

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of:

Implementation of Sections 309(j) and 337 of
the Communications Act of 1934 as Amended

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WT Docket No. 99-87

REQUEST FOR WAIVER

Pursuant to the guidelines issued in the Public Notice, DA 11-1189, DA 12-12, DA 12-90 and DA 12-246, the Petitioner, the Nebraska State Patrol (hereinafter NSP), hereby submits this Request for Waiver of the January 1, 2013 deadline for transitioning to narrowband operations in the 421 – 512 MHz UHF band.¹ As required by the waiver standard set forth in Section 1.925 of the Commission's rules, the NSP believes and will demonstrate in this petition 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; 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." This petition follows the Public Notice recommended content guidelines and addresses those facts applicable to the specific narrowband migration path as defined by the State of Nebraska through its Statewide Radio System (hereinafter SRS) project.

The NSP is headquartered in Lincoln, the capital of the State of Nebraska. The State is divided into six geographic NSP Troop Areas, currently employing statewide 476 commissioned law enforcement officers plus 20 uniformed but non-sworn security staff for State buildings. The NSP is a full service law enforcement agency responsible for enforcement of state laws throughout the 77,000 square miles of the State; it is not restricted to traffic enforcement. The

¹ Wireless Telecommunications Bureau, Public Safety and Homeland Security Bureau, and Office of Engineering and Technology Provide Reminder of January 1, 2013 Deadline for Transition to Narrowband Operations in the 150-174 MHz and 421-512 MHz bands and Guidance for submission of requests for waiver and other matters, DA 11-189, released July 13, 2011.

NSP Troopers and Investigators are charged with protecting the lives and property of our 1.8 million citizens, plus guests and travelers through the state. Two-way radio communication is critical for fulfilling this law enforcement responsibility and for officer safety.

The aging low-band VHF analog radio system, which uses wide-band technology:

The Petitioner, the NSP, currently operates and uses an aging analog low-band (30 to 50 MHz) VHF statewide wireless communications network that provides mission critical, public safety voice communications throughout Nebraska. The NSP is aware that the low-band VHF is not affected by the FCC narrowband requirement, however, this radio system relies on UHF, 421-512 MHz microwave connectivity to nineteen (19) tower sites that use wideband (25 kHz) channels and are subject to the narrowband requirement. Also, the portable radios and vehicular repeaters used as part of this low-band system use a UHF wideband frequency. The tower sites using the wideband frequencies for connectivity and the portable radio frequency that are the subject of this waiver request are listed in Addendum 1, attached hereto and made part of this waiver request. Neither the UHF site equipment nor the UHF mobile radios are narrowband capable and would need to be replaced to comply with the narrowband requirement.

The NSP is the license holder of these UHF frequencies. The NSP will no longer have a use for these frequencies once it migrates to the new SRS and the SRS is developed to the point that it is reliable. At that point, the NSP intends to relinquish these frequencies. (See Addendum 1 for the exact frequencies.)

To accomplish its mission, the NSP currently operates over 500 mobile radios along with approximately 500 vehicular repeaters in NSP vehicles and aircraft, plus around 500 portable radios on the low-band VHF system. This low-band system has served the NSP well for over 30 years but has reached its end of life. Still, it is a crucial law enforcement tool for the NSP and is needed for the NSP to fulfill its mission and to provide for officer safety.

The low-band VHF system is frequently relied on in the two Troop Areas around North Platte and Scottsbluff. These two Troop Areas have already transitioned to the SRS and are using the

SRS as their primary communications system, but frequently use the low-band VHF system as a backup system, when SRS tower sites are shut off for work, testing or are not working for other technical reasons. These Troop Areas have cause to rely on the low-band VHF system several times per month.

The low-band VHF radio system is also still used as the primary communications system in four NSP Troop areas, specifically those Troop Areas headquartered in Norfolk, Omaha, Lincoln and Grand Island. These four Troop Areas are waiting for the SRS infrastructure to be completed so that they can migrate to the SRS for use as their primary communications system. The four Troop Areas that still rely on the low-band system are located in eastern Nebraska, where approximately 75% of the State's population lives and approximately 75% of the NSP officers are stationed. It is critical for the NSP to maintain reliable two-way radio communications in the eastern two-thirds of Nebraska, until the SRS can be developed to the point that the NSP can migrate to it and rely on it for law enforcement critical missions. Until this happens, the NSP needs to be able to continue to operate our aging low-band VHF system for protection of the public and property, and for officer safety.

The Statewide Radio System or SRS:

The NSP has long been aware of the Commission's narrowband requirement as it applies to its aging low-band VHF radio system and subscriber equipment of that system. The NSP plan to comply with the narrowband requirement is to migrate to the new SRS currently under construction in Nebraska. Completion of the SRS and migration of the NSP to the SRS will mean that the NSP is fully compliant with the commission's narrowband requirement. The NSP has no reasonable alternative to this plan.

The SRS is an advanced, digital, trunked, P25 compliant radio system using VHF high-band (150 to 174 MHz) frequencies. Both the SRS infrastructure and all subscriber equipment operating on the SRS will be narrowband compliant, using 12.5 kHz or narrower channels. Each tower site will have one control channel and three talk paths. When completed, the SRS will

greatly improve interoperability, coverage and communications capability for several public safety agencies of Nebraska, including the NSP, and for public power entities as well.

The contract for the SRS requires the system to provide 95% coverage of the 77,000 square miles of Nebraska, with 95% coverage of each Troop Area, providing 95% reliability. The contract calls for fifty-one tower sites, although this number may be expanded in the future to provide improved coverage. Two Master Sites and one Tactical Operations Center are planned and all have been completed. Construction of the SRS infrastructure began in late 2008 and is continuing. Instead of building new tower sites, the SRS relies on the procurement and use of existing tower sites, from both public and private entities. Construction of this complex system that covers such a large area has been a complex technical challenge. Issues continue to present themselves and hamper the completion of the SRS.

There are two managing agencies for the SRS which are responsible for construction, operation and maintenance of the SRS infrastructure. The two managing agencies are the Nebraska Office of Chief Information Officer (hereinafter OCIO), a part of the Executive branch of the State of Nebraska, and the Nebraska Public Power District (hereinafter NPPD), a State governmental entity created separately from the State Executive branch. OCIO and NPPD are responsible for the frequency selection, frequency licensing, site selection, site preparation, system connectivity, site grounding, power, operation of the Master Sites, operation of the Technical Operations Center, and overseeing the installation and adjustment of infrastructure equipment by Motorola and other vendors. The OCIO and NPPD signed a contract with Motorola in October 2008, to manufacture and construct the site radio equipment, Master site equipment and Technical Operations Center equipment for the SRS. Initial plans were to complete the SRS by the end of 2010 so that the NSP could transition to it shortly thereafter. Difficulty in the frequency selection and delays in the SRS infrastructure have delayed the project, making it impossible for the NSP to transition to the SRS and comply with the narrowband deadline of January 1, 2013.

The SRS will be a shared system, with NSP being one of many subscriber agencies. The NSP is not a managing agency of the SRS and as such, does not have control over the construction schedule of the SRS infrastructure.

The NSP Troop Areas headquartered in Scottsbluff and North Platte have already transitioned to the SRS, however, the SRS infrastructure has not matured to the point of being entirely reliable. Tower sites fail when there is an electrical outage, a loss of connectivity, or when a thunderstorm comes through the area. Also, tower sites are frequently turned off for additional testing, maintenance or work. Such outages occur weekly, sometimes several times per week, and last from a few minutes to 24 hours or more. During such times, these Troop Areas revert to using the low-band VHF radio system as a backup communications system, until the SRS site or sites are reactivated.

The Troop Area around Grand Island transitioned to the SRS but transitioned back to the low-band VHF system due to issues with reliability and coverage. The Troop Areas around Lincoln and Omaha have not transitioned to the SRS, as the work on the infrastructure has not progressed to the point that it is ready and reliable in those Troop Areas. The majority of the Troop Area around Norfolk has not transitioned to the SRS, although the western most part of that Troop Area, comprising of twelve officers, has transitioned to the SRS.

Initially the subscribers on the SRS will include six (6) state agencies, including the NSP, plus NPPD, Lincoln Electric System and Lincoln County. The list of participating agencies and entities continues to grow, with the US Marshals Service and other federal agencies joining as user agencies.

To date, the following steps have been taken to plan for, initiate and complete the transition to narrowband operations:

1. Funding: Funding and spending authority for the SRS, was secured through the Nebraska Legislature in 2007. A total of \$58,620,788 was appropriated by the Legislature to seven state agencies starting in Fiscal Year 2007 - 2008 and continuing for seven subsequent fiscal years. This funding included the purchase of the SRS infrastructure by OCIO and the purchase of SRS radio equipment by the subscriber agencies including the NSP. \$20,307,019 was appropriated to OCIO for the construction of the SRS infrastructure.

Subsequently, the funding plan was strengthened through an agreement between OCIO and NPPD, in which NPPD agreed to fund 46% of the SRS infrastructure costs with OCIO funding the remaining 54% of the infrastructure costs.

2. System Contract: Following the release of a Request for Proposals in March 2008, Nebraska received four communication system proposals. After a lengthy evaluation and selection process, Motorola was selected as the vendor and a contract was executed between OCIO, NPPD and Motorola in October, 2008. Under this contract, the tasks of building the SRS are split. OCIO and NPPD are responsible for tasks such as frequency selection, licensing, site preparation, electrical power to the sites and connectivity to the sites. Motorola is responsible for providing and installing radio equipment for the infrastructure; including site equipment for fifty-one tower sites, the two Master Sites, and the Technical Operations Center.
3. Frequency Plan: OCIO was responsible for finding and licensing the appropriate VHF frequencies. Finding available frequencies slowed progress on the SRS; however, a frequency plan was completed in December 2011. OCIO informs us that they have applied for SRS frequency licenses for all fifty-one tower sites and have received all but a few. These remaining few licenses are in the 170 MHz range, obtained by sharing spectrum with federal agencies that will be subscriber agencies. OCIO anticipates receiving these licenses from the FCC soon.
4. Master Sites: The two planned Master Sites have been completed and are fully operable. Either one can completely control the SRS for the entire state. The Master Site in Lincoln is operated by OCIO and the one in Kearney is operated by NPPD.
5. Network Operations Center: A Technical Operations Center or Network Operations Center was completed in York and is being operated by NPPD.
6. Completion of fifty-one tower sites: Fifty of fifty-one tower sites have been “completed” to the point that they can operate but some are not yet fully operable. OCIO is waiting for some FCC licenses for a few sites. Some sites require additional testing and mitigation of VHF noise issues. Currently, approximately 30 tower sites are actively used by the NSP.

7. Tower Site Noise Testing and Mitigation: Efforts are underway to test for VHF noise at the tower sites and to mitigate it in a number of ways. Noise at some sites, Pleasanton and Wolbach, has already been addressed.
8. NSP Dispatch Centers: The six NSP dispatch centers have been completed with new Motorola MCC7500 Consoles installed at all locations. A new logger was installed in Lincoln to record NSP radio traffic and a new software system, Inform, was purchased and installed to operate with this new logger. These steps were completed in 2010 and 2011.
9. NSP Subscriber Equipment: The NSP purchased Motorola XTL-5000 mobile radios, FutureCom vehicular repeaters, Motorola APX7000 portable radios and a few Motorola APX7500 mobile radios for operation on the SRS. These radios and vehicular repeaters have been purchased in numbers to satisfy our needs statewide in all Troop Areas. They are compliant with the 12.5 kHz narrowband operation requirement. The NSP completed installation of these radios and vehicular repeaters in all six Troop Areas in December 2010. Some APX7000 portable radios have been programmed and deployed in those Troop Areas already using the SRS. The remainder will be programmed and deployed to officers as the SRS becomes ready for operation in each of the remaining Troop Areas not yet using the SRS. These radios will not operate on our old low-band VHF radio system.

The NSP purchased narrowband compliant subscriber equipment and met its deadlines for installation of that subscriber equipment in December 2010, well in advance of the January 1, 2013 deadline. It also completed the installation of dispatch consoles and a logging system for the SRS well in advance of the January 1, 2013 deadline. The above steps show that the licensee, the NSP, has worked diligently and in good faith to migrate to a narrowband compliant system prior to the January 1, 2013 deadline.

The above steps also show that the NSP is fully committed to the transition to the SRS, including narrowband compliance, and has adequate funding to accomplish this. All or nearly all of the NSP equipment for operation on the SRS has already been purchased and installed.

The above steps demonstrate that the NSP and the managing agencies of the SRS are fully committed to the completion of the SRS system, which is the basis of the NSP's plan to become narrowband compliant. However, the NSP does not control the construction of the SRS infrastructure and it is the infrastructure that requires further work and completion to allow the NSP to safely use the SRS as its primary communications system.

The following steps are yet to be taken for the completion of the SRS permitting NSP's migration to the SRS:

1. Transition of Four NSP Troop Areas to the SRS: The NSP was ready to transition all of its Troop Areas to the SRS statewide, at the end of 2010. Radios were installed in all NSP vehicles and programmed and training was completed. The NSP is now in the process of reprogramming all of its radios and vehicle repeaters, statewide, with a new code plug. This revised code plug includes a revised fleet map, new frequencies for tower sites in eastern Nebraska, firmware upgrades and some programming changes. Testing of the revised code plug has been successful. The NSP is working with the local Motorola vendors to complete the reprogramming of all of its radios and vehicle repeaters. The reprogramming effort is on schedule and should be completed by sometime in August, 2012. Once this reprogramming effort has been completed, the NSP will be ready to transition the rest of the Troop Areas to the SRS. Of course, transition is dependent on completion of the SRS infrastructure.
2. Replacement of Receive and Transmit Antennas: Twenty-seven (27) tower sites have shut down when thunderstorms come through their area and the sites show that the shutdown was due to an "illegal carrier". Testing was completed and it was determined that the issue was due to the fiberglass antennas, which reacted to the electrical precipitation from the storms. A replacement antenna has been selected and an order placed for twenty (20) replacement antennas. Structural analysis is being done on seven additional sites to determine if those towers can support the same antenna or if a different lighter antenna needs to be ordered. One additional site with a different fiberglass antenna will have its antennas replaced as well, bringing the total to twenty-eight sites. Local vendors will be scheduled to perform the installation work on some of the tower

sites and their schedule will affect the replacement schedule. Replacing the transmit and receive antennas will require each of these sites to be shut off for an extended period of time, causing the NSP officers to rely on its low-band VHF radio system. Installation of the antennas is scheduled to be completed by sometime in September of 2012. Motorola system technicians will optimize each of these sites after the installation is completed, but a schedule for that process has not yet been determined.

3. Noise testing at tower sites and mitigation of noise: Noise testing at tower sites will be done by a private vendor, Bird Electronics. The testing is scheduled to be completed by sometime in August, 2012. Noise issues at some sites, specifically Wolbach and Pleasanton have been successfully mitigated. However, many more sites have been identified as needing noise mitigation. This requires a variety of solutions involving the cooperation of power companies with noisy power lines, the purchase and installation of filters, the cooperation of tower owners if antennas are to be moved and in some instances, the cooperation of others radio operators. OCIO and NPPD are responsible for mitigating the site noise. We are told the projected time for completion of the testing and mitigation is September 30, 2012.
4. Ambient noise testing in Nebraska: Bird Electronics, has also been hired by Motorola to determine accurate measurements of ambient noise in Nebraska in the VHF range. This is important to accurately determine the SRS coverage in Nebraska and is different than the site noise testing. The projected time for completion of this testing is early August, 2012.
5. Coverage testing in Nebraska has not yet started: Coverage testing will begin after the replacement of the site antennas as set out under # 2 above, mitigation of the noise at tower sites as set out under #3 above, and optimization of the new antennas as also set out in #3 above. The coverage testing will likely begin in September 2012 and proceed through the fall and winter months well into 2013. The contract for the SRS requires a delivered audio quality of 3.4 with 95% coverage in each Troop Area, 95% coverage within Nebraska and 95% reliability.
6. Completion of the SRS infrastructure: The managing agencies anticipate completion of the initial SRS project “about a year from now”, so we project completion around June 1, 2013. Until that time, there will be frequent instances that SRS tower sites are shut

down for testing or additional work. We anticipate that some of these instances will be for 30 minutes and some will be for 24 hours or longer. During such times, the NSP needs to rely on its low-band VHF radio system for two-way communications to perform its work and to provide for officer safety.

OCIO and NPPD, the SRS managing agencies, either have or are facing the following challenges:

1. Planning for and construction of a shared digital trunked radio system that will cover 77,000 square miles is a very complex and difficult task. Identifying and obtaining VHF frequencies that do not conflict with those used in Nebraska or surrounding states proved more difficult than expected and caused the SRS project to progress more slowly than planned. Negotiating and getting agreements signed to use both public and private tower sites proved more difficult than anticipated and resulted in delays.
2. A variety of system issues required and continues to require investigation, testing and resolution; many of these issues have proven to be complex and delayed completion of the project. Such issues include connectivity with multiple vendors, signal propagation involving tower shadowing and noise issues, antenna issues and sites failing, and Master Site programming required to operate two master sites for a single system. Such issues often appear during the initial construction of a system and must be dealt with during the start up of a complex shared radio system, such as the SRS. Nebraska's system is no exception. Once these issues are resolved, a shared system like the SRS tends to be fairly stable.
3. The VHF frequency range was selected by OCIO for the SRS, due to its ability to cover long ranges and because Nebraska consists of 77,000 square miles with many rural areas with very low population density. However, VHF frequencies also have greater noise issues and addressing those noise issues is particularly difficult. Local sources of noise interference have also proven to be difficult to identify and resolve. Ambient noise in Nebraska in the VHF range has also been identified as more of a problem than originally anticipated. Nebraska also has the largest area of sand hills in the United States and this

type of sandy soil appears to adversely affect the performance of VHF. It is believed that the vast areas of sand hills in Nebraska are compounding this noise problem.

There is still a lot of work yet to be completed on the SRS infrastructure to get the system to the point that it is fully operable and reliable. The NSP has been told by the managing agencies that the initial SRS infrastructure will be completed “around a year from now”, approximately June 1, 2013.

Summary and waiver request:

The NSP’s plan to comply with the Commission’s narrowband requirement involves transitioning to the SRS. It is the NSP’s plan to transition to the SRS as soon as the infrastructure is completed to the point that it is ready and reliable for law enforcement operations. The NSP is eager to transition to the new SRS and has no other reasonable option to becoming narrowband compliant.

The NSP has worked diligently and in good faith to become narrowband compliant by purchasing new radio equipment that is narrowband compliant and having that equipment installed in its vehicles statewide. Our migration to the SRS is dependent on completion of the SRS infrastructure and these circumstances warrant a temporary extension of the deadline so that the managing agencies of the SRS can complete its construction and development. Accordingly, the NSP hereby submits this petition, seeking a waiver of the narrowband requirement for a period of one year, until December 31, 2013, to allow the NSP to continue to rely on our existing low-band VHF radio system with its wide-band UHF links, when necessary, until that time.

The NSP does not intend to wait any longer than necessary to comply with the narrowband mandate. The NSP will move to using the SRS as its primary communications system statewide as soon as the development of the SRS infrastructure permits. The NSP plans to revert to the low-band system as needed to maintain two- way communications as the SRS infrastructure is developed to the point that it is reliable in all Troop Areas. When the frequencies for which the waiver is sought are no longer needed, the NSP will promptly cancel the licenses. Granting this

petition will ensure that the NSP will continue to have effective two way communications; allowing the Patrol to serve and protect the people and visitors of the State of Nebraska, along with their property. Granting this waiver will also be in the public interest as it will provide for officer safety for the Troopers and Investigators of the Nebraska State Patrol.

The NSP urges the Commission to recognize that the above implementation program warrants such an extension and that the amount of time requested by this waiver petition is reasonable and necessary. Therefore, the Nebraska State Patrol respectfully requests the Commission to grant this request for a waiver of the narrowband requirement from January 1, 2013 until December 31, 2013.

Respectfully submitted,



Colonel David A. Sankey
Superintendent of Law Enforcement and Public Safety
Signed July 9, 2012

ADDENDUM 1

Frequencies using wideband technology

	Tower Site	Site Transmission Frequency	Lincoln Transmission Frequency
KAB308 Lincoln	Beatrice	456.375	451.375
KAB308 Lincoln	Mead	452.150	457.150
KAB308 Lincoln	Auburn	457.500	452.500
	Tower Site	Site Transmission Frequency	Omaha Transmission Frequency
KAB309 Omaha	Mead	452.150	457.150
	Tower Site	Site Transmission Frequency	Norfolk Transmission Frequency
KAB310 Norfolk	Winnebago	457.250	452.250
KAB310 Norfolk	Platte Center	457.150	452.150
KAB310 Norfolk	Carroll	456.150	451.375
	Tower Site	Site Transmission Frequency	Ainsworth Transmission Frequency
KAB314 Norfolk	Crookston	456.375	451.375
	Tower Site	Site Transmission Frequency	Norfolk Transmission Frequency
WPFJ417 Norfolk	Hartington	457.450	452.450
	Tower Site	Site Transmission Frequency	Grand Island Transmission Frequency
KAB331 Grand Island	Ayr	452.100	457.100
KAB331 Grand Island	Kearney	451.225	456.225
KAB331 Grand Island	Cotesfield	457.150	451.150
	Tower Site	Site Transmission Frequency	North Platte Transmission Frequency

KAB313 North Platte	Arnold	456.375	451.375
KAB313 North Platte	Cozad	451.225	456.225
KAB313 North Platte	Ogallala	457.150	452.150
			Theford Transmission Frequency
KAB313 North Platte	Whitman	465.150	460.150
	Tower Site	Site Transmission Frequency	North Platte Transmission Frequency
KAB312 North Platte	Wauneta/ Benkelman	457.225	452.225
	Tower Site	Site Transmission Frequency	Scottsbluff Transmission Frequency
KAB315 Scottsbluff	Oshkosh	457.250	452.250
KAB315 Scottsbluff	Rushville	456.225	451.225
KAB315 Scottsbluff	Crawford	452.500	457.500
	Statewide		
KA6007 mobile repeater	Mobile	465.525	