



# National Public Safety Telecommunications Council

## Radio Interoperability Best Practices

---

### Best Practice # 1

#### Nationwide I/O Channel Naming and Usage

This Best Practice is part of a larger, ongoing effort on the part of NPSTC to identify best practice recommendations for a variety of topics dealing with interoperability. Readers are encouraged to read the Radio Interoperability [Best Practices Report](#)<sup>1</sup> companion document for a more detailed explanation of the history, development process, and intent of this document.

#### Best Practice Statement

Nationwide Radio Interoperability Channels should be compliant with the current ANSI Standard Channel Nomenclature for Public Safety Interoperability Channels designated names, frequencies, and technical information; and in accordance with the FCC and NTIA designated usage for that channel.

#### Statement of Importance

Communications interoperability refers to the ability of emergency response agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice or data with one another on demand, in real time, when needed, and as authorized.

The effective use of interoperability frequencies has failed when agencies use these resources without following the standards that have been defined for these channels. The potential consequences of failed communications place lives, infrastructure and property at risk.

It is not enough for agencies to simply program the interoperable channels in their equipment. Doing so without conforming to the ANSI Standard naming practice or using the standardized tone squelch or network access codes creates a problem nearly as large as not having them at all.

---

<sup>1</sup>[http://npstc.org/download.jsp?tableId=37&column=217&id=3853&file=NPSTC\\_Radio\\_IO\\_Best\\_Practice\\_Overall\\_Report\\_Final.pdf](http://npstc.org/download.jsp?tableId=37&column=217&id=3853&file=NPSTC_Radio_IO_Best_Practice_Overall_Report_Final.pdf)

Several communication plans that have been published by agencies around the country show the use of Interoperability channels, but do not follow either the same technical specifications in the Standard, the same channel naming convention, or are not using them in the manner identified as a best practice use of that channel. Though this best practice does not aim to identify specific incidents or agencies, even the most cursory review of after action reports will often point to instances where mission critical voice operations have been hindered when first responders from different agencies are unable find a common channel in their radios. This occurs often when different channel names are used to identify the same interoperable frequency. Mutual aid personnel have also not been able to find the designated interoperability channel listed in the Incident Action Plan because their local radios are programmed with nonstandard channel names. Not following the Standards that have been identified for these channels will result in either a delay in effective interoperable communications or no communications capabilities on these channels at all.

Furthermore, it is important to understand that technology is only a piece of the interoperability solution. For a technical solution to be successful, areas of governance (often the most difficult challenge of all), standard operating procedures (SOPs), training and exercises, and the promotion of routine usage must also be addressed.

### **Supporting Elements**

Interoperability channels can be local, regional, and statewide, in addition to nationwide. These channels will only work when every agency makes it a priority to program them in their radios and consoles, using the ANSI channel names when applicable. It's equally important to train members on these channels, as well as when to utilize them, and to have agreements with neighboring departments or mutual aid organizations.

Today's public safety radios are capable of over 1,000 channels. Many agencies try to put every radio frequency used in their city, county, surrounding counties, region, state, etc. into their radios so they can monitor or talk to other agencies. The major problems are:

- Keeping the information current,
- Ensuring notification of a change has been sent and received,
- The cost and time to reprogram,
- Making sure the information is programmed correctly.

If one agency changes something, then all radios need to be reprogrammed. More often today, the use of interoperability/mutual aid channels are the new norm. The use of the nationwide,

state, regional or local mutual aid/interoperability channels has proved itself to be very successful and reduces the need for reprogramming.

Interoperability channels should be programmed based on ANSI Standards and should never be edited or abbreviated for local variation. Additionally, channels that are not designated nationwide interoperability channels should never be programmed using a naming convention that is so similar to the designated channel name as to become misleading to the first responders. This has occurred where local agencies use VTAC names for their local channels for example. The NPSTC Intrastate Channel Naming Recommendations report provides recommendations for state and local interoperability channels.

Radio purchasing decisions should include the radio's capacity to meet the ANSI Standard and the needs of the agency's mutual aid or interoperability communications plan.

### **SAFECOM Continuum -**

Nationwide I/O Channel Naming and Usage touches every lane of the Continuum which effectively demonstrates its importance in creating an interoperability solution.

### **Use Case Example**

Castle County Fire Rescue and Beach County Fire Rescue share a major highway between the two counties. Castle County Fire Rescue and Beach County Fire Rescue both respond to a multi-vehicle crash on the shared highway. Each agency owns and operates a proprietary radio system. The systems are not compatible and interoperability is accomplished via use of the conventional 800 MHz channels. Castle County, the incident owner, requests Beach County responding units switch to 8TAC91 to coordinate the response. Due to regional planning, training and coordination, both agencies communicate successfully and within moments. The regional approach provides technical and operational preparedness for any interoperable need. In accordance with policy, proper dispatch coordination and repeater responsibility, along with the channel announcement and radio location to end users, seamless communication will occur.

### **Migration Path**

Step 1: Provide user training on the channel names and educate users how the agency will "bridge" from current non-standard names to the ANSI approved name. Channel naming policies should be recorded in official agency SOP's.

- Personnel should receive training on channel names and I/O procedures at the same time they receive training on radio operability and on a recurring basis.

Step 2: Any radio using an interoperability channel shall have that channel programmed exactly as identified in the standard. Communication plans maintained by the agency owning those radios shall identify these channels using the standard channel names. Agencies should only use these channels under the best practice guidelines use of that channel.

- During the transition, until all agencies have programmed their radios with the ANSI Standard, an agency may choose to program radios with both the ANSI standard channel name in a separate I/O zone in the radio and leave the current non-standard channel name in a local channel zone. This is identified as a tool to use during the migration process only and these alternate names should be removed from those agencies communications plan as soon as all of the pertinent agencies have programmed their radios and consoles to meet the standard.
- Ensure radio consoles are programmed with the same ANSI channel names as the mobile and portable radios. In an emergency, any responder should be able to grab any other responder's radio and find the correct frequency/channel to call for help.
- For preplanned events or extended operational incidents, radio channels should be programmed into the same positions on all radios assigned as per the ICS 205, to reduce confusion between personnel at the scene who are searching for a common channel.

Step 3: Channels should be tested on a regular basis to maintain user awareness of proper usage. Suggested uses to accomplish this include:

- Use the channel during a daily or weekly roll call.
- Use the channel in planned events several times a year.

Step 4: Communication plans developed by agencies that includes or anticipates the use of these interoperability channels should meet the standard for these channels, and identify any supporting infrastructure that will provide appropriate coverage.

- The use of these channels by any agency internally or with other agencies shall use the ANSI standard and the channel shall be identified on each mutual aid agency's communication plans using the ANSI Standard.
- Work with all public safety agencies in the region to adopt the same process to ensure interoperability on day to day responses as well as major incidents.
- All agencies that have agreed, through governance or formal mutual aid response plans, shall have all selected interoperability channels programmed into the same locations on each radio, to enable quick effective access of these channels and reliable

communications.

### **Related Documents –**

The following links point to reference materials that were used in developing this Best Practice or otherwise referenced in the document. Additional supporting documents can be found on the Best Practice Working Group page on the NPSTC website at [www.NPSTC.org](http://www.NPSTC.org) or by joining NPSTC Committees Community on the National Interoperability Information eXchange at [www.NIIX.org](http://www.NIIX.org)<sup>2</sup>.

[ANSI Standard 2017](#)<sup>3</sup>

[NPSTC Intrastate Channel Naming Recommendations Report](#)

[Establishing Governance to Achieve Statewide Communications Interoperability Report](#)

[State of Alabama SCIP](#)

### **Date Approved**

January 24, 2017

### **Contributors List**

Numerous members of the Radio Interoperability Best Practices Working Group representing the public safety, government, academia, and industry communities contributed to the creation and review of this document.

NPSTC would in particular like to thank the following participants of the writing group who were instrumental in the development of this individual Best Practice document –

Patti Broderick – Retired  
Orange County Sheriff’s Office  
Florida

David Byrum  
Pinellas County Sheriff’s Office  
David Eierman  
Motorola Solutions, Maryland

---

<sup>2</sup>Select Interoperability Committee -> Best Practices -> Shared Documents

<sup>3</sup>[http://npstc.org/download.jsp?tableId=37&column=217&id=3836&file=11042-2017\\_CommonChannelNamingDocument.pdf](http://npstc.org/download.jsp?tableId=37&column=217&id=3836&file=11042-2017_CommonChannelNamingDocument.pdf)

Brent Finster  
University of Hawaii  
Department of Public Safety

John Johnson – Retired  
State of Tennessee

Chris Kindelspire  
Grundy County 911, Illinois

John Lenihan – Retired  
Los Angeles County Fire Department

Denis Marin – Retired  
Orange County Sheriff's Department  
California

Larry Schaefer – Retired  
U.S. Capitol Police

Mark Schroeder  
City of Phoenix Technology Services, Arizona

Keith Victor  
Town of West Hartford, Connecticut

Everett Wittig  
City of Bisbee Communications, Arizona