

Attachment 1
Northrop Grumman Systems Corporation
Application for Special Temporary Authority

By this application, Northrop Grumman Systems Corporation (“Northrop Grumman”) is seeking special temporary authority (“STA”) to resume, between July 30, 2015 and January 19, 2016, a testing and demonstration program that it had been operating previously under the STA that expired in May 2015, pursuant to Call Sign WG9XHQ. The program will permit Northrop Grumman to operate a trial 700 MHz Long Term Evolution (“LTE”) network for testing hypothetical first responder communications in the New York City metro area and the Northern Virginia metro area outside of Washington, DC (the “Demo Network”).¹ This STA covers the Northern Virginia wireless portion of the network – a separate STA covering the New York operations was filed on June 25, 2015.

The purpose of the Demo Network will remain to develop, implement, test and demonstrate how a primary state public safety network operations center (“NOC”), with local content and local control, will interface with a regional network core as part of the First Responder Network Authority (“FirstNet”) nationwide network. The network core in the Demo Network houses and is used to test three critical first responder features to ensure the integrity of the first responder network: (1) identity management; (2) cyber security; and (3) applications delivery. Northrop Grumman is also continuing to assess the various components of our Demo Network to ensure that we provide public safety with a “best of breed” solution.

Overview of the Demo Network. The Demo Network uses 758-768 MHz as the downlink band and 788-798 as the uplink band for the transmission of test local first responder communications in New York and Northern Virginia. One indoor base station is deployed in McLean (Northern Virginia), and one indoor base station is deployed in Brooklyn (New York City). A fully redundant wireline backhaul link has been deployed to couple the operations in New York City and Northern Virginia to a common LTE-evolved packet core. The instant STA proposes that twenty experimental end-user devices will be provisioned for testing and demonstration by Northrop Grumman employees indoors at the same McLean location as the base station.² As it

¹ Northrop Grumman’s trial operations are not, and will not be, used in actual mission-critical operations or in the delivery of live transmissions to protect life, property, or safety.

² As Northrop Grumman has previously reported to the Commission, it has implemented internal procedures to monitor and maintain control of the handsets and will promptly respond to any reports of harmful interference. Each unit is registered to its recipient, and Northrop Grumman maintains a record of each device so that each can be easily recalled at any time during testing and when testing is complete.

has in the past, the Commonwealth of Virginia, licensee of WPTZ775, the licensee of the spectrum to be used by Northrop Grumman and the only licensee potentially impacted by operation of the Demo Network in Northern Virginia, has consented to the grant of the STA subject to certain conditions.³ A copy of the Commonwealth's consent is annexed as Exhibit 1, and Northrop Grumman agrees to the conditions set forth therein.

Northrop Grumman has aimed to take every step possible to ensure that configuration of the Demo Network closely resembles the real-world, anticipated architecture of the FirstNet core network while assuring that it will not interfere with public safety use of the spectrum. The Northrop Grumman Innovation Center in McLean models the regional network core. Northrop Grumman's application for its prior STA provides a detailed description of how the Demo Network replicates a nationwide distributed network for FirstNet, including local hubs, regional hubs and the nationwide network core; and how FirstNet can leverage existing commercial and municipal infrastructure for first responders communications through the core network.⁴ In addition to continuing the evolution of the many features described by Northrop Grumman in its earlier filings, Northrop Grumman continues to improve the Demo Network by adding additional features such as its recently implemented location-based technology.

Northrop Grumman's investment to date in the Demo Network is approximately \$3 million.

Important Visits by Stakeholders Are Still Occurring. Since the Demo Network first entered its operational phase, Northrop Grumman has hosted at its New York and Northern Virginia sites a variety of important public safety stakeholders. The STA requested by this application is needed: (a) to complete visits by important stakeholders, including FirstNet (some of whom will be visiting for a second or third time to view the improvements Northrop Grumman has made since the Demo Network commenced operations); (b) to complete testing; and (c) to share with FirstNet and the Commission important lessons learned from deployment and operation of the Demo Network. To date, the following stakeholders have visited the Demo Network:

- The Head of the Public Safety Advisory Council – Harlin McEwen
- Association of Public-Safety Communications Officials (APCO) – Jeff Cohen, Roger Wespe
- The Department of Homeland Security (via WidePoint, which was awarded a large BPA contract with the Department of Homeland Security)
- National Institute of Standards and Technology (“NIST”) / Public Safety

³ With such consent, Northrop Grumman has obtained all government approvals necessary for the continued operation of the Demo Network, save for the Commission's grant of this application.

⁴ See FCC File No. 0913-EX-ST-2014.

Communications Research (PSCR) – Dereck Orr and his technical team

- Commonwealth of Virginia Spectrum Manager – David Warner
- The State of Maryland – Ray Lehr and Lori Stone
- The State of Michigan – Brad Stoddard
- LAPD Chief Information Officer
- Deputy CIO from the FBI – Dean Hall
- The CTO of Customs and Border Patrol – Wolf Tombe
- U.S. Army – Combat Training Centers Program Representatives
- The Social Security Administration
- London Metropolitan Police
- Acting FirstNet GM – TJ Kennedy
- FirstNet CTO – Ali Afrashteh
- FirstNet Deputy CTO – Jeff Bratcher
- FirstNet Technical Team
- Department of Justice
- US Marshals Service
- U.S. Postal Service
- U.S. Census Bureau
- Department of Justice
- FCC and NTIA Leaders

Northrop Grumman is working to schedule visits to the Demo Network by the following:

- The Department of Information Technology and Telecommunications in New York City (DoITT)
- The Mayor’s Office of Citywide Emergency Communications in New York City
- New York Police Department (NYPD)
- Fire Department of New York City (FDNY)
- FirstNet Statewide Interoperability Coordinators from all 50 states, territories, and 556 tribal nations
- Members of Congress or members of their staff, including: Rep. Greg Walden (R-OR); Rep. Anna Eshoo (D-CA); Rep. John Shimkus (R-IL); Rep. Bob Latta (R-OH); Rep. Leonard Lance (R-NJ); Rep. Jim Matheson (D-UT); Rep. Mike Pompeo (R-KS); and Rep. Renee Ellmers (R-NC)
- FEMA
- U.S. Secret Service
- The Virginia State Police

Further Matters. Northrop Grumman confirms the following:

1. Northrop Grumman understands that any STA granted by the Commission pursuant to this application will have secondary status, and that Northrop Grumman must accept any interference from the licensees of the spectrum and their lessees.

2. To the extent the Commonwealth or any lessee deploys service over the Commonwealth's spectrum that suffers harmful interference from Northrop Grumman's operations under the requested STA, Northrop Grumman will, within twenty-four (24) hours of receiving notice of such interference, cure such interference by modifying or, if necessary, ceasing operation of, the Demo Network. Moreover, Northrop agrees that, to the extent the FCC grants STAs to any third parties for use of the Commonwealth's spectrum in the vicinity of the Northern Virginia portion of the Demo Network, Northrop will work cooperatively with such third parties to coordinate operations without the need for intervention from the Commonwealth.
3. Northrop understands that the Commonwealth and FirstNet have the right to monitor its operations.
4. Northrop also understands that if additional time for its trial is needed beyond the requested STA, it will be required to file an application with the FCC and, once again, seek consent from the Commonwealth.



COMMONWEALTH of VIRGINIA

Office of the Governor

Brian J. Moran
Secretary of Public Safety
and Homeland Security

June 29, 2015

Mr. Royce Kincaid
FirstNet Campaign Director
Northrop Grumman
7555 Colshire Drive
McLean, VA 22102

Re: Consent for Special Temporary Authority

Dear Mr. Kincaid,

On October 20, 2014, the Commonwealth of Virginia, the sole guardian of the 'State' 700 MHz spectrum reference, WPTZ775, provided consent for the Special Temporary Authorization ("STA") formerly held by Northrop Grumman Systems Corporation ("Northrop Grumman") (Call Sign WG9XHQ). The most recently validated STA expired on May 18, 2015, and Northrop Grumman is seeking the Commonwealth's endorsement of its application with the Federal Communications Commission ("FCC") for a new STA to resume identical operations of its LTE demo network from July 20, 2015, to January 19, 2016. The Commonwealth contingently grants endorsement of Northrop Grumman's application for a new STA, subject to the following terms and conditions, which shall be made part of the documentation of this request:

- The resultant FCC license matches exactly to the application and resulting documentation that was supplied in good faith by Northrop Grumman to the Commonwealth of Virginia.
- Operations are strictly limited to ground floor indoor (in-building) operations at 7575 Colshire Drive, McLean, Virginia 22102, unless authorized by the Commonwealth of Virginia. The primary radiator coordinates (Latitude and Longitude) are as stated on the STA:

38 55 17 North
77 12 23 West

- The primary radiators under test shall not exceed 1 watt of power.
- It shall be further understood that in consideration of the Commonwealth's consent to this STA, and the FCC's grant of this STA, Northrop Grumman automatically agrees and consents to all terms and conditions as outlined by the Commonwealth of Virginia in this consent letter. Furthermore, Northrop Grumman assumes all causalities, risks, damages, and liabilities that may result from the operations associated with this STA or



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any resultant STA associated with this request.

- Any deviation from this agreement will result in revocation of any and all STAs approved by the Commonwealth of Virginia. However, Northrop Grumman agrees to indemnify and hold the Commonwealth harmless from any liability, loss, or damage it may suffer as a result of claims, demands, costs, or judgments against it arising out of the STA under Northrop Grumman's operation.
- The Comsearch results from testing the radiators for the LTE demo network to ensure no interferences were filed with the FCC on October 18, 2013.
- Absence of these stated terms and conditions from the published STA documentation will null and void the STA endorsement from the Commonwealth of Virginia.
- Northrop Grumman will notify the Interoperability Coordinator, the Commonwealth Spectrum Manager, and the Virginia State Police if any upcoming test associated with this STA deviates from the operations authorized under the STA.
- Northrop Grumman shall notify the STARS NOC prior to commencing any test. Northrop Grumman shall not conduct any test authorized under the STA without the concurrence of the Virginia State Police.

Should the Commonwealth experience any verifiable interference resulting from operations associated with this STA request, Northrop Grumman and any of its partners or associates will immediately discontinue all operations until the source of the interference is fully mitigated. In addition, Northrop Grumman will supply all equipment and personnel necessary to mitigate the interference to the satisfaction of the Commonwealth of Virginia.

The Commonwealth can revoke and nullify the STA at any time immediately upon notice. Moreover, the Commonwealth of Virginia or its employees will not be held liable for any ramifications that may be associated with an unplanned revocation of this STA.

If Northrop Grumman agrees to the terms and conditions upon which the Commonwealth's endorsement is given, please acknowledge the same by having an authorized agent of Northrop Grumman sign the attached acknowledgement and returning a copy to me.



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Office of the Governor

Brian J. Moran
Secretary of Public Safety
and Homeland Security

Seen and Agreed:

Signature: Karen L. Hull

Date: 6/30/15

Karen L. Hull

Division Director of Contracts

Northrop Grumman Information Systems

7555 Colshire Drive

McLean, VA 22102

Signature: Adam K. Thiel

Date: 07-15-15

Adam K. Thiel

Deputy Secretary of

Public Safety & Homeland Security

Commonwealth of Virginia

1111 East Broad Street, 3rd Floor