Programming Guide for Interoperability Radio Channels

Overview

To use communications equipment and systems effectively in all types of public safety communications, first responders must have access to channels used for multi-disciplinary and multi-jurisdictional response. Planning radio channel usage and programming interoperability channels into radios in advance of an emergency or planned event enhances preparedness. If communities plan their radio systems and operations to meet only their perceived immediate needs, they will be less able to give or receive assistance, either multi-jurisdictional or multi-discipline. Interoperability in the form of mutual aid to adjacent jurisdictions or assistance to distant areas suffering a major disaster requires advanced planning, including interoperable communications pre-programming. However, technology alone, no matter how expansive or advanced, is limited in its effectiveness unless it is used regularly in day-to-day operations. For personnel to effectively use interoperability channels, adequate training and exercises are also needed.

Background

The Department of Homeland Security (DHS), with its Federal partners, provides research, development, testing and evaluation, guidance, tools, and templates on communications-related issues to emergency response agencies. DHS helps the emergency response community and local, tribal, State, and Federal policy makers address critical elements for success as they plan and implement interoperability solutions. The programming templates[i] were developed based on practitioner input and through practical experience.

Consistent with NIMS principles, we have used the APCO/NPSTC Standard Channel Nomenclature[ii] as the source for channel names; and we have used the "Communications Resource Availability Worksheet"[iii] (ICS 217A, revised 3/2007) as the means to present the channel programming data.

Because different radio models have different capabilities and limitations, we recognize that the information contained in these templates cannot be programmed identically in all radios. We have therefore not attempted to create a "universal" programming guide, nor have we constrained the examples to the lowest common denominator. Coordination with your regional or statewide interoperability coordinator is recommended.

Purpose

This guide is intended for radio system managers and technicians responsible for designing and programming interoperability channels for public safety radios in their community. The content presented in this guide is based on FCC and NTIA regulations and public notices, the NIFOG, and the APCO/NPSTC Standard Channel Nomenclature; and uses the Communications Resource Availability Worksheet (ICS Form 217A, revised 3/2007) as the standard form for presenting data (template).

How to Use this Tool

This guide is intended to help technicians to program radios. The template in this guide is consistent with FCC and NTIA rules and regulations and the NPSTC Standard Channel Nomenclature. Sample data is included for reference; however, it is important to note that the sample data is geared for illustration purposes and not toward the needs of a specific jurisdiction or towards the features or limitations of any specific radio.

The examples used in this document strive for maximum capability – multi-jurisdictional, multi-disciplinary interoperability. The samples are there to provide examples and guidance only and should NOT be interpreted as mandates.

This document does not address every issue that jurisdictions, regions, or states may face when seeking to program radios. Programming should be customized to the capability or resource for which they are established and should consider unique characteristics of specific states or participating jurisdictions.

Customizing the Templates

We recommend programming as many of the interoperability channels as your radio can accommodate, even if they are for disciplines outside of your own. For example: in addition to the law enforcement channels, law enforcement systems should include fire and EMS channels; fire and EMS systems should include the fire and EMS channels and law enforcement channels. All systems should include the non-discipline-specific and "incident response" channels. When possible and as space is available, the NOAA All-Hazards Weather Radio broadcast channels should be included.

1. Understand the licensing or authorization requirements for channel usage (maritime, aviation, LMR, etc.; channels assigned to you for a specific geographical area vs. shared mutual aid and nationwide interoperability channels)

2. Review the existing local and regional communications policies and programming guides.

3. Determine which zones to include in the radios. If the radio has limited capacity, prioritize zones based on factors such as proximity to maritime areas or prevalence of federal responders. Additionally, the Law Enforcement Federal Interoperability Channels appear in three versions: the first version has a mix of digital and analog channels, as specified by the US Department of Justice; the second version has all analog channels; and the third version has all digital channels. If there are capacity limitations, the first version is recommended.

4. Confirm the zone/channel plan with the appropriate COML or reviewing authority.

5. Verify CTCSS/NAC programming for your area. You may want to have multiple zones with the same frequencies; one zone with CTCSS/NAC settings to support your local operations, and another zone configured to support nationwide interoperability.

6. Complete template

7. Complete documentation

8. Program test radios

9. Test radio operation and verify functionality

10. Program remaining radios.

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[i] VHF Low Band, VHF High Band, UHF, 700MHz and 800MHz Programming Templates available at https://www.cisa.gov/safecom/field-operations-guides (URL verified 10/14/2021)

[ii] "APCO/NPSTC ANS 1.104.2-2017: Standard Channel Nomenclature for the Public Safety Interoperability Channels", https://www.apcointl.org/~documents/standard/11042-2017-common-channel-naming-document/?layout=default (URL verified 10/4/2021) or https://npstc.org/download.jsp?tableId=37&column=217&id=17&file=11042-2017_CommonChannelNamingDocument.pdf (URL verified 10/14/2021)

[iii] ICS 217A Worksheet: http://www.npstc.org/resourceCD/ICS217A%20ver%2003_07.xls Instructions: http://www.npstc.org/resourceCD/ICS217A%20ver%2003_07%20Instructions.pdf Example: http://www.npstc.org/resourceCD/ICS217A%20ver%2003_07%20EXAMPLE.pdf (URLs verified 10/14/2021)