

Eastern Shore of Virginia 911 Commission

STATEMENT of WORK

Narrowband Radio Project

May 25, 2012

Table of Contents

<i>Introduction</i>	<i>1</i>
<i>1. Contract</i>	<i>5</i>
<i>2. Project Kickoff</i>	<i>6</i>
<i>3. Work Review</i>	<i>7</i>
<i>4. Fixed Equipment Specifications</i>	<i>9</i>
<i>5. Order Processing</i>	<i>12</i>
<i>6. System Configuration Planning</i>	<i>13</i>
<i>7. Fixed Equipment</i>	<i>16</i>
<i>8. System Installation</i>	<i>37</i>
<i>9. Finalize</i>	<i>39</i>
<i>10. Transition to Service</i>	<i>41</i>
<i>11. Project Administration</i>	<i>43</i>
<i>12. Preliminary Diagrams</i>	<i>45</i>

INTRODUCTION

Governmental entities and public safety agencies on the Eastern Shore of Virginia operate several land mobile radio communications systems in the frequency bands between 150MHz and 470 MHz, which are subject to the requirement to operate in a 12.5KHz narrowband (or spectrally equivalent) mode by January 1, 2013. Considerable work has been accomplished to identify equipment that requires replacement, and to offset the anticipated reduction in coverage for some users resulting from narrowband operations.

This document sets out the basic description, expectations, and understanding for the Eastern Shore of Virginia 911 Commission (“The Commission”) to comply with impending narrowband requirements of the Federal Communications Commission (FCC). Work includes the replacement of equipment as necessary, reconfiguration and conversion to narrowband operations for capable equipment, and enhancements or relocation of equipment to new or alternate sites.

Programming, installation of firmware upgrades, realignment or adjustment of parameters, and testing of equipment will be the responsibility of the Narrowbanding Vendor (“The Vendor”). Coordination for those efforts is the responsibility of the Commission. Such work is not anticipated to impede the Vendor’s approved work schedule or the subsequent acceptance of services.

Work includes the provision, delivery, installation, and integration of new base station transceivers and receivers, and control stations, narrowbanding of existing fixed equipment, as well as the expansion of the existing Motorola Consoles at the Eastern Shore of Virginia 911 Center.

Expansion will include the support for new operational configurations and capabilities during the narrowband conversion. Existing fixed equipment, where not replaced, shall be converted to narrowband operation to ensure compliance.

The work includes all necessary parts, labor, software, firmware, installation, programming, and testing services to effect the modifications, expansion and transition. The statement of work also describes changes to associated control or base stations necessary for the transition, which may not be specifically enumerated or detailed here, but are required for the proper operation and functioning of the system as described. The Narrowbanding Vendor is the responsible contractor.

At the successful completion of this work, the following goals will have been achieved:

- Conversion of seven VHF mobile relays to narrowband operation at five sites
- Conversion of two UHF mobile relays to narrowband operation at two sites
- Replacement of two VHF base stations with narrowband-capable units at two locations
- Removal of four VHF base stations and one UHF base station at three locations (three decommissioned and two replaced units)
- Conversion of two existing VHF base stations at two sites to narrowband operation

- Conversion of seven VHF control stations and two UHF control stations at three dispatch locations
- Replacement of 11 existing VHF receivers with narrowband-capable units at four sites (five are relocated to new sites)
- Conversion of 11 VHF receivers at three sites for narrowband operation
- Relocation of five existing VHF receivers at three locations to two new locations and conversion to narrowband operation (from two existing sites to one, one relocation to another shelter on site)
- Relocation of one existing UHF receiver (to different shelter at same site) and conversion to narrowband operation
- Installation of two new eight port VHF receiver multi-couplers
- Installation of one new four port UHF receiver multi-coupler
- Reconfiguration of two VHF multi-couplers (removal from existing MSF5000 stations and reuse with replacement receivers and base stations at two sites)
- Addition of two UHF diversity (satellite) receivers and a voting comparator to the Northampton Sheriff's Dispatch Channel (three receive sites)
- Addition of two UHF diversity (satellite) receivers and expansion of the existing voting comparator for the Accomack County Sheriff's Dispatch Channel (four receive sites)
- Addition of one diversity (satellite) receiver and a voting comparator to the Accomack County Public Schools System
- Replacement of five existing receiver comparators (19 receivers --14 existing, four relocated, plus one new) at the Eastern Shore 911 Center (existing equipment will be preserved and used for maintenance spares, or for the expansion of other similar existing comparators as outlined)
- Abandonment of the existing Craddockville and Jamesville receive only sites
- Relocation of Public Safety fixed equipment (two mobile relays and two comparators) from the existing shelter at Mappsville to the NOAA Weather Station Shelter at the same site
- Conversion of console connection/operation of three operational channels (currently contained within one multi-frequency station that is not narrowband capable – to be converted to three standalone control stations located at the 911 Center)
- Other conversion and relabeling of consoles and comparator equipment to reflect configuration changes and locations
- Transition of the listed infrastructure for Public Safety and Public Service Agencies on the Eastern Shore of Virginia to operation in compliance with the narrowband mandate

- Connection or reconnection of audio circuits, and adjustment of audio levels as necessary to support the replacement, reconfiguration, and relocation of equipment in accordance with this SOW

A summary view of the work at fixed equipment locations is provided in the following chart. Negative numbers in the relocation entries show where equipment is being relocated from. Replacement is reflected where new equipment is being provided at the same location as the existing equipment. The Mappsville relocations reflect removal from one shelter at the site and reinstallation of the same equipment in another shelter at the same site (only one site is counted for those relocations). Shaded equipment quantities are already accounted for in other activities (relocated stations also being narrowbanded) – they do not reflect additional quantities of equipment.

EASTERN SHORE OF VIRGINIA 911 COMMISSION
 NARROWBAND RADIO PROJECT

		ESVA911	NCSO	Sta 9	Townsend	Jamesville	Cheriton	Eastville	Wallops	Craddockville	Belle Haven	Mappsville (Existing)	Mappsville (NOAA)	Accomac STARS	Accomac Public Safety	Qty	Sites
Console Work																	
	Modification/Reconfiguration	1														1	1
Mobile Relays																	
VHF	Relocate											-1	1			1	1
	Narrowband							3			1	1	1		1	7	5
	Convert to Voted											1				1	1
UHF	Relocate											-1	1			1	1
	Narrowband							1					1			2	2
	Convert to Voted							1								1	1
Base Stations																	
VHF	Provide/Install												1			1	0
	Remove											1			2	3	2
	Provide/Replace						1									1	1
	Narrowband													1	1	2	2
UHF	Remove														1	1	1
Control Stations																	
VHF	Provide/Install	3														3	1
	Narrowband	2	3	2												7	3
UHF	Narrowband		1	1												2	2
Auxiliary Receivers																	
VHF	Provide/Install										3		3			6	2
	Remove								2			3				5	2
	Provide/Replace						3								3	6	2
	Relocate					-2				-2	4	-1	1			5	4
	Narrowband				2				3		4		1	6		16	5
UHF	Provide/Install				1				1		1				1	4	4
	Install (provided)														1	1	1
	Relocate									-1	1					1	2
	Narrowband										1					1	1
Receiver Multi-couplers																	
VHF	Provide/Install									1			1			2	2
	Remove								1							1	1
	Reconfigure (Reuse)						1								1	2	2
UHF	Provide/Install									1						1	1
Comparators																	
	Provide/Install							1				1				2	2
	Remove	5														5	1
	Relocate											-2	2			2	1
	Provide/Replace	5														5	1
	Site Modules	18						3				2				23	3
	Site Modules (provided)												2			2	1
	Command Module (provided)												1			1	1
	Repair												1			1	1

Table 1 Fixed Equipment Work Summary by Location

1. CONTRACT

1.1 CONTRACT AWARD (MILESTONE)

The Eastern Shore of Virginia 911 Commission and the Narrowbanding Vendor will execute a contract for the provision of equipment, software, firmware and services, and both parties receive all the necessary documentation. The documentation will be based on this Statement of Work and associated summary equipment list.

1.2 CONTRACT ADMINISTRATION

Vendor Responsibilities:

- ◆ Assign a single point of contact for coordination with the Commission.
- ◆ Assign resources and provide equipment necessary for project implementation.
- ◆ Schedule the project kick-off meeting with the Commission.
- ◆ Deliver Certificate(s) of Insurance including those for all subcontractors prior to the commencement of any site or field work.

Commission Responsibilities:

- ◆ Assign a Project Manager, as the single point of contact responsible for Customer signed approvals.
- ◆ Assign other resources necessary to ensure completion of project tasks for which the Commission is responsible.
- ◆ Procure and provide other equipment and services that are outside of the scope of this document, but required for system implementation (audio circuits and new antenna systems as required).

Completion Criteria:

- ◆ Contract Executed.
- ◆ Both the Vendor and the Commission assign all required resources.
- ◆ Project kickoff meeting is scheduled.

2. PROJECT KICKOFF

Vendor Responsibilities:

- ◆ Conduct a project kickoff meeting at Eastern Shore of Virginia 911 Center.
- ◆ Ensure key project team participants attend the meeting.
- ◆ Review the roles of the project participants to identify communication flows and decision-making authority between project participants.
- ◆ Review the overall project scope and objectives with Commission representatives.
- ◆ Review the resource and scheduling requirements with the Commission.
- ◆ Review the Project Schedule developed in conjunction with Commission and its representatives to provide input and address upcoming milestones and/or events.
- ◆ Review the teams' interactions (Vendor and Commission), meetings, reports, milestone acceptance, and Commission's participation in particular phases.
- ◆ Develop a proposed communications plan (reporting, status updates, and activity coordination).
- ◆ Provide summary notes of the Kickoff Meeting.

Commission Responsibilities:

- ◆ Commission's key project team participants attend the meeting.
- ◆ Review Vendor and Customer responsibilities.
- ◆ Approve project communications plan, schedule, and reporting expectations.

Completion Criteria:

- ◆ Project kick-off meeting completed
- ◆ Project Communications Plan (contacts, preferences, and intervals)
- ◆ Schedule Development
- ◆ Meeting notes that identify the next action items

3. WORK REVIEW

3.1 REVIEW CONTRACT PLANS

Vendor Responsibilities:

- ◆ Meet with the Commission project team.
- ◆ Review the operational requirements of affected agencies and the impact of those requirements on various equipment configurations.
- ◆ Assist in the establishment of a defined baseline for the system equipment configurations and identify any required or recommended accessory equipment or features, special product requirements and their impact on system implementation.
- ◆ Review functional descriptions and verify sufficiency of equipment lists and plans to accomplish the work described in this document.
- ◆ Develop and discuss the proposed Transition Plan and methods to document a detailed procedure.
- ◆ Develop site plans.
 - Conduct site evaluations to capture site details of the current system design and to determine site readiness (when necessary).
 - For new or replacement equipment, confirm each site's ability to accommodate/support proposed equipment based upon physical capacity.

Commission Responsibilities:

- ◆ Commission's key project team participants attend the meeting.
- ◆ Make timely decisions, according to the Project Schedule.
- ◆ Prepare and submit applications for frequency coordination and FCC licensure as necessary to comply with narrowband conversion and reporting requirements .

Completion Criteria:

- ◆ Receipt of shipped equipment list and updated installation schedule.
- ◆ Incorporation of any deviations from the proposed system into the contract documents accordingly.
- ◆ Confirmation from the Vendor that the equipment listed is sufficient, appropriate, and necessary to meet the requirements of the statement of work.

- ◆ Lock down of the implementation plan in preparation for subsequent project phases such as order processing, manufacturing, site preparation and installation.

3.2 PLAN APPROVAL (MILESTONE)

- ◆ Commission executes a plan approval milestone document.

4. FIXED EQUIPMENT SPECIFICATIONS

4.1 GENERAL

The work contemplated by this Statement of Work includes the incorporation of new equipment into an existing system, as well as the replacement of other equipment, which is not capable of conversion to narrowband operation.

To the extent possible, replacement equipment is expected to have specifications and capabilities, and the ability to operate in an environment similar to that of the equipment which will replace.

Unless specified otherwise, the primary power source for all provided equipment shall be 110VAC, 60 Hz. Equipment shall be designed to retain its configuration programming in non-volatile memory.

All fixed equipment provided shall be capable of operating with “wireline control” unless otherwise specified, or not required for the configuration of replacement equipment. Wireline controlled equipment connections shall have a characteristic impedance of 600 Ohms when terminated, or 1200 Ohms bridging. Wireline interfaces shall have a maximum audio output level adjustable over the range of +6 dBm to -16 dBm, and have an input “line sensitivity” adjustable over the range of -25 dBm to +2 dBm. Transmitters and multi-channel equipment shall be capable of remote control via EIA Standard tone sequences (2175 Hz Guard plus function). Wireline connectivity shall be by four wire audio (4WA) only where required by the application, and two wire audio (2WA) in all other instances.

Where new equipment is being added, it is expected to be compatible with the system which is being expanded or modified (CTCSS, CDCSS, Status Tones, wireline connectivity, tone control schemes, power supply requirements, etc.)

For radio frequency equipment, High Band VHF stations shall be tunable/operable on any transmit or receive frequency between 150.8 and 162 MHz. UHF stations shall be tunable/operable on any transmit or receive frequency between 450 and 470 MHz.

Except as stated otherwise, fixed antenna systems are being reused, or are being provided by the purchaser. Interface to the antenna systems shall utilize “N-Type” connections.

All transmitting equipment shall be type accepted by the Federal Communications Commission for the radio service and equipment classification.

4.2 EQUIPMENT CLASSES

4.2.1 Mobile Relay and Base Station Equipment

Mobile relay and base station equipment shall be designed to mount in standard EIA 19” racks, and shall be provided in 30” high locked cabinets unless otherwise specified. Equipment shall be wireline controlled (even if not currently connected), and operate with tone remote control. Mobile relay equipment shall operate in a single channel mode unless otherwise specified. Base stations shall be capable of operating on at least four frequencies, but configured for single or multi-channel operation in accordance with the requirements of the application. Equipment shall provide a maximum transmitter power output of at least 100 Watts, adjustable to at least 40 Watts.

4.2.2 Control Stations

Unless specified otherwise or required for the installation location, control station equipment shall be configured as mobile radios with power supplies and tone remote control adapters, or integrated desk top consoles. Control Station equipment shall operate in a single-channel mode unless otherwise specified. Control stations shall be provided with rack mount shelves where required for the installation location. Control station equipment shall provide a minimum transmit power output of at least 40 Watts, adjustable down to 10 Watts.

4.2.3 Auxiliary Receivers

Auxiliary receiver equipment shall be designed to mount in standard EIA 19” racks. Equipment shall be wireline controlled and be configurable to operate as a standalone receiver (no status tone), or in conjunction with voting comparators utilizing either 1950Hz or 2175Hz status tones. Auxiliary receivers shall operate in a single channel mode. Equipment shall have a receive sensitivity of 0.35 uV or less at its antenna port, and shall operate in a narrowband (12.5 KHz channel spacing) environment.

4.2.4 Receiver Multi-couplers

As specified by site, where more than one receiver operates at a location, receiver multi-couplers shall be provided and installed. Receiver multi-couplers shall include a bandpass input filter, low noise amplifier, and power splitter. Multi-couplers shall provide sufficient ports for the receivers to be served, but a minimum of four. The configuration of the multi-couplers shall provide an overall system gain of 0-6 dBm for the configuration provided.

4.2.5 Voting Comparators

Voting comparators shall be designed to mount in standard EIA 19" racks, and connect to base station or auxiliary receivers via wireline control. Voting comparators shall be capable of utilizing either 1950 Hz or 2175 Hz status tones, and shall be capable of providing transmit audio and keying, when connected to an associated mobile relay. Voting comparators shall continuously display the status of each active receiver connection (squelched, unsquelched, voted, and failed). Comparators shall be capable of connecting to 12 receivers within the basic chassis, by the addition of site modules, but shall be equipped only with the number of modules for the receivers currently shown in their operational description.

5. ORDER PROCESSING

5.1 PROCESS EQUIPMENT LIST

Vendor Responsibilities:

- ◆ Prepare a comprehensive equipment list, and review/validate for correctness and sufficiency by checking for valid model numbers, quantities, versions, compatibility and feasibility for equipment and option selection, frequency sensitive data and delivery lead times.
- ◆ Enter order into an order tracking and fulfillment system maintained by the Vendor.
- ◆ Create shipping plans and instructions. Shipping plans shall include sample labels and carry complete equipment shipping information, which direct the timing, method of shipment, and ship path for ultimate destination receipt.
- ◆ Create equipment orders.
- ◆ Reconcile order to the equipment list(s) and contract requirements.
- ◆ Procure accessory equipment necessary to complete the installation.
- ◆ Procure third-party equipment and installation accessories as needed.

Commission Responsibilities:

- ◆ Approve shipping location(s) and confirm addresses or instructions for final destinations.
- ◆ Complete and provide Tax Certificate information verifying tax status.

Completion Criteria:

- ◆ Provision of equipment lists which contain the quantities, model numbers, version, options, and delivery data.
- ◆ All equipment orders are accepted and acknowledged.

5.2 EQUIPMENT ORDERS COMPLETED (MILESTONE)

- ◆ All major equipment items are ordered with anticipated delivery dates provided to the Commission.

6. SYSTEM CONFIGURATION PLANNING

6.1 DEVELOP PROGRAMMING TEMPLATES

Vendor Responsibilities:

- ◆ Assist the Commission in reviewing final console configuration and layout plan,
- ◆ Participate in a meeting to review mobile relay, base station, control station and console configurations or templates in accordance with discussion.
- ◆ Document the approved fixed equipment templates or configurations in hard copy and revisable electronic formats using readily available software.

Commission Responsibilities:

- ◆ Facilitate User Group meetings to discuss operational issues and user requirements.
- ◆ Forward electronic copies of discussion documents to project team members and stakeholders for their review and comment.
- ◆ Review Selective Signalling usage and propose alternate CTCSS/CDCSS codes where interference is currently experienced
- ◆ Evaluate sample layouts and provide feedback.
- ◆ Approve templates.

Completion Criteria:

- ◆ Templates and configurations completed and approved by the Commission.

6.2 DEVELOP SITE SUPPORT REQUIREMENTS

Vendor Responsibilities:

- ◆ Provide electrical and space requirements for each piece of equipment to be installed as new, or as a replacement to existing equipment within Commission-provided facilities.
- ◆ Provide heat load information for each equipment rack to be installed in Commission provided facilities.

Commission Responsibilities:

- ◆ Secure permits, regulatory approvals, easements, power, and Telco connections.
- ◆ Provide site access and escorts as necessary in accordance with the implementation schedule. No special equipment or vehicles will be provided by the Commission.
- ◆ Supply adequately sized electrical service, backup (generator) power including the installation of conduit, circuit breakers, outlets, etc., at each equipment location in accordance with the Vendor's support requirements developed during the plan review.
- ◆ Provide detailed information on antenna system equipment and proposed locations, installation materials and termination points/connectorization methods.
- ◆ Provide telecommunications interconnection backboard space at each installation location.
- ◆ Provide for all necessary wall or roof penetrations on existing buildings for transmission lines.
- ◆ Where required by the installation conditions or environment, and where pathways are not already established, provide and install appropriately-sized conduits for any "in-house" control wiring.

Completion Criteria:

- ◆ All sites are ready for equipment installations in compliance with published code requirements, manufacturer recommendations and recognized standards or practices.

SPECIAL NOTE:

Due to the existing conditions and variation of equipment, it is not feasible within the current scope of this statement of work for either party to completely renovate, rehabilitate, or modify the existing facilities so that they comply with established or published guidelines for site installations.

Except as specifically noted, there is no expectation or requirement by the Commission for the Vendor to execute such work to improve existing installations, or to expand or improve on the support facilities.

There is no expectation or requirement by the Vendor that the Commission execute such work as would be necessary to make the existing installations or facilities “compliant” with installation or grounding guidelines (e.g. “Motorola R-56” or “Harris AE/LZT 123”) as a condition of the installation, connection, operation or warranty of Vendor supplied equipment.

Any new installations shall be executed such that they do not diminish the current conditions, or fail to use proper methods, materials, and practices to effect a professional installation. (e.g. The Vendor is expected to bond new equipment to ground systems as they exist, but is not expected to install new ground bars, upgrade existing ground systems, install transient protectors or uninterruptible power supplies on supply circuits, where none presently exists.)

Statements regarding the use of proper installation materials or practices shall not be construed to require full compliance with any grounding or installation Guidelines except for those that are required by local building codes.

7. FIXED EQUIPMENT

7.1 APPLICABLE TO ALL LOCATIONS

7.1.1 Site Planning

7.1.1.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Conduct site walks to collect pertinent information from the work locations (e.g., floor space, rack space, existing equipment, location of Telco demarcations, power, existing facilities, access points, etc.).
- ◆ In conjunction with the Commission or its representative, prepare record drawings of the site showing the planned or recommended location of equipment and documenting/confirming Commission support requirements.

7.1.1.2 *Responsibilities of the Commission*

- ◆ Provide Electromagnetic Emission (EME) plans for the site as needed to comply with FCC requirements, prior to starting work.
- ◆ Provide power circuits for all equipment, and leased radio control circuits that extend between sites for the connection of equipment.
- ◆ Review and approve design information within five calendar days of submission by the Vendor.
- ◆ Provide and install antenna systems with surge suppression/grounding as required to support new or relocated stations or facilities.
- ◆ Install, replace, or repair antenna systems for new fixed network equipment, or if found to be deficient, faulty, or incorrect by the Vendor.

7.1.2 Resources, Information, and Tools

Except as specifically noted, the Vendor is not to assume that the Commission has any of the necessary tools, test equipment, software, programming cables, manuals or formal system documentation necessary to complete the work.

7.2 EASTERN SHORE OF VIRGINIA 911 CENTER

The Vendor's scope of work related to the 911 Center is primarily that which is necessary to modify, convert, connect, and adjust the equipment (consoles, recorders, voting comparators, control stations, audio circuits, etc.) for operation in the new system environment as generally described in this document.

Work includes the provision of the necessary labor, equipment (cards, modules, appliqués), connectors, adapters, fasteners, cabling and wiring, software and firmware necessary to effect the conversion work and cutover to the new operation. The work includes, but is not limited to the following:

7.2.1 Control Stations

7.2.1.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Convert the existing VHF Kenwood TK series control station for Channel F2 to narrowband operation, adjust paging encoder tone levels, and test.
- ◆ Convert the existing VHF Kenwood TK series control station for Channel F9 to narrowband operation, and test.
- ◆ Provide, install, optimize, and test a wireline tone remote controlled VHF transceiver and associated antenna system with surge suppression/grounding for access to Channel F3.
- ◆ Provide, install, optimize, and test a wireline tone remote controlled VHF transceiver and associated antenna system with surge suppression/grounding for access to Channel F7.
- ◆ Provide, install, optimize, and test a wireline tone remote controlled VHF transceiver and associated antenna system with surge suppression/grounding for access to Channel F15.

7.2.2 Voting Comparators

7.2.2.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Provide a single wall-mounted cabinet to house all comparators, similar to the existing configuration and location.

- ◆ Provide, as necessary, any in-house replacement cable to demarcation points or equipment locations within the 911 Center.
- ◆ Remove and preserve the five existing SpectraTac comparators, which are connected via leased audio circuits to the various sites as outlined elsewhere.
- ◆ Provide, configure, connect, optimize, adjust audio levels, and test compatible replacement voting comparators as detailed below. Each comparator shall be configured to provide voted audio to the communications console and associated recording system.

7.2.2.1.1 F1 Voting Comparator

The six remote sites are:

- Cheriton
- Mappsville
- Accomac STARS
- Belle Haven (New – Replaces Craddockville)
- Wallops Flight

7.2.2.1.2 F3/F4 Voting Comparator

- ◆ The two remote sites are:
 - Mappsville
 - Accomac Public Safety

7.2.2.1.3 F7/F8 Voting Comparator

- ◆ The two remote sites are:
 - Belle Haven (New – Replaces Craddockville)
 - Accomac Public Safety

7.2.2.1.4 F11 Voting Comparator

- ◆ The five remotes sites are:
 - Cheriton STARS
 - Mappsville
 - Accomac STARS
 - Belle Haven (New – Replaces Craddockville)
 - Wallops Flight

7.2.2.1.5 F12 Voting Comparator

- ◆ The four remote sites are:
 - Cheriton STARS
 - Accomac STARS
 - Belle Haven (New – Replaces Craddockville)
 - Mappsville

7.2.3 Console Modification:

7.2.3.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Perform all work in a methodical, sequenced, and coordinated manner to minimize or prevent system outages or disruption to normal emergency service and law enforcement operations.
- ◆ Provide the necessary equipment, accessories, hardware, software, firmware feature keys or licenses, and labor to install any additional console modules needed by the reconfiguration.
- ◆ Reprogram, reconnect and re-label the console as necessary to support the conversion or replacement of the existing control stations, and base stations.
- ◆ Provide and install cards as necessary, reconfigure, reprogram, and re-label the console as to support the operation of separate control stations for channels F3, F7, and F15, which are now contained in a single station located at Accomac Public Safety Site.
- ◆ Perform any necessary feature programming or configuration, jumper settings, and adjustments to effect the needed modifications.
- ◆ Ensure proper audio adjustment and level balancing ensuring that audio output levels remain in conformance with leased line interface requirements.
- ◆ Perform functional verification testing as necessary to demonstrate proper operation of the equipment once reconfigured or converted.
- ◆ Reconfigure cross connections for the existing recording system to ensure continued operation and continuity of archived recordings and verify proper operation.

7.2.3.2 Responsibilities of the Commission

- ◆ Provide adequate floor space, HVAC, backup (generator) power, outlets, lighting, and cable routing based upon published manufacturer recommendations and recognized standards or practices.
- ◆ Provide all power (both utility and emergency) during the installation.

7.3 NORTHAMPTON COUNTY SHERIFF'S DISPATCH

The Vendor's scope of work related to the Northampton County Sheriff's Dispatch Center is primarily that which is necessary to modify and convert the existing control station equipment and consoles for operation in a narrowband system environment.

Work includes the provision of the necessary labor and equipment to effect the conversion of control stations to operate on the narrowbanded systems. The work includes, but is not limited to the following:

7.3.1 Control Stations

7.3.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing VHF CDM1250 control station for Channel F2 to narrowband operation, adjust paging encoder tone levels, and test.
- ◆ Convert the existing VHF CDM1250 control station for Channel F9 to narrowband operation, and test.
- ◆ Convert the existing VHF CDM1250 control station for the Chesapeake Bay Bridge Tunnel to narrowband operation, and test.
- ◆ Convert the existing UHF CDM1250 control station for the Northampton County Sheriff's Dispatch Channel to narrowband operation, and test.

7.4 BACKUP COMMUNICATIONS SITE (STATION 9)

Station 9 (Onancock Volunteer Fire Department) serves as an alternate site to the 911 Center, and provides limited backup capabilities for essential operations. It can also function to support special events. The equipment at this site consists of three backup control stations, and one tone remote control that connects to the Backup Base Station on F1 at the Accomac Public Safety Site (Sheriff's Office).

The Vendor's scope of work related to narrowband conversion generally includes, but is not limited to the following:

7.4.1 Backup Control/Base Stations

7.4.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing VHF CDM control/base station for Dispatch channels to narrowband operation, adjust paging encoder tone levels, and test.
- ◆ Convert the existing VHF CDM control/base station for Tactical channels to narrowband operation, and test.
- ◆ Convert the existing UHF CDM control/base station for Law Enforcement channels to narrowband operation, and test.

7.4.1.2 Responsibilities of the Commission

- ◆ Provide or coordinate Vendor access to the site location.
- ◆ Participate in and/or coordination in the testing of narrowbanded equipment and paging functionality.

7.5 TOWNSEND SITE

The Townsend Site is a receive only location, which currently supports two channels within one equipment chassis in an outdoor cabinet. The site will be expanded to include a third UHF receiver.

7.5.1 Auxiliary Receivers

7.5.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing MASTRIII auxiliary receiver for Channel F2 to narrowband operation, adjust audio levels, and test (single shared Chassis with receiver below).
- ◆ Convert the existing MASTRIII auxiliary receiver for Channel F9 to narrowband operation, adjust audio levels, and test (single shared Chassis with receiver above).

- ◆ Provide, install (within existing cabinet), connect, optimize, and test an UHF auxiliary receiver having wireline control for the Northampton County Sheriff's Department. This receiver will connect via wireline control back to a voting comparator located at the Eastville Navy site.
- ◆ Provide local control wiring and required surge suppression between the Telco demarcation point and the new UHF receiver.

7.5.1.2 Responsibilities of the Commission

- ◆ Provide or coordinate Vendor access to the site location.
- ◆ Furnish and Install one new UHF antenna system with surge suppression/grounding for the new auxiliary receiver.
- ◆ Furnish a leased audio circuit to the Eastville Site for the Northampton County Sheriff's Department Dispatch channel.
- ◆ Furnish a suitable outdoor equipment cabinet similar to the existing unit, if insufficient space exists in current cabinet.

7.6 JAMESVILLE SITE

The Jamesville Site is a receive-only location, which currently supports two channels within one equipment chassis in an outdoor cabinet. The site will be abandoned, and the receivers will be relocated to the Belle Haven Site.

7.6.1 Auxiliary Receivers

7.6.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Remove and preserve the existing auxiliary receiver for Channel F2 for relocation to the Belle Haven Site.
- ◆ Remove and preserve the existing auxiliary receiver for Channel F9 for relocation to the Belle Haven Site.
- ◆ Remove and preserve the existing outdoor cabinet.
- ◆ Remove power and telecommunications wiring from exterior cabinet, and decommission/disconnect and isolate circuits as necessary.

7.6.1.2 Responsibilities of the Commission

- ◆ Remove existing antenna system (antenna, cabling, protectors).

7.7 CHERITON SITE

The Cheriton Site is the property of the Commonwealth of Virginia, Department of State Police. It currently houses a backup base station and multiple monitoring receivers. The equipment is not capable of conversion to narrowband, and is planned for replacement. No change in the operation or use of the site or equipment is envisioned or required. Access to the site is controlled, and requires an escort, which will be provided by the Commission.

7.7.1 Base Station

7.7.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Remove the existing MSF5000 Base station and cabinet, and return.
- ◆ Provide and install/anchor a new EIA open equipment rack in the space vacated, for the new equipment. Install/restore rack grounding and power circuits as required to support the replacement equipment.
- ◆ Remove, remount, reconfigure, rewire, and reuse the existing four-port receiver multi-coupler for the replacement receivers.
- ◆ Provide, install, optimize, and test a wireline tone remote controlled four-frequency (minimum) VHF transceiver with an associated antenna relay. This station will replace the existing station, which is not capable of conversion to narrowband operation.
 - Program the base station to operate narrowband in a T4-4R mode with the associated receivers, configured as shown below:
 - Tx: F1, F10, F11, F12
 - Rx: F12

7.7.2 Auxiliary Receivers

7.7.2.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Provide, install, optimize, and test three single frequency wireline connected VHF auxiliary receivers, sharing a single antenna by connection to the receiver multi-coupler in the station above, and operating in a simplex mode.
 - Program the auxiliary receivers to operate in a single channel mode on the following receive channels:
 - Rx: F1
 - Rx: F10
 - Rx: F11
 - Adjust audio levels for equipment to be consistent with those of the removed equipment, as well as audio level standards and further direction provided by the Virginia State Police. (Connection and control of these stations is supported via multiple audio circuits provided by the Virginia State Police microwave system.)

7.8 EASTVILLE SITE

The Eastville Site and tower are the property of the Department of Defense, US Navy. WHRO-TV owns a shelter at the base, which currently houses multiple mobile relays for Northampton County, and serves as their primary location. Equipment at this site is capable of narrowband conversion and operation. Additionally, a voting comparator will be added to the Northampton County Sheriff's Dispatch Channel. No other change in the operation or use of the site or equipment is envisioned or required. Access to the site is controlled, and requires an escort, which will be provided by the Commission.

7.8.1 Mobile Relays

7.8.1.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Convert the existing VHF MASTRIII mobile relay for Channel F2 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing VHF MASTRIII mobile relay for Channel F9 to narrowband operation, adjust audio levels, and test.

- ◆ Convert the existing VHF Kenwood mobile relay for Northampton County Public Schools to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing UHF MTR3000 mobile relay for Northampton County Sheriff's Office to narrowband operation, adjust audio levels, and interface/integrate with the voting comparator described below.

7.8.1.2 Responsibilities of the Commission

- ◆ Provide or coordinate Vendor access to the site location.

7.8.2 Voting Comparator

7.8.2.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide, install, connect, optimize, and test a voting comparator (three sites) having wireline tone control (within existing cabinet) for the Northampton County Sheriff's Department. The comparator will be connected to auxiliary receivers located at the Belle Haven and Townsend Site receivers, as well as the collocated mobile relay receiver. Configure the comparator to control the associated mobile relay transmitter, and provide voted audio for retransmission.
- ◆ Test, adjust audio levels, and re-label comparators for F2 and F9 as necessary due to the relocation of receivers from the Jamesville Site to the Belle Haven Site.

7.8.2.2 Responsibilities of the Commission

- ◆ Provide or coordinate Vendor access to the site location.
- ◆ Furnish a leased audio circuit to the Townsend Site for the Northampton County Sheriff's Department Dispatch channel.
- ◆ Furnish a leased audio circuit to the Belle Haven Site for the Northampton County Sheriff's Department Dispatch channel.
- ◆ Coordinate the reconfiguration of two leased circuits that currently provide service for the Jamesville Site to provide connection to the receivers being relocated to the Belle Haven Site.

7.9 WALLOPS FLIGHT FACILITY SITE

The Wallops Flight Facility Site is owned by NASA, and is a receive only location, which currently supports three VHF channels. The site will be expanded to include a fourth UHF receiver.

7.9.1 Auxiliary Receivers

7.9.1.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F1 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F3 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F11 to narrowband operation, adjust audio levels, and test.
- ◆ Provide, install, connect, optimize, and test an UHF auxiliary receiver having wireline control for the Accomack County Sheriff's Department. This receiver will connect via wireline control back to an existing voting comparator located at the Mappsville site.

7.9.1.2 *Responsibilities of the Commission*

- ◆ Provide or coordinate Vendor access to the site location.
- ◆ Furnish and Install a new UHF antenna system with surge suppression/grounding for the new auxiliary receiver.
- ◆ Furnish a new leased audio circuit to the Mappsville site for the Accomack County Sheriff's Dispatch channel.

7.10 CRADDOCKVILLE SITE

The Craddockville Site is a receive only location, which currently supports five channels. The site will be abandoned, and the receivers that are considered to be narrowband capable and serviceable will be relocated to the Belle Haven Site.

7.10.1 Auxiliary Receivers

7.10.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Remove and return the existing VHF Astro-Tac auxiliary receiver for Channel F1.
- ◆ Remove and return the existing VHF Micor auxiliary receiver for Channel F8.
- ◆ Remove and return the existing VHF Astro-Tac auxiliary receiver for Channel F11.
- ◆ Remove and return the existing UHF Astro-TAC auxiliary receiver for Accomack Sheriff's Dispatch Channel.
- ◆ Remove and return the existing VHF receiver multi-coupler.
- ◆ Remove and preserve the existing VHF MTR2000 auxiliary receiver for Channel F12 for relocation to and reuse at the Belle Haven Site.

7.11 BELLE HAVEN SITE

The Belle Haven Site currently supports one mobile relay. It will be expanded to also support nine auxiliary receivers that are new, or relocated from the Jamesville and Craddockville Sites.

7.11.1 Mobile Relay

7.11.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing VHF MTR2000 mobile relay for Channel F7 to narrowband operation, adjust audio levels, and test.

7.11.2 Auxiliary Receivers

7.11.2.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for Channel F1. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center. (Note - this replaces the similar Craddockville Receiver.)
- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for Channel F8. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center. (Note - this replaces the similar Craddockville Receiver.)
- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for Channel F11. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center. (Note - this replaces the similar Craddockville Receiver.)
- ◆ Reinstall, connect, convert to narrowband operation, optimize, and test the existing VHF MTR2000 auxiliary receiver for Channel F12 from the Craddockville Site. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center.
- ◆ Provide, install, connect, optimize, and test a UHF auxiliary receiver having wireline control for the Accomack Sheriff's Dispatch Channel. This receiver will connect via wireline control back to the voting comparator located at the Mappsville Site. (Note - this replaces the similar Craddockville Receiver.)
- ◆ Reinstall, connect, convert to narrowband operation, optimize, and test the existing VHF MASTRIII auxiliary receiver for Channel F2 from the Jamesville Site. This receiver will connect via wireline control back to the voting comparator located at the Eastville Site.
- ◆ Reinstall, connect, convert to narrowband operation, optimize, and test the existing VHF MASTRIII auxiliary receiver for Channel F9 from the Jamesville Site. This receiver will connect via wireline control back to the voting comparator located at the Eastville Site.
- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for the Accomack County Public Schools Channel. This receiver will connect via wireline control back to the voting comparator located at the Mappsville Site.

- ◆ Provide, install, connect, optimize, and test an UHF auxiliary receiver having wireline control for the Northampton County Sheriff's Dispatch Channel. This receiver will connect via wireline control back to the voting comparator located at the Eastville Site.

7.11.2.2 Responsibilities of the Commission

- ◆ Provide or coordinate Vendor access to the site location.
- ◆ Furnish two leased audio circuits to the Mappsville Site (Accomack Public Schools channel and Accomack County Sheriffs Dispatch channel).
- ◆ Furnish three leased audio circuits to the Eastville Site (Northampton County Sheriff's Dispatch, and channels F2, and F9).
- ◆ Furnish four leased audio circuits to the Eastern Shore of Virginia 911 Center for channels F1, F8, F11, and F12.

7.11.3 Receiver Multi-couplers

7.11.3.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide, install, connect, and test an eight port VHF receiver multi-coupler for all VHF stations at this site.
- ◆ Provide, install, connect, and test a four port UHF receiver multi-coupler for the UHF receivers at this site.

7.11.3.2 Responsibilities of the Commission

- ◆ Provide or coordinate Vendor access to the site location.
- ◆ Furnish and Install a new single UHF antenna system with surge suppression/grounding for auxiliary receivers.
- ◆ Furnish and Install a new single VHF antenna system with surge suppression/grounding for auxiliary receivers.

7.12 MAPPSVILLE SITE

Work at the Mappsville Site includes the installation of all new public safety equipment and the relocation of all existing public safety equipment to the NOAA Weather Radio

Transmitter Shelter. Equipment associated with the Accomack County Public Schools system will remain, or be installed at the current location. The Vendor's scope of work related to narrowband conversion generally includes, but is not limited to the following:

7.12.1 Site Preparation

7.12.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide and install/anchor a new EIA open equipment rack in the new NOAA Weather Transmitter Shelter for all equipment to be relocated. Install rack grounding and power circuits as required to accommodate the equipment to be relocated from the current shelter.
- ◆ Provide all internal telecommunications wiring between the installed equipment and the Telco demarcation point, and provide necessary secondary surge suppression devices on control circuits.

7.12.2 Mobile Relays

7.12.2.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Relocate the existing VHF MTR2000 mobile relay for Channel F3 to the NOAA Weather Shelter, convert to narrowband operation, reconnect to relocated voting comparator, adjust audio levels, and test.
- ◆ Relocate the existing UHF MTR2000 mobile relay for the Accomack County Sheriff's Dispatch Channel to the NOAA Weather Shelter, convert to narrowband operation, reconnect to relocated voting comparator, adjust audio levels, and test.
- ◆ Reroute/relocate existing transmission lines for the two stations above to the new NOAA Weather Transmitter Building, providing any necessary replacement coaxial jumpers, grounding, weatherproofing, and surge suppression for the relocated lines.
- ◆ Convert the existing VHF XPR6300 mobile relay for Accomack County Public Schools to narrowband operation, modify and connect as necessary for voting receiver operation, adjust audio levels, and test.

7.12.3 Base Stations

7.12.3.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Provide, install, optimize, and test a VHF base station with wireline tone control (4WA) for channel F1 in the new shelter location. This station will operate in a simplex, conventional analog mode. It will continue to be controlled by the Eastern Shore 911 Center console, and connected to the associated F1 voting comparator at that location with no changes in functionality or use.
- ◆ Remove and return the existing VHF Mitrek Base Station.
- ◆ Reroute/relocate the existing transmission line to the new NOAA Weather Transmitter Building, providing any necessary replacement coaxial jumpers, grounding, weatherproofing, and surge suppression for the relocated line.

7.12.3.2 *Responsibilities of the Commission*

- ◆ Arrange for the relocation of the demarcation point for the existing 4WA leased audio circuit to the Eastern Shore of Virginia 911 Center for the control of the base station and connection of its receiver to the voting comparator.

7.12.4 Auxiliary Receivers

7.12.4.1 *Responsibilities of the Vendor*

The Vendor Shall:

- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for Channel F1. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center.
- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for Channel F4. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center.
- ◆ Provide, install, connect, optimize, and test a VHF auxiliary receiver having wireline control for Channel F11. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center.
- ◆ Relocate, connect, convert to narrowband operation, optimize, and test the existing VHF MTR2000 auxiliary receiver for Channel F12.

- ◆ Remove and return the existing VHF auxiliary receivers for F1, F4, and F11.

7.12.4.2 Responsibilities of the Commission

- ◆ Arrange for the relocation of the demarcation point to the New NOAA Weather Shelter for four existing leased audio circuits to the Eastern Shore of Virginia 911 Center.

7.12.5 Voting Comparators

7.12.5.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide, install, connect, optimize, and test a voting comparator (two sites) for the Accomack County Public Schools Channel. This comparator will connect via wireline back to an auxiliary receiver located at the Belle Haven Site receiver, as well as the collocated mobile relay. Configure the comparator to control the associated mobile relay transmitter, and provide voted audio for retransmission.
- ◆ Relocate the existing Spectratrac Voting comparator for Channel F3 to the new shelter, reconnect to receivers and mobile relay, adjust audio levels, and test.
- ◆ Relocate the existing Spectratrac Voting comparator for the Accomack County Sheriff's Dispatch Channel to the new shelter, add two additional site modules and a channel control module (modules to be provided by ESVA from other decommissioned equipment), reconnect to and properly interface with collocated mobile relay, adjust audio levels, and test. Voted receivers will be located at the Wallops Flight Facility (new), Belle Haven (replaces Craddockville), and Accomack Public Safety (new), as well as the collocated mobile relay receiver.
- ◆ Label all voting comparator modules with updated information.

7.12.5.2 Responsibilities of the Commission

- ◆ Furnish a new leased audio circuit from the existing shelter to the Belle Haven Site for the Accomack Public Schools channel.
- ◆ Furnish a new or reconfigured leased audio circuit from the new NOAA Weather shelter location to the Belle Haven Site for the Accomack County Sheriffs Dispatch channel (replaces the Craddockville Circuit/Site).
- ◆ Furnish a new leased audio circuit from the new NOAA Weather shelter location to the Wallops Flight Facility Site for the Accomack County Sheriffs Dispatch channel.

- ◆ Furnish a new leased audio circuit from the new NOAA Weather shelter location to the Accomac Public Safety Site for the Accomack County Sheriffs Dispatch Channel.
- ◆ Arrange for the relocation of the demarcation point to the New NOAA Weather location for the Wallops Flight Facility Site circuit for channel F3.

7.12.6 Receiver Multi-couplers

7.12.6.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide, install, connect, and test a VHF receiver multi-coupler for all VHF stations at the New NOAA Weather Shelter.
- ◆ Reroute/relocate the existing transmission line to the new NOAA Weather Transmitter Building, providing any necessary replacement coaxial jumpers, grounding, weatherproofing, and surge suppression for the relocated line.

7.13 ACCOMAC STARS SITE

The Accomac STARS Site is the property of the Commonwealth of Virginia, Department of State Police. It currently houses a backup base station and multiple monitoring receivers. All equipment is capable of conversion to narrowband. No change in the operation or use of the site or equipment is envisioned or required. Access to the site is controlled, and requires an escort, which will be provided by the Commission.

7.13.1 Base Stations

7.13.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing VHF MTR2000 five-channel base station to narrowband operation, adjust audio levels, and test.
 - Once converted, the station shall continue to operate narrowband in a T5-5R simplex mode with the associated receivers, and be configured as shown below:
 - Tx: F1, F11, F12, F14, HEAR
 - Rx: F1

7.13.2 Auxiliary Receivers

7.13.2.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F11 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F12 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F14 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for the HEAR Channel to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F3 to narrowband operation, adjust audio levels, and test.
- ◆ Convert the existing MTR2000 auxiliary receiver for Channel F7 to narrowband operation, adjust audio levels, and test.

7.14 ACCOMAC PUBLIC SAFETY SITE

The Accomac Public Safety Site is located adjacent to the County Sheriff's Office location. It currently houses mobile relays, base stations and multiple monitoring receivers.

7.14.1 Mobile Relay

7.14.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing VHF MTR2000 mobile relay for Channel F5 to narrowband operation, adjust audio levels, and test.

7.14.2 Base Station

7.14.2.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Convert the existing VHF Quantar base station for Channel F1 to narrowband operation, adjust audio levels, and test.
- ◆ Remove and return one existing inactive MSF5000 Base station and cabinet currently located in this shelter.
- ◆ Remove one existing MSF5000 Base station from its cabinet, and return (Note: neither station's transceiver is being replaced, but three associated auxiliary receivers are being replaced, and one UHF auxiliary receiver is being added – all receivers shall be mounted within this cabinet).
- ◆ Remount, reconfigure, rewire, and reuse the existing four-port receiver multi-coupler for the replacement receivers.
- ◆ Remove and return the Micor UHF MED station currently located in this shelter.

7.14.3 Auxiliary Receivers

7.14.3.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide, install, connect, optimize, and test a replacement VHF auxiliary receiver having wireline control for Channel F4. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center.
- ◆ Provide, install, connect, optimize, and test a replacement VHF auxiliary receiver having wireline control for Channel F6. This receiver will connect via wireline control back to the Eastern Shore of Virginia 911 Center consoles.
- ◆ Provide, install, connect, optimize, and test a replacement VHF auxiliary receiver having wireline control for Channel F8. This receiver will connect via wireline control back to the voting comparator located at the Eastern Shore of Virginia 911 Center.
- ◆ Install, connect, optimize, and test a new UHF auxiliary receiver having wireline control for the Accomack County Sheriff's Department. This receiver will connect via wireline control back to an existing voting comparator located at the Mappsville site. This receiver will connect to the former MED channel antenna system.

7.14.3.2 Responsibilities of the Commission

- ◆ Identify and coordinate Vendor access to the site location.
- ◆ Furnish an UHF MTR2000 auxiliary receiver for the Accomack County Sheriff's Dispatch Channel.
- ◆ Furnish three leased audio circuits to the Voting Comparators located at the Eastern Shore of Virginia 911 Center (Channels F4, F6, and F8).
- ◆ Furnish one leased audio circuit to the Voting Comparator located at the Mappsville Site for the Accomack County Sheriff's Dispatch Channel.

7.15 MISCELLANEOUS WORK

Any miscellaneous work or materials not specifically called for in this statement of work, but which result from specific methods used or procedures undertaken by the Vendor or its contractors and subcontractors to effect the work shall be considered to be included, unless specifically called out as optional, extra, or excluded services in the resulting quotation.

Should the site locations, conditions, or requirements change or vary from that described in this document significantly enough that they require a change in scope or level of effort from what is reflected here, then at the request of the Commission, the Vendor shall document the extent of the required changes and prepare a change notice request, making proper revisions or corrections to the description and locations of the work, changes in project scope or materials, and providing any resulting adjustments to project costs and schedule, if required.

7.15.1.1 Responsibilities of the Vendor

The Vendor Shall:

- ◆ Provide individual work tickets with documentation of operating parameters, measurements and adjustments for each piece of fixed equipment installed, relocated, or converted to narrowband, consistent with the requirements of FCC 47 CFR90.215 (frequency, forward and reflected power, deviation) as well as receiver sensitivity measurements.
- ◆ Reprogram selective signalling (CTCSS and/or CDCSS) codes in accordance with any changes incorporated into the plan and templates to mitigate co-channel interference, where experienced.
- ◆ Provide labeling for all new or modified equipment, and complete sketches and wiring diagrams for any modified or special connections.

8. SYSTEM INSTALLATION

8.1 INSTALL FIXED NETWORK EQUIPMENT

Vendor Responsibilities:

The Vendor Shall:

- ◆ Receive and inventory all fixed equipment.
- ◆ Install system equipment as specified by the Equipment List, System Description, and system drawings.
- ◆ Bond the supplied equipment to the site ground system in accordance with published manufacturer recommendations and recognized standards or practices.
- ◆ Interface with the following system equipment:
 - Motorola Console – Utilizing existing cards and equipment where available, and providing additional cards only where necessary.
 - Provide cross connection and testing of the reconfigured console to the Existing Logging Recorder.
- ◆ Not remove or disable existing equipment, except as required to complete work, and as approved by the Commission in accordance with plans.
- ◆ Properly inventory, care for, and protect existing equipment. Dispose of existing equipment where necessary as directed or approved by the Commission.

Interference

The Vendor is expected to assist in the identification of any harmful interference received or apparently caused by the work performed and equipment provided in accordance with this SOW. The Vendor is not expected to address or resolve extrinsic interference (occurring on the same channel, or an immediately adjacent one) except where it occurs due to a hardware, firmware, or software failure; improper adjustment; or error in programming or configuration of the equipment provided and installed. Where the interference is internal to the supplied system, or found to be due to special architecture-specific frequencies, inadequate system design or equipment specification of the equipment it provides, the Vendor will correct such deficiency(ies) at no additional cost to the Commission.

Where the interference is attributed to equipment, selections, or effects beyond the control of the Vendor (such as equipment provided or operated by others that causes transmitter noise, externally produced intermodulation, spurious emissions, or improper performance), then the Vendor may be contracted at the Commission's option to act as its agent or to recommend a solution or correct the problem at established costs and offered labor rates. Such work will be discussed and negotiated between the Vendor and Commission if needed to mitigate the issue.

Commission Responsibilities:

- ◆ Provide access to the sites, as necessary on at least 48 hour notice from the Vendor.
- ◆ Provide coordination contacts for planned work.

Completion Criteria:

- ◆ Fixed Network Equipment installation completed and functional.

8.2 FNE INSTALLATION COMPLETE

- ◆ All fixed network equipment installed and accepted by the Commission.

8.3 SYSTEM INSTALLATION ACCEPTANCE (MILESTONE)

- ◆ All equipment installations are completed and accepted by the Commission. The Vendor will supply an inventory of equipment added, relocated, or modified, checklist of completed installations and functional verification for the customer to review and sign as acknowledgement the installation is complete.

9. FINALIZE

9.1 CUTOVER

Vendor Responsibilities:

- ◆ Develop, in conjunction with the Commission, a mutually agreed upon cutover plan based upon discussions held during the design review. Separate cutover events are anticipated for public safety and non-public safety user groups.
- ◆ During cutover, follow the written plan and implement the defined contingencies, as required.
- ◆ Program or reprogram modes and parameters of equipment as appropriate and necessary. Coordinate with the Commission and user group representatives to address technical and operational issues with programming templates.
- ◆ Coordinate with the Commission, subcontractors, user representatives, and other parties as necessary to conduct basic testing that ensures system readiness and proper operation prior to the date of planned cutover events.
- ◆ Conduct cutover meeting(s) with user group representatives to address both how to mitigate technical and communication problem impact to the users during cutover and during the general operation of the system.
- ◆ Ensure continuity of the Commission's emergency communications operations. Provide advanced notice and receive approval for any scheduled outages.
- ◆ Provide archive copies of any configuration files or templates created for equipment installed or programmed by the Vendor as part of the system.

Commission Responsibilities:

- ◆ Participate in discussions with the Vendor, and provide input on operational requirements and acceptable "activity and outage windows."
- ◆ Facilitate meetings to coordinate, plan, and perform reprogramming activities. Provide (on temporary loan to the Vendor) any existing programming software, cables and configuration templates available where it might promote efficiency or reduce effort and expense.
- ◆ Attend cutover meetings and approve the cutover plan.
- ◆ Notify the user group(s) affected by the cutover (date and time).

- ◆ Ensure that all users are trained and that subscriber radios have been procured, programmed as necessary, and activated on the system.

Completion Criteria:

- ◆ Successful migration from the existing system to the new system.

9.2 RESOLVE PUNCH LIST

Vendor Responsibilities:

- ◆ Work with the Commission to resolve punch list items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance.

Commission Responsibilities:

- ◆ Assist the Vendor with resolution of identified punch list items by providing support, such as access to the sites, equipment and system, review of work and corrective actions, and approval of the resolved punch list item(s).

Completion Criteria:

- ◆ All punch list items resolved and approved by the Commission.

10. TRANSITION TO SERVICE

Vendor Responsibilities:

- ◆ Review the items necessary for transitioning the project to warranty support and service
- ◆ Provide a Customer Support Plan detailing the warranty and post warranty support, if applicable, associated with the Contract equipment.

Commission Responsibilities:

- ◆ Provide contact information.
- ◆ Provide input regarding service requirements, issue severity, and response times.
- ◆ Participate in the transition.

Completion Criteria:

- ◆ All warranty and service information has been delivered to the Commission.

10.1 FINALIZE DOCUMENTATION

Vendor Responsibilities:

- ◆ Provide final versions of revised drawings or sketches of initial plans, corrected based on redlined drawings and implementation details.
- ◆ Provide one as-built system manual set.
- ◆ The documentation will be limited to the following:
 - Maintenance manuals for all fixed site equipment
 - Functional Acceptance Test Plan test sheets and results
 - Equipment Inventory List (paper or disk)
 - Test Sheets and Checklists
 - System Block Diagram
 - Fixed Equipment Templates and Code Plug Archives

Commission Responsibilities:

- ◆ Receive and approve all documentation provided by the Vendor.

Completion Criteria:

- ◆ All required documentation is provided to, and approved by the Commission.

10.2 FINAL ACCEPTANCE (MILESTONE)

- ◆ All listed and purchased equipment is delivered. All installation, programming and testing of fixed equipment is completed.
- ◆ Delivery of a consolidated inventory listing (model, serial, description, location, and usage) and check sheet for all equipment provided, installed, converted and/or programmed, or removed from service and returned or disposed of.
- ◆ Documentation of all fixed station measurements/adjustments performed has been provided.
- ◆ Final System Acceptance received from the Commission.
- ◆ Any spare or excess equipment delivered to the Commission in new, unused condition.
- ◆ All old equipment removed from service returned to the Commission, or properly disposed of as directed.
- ◆ All equipment on temporary loan, returned to the Commission.

11. PROJECT ADMINISTRATION

11.1 PROJECT STATUS MEETINGS

Vendor Responsibilities:

- ◆ During the course of activities associated with this Statement of Work, the Vendor's designated representative shall attend bi-weekly project status meetings with the Commission, as determined during the kickoff and detailed plan review process.
- ◆ Record the meeting minutes and supply the report.
- ◆ The agenda will include the following at a minimum:
 - Overall project status compared to the Project Schedule.
 - Product or service related issues that may affect the Project Schedule.
 - Status of the action items and the responsibilities associated with them, in accordance with the Project Schedule.
 - Any miscellaneous concerns of either the Commission or the Vendor.

Commission Responsibilities:

- ◆ Provide meeting space and ensure attendance by Commission representatives.
- ◆ Respond to issues in a timely manner.

Completion Criteria:

- ◆ Completion of the meetings and submission of meeting summary notes.

11.2 PROGRESS MILESTONE SUBMITTAL

Vendor Responsibilities:

- ◆ Submit progress (non-payment) milestone completion certificate/documentation.

Commission Responsibilities:

- ◆ Approve milestone, which will signify confirmation of completion of the work associated with the scheduled task.

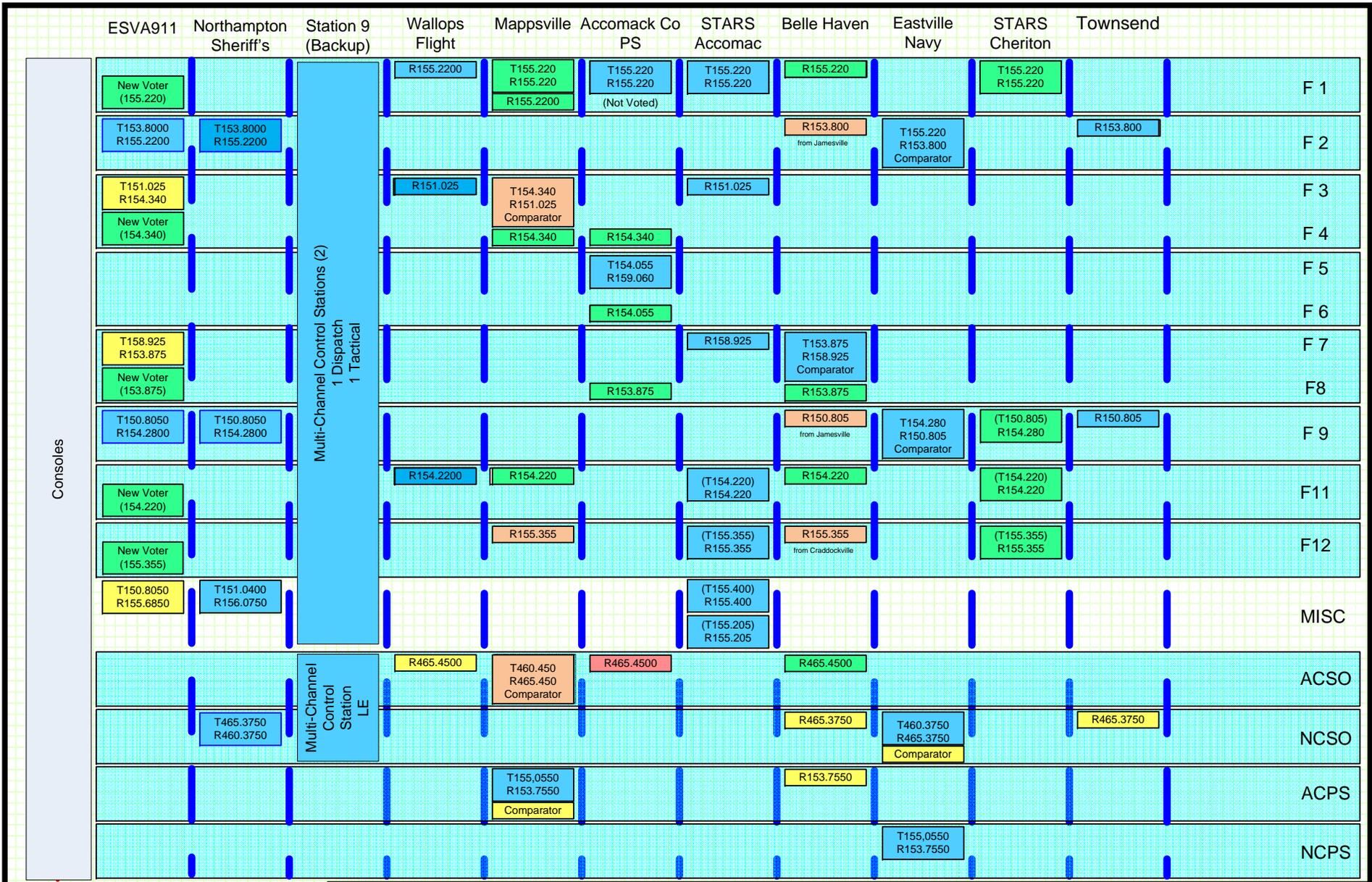
Completion Criteria:

- ◆ Commission approval of the Milestone Completion document(s).

11.3 CHANGE ORDER PROCESS

CHANGE ORDERS. Either Party may request changes within the general scope of this Agreement. If a requested change causes an increase or decrease in the cost or time required to perform this Agreement, the Parties will agree to an equitable adjustment of the Contract Price, Performance Schedule, or both, and will reflect the adjustment in a change order. Neither Party is obligated to perform requested changes unless both Parties execute a written change order.

12. PRELIMINARY DIAGRAMS



OP1
OP2
OP3

KEY

- Install (provided)
- New
- Replacement
- Existing
- Relocated



RCC Consultants, Inc.

4900 Cox Road
Suite 235
Glen Allen, Virginia 23060-6509
Tel (804) 353-0300 Facsimile (804) 353-8059

CLIENT ESVA 911 Commission

PROJECT 3391-01 JOB SOW

SHEET NO. 1 OF 1 SCALE NTS

TITLE Narrowband Overview

PREPARED BY JDP DATE 5/24/12

CHECKED BY _____ DATE _____

CH	Description	Fixed Tx		Mobile Tx	
		Freq	SS	Freq	SS
F 1	Accomack Rescue Dispatch	155.2200	123.0	155.2200	123.0
F 2	Northampton Rescue Repeater	155.2200	123.0	153.8000	123.0
F 3	North Accomack Fire Ops Rpt	154.3400	123.0	151.0250	123.0
F 4	North Accomack Fire Ops TA	154.3400	123.0	154.3400	123.0
F 5	Central Accomack Fire Ops Rpt	154.0550	186.2	159.0600	186.2
F 6	Central Accomack Fire Ops TA	154.0550	186.2	154.0550	186.2
F 7	South Accomack Fire Ops Rpt	153.8750	186.2	158.9250	186.2
F 8	South Accomack Fire Ops TA	153.8750	186.2	153.8750	186.2
F 9	Northampton Fire Ops Rptr	154.2800	123.0	150.8050	123.0
F10	Northampton Fire Ops TA	154.2800	123.0	154.2800	123.0
F11	Tactical Operations 1	154.2200	123.0	154.2200	123.0
F12	Tactical Operations 2	155.3550	186.2	155.3550	186.2
F13	Field Ops	154.4450	123.0	154.4450	123.0
F13A	Tidewater HEAR (Ambulances)	155.4000		155.4000	
F14	Statewide EMS	155.2050	186.2	155.2050	CSQ
F15	Chincoteague F/EMS Rpt	155.6850	D114	150.8050	D114
F16	Chincoteague F/EMS TA	155.6850	D114	155.6850	D114
	Siren Control	46.1800	CSQ	46.1800	CSQ
	SIRS	39.5400	CSQ	39.5400	CSQ
	Northampton Sheriff Dispatch	460.3750	D143	465.3750	D143
	Northampton Sheriff Tactical	460.1750	D143	465.1750	D143
	Accomack Sheriff Dispatch	460.4500	D143	465.4500	D143
	Chesapeake Bay Bridge Tunnel	156.0750	118.8	151.0400	118.8
	Accomack County Public Schools	155.0550		153.7550	
	Northampton County Schools	155.1150	146.2	158.8800	146.2

Table 2 Existing Frequency Utilization

Note – Highlighted entries reflect the same operating frequencies, but utilization for different channels.

