incident or disaster, measured in days or weeks, regular verification will not be performed. A MOTOBRIDGE patch will not be discontinued unless positive verification is made from the requestor or their agency.

Generally, discontinuation of a patch should be handled by the person or agency who requested the original activation. Discontinuation of a patch via radio request should be made on the call-in channel. Following the same procedure as patch activation, provide the location(s) and bands to be discontinued.

4.4 License Requirements

All fixed-site MOTOBRIDGE base-stations and repeaters located on the KDOT towers are owned by KDOT and licensed through the FCC. **Any other base-station, control-station or repeater at the local level using the National or State Interoperability channels must be licensed by the FCC to the appropriate local government agency.**

For mobile and portable use, the National Interoperability Channels are covered under a “blanket license”. If an agency is ELIGIBLE for a FCC part 90 radio license, the National Interoperability Channels may be programmed into equipment without having the channels individually licensed to the agency. ****The state VHF Low-Band channels (39.58/39.70) used by MOTOBRIDGE require an FCC license through a local agency for fixed-site and mobile / portable use.****

Users of KSICS require no local licensing for the use of the system, assuming that the proper documentation has been filed with KDOT. Licenses for these channels are coordinated and held by KDOT on behalf of the local agency.

4.5 Signaling

For the purpose of this document, signaling is defined as any non-voice signal produced by radio equipment to identify, notify, or otherwise dispatch and coordinate responders. Examples of signaling include, but are not limited to:

- Paging
- DTMF
- Voice Encryption
- Push-to-Talk identification

MOTOBIDGE uses nationally recognized interoperability channels designated for multi-jurisdictional and multi-disciplinary use. Currently there are no national signaling standards for these channels. The lack of standards could potentially lead to confusion and channel congestion. To avoid unnecessary confusion and to reduce channel congestion, signaling functions are not allowed on the MOTOBIDGE system.

5. NIMS Compliance

Based on Presidential Directive (HSPD)-5, in 2005, Kansas Executive Order 05-03 established the National Incident Management System (NIMS) as the statewide standard for incident management. The current Kansas Emergency Response Plan was developed using NIMS principles, including the use of the Incident Command System (ICS), an integrated system of multi-agency coordination centers, and joint public information. Local emergency operations plans have been, or are currently being developed, from the same principles. The Kansas Response Plan (KRP) is developed and maintained by the Kansas Division of Emergency Management.

5.1 Plain Language

Over-the-air common terminology, otherwise known as plain-language, during an emergency or disaster is a requirement of the NIMS. Currently, the use of plain-language on local communications systems while conducting normal operations is addressed by individual agency policy. A multi-agency response to an incident requires the use of plain-language for emergency operations.

MOTOBIDGE is designed for multi-jurisdictional and multi-disciplinary use. To avoid confusion stemming from the use of non-standard codes, plain language should be used at all times while communicating on MOTOBIDGE. The use of 10-codes and similar signaling codes should be avoided.

5.2 Incident Command System (ICS) Support

With the occurrence of a disaster or pre-planned event where the Incident Command System (ICS) may be implemented, MOTOBIDGE can be used in support of the event. The Incident Commander or his/her designee within the ICS has authority to utilize MOTOBIDGE

as deemed necessary to coordinate and fulfill the communications needs of the appropriate responders.

6. Training and Exercise

As with any other tool used by emergency responders, communications equipment and systems such as MOTOBRIDGE should be regularly trained and exercised upon to promote familiarity and ease of use. As a general rule, agencies should train and exercise on communications equipment and protocol at least once annually. MOTOBRIDGE training could be as simple as a review of this document or subsequent training materials and a review of communications equipment to locate the channels used by the system.

A group exercise at a staff meeting or similar event should involve a patch request to KHP and a brief test of the patch on the tactical channels. Similar MOTOBRIDGE exercises are encouraged during other types of events such as a county or region-wide disaster exercise. To ensure the exercise will not interfere with more urgent emergency operations, as a courtesy, KHP Dispatch should be notified prior to the start of the exercise.

The Kansas Office of Emergency Communications (KS-OEC) provides instructor driven MOTOBRIDGE and KSICS training. This training may be requested through the KS-OEC. Contact information for the KS-OEC is listed in Appendix A.

7. System Administration and Trouble Reporting

The Kansas MOTOBRIDGE System is maintained by the Kansas Department of Transportation (KDOT). Questions concerning the administration and maintenance of the MOTOBRIDGE system should be directed to the KDOT system administrator via telephone. Appendix A lists the contact information for system administration, trouble reporting, and operational concerns.

The Kansas Department of Transportation strives to provide the best quality communications systems. In order to do so, KDOT communications personnel need to know of any troubles or malfunctions of the MOTOBRIDGE system as soon as possible. System trouble reports should be directed to the KDOT Communications Section at (785) 296-3661. This is a recorded line

after hours and on weekends. This is the same policy used for tower site notifications from the general public. In an emergency, after hours and weekend trouble reports should be directed to the KHP Central Dispatch Center via telephone or teletype. End user equipment (mobile, portable, base/control station) functionality and maintenance is the responsibility of the agency or department which owns the equipment.

The Kansas Highway Patrol is responsible for operating the MOTOBRIDGE consoles through taking patch requests and making patch connections. Concerns about the operations level of MOTOBRIDGE functionality can be directed to the KHP Central Dispatch Center supervisory staff.

Many local and regional response agencies have purchased mobile gateway devices that provide channel patch capabilities similar to MOTOBRIDGE. Many of these mobile devices also rely upon using the National Interoperability Channels. The combination of mobile and fixed-site communications gateway equipment using the same frequencies commonly raises a concern about interference between the two systems. KDOT Communications staff will work in conjunction with the mobile gateway user to determine the cause of potential interference between the mobile device and MOTOBRIDGE. If it is determined that interference exists between the two systems, KDOT and local staff will work together to decide the best course of action to resolve the issue.

8. Equipment Requirements Quick Reference

- To operate on the MOTOBRIDGE system, users must have the channels used by the system properly programmed into their radio equipment.
- With the exception of VHF Low-Band, conventional radio equipment must have the capability of narrowband (12.5 KHz) operation in order to properly program the channels.
- By order of the Kansas SIEC, all public safety mobile and portable radio equipment purchased under the Public Safety Interoperable Communications (PSIC) Grant, and FY 2008 and subsequent Homeland Security Grant Programs must have

sufficient channel capacity to allow programming of the National Interoperability Channels designated for the radio band(s) being purchased. The order also states that all such equipment acquired will have the National Interoperability Channels programmed according to the NPSTC / KS SIEC Channel Naming Plan (Appendix D) at the time of purchase.

DOCUMENT APPROVAL

This document has been reviewed by the members of the Kansas Statewide Interoperability Executive Committee (SIEC) in order to ensure adherence with the Kansas Statewide Communications Interoperability Plan and to the principles of public safety communications. Any future revisions, other than information contained in the Appendix sections, must have SIEC approval prior to implementation. Requests for modification or revision of this document should be directed to Kansas Office of Emergency Communications (KS-OEC) staff. Contact information for the KS-OEC is located in Appendix A.

On this 22nd day of February, 2012, Version 1.1 of the MOTOBRIDGE System Description and Standard Operating Procedures has been approved by the Kansas Statewide Interoperability Executive Committee.

Tyler Brewer, Chairperson

APPENDIX SECTION

APPENDIX A- POINTS OF CONTACT

Kansas Department of Transportation (KDOT)

<i>Contact</i>	<i>Phone</i>	<i>Notes</i>
Communications System Supervisor	(785) 296-5948	System admin. and operational concerns
24 Hour Report Line -- Non-emergency Trouble Reports	(785) 296-3661	Non-emergency trouble reports. Recorded on evenings and weekends

Kansas Highway Patrol (KHP)

<i>Contact</i>	<i>Phone</i>	<i>Notes</i>
To coordinate a MOTOBRIDGE patch via phone or report emergency after-hour system malfunctions, use the following:		
Central Dispatch / Salina Designate desired Troop	(785) 827-4437	Salina Dispatch
Central Dispatch / Salina Statewide from mobile phone	*47	Salina Dispatch
KHP Troop M (Communications) Supervisors		
Capt. Randy Moon—Troop M (Communications) Cmdr.	(785) 827-3065	KHP operational concerns
Lt. Justin Bramlett—Troop M Supervisor	(785) 368-6515	KHP operational concerns
Lt. John Guerrero—Troop M Supervisor	(785) 822-1732	KHP operational concerns

Office of Emergency Communications (KS-OEC)

<i>Contact</i>	<i>Phone / e-mail</i>	<i>Notes</i>
—Interoperable Communications Coord.		Planning / Training & Exercise
J.L. Ellis—Training and Exercise Specialist	(785)861-3097 ofc. (785)438-0470 cell jimmy.ellis3@us.army.mil	Training & Exercise
Scott Ekberg—Training and Exercise Specialist	(785)861-3098 ofc. (785)438-8440 cell scott.ekberg@us.army.mil	Training & Exercise

APPENDIX B- MOTOBIDGE FREQUENCIES

National and State Interoperability Channels

LOW BAND FREQUENCIES (STATE FREQUENCIES)				
CHANNEL NAME	MOBILE RX.	RX. P.L.	MOBILE TX	TX. P.L.
LCALLKS	39.580	156.7	39.580	156.7
LTACKS	39.700	156.7	39.700	156.7
VHF FREQUENCIES (NATIONAL FREQUENCIES)				
CHANNEL NAME	MOBILE RX.	RX. P.L.	MOBILE TX	TX. P.L.
VCALL10	155.7525	156.7	155.7525	156.7
VTAC11	151.1375	156.7	151.1375	156.7
VTAC12	154.4525	156.7	154.4525	156.7
VTAC13	158.7375	156.7	158.7375	156.7
VTAC14	159.4725	156.7	159.4725	156.7
UHF FREQUENCIES (NATIONAL FREQUENCIES)				
CHANNEL NAME	MOBILE RX.	RX. P.L.	MOBILE TX	TX. P.L.
UCALL40	453.2125	156.7	458.2125	156.7
UCALL40D	453.2125	156.7	453.2125	156.7
UTAC41	453.4625	156.7	458.4625	156.7
UTAC41D	453.4625	156.7	453.4625	156.7
UTAC42	453.7125	156.7	458.7125	156.7
UTAC42D	453.7125	156.7	453.7125	156.7
UTAC43	453.8625	156.7	458.8625	156.7
UTAC43D	453.8625	156.7	453.8625	156.7
800 MHZ. FREQUENCIES (NATIONAL FREQUENCIES)				
CHANNEL NAME	MOBILE RX.	RX. P.L.	MOBILE TX	TX. P.L.
8CALL90	851.0125	156.7	806.0125	156.7
8CALL90D	851.0125	156.7	851.0125	156.7
8TAC91	851.5125	156.7	806.5125	156.7
8TAC91D	851.5125	156.7	851.5125	156.7
8TAC92	852.0125	156.7	807.0125	156.7
8TAC92D	852.0125	156.7	852.0125	156.7
8TAC93	852.5125	156.7	807.5125	156.7
8TAC93D	852.5125	156.7	852.5125	156.7
8TAC94	853.0125	156.7	808.0125	156.7
8TAC94D	853.0125	156.7	853.0125	156.7

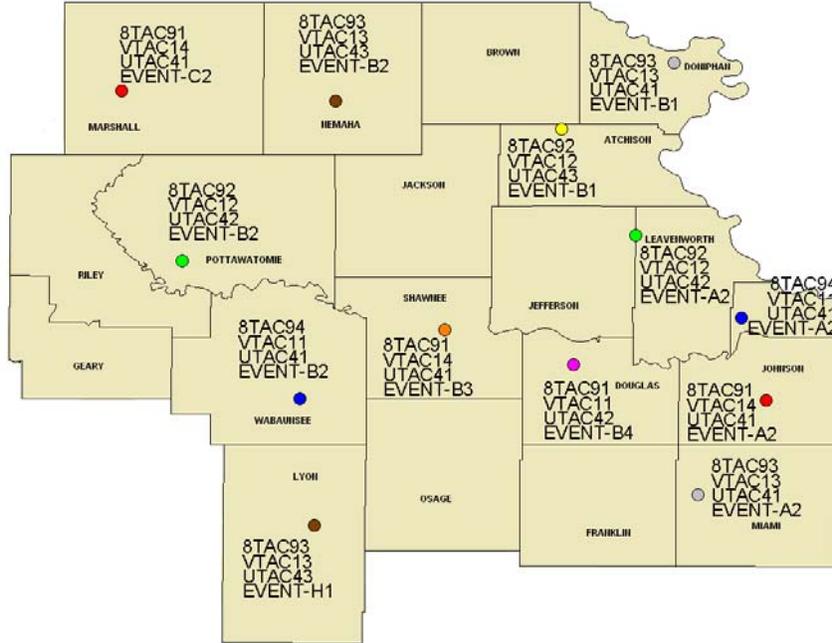
D= DIRECT / TALKAROUND CHANNELS

DIGITAL EVENT TALKGROUPS

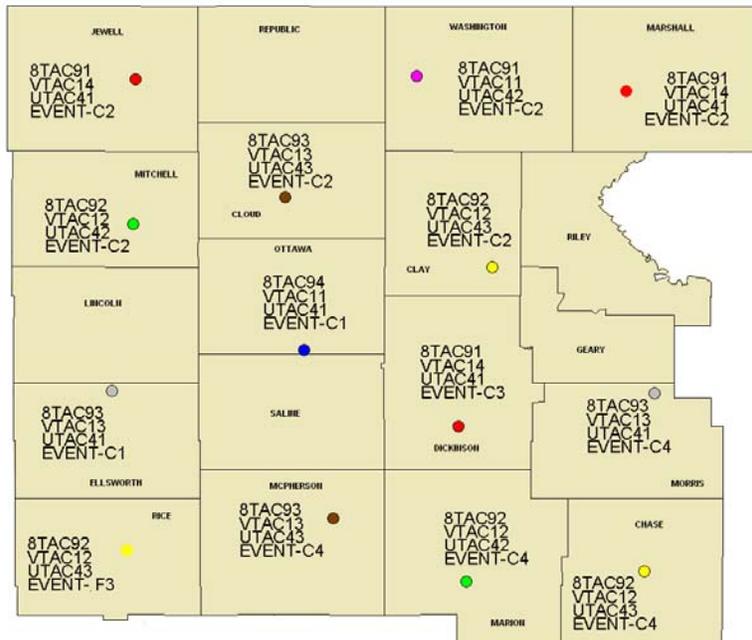
TROOP A (KANSAS CITY AREA)
TALKGROUP NAME
A-EVENT-1
A-EVENT-2
A-EVENT-3
TROOP B (NE KANSAS AREA)
TALKGROUP NAME
B-EVENT-1
B-EVENT-2
B-EVENT-3
B-EVENT-4
TROOP C (NC KANSAS AREA)
TALKGROUP NAME
C-EVENT-1
C-EVENT-2
C-EVENT-3
C-EVENT-4
TROOP D (NW KANSAS AREA)
TALKGROUP NAME
D-EVENT-1
D-EVENT-2
D-EVENT-3
D-EVENT-4
TROOP E (SW KANSAS AREA)
TALKGROUP NAME
E-EVENT-1
E-EVENT-2
E-EVENT-3
E-EVENT-4
TROOP F (SC KANSAS AREA)
TALKGROUP NAME
F-EVENT-1
F-EVENT-2
F-EVENT-3
F-EVENT-4
TROOP H (SE KANSAS AREA)
TALKGROUP NAME
H-EVENT-1
H-EVENT-2
H-EVENT-3
H-EVENT-4

APPENDIX C- MOTOBRIDGE TACTICAL MAPS

NORTHEAST KANSAS



NORTH CENTRAL KANSAS



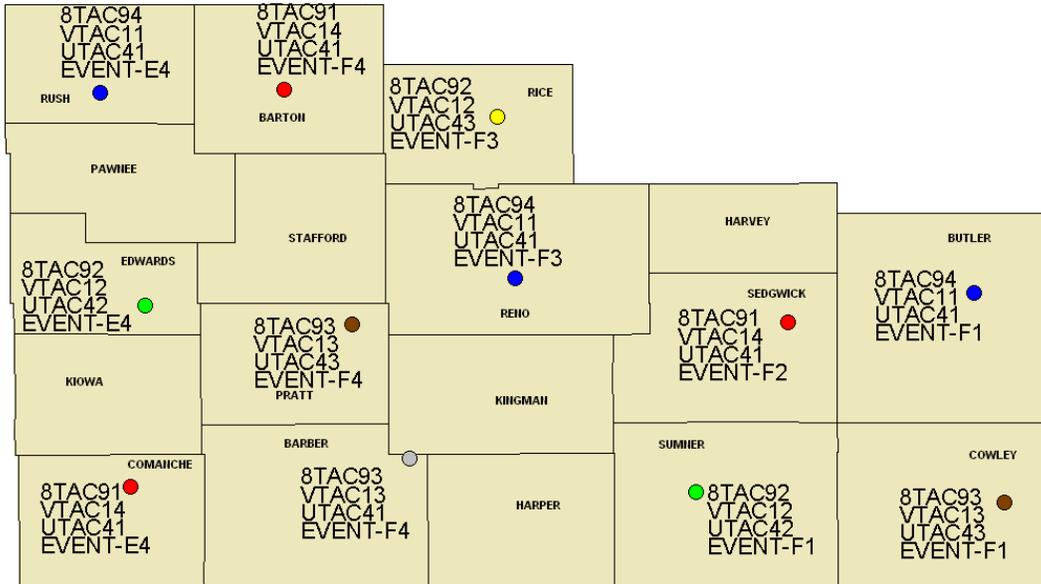
NORTHWEST KANSAS

CHEYENNE 8TAC94 VTAC11 UTAC41 EVENT-D3	RAWLINS 8TAC91 VTAC11 UTAC42 EVENT-D3	DECATUR 8TAC92 VTAC12 UTAC42 EVENT-D2	HORTON 8TAC92 VTAC12 UTAC43 EVENT-D2	PHILLIPS 8TAC93 VTAC13 UTAC43 EVENT-D2	SMITH 8TAC93 VTAC13 UTAC41 EVENT-D2
SHERMAN 8TAC91 VTAC14 UTAC41 EVENT-D3	THOMAS 8TAC93 VTAC13 UTAC43 EVENT-D3	SHERIDAN	GRAHAM 8TAC94 VTAC11 UTAC41 EVENT-D2	ROOKS 8TAC91 VTAC14 UTAC41 EVENT-D2	OSBORNE 8TAC92 VTAC12 UTAC43 EVENT-D1
WALLACE 8TAC92 VTAC12 UTAC42 EVENT-D3	LOGAN 8TAC92 VTAC12 UTAC43 EVENT-D4	GOVE 8TAC93 VTAC13 UTAC41 EVENT-D4	TREGO	ELLIS 8TAC92 VTAC12 UTAC42 EVENT-D1	RUSSELL 8TAC91 VTAC11 UTAC42 EVENT-D1

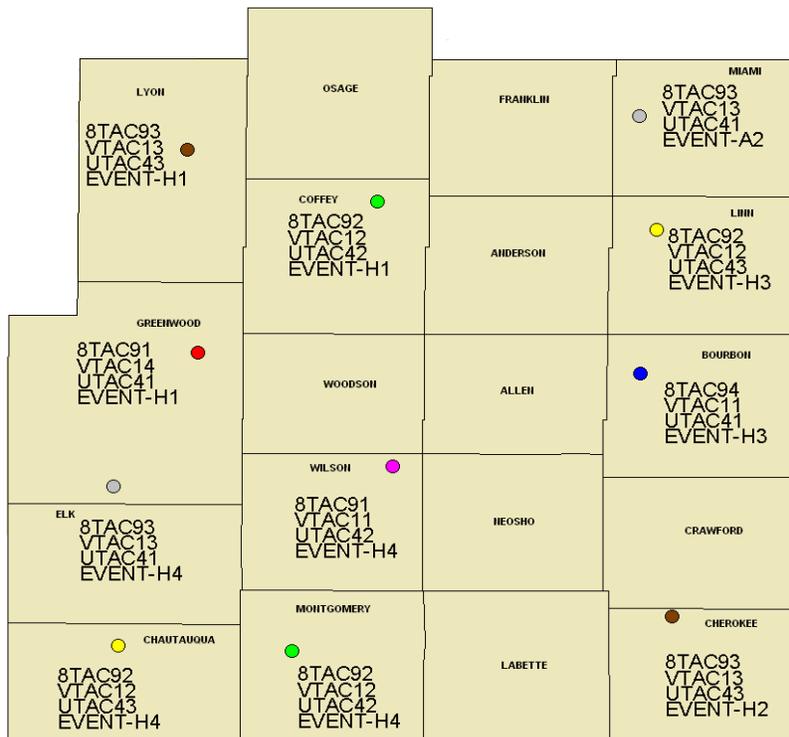
SOUTHWEST KANSAS

GREELEY 8TAC93 VTAC13 UTAC43 EVENT-E1	WICHITA	SCOTT 8TAC91 VTAC11 UTAC42 EVENT-E1	LAINE 8TAC91 VTAC14 UTAC41 EVENT-E1	NESS 8TAC93 VTAC13 UTAC43 EVENT-E4	8TAC94 VTAC11 UTAC41 EVENT-E4 RUSH
HAMILTON 8TAC93 VTAC13 UTAC41 EVENT-E1	KEARNEY 8TAC92 VTAC12 UTAC43 EVENT-E1	8TAC94 VTAC11 UTAC41 EVENT-E1 FINNEY	GRAY 8TAC92 VTAC12 UTAC42 EVENT-E2	HODGEMAN 8TAC92 VTAC12 UTAC43 EVENT-E4	PAWNEE 8TAC92 VTAC12 UTAC42 EVENT-E4 EDWARDS
STANTON	GRAFT	HASKELL	8TAC91 VTAC11 UTAC42 EVENT-E2 FORD	KIOWA	
8TAC91 VTAC14 UTAC41 EVENT-E3 MORTON	8TAC93 VTAC13 UTAC43 EVENT-E3 STEVENS	SEWARD	8TAC93 VTAC13 UTAC41 EVENT-E3 MEADE	8TAC94 VTAC11 UTAC41 EVENT-E2 CLARK	8TAC91 VTAC14 UTAC41 EVENT-E4 COMANCHE

SOUTH CENTRAL KANSAS



SOUTHEAST KANSAS



APPENDIX D – NAMING CONVENTIONS

On September 29, 2008, the Kansas SIEC adopted a set of standards for the National Interoperability Channels. The standards are those recommended by the National Public Safety Telecommunications Council (NPSTC). Additionally, state standards were adopted for VHF Low-Band frequencies that are not recognized nationally for interoperability. Common channel names are as follows:

Low-Band	VHF	UHF	800 MHz
LCALKS	VCALL10	UCALL40	8CALL90
LTACKS	VTAC11	UTAC41	8TAC91
	VTAC12	UTAC42	8TAC92
	VTAC13	UTAC43	8TAC93
	VTAC14		8TAC94