

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20054**

In the Matter of)	
)	
47 CFR §90.531(b)(7))	RM-11433
)	
Request for Waiver to permit operation of)	
Air-to-Ground radio equipment on 700 MHz)	
Secondary Trunking Channels)	

To: Chief, Public Safety and Homeland Security Bureau

PETITION FOR WAIVER OF RULES

Respectfully Submitted,

THE STATE OF MARYLAND

By

Raymond Lehr
Statewide Interoperability Director

February 24, 2012

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INTRODUCTION

The State of Maryland has a nationally recognized first responder aviation program operated by the Maryland State Police (“MSP”) that in addition to its law enforcement missions, also supports the Emergency Medical Services (“EMS”) program of the Maryland Institute for Emergency Medical Services Systems (“MIEMSS”). The State has also embarked upon a statewide replacement of the MSP land mobile radio (“LMR”) system. Maryland FiRST (“First Responders Interoperable Radio System Team”) will be a statewide 700 MHz LMR system that links state and local government first responders into a cohesive and interoperable public safety communications network. The Maryland FiRST system will primarily operate through 700 MHz channels allotted to the states¹.

The Federal Communications Commission (“FCC” or “Commission”) has issued certain guidelines relative to the use of “state²” 700 MHz channels which delimit signal strength energy at state borders to a level not to exceed 40 dBu/m³. For aircraft flying at typical operational altitudes of approximately 1,000 – 1,500 feet above ground, even low power radios will generate radio frequency (“RF”) energy that can make compliance to the 40 dBu/m signal strength level beyond Maryland’s state borders difficult, if not impossible, to meet. Maryland believes that aircraft employing low-power radios operating on “state” 700 MHz frequencies would likely interfere with adjoining state operations. This is particularly true of the Commonwealth of Virginia which makes extensive use of the 700 MHz “state” frequencies for low-power digital vehicular repeater system (“DVRS”) use.

¹ See 47 CFR §90.531(b)(5).

² *Id.*

³ See DA 01-406. “State Licensees may operate facilities in interstate boundary areas so long as the field strength of station transmissions is limited to 40 dBu/m at the licensee’s geographic border.”

Maryland is also sensitive to the Commission's narrowbanding requirements⁴ for systems operating between 150 – 512 MHz. State government has maintained radio systems operating in the spectrum subject to the narrowbanding mandate, and Maryland FiRST is an important strategy to end use of wideband systems and adhere to the Commission's rules. The Maryland Transportation Authority Police ("MDTA Police") is a major user of UHF technology and will be converted to 700 MHz in the first phase of the project in order to meet the January 1, 2013 narrowbanding deadline. The MSP Barrack patrolling the John F. Kennedy Expressway (I-95) will also be converted to 700 MHz in this first phase of the project.

In a search of spectrum alternatives to permit aircraft to operate in the 700-800 MHz frequency band and comply with DA 01-406, Maryland identified certain channels categorized by the Commission as "secondary trunking channels"⁵. In a search of the Commission's Universal Licensing System ("ULS")⁶, Maryland discovered that no licenses have been issued for operations on the "secondary trunking channels" in the United States. The "secondary trunking channels" were originally intended by the Commission for use with trunked systems operating with a 25 KHz bandwidth⁷. Subsequently, the Commission adopted the P25 standard for national interoperability channels, which only use 12.5 KHz of spectrum, essentially obviating the need for 25 KHz interoperability channels. As stated in the Fourth MO&O, the Commission said "*For trunked systems in any given area using a 25 kHz bandwidth format, the*

⁴ See Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Second Report and Order and Second Further Notice of Proposed Rulemaking*, WT Docket No. 99-87, RM-9332, 18 FCC Rcd 3034 (2003) (*Second R&O*); Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Third Memorandum Opinion and Order, Third Further Notice of Proposed Rule Making and Order*, WT Docket No. 99-87, RM-9332, 19 FCC Rcd 25045 (2004) (*Third MO&O*); Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Order*, WT Docket No. 99-87, RM-9332, 25 FCC Rcd 8861 (2010) (*Narrowbanding Waiver Order*); see also 47 C.F.R. §§ 90.203(j), 90.209(b).

⁵ See 47 CFR §90.531(b)(7).

⁶ Search conducted on February 7, 2012.

⁷ See Docket 98-96 Fourth Memorandum, Opinion, and Order adopted on March 5, 2002 at ¶11, "To accommodate trunking formats that utilize 25 kHz bandwidth channels, the Commission also designated eight 12.5 kHz Reserve Spectrum channels that were adjacent to the eight Interoperability channels, as secondary trunking channels."

same eight 12.5 kHz Interoperability channels are available along with the eight 12.5 kHz adjacent channels that were redesignated from Reserve Spectrum to secondary trunking”⁸. The State of Maryland has no intention of utilizing the secondary trunking channels with their companion channels⁹ or in any other manner contrary to this Petition for Waiver.

As such, the “secondary trunking channels” have remained fallow relative to use throughout the United States. Maryland has held discussions with the neighboring States, and they have not voiced any objections to Maryland pursuing this Petition. The National Public Safety Telecommunications Council (“NPSTC”) has also filed a Petition for Rule Making¹⁰ on this subject. Maryland is seeking the waiver now due to the necessity to program frequencies into our MSP and MDTA Police fleetmaps for deployment by the end of calendar 2012 to meet the narrowbanding deadline.

Maryland requests that the Commission issue a Waiver of the rules to permit the State to operate on these secondary trunking frequencies for air-to-ground¹¹ interoperable communications in conjunction with the Maryland FiRST system and the MSP-MIEMSS emergency medical system. If the Petition is granted, Maryland will follow the Commission’s rules for the use of national interoperability channels as found in Subpart R of Part 90. With respect to eligibility, Maryland will permit and encourage the aircraft of other governments and commercial air ambulance aircraft transporting critically injured or ill patients to interoperate with its Emergency Medical Systems Control center (“SYSCOM”) pursuant to the

⁸ *Id.* at 2036-37 ¶¶ 44 45. The Commission stated that the Reserve Spectrum channels will be designated as secondary trunking channels and may only be used in connection with the adjacent Interoperability 12.5 kHz channel pair in a trunked system. The *Fourth R&O* also specified the specific 6.25 kHz channels that can be combined to form the eight 25 kHz trunked channels.

⁹ See 47 CFR §90.523(b)(1).

¹⁰ See Petition for Rule Making submitted by the National Public Safety Telecommunications Council on March 19, 2010.

¹¹ For the purposes of this Petition for Waiver, the term “air-to-ground” also includes air-to-air communications on the secondary trunking interoperability channels.

Commission's rules¹² and relevant statutes. Maryland seeks waiver relief pursuant to Section 1.925 of the Commission's rules¹³ to share the use of the secondary trunking channels for air-to-ground interoperability channels.

¹² See 47 CFR §90.523(b).

¹³ See 47 C.F.R. §§ 1.925.

BACKGROUND

The State of Maryland has an extensive fleet of rotary wing aircraft operated by the Department of State Police and located at multiple airports within the State that support two primary missions: law enforcement and emergency medical transportation. In addition to serving the residents and visitors of Maryland, these aircraft are occasionally requested by the law enforcement and medical services organizations of adjoining states for first responder activities. Even in times of critical shortfalls in public funds, this program is so essential to saving lives that Maryland has initiated a program to replace the fleet with up to twelve new helicopters.

Today, MSP helicopters use a variety of radio frequencies to interoperate with other state government partners and local first responders. Primary communications between the aircraft fleet and SYSCOM, the command and control center are conducted over noisy low band radio channels employing analog technology. Due to the limitations of low band frequencies, the State has established several transmitting points for aircraft to communicate with SYSCOM. Today, most Emergency Medical communications occur over two radio frequencies: one for aircraft command and control and one for medical consultations with physicians who may be located in a trauma center, SYSCOM, or other location. It is necessary for these aircraft to migrate to the 700 MHz band as all State Police vehicles are moving from the low band to the Maryland FiRST¹⁴ system, a statewide inter-governmental public safety network that will employ frequencies in 700 MHz across the state.

Once the aircraft is proximate to the scene of a law enforcement or emergency medical incident, on board personnel augment communications by employing radios in other bands to permit direct communications with ground-based personnel. While this means of interoperability

¹⁴ First responders Interoperable Radio System Team.

facilitates communications with personnel attending to victims, it does not provide situational awareness for the aircraft pilot landing the helicopter in unfamiliar and improvised landing zones. Maryland believes that enhancing situational awareness for helicopter pilots is a critical life-safety need that merits every reasonable strategy to overcome the inherent dangers associated with this activity. To that end, Maryland FiRST has identified an emergency channel identified in Table A which will be installed in every MSP mobile and portable radio and continually monitored by pilots on “guard channels” during landings and take-offs from improvised landing zones if this Petition is approved. This channel, now tentatively identified as 7GRND88¹⁵, will be made available to any Part 90 eligible first responder in Maryland operating with a P25 mobile or portable radio capable of operations in the 700 MHz band. The aircraft of Maryland local governments will be encouraged to utilize the same methodology as a strategy to enhance the safety of helicopter operations and promote interoperability. For MSP radios, this channel will be programmed in the switch position 16 of every Troop’s (radio) zone “A” permitting a trooper to instantly switch the radio to the emergency channel without delay and instantly alert pilots as to eminent dangers to flight safety.

Maryland is taking extraordinary steps to enhance the pilot’s situational awareness due to the inherent challenges of operating a helicopter safely during emergency missions. “Emergency medical helicopter pilots had the most dangerous jobs in the U.S., racking up fatalities at a faster clip than loggers and other historically risky professions” according to *the Wall Street Journal*¹⁶. “Comparing 13 medical helicopter crashes that claimed 29 lives in 2008 with federal fatality rates for many other accident-prone professions, Dr. Ira Blumen, of the University of Chicago Hospitals, concluded that statistically the pilots ‘far exceed any of the high-risk occupations.’”

¹⁵ Maryland has started to communicate with the National Public Safety Telecommunications Council to augment the standardized interoperability channel names coordinated with the American National Standards Institute.

¹⁶ See Study Spotlights Helicopter Dangers, Wall Street Journal, February 3, 2009.

Unfortunately, MSP has also experienced the loss of valued colleagues through aircraft accidents¹⁷.

Through this Petition for Waiver, Maryland also intends to permit other state and local governments operating aircraft within or adjacent to Maryland to share the use of these secondary trunking interoperability channels as permitted by the rules¹⁸ in their aircraft. In Maryland, the governments of a county or the City of Baltimore operating an aircraft for law enforcement, fire, or EMS functions would be included within this waiver request. Similarly the State of Delaware regularly flies critically injured victims to the Shock-Trauma Center in Baltimore, and we would ask that their aircraft be included. Additionally, Maryland will allow the helicopter fleet of any adjoining state or local government in an adjoining state, or commercial air ambulance transporting critically injured trauma victims into Maryland for emergency life-saving treatment be included in this Petition as relates to mobile or portable radios installed in aircraft¹⁹. This Petition does not seek the authority to operate fixed base stations on secondary trunking channels outside of the State of Maryland.

Maryland will operate fixed base stations which will be individually licensed per the Commission's rules²⁰. Should there be a catastrophic event requiring the temporary emergency establishment of a fixed base station outside of Maryland, the State would contact the Commission and request Special Temporary Authority ("STA") for operation of a fixed base station outside of the State.

¹⁷ See <http://www.tbd.com/blogs/tbd-latest/2010/10/md-board-approves-purchase-of-medevac-helicopters--3411.html>

¹⁸ See 47 CFR §90.523(a).

¹⁹ *Id.* "A public safety entity meeting the requirements of § 90.523 may operate mobile or portable units on the Interoperability channels in the 769-775 MHz and 799-805 MHz frequency bands without a specific authorization from the Commission provided it holds a Part 90 license".

²⁰ See 47 CFR §90.525(a) "States are responsible for administration of the Interoperability channels in the 769-775 MHz and 799-805 MHz frequency bands. Base and control stations must be licensed individually".

In addition to those aircraft owned by governments and clearly authorized by the rules to operate in the 700 MHz band, Maryland intends to permit commercial air ambulances used for emergency transportation—the principal purpose of which is to protect the safety of life, health, or property”— to also operate on these secondary trunking interoperability channels when communicating with SYSCOM or a Maryland Trauma Center or coordinating emergency medical activities within Maryland pursuant to and in compliance with the provisions of 47 USC 337(f)(1). This level of emergency resource coordination is particularly critical in the event of a regional disaster. Regarding commercial air ambulances, compliance with 47 USC 337(f)(1) will be addressed in detail in the “Discussion” portion of this Petition.

With respect to the “area of operation” for Maryland’s helicopters, obviously statewide authority is needed within Maryland. However, Maryland would seek permission from the Commission to extend the area of operation into each of the adjoining states²¹ and the District of Columbia to render emergency law enforcement or medical support *only* when requested by a government of such state or political sub-division therein or the District of Columbia or when flying into an adjoining state or the District of Columbia to deliver a critically ill patient to a trauma or other specialty emergency medical center for treatment. As a practical matter, MSP aircraft would likely lose communications with SYSCOM when more than 100 miles from a fixed base station in the State so it is unnecessary to seek authority to extend the communications authority sought in this Petition beyond the adjoining states.

The first phase of the Maryland FiRST network is now under construction and scheduled to be operational before the end of calendar 2012. This area is along the I-95 corridor from Baltimore to the Delaware state line as well as the upper Eastern Shore. Programming of radios will begin this summer followed by field coverage testing. Subsequent phases will follow based

²¹ State of Delaware, Commonwealth of Pennsylvania, Commonwealth of Virginia, and State of West Virginia.

upon the appropriations of the Maryland General Assembly. The timeline for the issuance of this Petition for Waiver request is critical to permit compliance with the Commission's narrowbanding deadline.

It is important to note that Maryland's request is not a new matter. The State initiated action on this issue in 2009. It was presented to NPSTC and approved by that body in 2010. NPSTC filed a Petition for Rule Making²² with the Commission on March 19, 2010 and the provisions of the Maryland Petition for Waiver as described herewithin parallel that Petition as relates to the operational manner in which the secondary trunking interoperability channels would be used for air-to-ground communications.

The State has continually worked with NPSTC to coordinate the naming of the proposed air-to-ground channels in anticipation of a national rule making procedure. While Maryland continues to support a national rule making process, time is of the essence and the State must submit this Petition now in order to comply with the Commission's narrowbanding mandate. Notwithstanding the route taken to submit this Petition, Maryland intends to continue working with NPSTC to identify universal channel names in the event that the Commission takes favorable action on the NPSTC Petition. The channel names identified in Table A are tentative and subject to further action and coordination with NPSTC should the Commission act favorably on the NPSTC Petition.

Finally, the Commission issued a Public Notice on June 30, 2011 seeking comments relative to the initiation of a rule making procedure²³. All responses submitted from the Commission's Public Notice were positive and favored action by the FCC.

²² See Petition for Rule Making submitted by the National Public Safety Telecommunications Council on March 19, 2010.

²³ See DA 11-1146 issued June 30, 2011 regarding RM-11433.

PROPOSED OPERATION

If the Commission approves the Petition for Waiver, Maryland would then seek the approval of its Statewide Interoperability Executive Committee (SIEC), and following an affirmative response, submit an application for fixed base station operations pursuant to the rules²⁴. Maryland would utilize the MIEMSS SYSCOM facility as the system control point and install 700 MHz P25 Phase I fixed base station transceiver repeaters in Baltimore as well as other parts of the State. Each fixed base station will be individually licensed. The first fixed transceivers would be installed on Maryland's Eastern Shore and connected to SYSCOM through the Maryland FiRST backhaul network. At SYSCOM, a comparator-receiver voting system would be used to ensure that operators receive a clear radio signal. SYSCOM operators would manually activate and de-activate the 700 MHz fixed base repeater stations located throughout the State. The land-based components will operate in a manner consistent with normal ground operations with two exceptions; fixed base station antenna height will not be as critical as with typical LMR systems and RF output may be reduced as determined through operational testing.

Maryland proposes to follow the provisions related to the proposed air-to-ground interoperability frequencies as follows:

- A. Fixed base and control stations will be licensed individually per Subpart 525(a).
- B. Any public safety entity meeting the requirements of Subpart 523 and 47 USC 337(f)(1) may operate mobile or portable units on the secondary trunking interoperability channels identified in Table A herein without a specific authorization from the Commission provided it holds a Part 90 license. All

²⁴ See 47 CFR §90.525(b).

persons operating mobile or portable units under this authority are responsible for compliance with Part 90 of these rules and other applicable federal laws per Subpart 525(a).

- C. The area of operation for aircraft will extend throughout the State; and also into each adjoining state and the District of Columbia when public safety support is requested by a public authority in that State or the District.
- D. License applications for fixed base stations operating on secondary trunking interoperability channels will be approved by the Maryland SIEC or designee pursuant to Subpart 525(b).
- E. Commercial air ambulance services, as a non-governmental organization (“NGO”), will be permitted to operate on the secondary trunking channels pursuant to 47 USC 337 (f)(1) following the review and approval of MIEMSS. Such NGO operations will be conditional based upon MIEMSS review of compliance with Subpart 523(b) and may be revoked by MIEMSS without notice if necessary to comply with the statute.
- F. All operations on air-to-ground channels shall be secondary per Subpart 423.
- G. All aircraft transmissions shall be conducted at altitudes regularly flown below 1.6 kilometers above the earth’s surface per Subpart 423(a).
- H. Should the Commission issue similar waivers to adjoining or proximate states such as New Jersey and Ohio, or act favorably on the Petition for Rule Making submitted by the National Public Safety Telecommunications Council, Maryland will coordinate the use of frequencies as applicable to avoid interference.

- I. The Maryland SIEC or its designee will coordinate the use of all eight air-to-ground channels for aircraft and ground operations within the State. Land-based communications with fixed transmitters will operate in the repeated or direct mode. Aircraft will transceive with land-based stations as well as other aircraft, mobile and portable radio users in the repeated or direct mode.
- J. All transmissions shall be conducted using P25 Phase I per Subpart 548(a)(1).
- K. Transmission power from aircraft operating on secondary trunking channels shall be limited to two watts, effective radiated power (“ERP”), per Subpart 541(d).
- L. Base station RF power output shall meet the requirements of Subpart 635.
- M. All transmitters used on secondary trunking interoperability channels shall be of a type approved by the Commission per Subpart 549.
- N. Transmitters operating on secondary trunking interoperability channels may employ Advanced (“AES”) or Dynamic (“DES”) encryption technology per Subpart 553.

DISCUSSION

Section 1.925 of the Commission's rules provides that to obtain a waiver of the Commission's rules, a petitioner must demonstrate either that: "(i) *[t]he underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the waiver would be in the public interest;*²⁵ or (ii) *[i]n view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative*"²⁶. Applicants seeking a waiver face a high hurdle and must plead with particularity the facts and circumstances that warrant a waiver²⁷

In the instant case, the purpose of the Commission's rules for secondary trunking channels was to permit the use of 25 KHz frequencies for trunked radio systems²⁸. As stated in the Petition, the State of Maryland has no intention of operating or permitting such 25 KHz trunked public safety interoperability systems. None of Maryland's neighboring states have indicated any interest in operating such a trunked interoperability system with 25 KHz channels as P25 has become the standard for interoperability.

If Maryland initiates operations on the parallel nationwide 12.5 KHz interoperability frequencies identified in Subpart 531(b)(1)(iii), the State will employ appropriate engineering techniques to ensure that adjacent channel interference does not occur. Similarly, Maryland will coordinate with its adjoining states should they install 700 MHz fixed base stations on adjacent

²⁵ 47 C.F.R. § 1.925(b)(3)(i).

²⁶ 47 C.F.R. § 1.925(b)(3)(ii).

²⁷ *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969), *aff'd*, 459 F.2d 1203 (1973), *cert. denied*, 409 U.S. 1027 (1972) (citing *Rio Grande Family Radio Fellowship, Inc. v. FCC*, 406 F.2d 664 (D.C. Cir. 1968)); *Birach Broad. Corp., Memorandum Opinion and Order*, 18 FCC Rcd 1414, 1415 (2003).

²⁸ See Docket 96-86 Fourth Memorandum Opinion and Order at ¶11.

channels operating under Subpart 531(b)(1)(iii) and at all times maintain a geographical separation sufficient to achieve a 60 dBu interference protection contour.

Subsequently, the Commission adopted the P25 Phase I architecture for nationwide interoperability channels²⁹. Since national interoperability standards have coalesced with the P25 Phase I standard, which only requires 12.5 KHz of bandwidth, Maryland believes that the underlying purpose of the Commission's rules for secondary trunking would not be frustrated by grant of the waiver. Conversely Maryland respectfully asserts that the use of nationally fallow 700 MHz secondary trunking channels for the purpose of enhancing the safety of first responder aircraft operators is in the public interest.

The second test for the issuance of a waiver relates to *“unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”* The most obvious alternative for aircraft radio operation is use of the state 700 MHz channels found in Subpart 531(b)(5), which are used not only in Maryland, but also by the District of Columbia, State of Delaware, Commonwealths of Pennsylvania and Virginia, and many other states.

Maryland engaged the services of RCC Consultants to perform technical analyses of propagation from an aircraft flying at approximately 1,500 feet above ground. The State's consultant found that frequently, a signal with a power of only two watts ERP would travel one hundred or more miles. Maryland fears that the State cannot comply with the provisions of DA 01-406 with operations as noted in Figure 1 on the State or general pool³⁰ channels.

²⁹ See 47 CFR § 90.548(1).

³⁰ See 47 CFR § 90.531(b)(6).

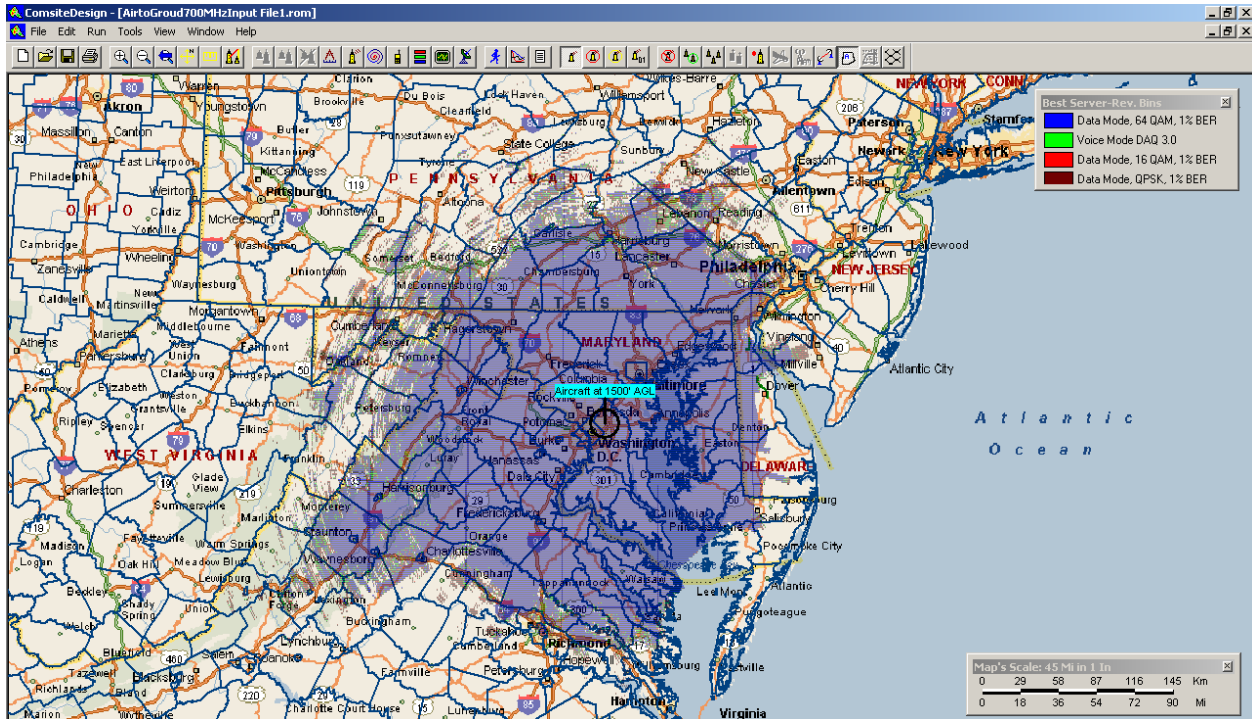


FIGURE 1 - PREDICTED PROPAGATION FROM AIRCRAFT AT 1,500 FEET WITH TWO WATT RADIO OVER COLLEGE PARK, MD.

The detailed propagation slides developed by RCC Consultants relative to Figure 1 have been shared with the staff of the Commission’s Public Safety and Homeland Security Bureau. It is important to note that the degree of potential interference to other states will vary depending upon the location of the aircraft, even when flying in conformity to the Commission’s existing rules on aircraft operation³¹. An aircraft conducting a mission in Western Maryland could extend signal into Ohio. Equally, when operating in Northeast Maryland, signal would easily extend into New Jersey. DA 01-406 states that “*State Licensees may operate facilities in interstate boundary areas so long as the field strength of station transmissions is limited to 40 dBu/m at the licensee’s geographic border. Adjoining states may agree to alternate field strengths at their common border*”³². Even if Maryland negotiated an agreement to use State 700 MHz channels with the “adjoining” states, depending upon aircraft location, it would be virtually impossible to

³¹ See 47 CFR § 90.423.

³² See *Third MO&O and Third R&O*, 15 FCC Rcd at 19873 ¶ 67 & n. 207 citing 47 C.F.R. § 73.699, Fig. 10

delimit RF entering New Jersey or Ohio, non-adjointing states. The same potential for interference would occur with the use of General Pool 700 MHz channels³³. Maryland would also face the same challenge through the use of other 700 MHz channels identified for nationwide interoperability³⁴.

Maryland FiRST radios will also be able to operate in the 800 MHz frequency band; however, with air-to-ground channels in this band, interference would certainly be generated to existing users. Because use of the 700 MHz secondary trunking channels is fallow and MSP radios will operate on 700 and 800 MHz channels, Maryland believes that there are no other reasonable alternatives to the use of the requested secondary trunking channels for this type of communications interoperability. Again, Maryland believes that operation on the secondary trunking channels for public safety air-to-ground operations would be in the public interest and merit the Commission's approval of the Petition for Waiver of the rules.

There are two other important issues that must be addressed in this Petition; eligibility and coordination. By statute, not Commission rule, the users of secondary trunking channels must meet the eligibility tests for "public safety services" established by 47 USC 337(f)(1). The first test of compliance is "*the sole or principal purpose of which is to protect the safety of life, health, or property.*" The proposed use of the secondary trunking channels for air-to-ground interoperability will be limited to official law enforcement activities or in support of the State's Emergency Medical System. As indicated in the Petition, the proposed control point for fixed base stations will be the EMS SYSCOM, which is located in Baltimore. SYSCOM's mission is limited to the coordination of emergency medical services of the most seriously injured trauma patients who require high-speed transportation to emergency medical centers. There will be no

³³ See 47 CFR § 90.531(b)(6)

³⁴ See 47 CFR § 90.531(b)(1)(i)(ii)(iii).

activity on these frequencies other than as required to coordinate and direct the activities of law enforcement officers or air ambulances transporting trauma patients to appropriate treatment centers or communicating with physicians relative to treating seriously injured patients. While the State does propose to permit commercial air ambulances to use the frequencies for the purpose of coordinating their emergency medical activities with SYSCOM and trauma physicians in hospitals, no commercial radio traffic will occur on these frequencies.

Maryland is guided by the Commission's statements, "*the term "public safety services" is directed towards the communications service being provided by the entity in question, rather than the underlying service provided by the entity, in determining the use of the spectrum. That is, the entity making the communications need not be a police, fire, or emergency medical entity, but the communications undertaken must solely or principally be used to protect the safety of life, health, or property. In this respect, and as illustrated by the remainder of Section 337(f)(1), public safety services may be provided by a variety of entities, including governmental and authorized non-governmental entities*"³⁵. The communications service proposed by Maryland and the inclusion of commercial air ambulances is limited to emergency medical services. Maryland will ensure that commercial air ambulances meet this test by directing MIEMSS to review usage applications. SYSCOM will constantly monitor use of the 700 MHz air-to-ground channels and, if necessary, MIEMSS can immediately revoke the authorization of a commercial air ambulance to use the frequencies if a violation is noted.

The Commission went on to say "*If Congress had intended to rely solely on the identity of the user as a governmental entity, there would have been no need to specify that the sole or principal purpose of the service provided must be to protect the safety of life, health, or property. Rather, Congress could simply have required that the user either be a governmental entity or an*

³⁵ See Fourth Report and Order in Docket 06-229 adopted on July 20, 2011 at ¶15.

authorized non-governmental entity, as specified in Section 337(f)(1)(B), whose sole or principal purpose for the service was to protect the safety of life, health, or property. Instead, Congress structured the definition to require both a certain type of use (without any qualifier as to the user (described in subsection (f)(1)(A)) and certain types of users (described in subsection (f)(1)(B)) in order for the services to qualify as "public safety services"³⁶.

Since Maryland intends to delimit the use of these frequencies for law enforcement use as well as EMS services from governmentally and commercially owned aircraft, and further, ensure that only communications related to law enforcement or the delivery of emergency medical services, the State believes that the proposed use meets the tests under 47 USC 337(f)(1)(A) and 47 USC 337(f)(1)(B). Maryland believes that the Commission has the authority to provide guidance under the statute to ensure that the proposed use meets all federal requirements. Further in the Fourth Order, the Commission stated, *"we also find that we have discretion to determine, within the statute, what types of activities the communications service must support in order to satisfy the requirement that the sole or principal purpose of the service is the protection of the safety of life, health, or property"*³⁷. Maryland respectfully requests that the Commission find that the State has met its test by delimiting use of the proposed air-to-ground interoperability channels to law enforcement, EMS, and other first responder emergency services.

The final eligibility test is found in 47 USC 337(f)(1)(C). In response to the Charlotte Petition³⁸, the Commission stated, *"We find this prong satisfied as long as the communications services of a public safety (broadband) 700 MHz network are used for internal communications purposes in support of the governmental mission"*³⁹. While the Charlotte case related to a request

³⁶ *Id.* at ¶22.

³⁷ *Id.* at ¶26.

³⁸ See Petition for Declaratory Ruling filed by the City of Charlotte, NC in Docket 06-229 dated March 7, 2011.

³⁹ See Fourth Report and Order in Docket 06-229 adopted on July 20, 2011 at ¶29.

for declaratory judgment in a broadband matter, the Commission’s guidance is also instructive for land mobile radio services. Again, Maryland will only use these frequencies in support of its governmental missions related to law enforcement, emergency medical services, and other emergency services such as the direction of fire fighters or other first responders. No commercial activity will occur on these channels.

Maryland would also like to address coordination issues. Since this spectrum is not licensed anywhere in the United States, from a practical perspective, limited coordination is needed. However, Maryland hopes the Commission will once again consider the NPSTC Petition for Rule Making and permit the expansion of this program to all parts of the United States. It is also important to note that Maryland developed a statewide 700 MHz channel plan for Maryland FiRST and coordinated its development with the District of Columbia, Delaware, Pennsylvania, Virginia, and West Virginia. To that end, we have developed experience with 700 MHz coordination protocols that will be carried over to the use of secondary trunking channels.

To facilitate communications, Maryland has communicated drafts of this Petition with all of the adjoining Statewide Interoperability Coordinators (“SWICs”) and obtained their concurrence prior to submitting the Petition to the Commission for action. Maryland believes that if the Commission releases the Petition for Public Comments, each of the adjoining state SWICs, as well as the District of Columbia, will provide comments in support of the Petition.

Additionally and while the frequencies incorporated in the Petition are not under the Regional Planning Committees (“RPCs”), but the State governments, we have shared drafts of the Petition with each of the adjoining RPCs⁴⁰. In Table B of this Petition, Maryland has also identified the immediately adjacent channel above and below the secondary interoperability

⁴⁰ Regional Planning Committees 20, 28, 36, 42, and 44.

frequency. Each secondary interoperability frequency is paired by a nationwide interoperability frequency. Since these channels are under the management of the states, Maryland will coordinate any fixed base use of secondary interoperability channels.

With respect to the eight General Pool channels which are immediately adjacent to the secondary interoperability channels, Maryland proposes to coordinate any fixed base station in multiple ways to prevent interference. In Table B of the Petition, Maryland has identified adjacent General Pool channels and where Regional Planning Committee Twenty allotted 700 MHz channels. In many cases, the counties proximate to the proposed locations of any fixed base stations using the secondary interoperability channels operate mature 800 MHz systems and may never require the 700 MHz spectrum. In several of Maryland's counties, the State and county governments are discussing the integration of State and local first responders into the Maryland FiRST system which may further delimit the need for adjacent 700 MHz channels.

However, if an eligible applicant in an area proximate to a proposed fixed base station operating on the secondary interoperability channels desires to use the relevant frequency, Maryland believes that interference would still be avoided. When the Commission established the 700 MHz band plan, all General Pool channels were developed with individual 6.25 KHz channel pairs. These channels are grouped into four channel "blocks" for use as (two-channel pairs) P25 12.5 KHz or (four-channel pairs) 25 KHz frequencies.

Typically in Region 20, 700 MHz licensees have used the lower two channels in the block for their P-25 frequencies. As a result, in most parts of Maryland, 12.5 KHz from the upper two channels of the block would serve as a "guard band" between a General Pool 12.5 KHz frequency and a secondary trunking frequency. This strategy provides sufficient separation for secondary trunking channels 101-102, 181-182, and 819-820.

Regardless of the channel plan, when necessary, Maryland will coordinate with affected adjoining states and RPCs and provide a 60 dBu interference contour to ensure that there is no possibility of adjacent channel interference from a fixed base station operating on a secondary trunking channel. In some cases where the potential of interference cannot be mitigated, Maryland will not use the secondary trunking channel. Table B provides detailed information relative to the strategies proposed to mitigate the possibility of interference.

There is also the issue of the practical coordination of day-to-day channel use. Although this Petition relates only to the State of Maryland and the governmental and commercial air ambulances travelling into Maryland, the State has looked forward relative to the issue of coordinating channel use if the Commission acts on the NPSTC Petition and permits the channels to be used on a nationwide basis, which Maryland would strongly support.

The framework for this Petition is the fact that there are eight P25 channel pairs assigned to secondary trunking interoperability. Maryland would propose to use a subset of these channels if the Commission acts on the NPSTC Petition. One channel pair would be used for command and control of aircraft on a statewide basis through SYSCOM. Similarly, another channel pair would be used for physician consultation. A channel tentatively identified as 7GRND88 would also be reserved for emergency ground-to-air communications and used only by ground personnel to alert aircraft to immediate dangers to life and safety when utilizing improvised landing and take-off zones. Two other channels would be used for communications with law enforcers. All channel use would be coordinated with each adjoining state through the SWIC of each state and the District of Columbia.

In addition to our coordination with NPSTC, the Maryland State Police have started to coordinate the proposed use of these channels with the Airborne Law Enforcement Association

(“ALEA”)⁴¹. It is the hope of MSP Aviation that the use of these eight channels would be established on a nationwide basis to promote interoperability during disasters or other national events requiring extraordinary aircraft first responder support. Maryland’s need for direct communications with on-ground first responders is not unique, and it is anticipated that the 7GRND88 channel could be implemented on a nationwide basis.

The goal of this work is to establish a nationwide purpose for each of the eight channels, incorporate national channel names through NPSTC and the American National Standards Institute (“ANSI”), and coordinate channel use with each of our adjoining states and the District of Columbia. This kind of coordination is essential if a regional catastrophe occurs.

With respect to EMS, SYSCOM believes that it is essential to have communications with every governmentally owned or commercial aircraft flying in or to Maryland when responding to the emergency so that critically injured patients are air lifted to the most appropriate medical treatment center expeditiously. This could require the re-direction of aircraft in flight from an intended medical facility to another emergency resource center. Maryland believes that this kind of emergency medical service command and control is essential in the saving of lives and as such, is in the public interest.

If the Commission approves the NPSTC Petition or similar Waiver Petitions from neighboring states, the establishment of nationwide channel purposes, along with ANSI approved universal channel names, creates the predicate for effective aircraft emergency communications. If an adjoining state files a similar Petition for Waiver, Maryland will coordinate with each adjoining state as to network access codes (“NAC”) and the assignment of channels. If the Waiver is approved, Maryland will employ the \$293 NAC used on all other

⁴¹ <http://www.alea.org/>

nationwide 700 MHz interoperability channels. If the Commission approves the Maryland Petition and subsequently the NPSTC Petition, Maryland will have a base of experience to offer to the country from which national models might be structured. Notwithstanding all of the above, Maryland will coordinate with the SWICs of neighboring states and relevant Regional Planning Committees to ensure that no harmful interference arises from the use of secondary trunking channels.

CONCLUSION

The State of Maryland submits this Petition for Waiver and believes that the facts included herein meet the Commission's high hurdle tests for compliance with the provisions of Section 1.925 of the rules and respectfully requests the granting of this Petition for Waiver. Additionally, Maryland believes that the intended uses incorporated within this Waiver Petition meet all of the requirements of 47 USC 337(f)(1) as to eligibility.

Time is of the essence as Maryland must meet the Commission's narrowbanding mandate. Maryland anticipates placing system components on the air this summer for comprehensive testing and, again, meeting the narrowbanding mandate. The expedited processing of this Petition for Waiver is requested, and the State of Maryland looks forward to working with the Commission's staff to resolve any concerns arising from the review of this Petition.

/s/

Ray Lehr
State of Maryland Statewide Interoperability Director

Table A – List of Proposed 700 MHz Air-to-Ground Interoperability Frequencies

Tentative Channel Name	Base Frequency	Mobile Frequency	
7AIR58 7AIR58D	769.13125 769.13125	799.13125 769.13125	
7AIR60 7AIR60D	769.63125 769.63125	799.63125 769.63125	
7AIR67 7AIR67D	770.13125 770.13125	800.13125 770.13125	
7AIR68 7AIR68D	770.63125 770.63125	800.63125 770.63125	
7AIR78 7AIR78D	773.11875 773.11875	803.11875 773.11875	
7AIR80 7AIR80D	773.61875 773.61875	803.61875 773.61875	
7AIR85 7AIR85D	774.11875 774.11875	804.11875 774.11875	
7GRND88 7GRND88D	774.61875 774.61875	804.61875 774.61875	This channel is reserved for on-scene air-to-ground landing and take-off control. It is used by on-scene first responders and aircraft operators to coordinate safe landings and take-offs. The primary purpose of this channel is to immediately alert aircraft operators to eminent threats to safety.

Table B – Adjacent Channel Use in Regional Planning Committee 20

Secondary Interoperability Channels	Potentially Affected Channels	Potentially Affected Channels	Comments related to General Pool Channel Allotments
21-22	19-20 General Pool	23-24 Nationwide Interoperability	Allotted by Region 20 Plan - Baltimore and Wicomico Counties (1)
101-102	99-100 General Pool	103-104 Nationwide Interoperability	Allotted by Region 20 Plan -- Somerset County (2)
181-182	179-180 General Pool	183-184 Nationwide Interoperability	Allotted by Region 20 Plan - Wicomico County and District of Columbia (3)
261-262	259-260 General Pool	263-264 Nationwide Interoperability	Allotted by Region 20 Plan - Prince George's County (4)
659-660	661-662 General Pool	657-658 Nationwide Interoperability	Allotted by Region 20 Plan - Prince George's and Talbot Counties (5)
739-740	741-742 General Pool	737-738 Nationwide Interoperability	Allotted by Region 20 Plan - Prince George's and Wicomico Counties (6)
819-820	821-822 General Pool	817-818 Nationwide Interoperability	Allotted by Region 20 Plan - Anne Arundel County (7)
899-900	901-902 General Pool	897-898 Nationwide Interoperability	Not allotted in Region 20

Strategies to Protect Adjacent Channel Licensees

- (1) Baltimore and Wicomico have mature systems operating in 800 MHz. Baltimore uses channels 17-20 for Motorola's HPD system. If 700 MHz channels are needed in Wicomico, the licensee may operate in lower half of block (channels 17-18) and use channels 19-20 in the block as a guard band. Maryland will avoid the installation of a fixed base station in the Baltimore area on channels 21-22.
- (2) Somerset County has a mature system operating in 800 MHz. If 700 MHz channels are needed in Somerset County, the licensee may apply for channels in lower half of block, channels 97-98 and use the channels 99-100 in the block as a guard band. Channels 101-102 will be used by SYSCOM for fixed stations and statewide for mobiles.
- (3) Wicomico has a mature systems operating in 800 MHz. The District of Columbia is implementing a new 700 MHz system. If the District of Columbia applies to Region 20

to use channels in the 177-180 block. Maryland will coordinate with the District to ensure that they are using channels 177-178 and not using channels 179-180. Channels 181-182 will be used by SYSCOM for fixed station as well as mobile statewide and channels 179-180 will represent the guard band between the District of Columbia at SYSCOM.

- (4) Prince George's has implemented a new 700 MHz system. Maryland will not use channels 259-260 in an area that creates interference with these channels as used in Prince George's.
- (5) Prince George's has implemented a new 700 MHz system. Talbot has a mature 800 MHz system. Maryland will not use channels 659-660 in an area that creates interference with Prince George's.
- (6) Prince George's has implemented a new 700 MHz system. Wicomico has a mature 800 MHz system. Maryland will not use channels 739-740 in an area that creates interference with this channel as used in Prince George's.
- (7) Anne Arundel operates a mature 800 MHz system. Region 20 has allocated the adjacent channel, 821-822, to Maryland FiRST. Maryland will avoid the installation of a fixed base station in the Annapolis area on channels 819-820.