

# **Appendix D**

Report to the NCC Interoperability Subcommittee  
From the Rules/Policies Workgroup (#3)  
**Policy Recommendation for Channel Designation & Priorities  
For Voice Interoperability Channels**

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**Discussion:**

Paragraph 76 of FCC 98-191 defines "Interoperability" as:

"An essential communications link within public safety and public service wireless communications systems which permits units from two or more different entities to interact with one another and to exchange information according to a prescribed method in order to achieve predictable results."

The 700 MHz band plan per the First Report and Order in 96-86 (FCC 98-191) shows Interoperability channels set up in four groups of five, 12.5 kHz channel sets (6.25 kHz pairs) each and two groups of six, 12.5 kHz channel sets each. That makes a total of sixty - 6.25 kHz channels available for tactical interoperability use and two - 12.5 kHz channels available for Calling channels.

Each 12.5 kHz channel set has at least one adjacent 12.5 kHz channel set shown as Reserve spectrum. The 12.5 kHz channel set of Reserve spectrum prior to the initial groups shown in the attached band plan for both 764-767 MHz and 773-776 MHz subsets should remain in reserve as "guard" bands - particularly, between General Use and Interoperability spectrum unless it is released to expand Interoperability to 25 kHz channel sets. Thus, any consideration for expanding Interoperability channels to 25 kHz should include the associated 12.5 kHz channel sets immediately before each 12.5 kHz channel set of Interoperability channels.

821 MHz in 700 MHz equipment would reduce the need for two radios in vehicles or on the person; however, it will likely increase the cost, size, and weight of the equipment (i.e., a "tri-mode" radio). The cost of this equipment may be far outweighed by the cost, size and weight of two individual radios - including twice the maintenance costs. Realize that this argument may only be supported by agencies operating in both 821 MHz and 700 MHz bands. Whether agencies add 700 MHz operation to current 821 MHz systems or actually migrate from 821 MHz to 700 MHz, both bands in one radio could introduce backward compatibility to agencies remaining in 821 MHz systems only. Establishing the 821 MHz Calling channel as the Calling channel for the 700 MHz Interoperability channels (discussed later) would certainly add support to one radio for both bands. Ultimately, it may rest with the vendors and market forces. Hence, a policy is not proposed at this time.

Labeling specific interoperability channels for emergency medical services, fire services, law enforcement services, other public safety services, and other public services on a local, state and federal level may provide for consistent channel usage; but, it could compromise flexibility in system design. Furthermore, as the Calling channel does for the 821-824/866-869 MHz mutual aid channels, one or more Calling channels can do for the Interoperability spectrum herein. One Calling channel eliminates guesswork in requesting 700 Interoperability channels. It is

recommended that specific labeling be mandated, following a nationally recognized format. This would provide any local, state or federal agency an expected channel assignment during a multi-agency response – particularly in the event channels must be assigned for specific uses/services during the response.

Attached is a Table of Interoperability Channels for Specific Uses/Services. This table is subject to be changed as the Technology Subcommittee, Spectrum Use Workgroup (TWG3) and other Workgroups see it affected by their tasks. Of the thirty-two, 12.5 kHz channel sets (sixty-four, 6.25 kHz channels), the table includes two - 12.5 kHz wide Calling channels – one associated with the lower block - 135 & 136 through 467 & 468 and one associated with the upper block - 615 & 616 through 947 & 948.

An alternate to establishing 700 MHz Calling channels is to require the 821 MHz Calling channel for requesting a 700 MHz Interoperability channel. A previous paragraph on “821 MHz in 700 MHz equipment...” discusses some ramifications of this. Should the 821 MHz Calling channel be designated as the Calling Channel for both the 700 and the 821 MHz bands, cooperation and coordination between 700 MHz RPCs and 821 MHz RPCs will be necessary. Conventional-only Calling channel(s) are necessary for any 700 MHz Interoperability spectrum implemented. Otherwise no mechanism exists for rapid notification that a priority exists for use of a tactical interoperability channel, nor to request a tactical channel assignment.

Two options are illustrated for subcommittee and workgroup direction. Each associated subset of Interoperability channels include channels labeled for tactical use similar to the 821-824/866-869 MHz mutual aid channels (i.e., TAC 1, TAC 2, TAC 3, TAC4). However, to avoid confusion with TAC 1 through TAC 4 of the 821 MHz band, 700 MHz TAC channel numbering should begin with TAC 5. TAC 23 and TAC 53 are labeled for “Mobile Repeater” uses (MTAC 23 and MTAC 53). The remaining TAC channels are labeled “Emergency Medical”, “Fire”, “Law Enforcement,” “General Public Safety,”<sup>1</sup> or “Other Public”<sup>2</sup> Services. This results in four each Emergency Medical, Fire and Law Enforcement, fourteen for General Public Safety, and two for Other Public Services.

Maintaining a correlation with two-channel sets, GTAC 5 for the 12.5 kHz channel set can be subdivided into GTAC 5 and GTAC 6 (following the style used by FCC in 47 CFR 90.531(d)(1) for channel numbering), and so on for the remaining channels.

Should FCC action create 25 kHz channel sets by taking reserve spectrum channels, requiring a change in the wording of 47 CFR 90.531(d), it will be necessary to depart from this convention for tactical channel labeling. Channels 53 & 54, (from reserve spectrum) and 55 & 56 (GTAC 5) would retain the label GTAC 5, and so on for the lower block through GTAC 13. . Similarly, in the upper block for channels 533 & 534 (from reserve spectrum) and 535 & 536 (GTAC 35)

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<sup>1</sup> “General Public Safety” Services includes all public safety agencies (not necessarily Law Enforcement, Fire, or Emergency Medical Services).

<sup>2</sup> “Other Public” Services include “...non-Public Safety entities that furnish, maintain, and protect the nation’s basic infrastructures which are required to promote the public’s safety and welfare” (i.e., transportation companies, utilities, etc.). (excerpted from §4.3.2.2 of the Final Report of the Public Safety Wireless Advisory Committee dated September 11, 1996)

would retain the label GTAC 35, and so on for the upper block through GTAC 43. Irrespective of any channel aggregation or disaggregation to create 25 kHz trunking interoperability channels or 6.25 kHz interoperability channels, the Calling channels shall remain as CALL 7A and CALL 7B with 12.5 kHz channel width.

After consideration of various interoperability channel identification options, and equipment display limitations, the "Table of Interoperability Channels for Specific Uses/Services" was developed.

#### **Recommendations:**

1. **The safety and security of life and property determines appropriate interoperable priorities of access and/or reverting from secondary trunked to conventional operation. In the event secondary trunked access conflicts with conventional access for the same priority, conventional access shall take precedence. Access priority for "mission critical"<sup>3</sup> communications shall be as follows:<sup>4</sup>**

1. **Disaster and extreme emergency operations for mutual aid and interagency communications;**
2. **Emergency or urgent operation involving imminent danger to life or property;**
3. **Special event control, generally of a preplanned nature (including Task Force operations);**
4. **Single agency secondary communications.<sup>5</sup>**

**Priority 4 is the default priority when no higher priority has been declared.**

2. **Within the operational area of a system, the respective conventional-only Calling channel(s) shall be implemented (or monitored if infrastructure already exists) when any conventional or trunked interoperability channels are implemented in a base station configuration (e.g. Call 7A for channels from the upper block and Call 7B for channels from the lower block). Coverage for the Calling channel(s) shall equal or exceed that for the other interoperability channel(s). The appropriate Calling channel shall be used to notify incumbent users in an impacted area when a priority is declared on one or more of the tactical interoperability channels.**
3. **Use of encryption is prohibited on Calling channels and permitted on all other interoperability channels. A standardized encryption algorithm for use on the**

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<sup>3</sup> Mission critical use shall not include nor imply administrative or non-mission critical applications.

<sup>4</sup> These access priorities are taken from the §4.1.21 of the Final Report of the Public Safety Wireless Advisory Committee dated September 11, 1996.

<sup>5</sup> This fourth priority would allow shedding traffic long in duration or overloading the non-interoperable system; but is not "two or more different entities" as defined in paragraph 76 of FCC 98-191. Overloading conditions should identify a potential need for expansion of the associated non-interoperable system.

**interoperability channels must be identified by the NCC Technical Subcommittee and submitted to the NCC Steering Committee.**

4. **Channels labeled GTAC 5 through GTAC 13, GTAC 35 through GTAC 43, or both, shall be made available for "deployable" equipment used during disasters and other emergent events that place a heavy, unplanned burden upon in-place radio systems. Regional Planning Committees shall consider the need for both "deployable trunked" and "deployable conventional" systems and make those channels available to all entities in their region.**
5. **Standardized nomenclature is required nationwide. It is recommended that the Steering Committee ask the FCC to require that all 700 MHz public safety subscriber equipment using an alphanumeric display only be permitted to show the recommended label from the following Table when the radio is programmed to operate on the associated 700 MHz channel set. The Table shows the recommended label for equipment operating in the mobile relay (repeater) mode. When operating in direct (simplex) mode, the letter "D" shall be appended to the end of the label.**

#### RECAP

There are thirty-two, 12.5 kHz channel sets (each consisting of two 6.25 kHz channels) of interoperability channels available for local, state and federal agencies labeled for specific uses/services as follows:

- 2 Calling Channels
- 30 Tactical Channels consisting of:
  - 4 Emergency Medical Services
  - 4 Fire Services,
  - 4 Law Enforcement Services,
  - 14 General Public Safety Services<sup>6</sup>,
  - 2 Other Public Services, and
  - 2 Mobile Repeater Channels

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<sup>6</sup> There are ten, 12.5 kHz blocks of Secondary Trunked Channels proposed from these channels divided into two subsets. Refer to the policy recommended. Hence, there are 4 convention-only GTAC channels.

**Table of Interoperability Channels  
For  
Specific Uses/Services**

<b>CHANNEL SETS</b>	<b>DESCRIPTION</b>	<b>LABEL</b>
Channel 55 & 56	<i>General Public Safety Services</i>	<i>GTAC 5</i>
Channel 135 & 136	<i>General Public Safety Services</i>	<i>GTAC 7</i>
Channel 215 & 216	<i>General Public Safety Services</i>	<i>GTAC 9</i>
Channel 295 & 296	<i>General Public Safety Services</i>	<i>GTAC 11</i>
Channel 375 & 376	<i>General Public Safety Services</i>	<i>GTAC 13</i>
<i>Channel 59 &amp; 60</i>	Calling Channel	CALL 7A
<i>Channel 139 &amp; 140</i>	Emergency Medical Services	ETAC 15
<i>Channel 219 &amp; 220</i>	Fire Services	FTAC 17
<i>Channel 299 &amp; 300</i>	Law Enforcement Services	LTAC 19
<i>Channel 379 &amp; 380</i>	General Public Safety Services	GTAC 21
Channel 67 & 68	Mobile Repeater	MTAC 23
Channel 147 & 148	Emergency Medical Services	ETAC 25
Channel 227 & 228	Fire Services	FTAC 27
Channel 307 & 308	Law Enforcement Services	LTAC 29
Channel 387 & 388	General Public Safety Services	GTAC 31
Channel 467 & 468	Other Public Services	OTAC 33
Channel 535 & 536	<i>General Public Safety Services</i>	<i>GTAC 35</i>
Channel 615 & 616	<i>General Public Safety Services</i>	<i>GTAC 37</i>
Channel 695 & 696	<i>General Public Safety Services</i>	<i>GTAC 39</i>
Channel 775 & 776	<i>General Public Safety Services</i>	<i>GTAC 41</i>
Channel 855 & 856	<i>General Public Safety Services</i>	<i>GTAC 43</i>
<i>Channel 539 &amp; 540</i>	Calling Channel	CALL 7B
<i>Channel 619 &amp; 620</i>	Emergency Medical Services	ETAC 45
<i>Channel 699 &amp; 700</i>	Fire Services	FTAC 47
<i>Channel 779 &amp; 780</i>	Law Enforcement Services	LTAC 49
<i>Channel 859 &amp; 860</i>	General Public Safety Services	GTAC 51
Channel 547 & 548	Mobile Repeater	MTAC 53
Channel 627 & 628	Emergency Medical Services	ETAC 55
Channel 707 & 708	Fire Services	FTAC 57
Channel 787 & 788	Law Enforcement Services	LTAC 59
Channel 867 & 868	General Public Safety Services	GTAC 61
Channel 947 & 948	Other Public Services	OTAC 63

*Trunking is permitted on the 10 channel sets indicated in italics.*