Memorandum MIAMI-DADE COUNTY

Date: November 12, 2020

To: Honorable Chairwoman Audrey M. Edmonson
and Members, Board of County Commissioners

From: Carlos A. Gimenez
Mayor

Subject: Recommendation for Approval of a Legacy Contract: L3Harris Radio Communication System Upgrade

Agenda Item No. 8(F)(5)
(11-19-20)

Resolution No. R-1188-20

Recommendation

It is recommended that the Board of County Commissioners (Board) approve this request for award of Legacy *Contract No. L9203-0/30, L3Harris Radio Communication System Upgrade*, to L3Harris Technologies, Inc. (L3Harris) for the Information Technology Department (ITD), pursuant to Section 2-8.1(b)(2) of the Miami-Dade County Code, to enhance, upgrade, maintain and support the County's P25 Radio Communication System (P25 System) for a ten-year period. The Board awarded the contract for the original System under Contract No. BW9203-3/21, to Harris Corporation (presently L3Harris Technologies, Inc.) through Resolution No. R-83-10 in January 2010 for a five-year term with three, two-year option to renew terms. The final option to renew term for maintenance and support will expire in September 2021.

Miami-Dade County was required to reconfigure its radio operations by engaging in a frequency swap known as "re-banding" pursuant to a report issued by the Federal Communications Commission (FCC) in August 2004. On January 28, 2010, the Board authorized a purchase agreement, through the aforementioned Resolution, with Harris Corporation to address the FCC mandate. As a result of negotiations derived from the "re-banding agreement," the County received a new 800 MHz infrastructure and enhancements to the countywide radio communication system, and it has been operational since November 2014.

The County's P25 system is comprised of two independent radio systems, System B services the public safety environment and System A is the redundant backup to System B, as well as, services general government. The current System is utilized by the Miami-Dade Police and Fire Rescue departments, over 30 local police agencies, as well as State and Federal law enforcement partners. System A requires enhancements to the current environment, to allow both systems to mirror one another, in order to provide continual service in times of emergencies. This contract will afford the County the ability to perform the required upgrades needed to maintain a supported environment. The purchase will enhance countywide coverage with the addition of two transmit/receive sites, software upgrades, replace end-of-life components and 911 dispatch consoles, as well as extend maintenance and support. Additionally, the upgrade will facilitate the County's ability to utilize other radio manufacturers' equipment on the County's network.

The design and architecture of the County's current P25 Radio System was a collaboration with L3Harris. As such, L3Harris is uniquely qualified to continue working with the County on the critical development and enhancements to the System. A complete transition to a new radio provider would take an estimated eight to ten years and cost the County about $350 million, including the potential need to purchase land and install up to 11 radio tower sites. The P25 System network infrastructure is proprietary and does not integrate properly with any competitor's hardware and/or software, therefore partial upgrades are also not feasible.

The availability of competition will be continually monitored to determine if migrating to a new system is feasible so that the need for future legacy purchases is reduced or eliminated as soon as practicable.

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Accordingly, it is in the County's best interest to award this legacy contract to L3Harris pursuant to Section 2-8.1(b)(2), of the County Code to upgrade the existing P25 Radio Communications System infrastructure and continue obtaining maintenance and support services.

Scope
The scope of this item is countywide in nature.

Fiscal Impact/Funding Source
The fiscal impact for the ten-year term is $20,715,017. The current contract, BW9203-3/21-3, is valued at $43,496,000 for an 11-year term which expires on September 30, 2021. The allocation under the new agreement is lower than the current contract due to the fact that the County purchased a complete system under the current agreement, while the new agreement will provide upgrades and additional maintenance.

Department	Allocation	Funding Source	Contract Manager
Information Technology	$20,715,017	Internal Service Funds	Thomas Gross
Total:	**$20,715,017**		

Track Record/Monitor
Sade Chaney of the Internal Services Department is the Procurement Contracting Manager.

Delegated Authority
If this item is approved, the County Mayor or County Mayor's designee will have the authority to exercise all provisions of the contract, including any cancellation or extension provisions, pursuant to Section 2-8.1 of the County Code and Implementing Order 3-38.

Vendor Recommended for Award
Pursuant to requirements in Resolution No. R-477-18, there are no firms in Miami-Dade County which are capable of providing an L3Harris Radio Communication System upgrade. This is a highly specialized field requiring vendors with specific capabilities, experience and expertise. Further, the L3Harris System is proprietary, as such only L3Harris is authorized to provide the needed upgrades, maintenance and support services.

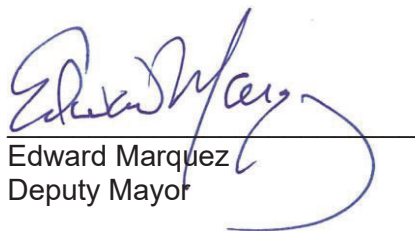| Vendor	Principal Address	Local Address*	Number of Employee Residents 1) Miami-Dade 2) Percentage*	Principal
L3Harris Technologies, Inc.	1025 W NASA Boulevard, Melbourne, FL	None	0 0%	William Mitchell Brown

*Provided pursuant to Resolution No. R-1011-15. Percentage of employee residents is the percentage of vendor's employees who reside in Miami-Dade County as compared to the vendor's total workforce.

Due Diligence
Pursuant to Resolution No. R-187-12, due diligence was conducted in accordance with the Internal Services Department's Procurement Guidelines to determine contractor responsibility, including verifying corporate status and that there are no performance or compliance issues. The lists that were referenced included convicted vendors, debarred vendors, delinquent contractors, suspended vendors, and federal excluded parties. There were no adverse findings relating to contractor responsibility.

Applicable Ordinances and Contract Measures
- The two percent User Access Program provision applies.
- The Small Business Enterprise measures and Local Preference do not apply.
- The Living Wage does not apply.

Edward Marquez
Deputy Mayor

MEMORANDUM
(Revised)

TO: Honorable Vice Chairwoman Rebeca Sosa
and Members, Board of County Commissioners

DATE: November 19, 2020

FROM: Geri Bonzon-Keenan
Successor County Attorney

SUBJECT: Agenda Item No. 8(F)(5)

Please note any items checked.

_____ **"3-Day Rule" for committees applicable if raised**

_____ **6 weeks required between first reading and public hearing**

_____ **4 weeks notification to municipal officials required prior to public hearing**

_____ **Decreases revenues or increases expenditures without balancing budget**

_____ **Budget required**

_____ **Statement of fiscal impact required**

_____ **Statement of social equity required**

_____ **Ordinance creating a new board requires detailed County Mayor's report for public hearing**

✓ **No committee review**

_____ **Applicable legislation requires more than a majority vote (i.e., 2/3's present ____, 2/3 membership ____, 3/5's ____, unanimous ____, CDMP 7 vote requirement per 2-116.1(3)(h) or (4)(c) ____, CDMP 2/3 vote requirement per 2-116.1(3)(h) or (4)(c) ____, or CDMP 9 vote requirement per 2-116.1(4)(c)(2) ____) to approve**

✓ **Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required**

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RESOLUTION NO.   R-1188-20

RESOLUTION AUTHORIZING AWARD OF A LEGACY CONTRACT FOR L3HARRIS RADIO COMMUNICATION SYSTEM UPGRADE FOR THE INFORMATION TECHNOLOGY DEPARTMENT, CONTRACT NO. L-9203-0/30, TO L3HARRIS TECHNOLOGIES, INC. FOR A TEN-YEAR TERM IN A TOTAL AMOUNT NOT TO EXCEED $20,715,017.00, AND AUTHORIZING THE COUNTY MAYOR OR COUNTY MAYOR'S DESIGNEE TO EXECUTE THE CONTRACT AND TO EXERCISE ALL PROVISIONS OF THE CONTRACT, INCLUDING ANY CANCELLATIONS OR EXTENSION PROVISIONS, PURSUANT TO SECTION 2-8.1 OF THE COUNTY CODE AND IMPLEMENTING ORDER 3-38

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that:

Section 1. This Board authorizes award of a legacy contract pursuant to Section 2-8.1(b)(2) of the County Code to L3Harris Technologies, Inc. for a ten-year term in an amount not to exceed $20,715,017.00 for Contract No. L-9203-0/30, in substantially the form attached hereto and made a part hereof, for L3Harris radio communication system upgrade for the Information Technology Department.

Section 2. This Board further authorizes the County Mayor or County Mayor's designee to execute the contract and to exercise all provisions, including any cancellations or extension provisions of the contract, pursuant to Section 2-8.1 of the County Code and Implementing Order 3-38.

The foregoing resolution was offered by Commissioner **José "Pepe" Diaz** ,

who moved its adoption. The motion was seconded by Commissioner **Sally A. Heyman**

and upon being put to a vote, the vote was as follows:

|			
	Rebeca Sosa, Vice Chairwoman	**aye**	
Jose "Pepe" Diaz	**aye**	Sen. René García	**aye**
Oliver G. Gilbert, III	**aye**	Keon Hardemon	**aye**
Sally A. Heyman	**aye**	Eileen Higgins	**aye**
Joe A. Martinez	**aye**	Kionne L. McGhee	**aye**
Jean Monestime	**aye**	Raquel A. Regalado	**aye**
Sen. Javier D. Souto	**aye**	District 8 - Vacant	**vacant**

The Chairperson thereupon declared this resolution duly passed and adopted this 19th

day of November, 2020. This resolution shall become effective upon the earlier of (1) 10 days

after the date of its adoption unless vetoed by the County Mayor, and if vetoed, shall become

effective only upon an override by this Board, or (2) approval by the County Mayor of this

resolution and the filing of this approval with the Clerk of the Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By:_____ **Melissa Adames**
Deputy Clerk
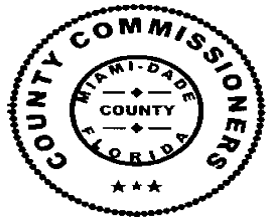
Approved by County Attorney as
to form and legal sufficiency.

Eduardo W. Gonzalez

L3Harris Radio Communications System Upgrade Agreement
Contract No. L9203-0/30

THIS AGREEMENT made and entered into as of this _____ day of _____ by and between L3Harris Technologies, Inc., a corporation organized and existing under the laws of the State of Delaware, having its principal office at 221 Jefferson Ridge Parkway, Lynchburg, Virginia 24501 (hereinafter referred to as the "Contractor"),

and Miami-Dade County, a political subdivision of the State of Florida, having its principal office at 111 N.W. 1st Street, Miami, Florida 33128 (hereinafter referred to as the "County"),

WITNESSETH:

 WHEREAS, pursuant to a contract dated January 29, 2010, Contractor delivered to the County a P25 Phase 1 Radio Communications System;

 WHEREAS, Contractor delivered a proposal (collectively, the "Contractor's Proposal") to provide a SR10A.4 System Upgrade and Expansion to the existing P25 Phase 1 Radio Communications System, as requested by the County;

 WHEREAS, County has reviewed the Contractor's Proposal and now desires to contract with Contractor to engage the services of Contractor, as an independent contractor, to furnish goods and services to the County in order to provide the County with a SR10A.4 System Upgrade and Expansion comprised of the Hardware and Software (as defined herein Exhibit A); and

 WHEREAS, County and Contractor desire to enter into this Contract to set forth in writing their respective rights, duties and obligations hereunder.

NOW, THEREFORE, WITNESSETH that for and in consideration of the mutual promises contained herein and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, it is mutually agreed between the parties as follows:

ARTICLE 1. DEFINITIONS

The following words and expressions used in this Agreement shall be construed as follows, except when it is clear from the context that another meaning is intended:

1.1 **"Effective Date of the Contract"** shall mean the date on which the Contract is signed by the County.

1.2 The words "Contract" or "Agreement" to mean collectively these terms and conditions, the Statement of Work (Exhibit A), all other exhibits and attachments hereto.

1.3 **"Contractor"** shall mean L3Harris Technologies, Inc., a Delaware corporation, through its Communication Systems Segment, with offices at 221 Jefferson Ridge Parkway, Lynchburg, Virginia 24501.

1.4 **"Day"** shall mean a business day, Monday through Friday from 8 a.m. to 5 p.m. local time, excluding weekends and holidays.

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1.5 **"Change Order"** shall mean a legally authorized written modification to the Total Contract Price, Project Schedule or other Contract Terms which will be signed by both parties.

1.6 **"Project Manager"** shall mean the County's Technical Project Manager or Contractor's Senior Project Manager, or each respective party's duly authorized representative designated to manage the Project.

1.7 **"Statement of Work"** shall mean the document appended hereto as Exhibit A, which details the work to be performed by the Contractor.

1.8 **"Subcontractor"** or **"Subconsultant"** shall mean any person, entity, firm or corporation, other than the employees of the Contractor, who furnishes labor and/or materials, in connection with the Work, whether directly or indirectly, on behalf and/or under the direction of the Contractor and whether or not in privity of the Contract with the Contractor.

1.9 **"Work", "Services" "Program",** or **"Project"** shall mean the description of the work to be performed by Contractor to deliver all matters and things required to be done by the Contractor in accordance with the provisions of this Contract all as described in Exhibit A attached to this Contract.

1.10 **"Acceptance" or "Accepted"** shall mean acceptance of the System Upgrade as set forth in the Testing and Acceptance section of this Contract as set forth in Article 32 hereof.

1.11 **"Acceptance Date"** shall mean the date the System Upgrade is accepted or deemed accepted as set forth in the Testing and Acceptance section of this Contract Article 32 hereof.

1.12 **"Acceptance Tests"** shall mean the testing procedures as described in the Statement of Work, Exhibit A and as specifically set forth in Exhibit D, Functional Test Procedures.

1.13 **"Additional Projects," "Additional Services," and "Additional SOW"** shall each have the meaning given in Article 48.

1.14 **"Contract Documents"** shall have the meaning given in Article 2.

1.15 **"County's Obligations"** shall mean the work and obligations to be performed by the County as set forth in Article 8.

1.16 **"Disclosing Party"** shall have the meaning given in Article 45.

1.17 **"Deliverables"** shall mean the hardware, software, professional services and standard commercial quality manuals to be furnished by the Contractor to the County pursuant to the terms set forth in the Statement of Work and this Contract.

1.18 **"Existing Radio System"** as defined in Exhibit A, Statement of Work.

1.19 **"Final Acceptance Date"** shall mean the date that the System Upgrade is accepted or deemed accepted as set forth in Article 32 hereof.

1.20 **"Final System Acceptance"** shall mean acceptance of the System Upgrade as a whole, as set forth in Article 32 hereof.

1.21   **"Hardware"** shall mean, collectively, Terminal Hardware and Infrastructure Hardware, as defined below.

1.22   **"Infrastructure Hardware"** shall mean the equipment, goods, and materials to be supplied by Contractor, as further described in the Statement of Work.

1.23   **"Milestone Payment"** shall mean an installment payment, as set forth in Exhibit C-3, of a specified portion of the Total System Upgrade Price due and payable as set forth in this Agreement, from County to Contractor upon the Contractor's completion and County's acceptance of specific tasks more fully described in Exhibit A, Statement of Work.

1.24   **"Project Schedule"** shall mean the schedule set forth in Exhibit C-1, or as may otherwise be amended and mutually agreed upon by Contractor and County in writing for the delivery of the Infrastructure Hardware and Software and the performance of the Services as described in Exhibit A, Statement of Work.

1.25   **"SR10A.4 System Upgrade and Expansion"** shall mean the System Upgrade as defined in Exhibit A, Statement of Work.

1.26   **"Software"** shall mean the proprietary computer software of Contractor as owned exclusively by Contractor or Contractor's suppliers, as appropriate, and as further defined in and licensed to County pursuant to the terms of the Software License Agreement.

1.27   **"Software License Agreement"** shall mean the Software License Agreement set forth in Exhibit F attached hereto.

1.32   **"Subsystem"** shall mean each of the components of the System Upgrade, as defined within the Statement of Work.

1.33   **"Taxes"** shall have the meaning given in Article 15.

1.34   **"Terminal Hardware"** shall mean mobile units, portable units, control stations and related accessories.

1.35   **"Total System Upgrade Price"** shall mean the aggregate price of the Infrastructure Hardware, the Software and the Services to be furnished by the Contractor to the County for the implementation of the System Upgrade, and purchase of annual firmware pursuant to the terms set forth in Exhibit C-2, Pricing.

1.36   **"UAP"** shall mean the County User Access Program as further described in Article 63.

1.37   **"Warranty Period"** shall have the meaning given in Article 36(A).

1.38   **"HA-NSC"** shall mean High Availability-Networks Switching Center.

1.39   **"Lightspeed"** shall mean the Miami-Dade County Lightspeed Facility.

1.40   **"RF"** shall mean Radio Frequency.

1.41   **"RDCS"** shall mean Rapid Deployable Communication System.

1.42 **"CAB"** shall mean the County Administration Building located on the 30th floor of the Stephen P. Clark Center at 111 NW 1st Street, Miami, FL 33128.

1.43 **"TCC"** shall mean the Telecommunications Control Center located at 6010 SW 87th Avenue, Miami, FL 33173.

1.44 **"UPS"** shall mean Uninterrupted Power Supply.

1.45 **"PSIC"** shall mean Public Safety Interoperable Communications.

ARTICLE 2. ORDER OF PRECEDENCE

The Statement of Work and the following Exhibits are expressly incorporated herein by reference (unless otherwise provided herein) and, together with this Contract, constitute the Contract Documents. In the event of a conflict among or between the Contract and the Contract Documents, the Contract shall govern. In the event that there is a conflict among Contract Documents, other than the Contract, the documents shall control in the order of precedence set forth below:

1.	Exhibit A	Statement of Work
2.	Exhibit B	Upgrade Migration Plan
3.	Exhibit C-1	Project Schedule, Pricing and Milestone Payments
4.	Exhibit C-2	Pricing Pages
5.	Exhibit C-3	Milestone Payments
6	Exhibit D	Functional Test Procedures
7	Exhibit E	Domestic Standard Conditions of Sale
8.	Exhibit F	P25 Software License Agreement (SLA)
9.	Exhibit G	Software Services Agreement
10.	Exhibit H	Reserved

ARTICLE 3. RULES OF INTERPRETATION

a)   References to a specified Article, section or schedule shall be construed as reference to that specified Article, or section of, or schedule to this Agreement unless otherwise indicated.

b)   Reference to any agreement or other instrument shall be deemed to include such agreement or other instrument as such agreement or other instrument may, from time to time, be modified, amended, supplemented, or restated in accordance with its terms.

c)   The terms "hereof", "herein", "hereinafter", "hereby", "herewith", "hereto", and "hereunder" shall be deemed to refer to this Agreement.

d)   The titles, headings, captions and arrangements used in these Terms and Conditions are for convenience only and shall not be deemed to limit, amplify or modify the terms of this Contract, nor affect the meaning thereof.

ARTICLE 4. NATURE OF THE AGREEMENT

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a)   This Agreement incorporates and includes all prior negotiations, correspondence, conversations, agreements, and understandings applicable to the matters contained in this Agreement. The parties agree that there are no commitments, agreements, or understandings concerning the subject matter of this Agreement that are not contained in this Agreement, and that this Agreement contains the entire agreement between the parties as to all matters contained herein. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written. It is further agreed that any oral representations or modifications concerning this Agreement shall be of no force or effect, and that this Agreement may be modified, altered or amended only by a written amendment duly executed by both parties hereto or their authorized representatives.

b)   The Contractor shall provide the services set forth in the Statement of Work and render full and prompt cooperation with the County in all aspects of the Services performed hereunder.

c)   The Contractor shall furnish all labor, materials, tools, supplies, and other items required to perform the Work and Services as described in the Statement of Work and this Contract. There are a number of provisions in the contract that require County's review and approval, these reviews and approvals will be performed and approved by the County's project management.

ARTICLE 5.   SCOPE OF WORK

Contractor shall furnish, deliver and install the Infrastructure Hardware and Software for the System Upgrade and provide the Deliverables and Services in accordance with the terms and conditions of the Exhibit A, Statement of Work and this Contract and in a competent and professional manner.

The functions of the System Upgrade to be delivered pursuant to this Contract are set forth in the Exhibit A, Statement of Work. The parties understand and agree that any functions not included in the System Upgrade features described in the Statement of Work are not included under and are outside the scope of this Contract.

ARTICLE 6.   PROJECT MANAGEMENT AND PLANNING

A.   **Project Team.** Contractor shall designate a Senior Project Manager who will lead the project and will be the County's primary point of program authority for Contractor's project team. The County will designate a Technical Project Manager to function as the single point-of-contact and official liaison between Contractor's Senior Project Manager and the County. Contractor's Senior Project Manager, County's Technical Project Manager and all other project managers appointed by either of those two persons shall constitute the Project Management Team, which will be responsible for the obligations as set forth in the Statement of Work.

B.   **Major System Upgrade Implementation Events.**

     i. Project Kick-off Meeting. Within sixty (60) days from the Effective Date of the Contract, the Contractor's Senior Project Manager shall schedule a Project Kick-Off Meeting, the timing and location of which will be mutually agreed upon by Contractor and County. The objectives of this meeting include introduction of all project participants, review of the roles of the project participants, review of the overall project scope and objectives, review of the resource and scheduling requirements, review of current site status, and review of the current frequency plan.

ii. Site Visits. The parties jointly will conduct site visits at County facilities to establish existing conditions, to identify work required to be accomplished at the sites, and to assign responsibility for such work as per the Responsibilities Matrix. Following the Effective Date of the Contract, County shall grant Contractor access to all such sites upon reasonable notice to allow Contractor to formulate a schedule of preparatory work. The County and the Contractor shall then review the schedule of preparatory work required for each site and develop and define a requirements list. The final schedule will be mutually agreed upon by both parties and will include a timeline for completion of the preparatory work at each site. At the conclusion of the preparatory work at each site, the County and the Contractor shall inspect the various sites to determine whether the preparatory work has been satisfactorily completed according to the requirements. If there are deficiencies identified in the County's preparatory work, the County will be provided an opportunity to cure the outstanding issues within a reasonable period of time. County shall grant Contractor access to all such sites upon reasonable notice to allow Contractor to complete its inspections. If, after inspection, any preparatory work has been deemed by the Contractor to have not been completed, Contractor may suspend further performance pertaining to the site, and the time period between the inspection date and the completion of the preparatory work shall be deemed an excusable delay pursuant to Article 30 of this Contract. County shall identify and disclose to Contractor any and all problems or conditions at all sites of which County is aware that may affect the work to be performed by Contractor under this Contract. The County has established $150,000 cap on any preparatory work. Any work exceeding this amount would give rights to the County to cancel contract without any penalties. In the event the County cancels under this provision, all Services performed, finished and unfinished Hardware, and Documentation Deliverables produced or made by Contractor, or its suppliers, for County up to and including the date of cancellation, shall become the property of County, and Contractor shall be compensated for the portion of the Services performed and finished ad unfinished Hardware and Documentation Deliverables.

iii. County Design Review. The County Design Review ("CDR") will commence at the conclusion of the Project Kick-off Meeting. During the CDR, Contractor's project managers will meet with County's project team on one or multiple occasions to review the system design, technical data, and site specific information to confirm approach on overall system upgrade design. As part of the CDR, Contractor will provide County with the documents enumerated in the Statement of Work. County shall reasonably approve the design of the System Upgrade, or any Subsystem, acknowledging completion of the CDR within fifteen (15) business days, after which time, the design is final, subject to minor changes as may be mutually agreed upon by the parties.

Contractor shall provide the following CDR documents six months after the Effective Date of the Contract to the County for their review and approval, which approval shall not be unreasonably withheld, conditioned or delayed:

- Project Schedule

- Preliminary Site Layout Drawings

- Shelter Floor Plan Drawings

- Rack Elevation Drawings

- System Block and Level Diagrams

- Not applicable for this scope of work L3Harris Equipment, Power and HVAC Loads

- LMR Antenna System Schematics

- Site Frequency Plan (including spectrum analysis and intermodulation studies of existing and proposed frequencies at each site).

- TX Combiner Plan by Site

- Network & Microwave Requirements

- Preliminary Acceptance Test Documents

C.   **Execution of the System Upgrade Implementation.** Contractor's project team shall integrate the Infrastructure Hardware to produce the System Upgrade. To the extent practical, components of the System Upgrade will be assembled and staged before shipping, though some equipment, which is specific to the installation of the sites, will need to directly ship to a specified location in the Miami area.

D.   **Schedule for System Upgrade Implementation.** The Project Schedule for the Project identifying the projected timeline for completing the required tasks to complete the Project is contained within Exhibit C-1, Project Schedule. Updates to the start dates and durations will be made as the information evolves and will be mutually agreed by both parties. Throughout the project, the Contractor's Senior Project Manager shall utilize schedule compression techniques and lags as a technique to integrate the tasks.

E.   **System Upgrade Implementation Communications.** Contractor and County shall jointly establish a plan that defines regular meetings, reporting structure, and other communications activities, including Workshops or working sessions that may be needed throughout the Project to plan sub-tasks, including (a) CDR (as defined in the Statement of Work) to communicate the final engineering design, (b) formal monthly reports to County's Technical Project Manager concerning work in progress and accomplishments, (c) quarterly on-site status meetings at which Contractor's Senior Project Manager and County's Technical Project Manager will provide updates, (d) conference calls with Contractor's and County's project teams to discuss tasks, assign responsibility, and establish schedules; (e) a joint outreach program, led by County, to manage user expectations, and (f) workshops or working sessions that may be needed throughout the Project to plan subtasks.

ARTICLE 7.   <u>AUTHORITY OF THE PROJECT MANAGERS</u>

See Article 23 of this Agreement

ARTICLE 8.   <u>COUNTY'S OBLIGATIONS –SYSTEM UPGRADE IMPLEMENTATION</u>

The following subsections apply to the System Upgrade Implementation.

A.   **Access.** County shall provide access, at no cost to Contractor, to all owned or leased/licensed tower sites and sites of work, as described in the Statement of Work. County shall provide the Contractor access to Project Sites during working hours (or during extended hours as reasonably required) and an escort, if required by County, at no charge, with at least twenty-four hours prior notification from Contractor. County shall ensure sufficient room for construction vehicles used by Contractor. County shall issue temporary identification cards to Contractor's personnel and its authorized subcontractors, if required, for access to any of the County sites.

B.   **Permits and Licenses, Site Survey, General Site Related Responsibilities, General Equipment Related Responsibilities, and Site Specific <u>Responsibilities</u>.** As is further <u>defined</u> in the Statement of Work, each party agrees to perform its respective tasks and obligations as set forth therein.

C. **Changes in Sites.** Should County add to, delete from, or modify the list of sites as detailed in the Statement of Work, the parties agree that such change shall require a Change Order that has been fully negotiated and executed by the County prior to commencement of the work.

D. **Site-Related Responsibilities.** As is further detailed in the Responsibility Matrix attached to the Statement of Work, the County shall perform the tasks and obligations assigned to the County as set forth therein.

E. **Preparatory Work on Sites.** Notwithstanding anything to the contrary contained in this Contract or the Statement of Work, the parties agree that some sites may require tower replacement or modifications, as well as related permitting and licensing work and/or physical real estate space. The parties agree that Contractor shall have primary responsibility to secure all applicable local, state and federal permits, licenses, and approvals, with the County assisting as is reasonably necessary, and County shall have primary responsibility to secure by lease, purchase or license all rights and access to additional real estate as may be required. County agrees to mitigate the need for tower replacement or modification to the extent practical, including, but not limited to, transitioning the system to pre-existing equipment and removing existing transmission dishes. The parties further agree that the cost, and potential delay, for all related replacement, enhancements, and licensing work for additional real estate, may entitle Contractor to an extension of time for any impacted activities and/or an equitable adjustment to the Contract price to maintain the Project Schedule. The County has established $150,000 cap on any related improvement, enhancements and any licensing work for additional real estate. This is in addition to the $150,000 cap in Article 6 B above. Any work exceeding this amount would give rights to the County to cancel contract without any penalties. In the event the County cancels under this provision, all Services performed, finished and unfinished Hardware, and Documentation Deliverables produced or made by Contractor, or its suppliers, for County up to and including the date of cancellation, shall become the property of County, and Contractor shall be compensated for the portion of the Services performed and finished ad unfinished Hardware and Documentation Deliverables.

ARTICLE 9. CONTRACT TERM

The Contract Term shall run from the Effective Date of the Contract and expire at Midnight EST of the day prior to the day which is the tenth anniversary of the Effective Date of the Contract.

The County also reserves the right to exercise a bilateral option to extend this Contract for up to one hundred-eighty (180) calendar days beyond the current Contract period or beyond any of the renewals, subject to mutual agreement between the County and the Contractor and upon approval by the Board of County Commissioners

ARTICLE 10. NOTICE REQUIREMENTS

Notices and other communications between the parties shall be transmitted in writing by certified mail or nationally recognized overnight courier service to the parties at the addresses set forth below and shall be deemed effective upon receipt by the receiving party. Either party may change its address by giving notice in writing thereof to the other party.

TO COUNTY:

Miami-Dade County Enterprise Technology Services Department
Assistant Director, Infrastructure and Platforms
5680 SW 87th Avenue

Rev. 06/11/2019

Miami, FL 33173

Attn: Thomas Gross
Phone: (305) 596-8218   E-mail Address: Thomas.gross@miamidade.gov

WITH A COPY TO:

Miami-Dade County Enterprise Technology Services Department
Information Technology Business Office
5680 SW 87th Avenue
Miami, FL 33173

Attn: Contracts Manager

AND TO:

Miami-Dade County Department of Procurement Management
111 NW 1st Street, Suite 1300
Miami, FL 33128

Attn: Namita Uppal

TO CONTRACTOR:

L3Harris Technologies, Inc.
221 Jefferson Ridge Parkway
Lynchburg, Virginia 24501

Attn: Ms. Lori Rodriguez
E-mail Address: Lori.Rodriguez@L3Harris.com

WITH A COPY TO:

L3Harris Technologies, Inc.
221 Jefferson Ridge Parkway
Lynchburg, VA 24501

Attn: Senior Project Manager
E-mail Address:

ARTICLE 11. PAYMENT FOR SERVICES/AMOUNT OBLIGATED

 The compensation for Work and Services performed under this Contract, including all costs associated with such Work and Services, shall be as provided in Exhibit C. The County shall have no obligation to pay the Contractor any additional sum in excess of this amount, except for a change and/or modification to the Contract, which is approved and executed in writing by the County and the Contractor.

All Services undertaken by the Contractor before County's approval of this Contract shall be at the Contractor's risk

and expense.

ARTICLE 12. PRICING

Prices shall remain firm and fixed for the term of the Contract, including any option or extension periods; however, the Contractor may offer incentive discounts to the County at any time during the Contract term, including any renewal or extension thereof.

ARTICLE 13. METHOD AND TIMES OF PAYMENT

The Contractor agrees that under the provisions of this Agreement, as reimbursement for those actual, reasonable and necessary costs incurred by the Contractor, which are directly attributable or properly allocable to the Services, the Contractor may bill the County periodically, but not more than once per month, upon invoices certified by the Contractor pursuant to Exhibit C. All invoices shall be taken from the books of account kept by the Contractor, shall be supported by, documents reasonably required by the County, shall show the County's contract number, and shall have a unique invoice number assigned by the Contractor. It is the policy of Miami-Dade County that payment for all purchases by County agencies and the Public Health Trust shall be made in a timely manner and that interest payments be made on late payments. All firms, including Small Business Enterprises, providing goods and services to the County, shall receive payment to maintain sufficient cash flow. In accordance with Section 218.74 of the Florida Statutes, and Section 2-8.1.4 of the Code of Miami-Dade County, the time at which payment shall be due from the County or the Public Health Trust shall be forty-five (45) days from receipt of a proper invoice. Billings from prime Contractors under services and goods contracts with the County or Public Health Trust, that are Small Business Enterprise contract set-aside, bid preference or contain a subcontractor goal, shall be promptly reviewed and payment made by the County or Trust on those amounts not under dispute within fourteen (14) calendar days of receipt of such billing by the County or the Trust pursuant to Sections 2-8.1.1.1.1 and 2-8.1.1.1.2 of the Code of Miami-Dade. All payments due from the County or the Public Health Trust, and not made within the time specified by this section shall bear interest from thirty (30) days after the due date at the rate of one percent (1%) per month on the unpaid balance. Further, proceedings to resolve disputes for payment of obligations shall be concluded by final written decision of the County Mayor, or his or her designee(s), not later than sixty (60) days after the date on which the proper invoice was received by the County or the Public Health Trust.

In accordance with Miami-Dade County Implementing Order 3-9, Accounts Receivable Adjustments, if money is owed by the Contractor to the County, whether under this Contract or for any other purpose, the County reserves the right to retain such amount from payment due by County to the Contractor under this Contract. Such retained amount shall be applied to the amount owed by the Contractor to the County. The Contractor shall have no further claim to such retained amounts which shall be deemed full accord and satisfaction of the amount due by the County to the Contractor for the applicable payment due herein.

Invoices and associated back-up documentation shall be submitted in duplicate by the Contractor to the County as follows:

> Miami-Dade County Enterprise Technology Services Department
> Information Technology Business Office
> 5680 SW 87th Avenue
> Miami, FL 33173
>
> Attn: Contracts Manager

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The County may at any time designate a different address and/or contact person by giving written notice to the other party.

ARTICLE 14. DELIVERY, TITLE AND RISK OF LOSS

Contractor shall ship the Infrastructure Hardware to County on or before the dates set forth in the Exhibit C1, Project Schedule. Partial deliveries shall be permitted. Storage at County facilities will not be permitted, unless mutually agreed upon in writing. Upon receipt of delivery to the County or to a County-controlled facility, all risk of loss or damage shall pass to County; provided, however, that Contractor shall remain responsible until Final System Acceptance for loss or damage resulting from the willful misconduct or negligent acts or omissions of Contractor, its employees, agents, and subcontractors. Security title and right of possession without legal process of the Infrastructure Hardware sold hereunder shall remain with the Contractor until all payments hereunder (including deferred payments whether evidenced by note or otherwise) shall have been made, and the County agrees to do all acts necessary to perfect and maintain such right and security title in the Contractor.

ARTICLE 15. TAXES

The County represents that it is a tax-exempt entity, and is exempt from sales, use, excise, value-added, or other similar tax applicable to the price, sale, or transfer of any products or services furnished hereunder ("Taxes"). The County agrees to pay all penalties or Taxes that may be assessed against County or against Contractor as a result of a finding that County is not tax exempt. County shall provide Contractor will prompt notice of challenge or claim made against County relating to this Contract and Taxes.

ARTICLE 16. CHANGES AND ADDITIONS

A.   In the event of any change in the Infrastructure Hardware as a result of the imposition or passage after the Effective Date of the Contract of any requirements by any federal, state, or local government, an equitable adjustment in the schedule and price shall be made to reflect any added cost and expense of such change and the Contract shall be modified in writing accordingly.

B.   Notwithstanding any other provision hereof to the contrary, if the performance by Contractor of all or any part of this Contract, through and including completion of system testing and acceptance, is delayed or interrupted, for any reason other than the reasonable fault of the Contractor, for a consecutive period exceeding thirty (30) days in any instance or a cumulative period exceeding ninety (90) days for all instances then, upon written notice from the Contractor to the County, an equitable adjustment in the Project Schedule and the Total Contract Price shall be made to reflect any increase in the cost of performance of, or time required under, this Contract and the Contract shall be modified in writing accordingly. No delay mentioned in this paragraph shall be compensable due to COVID-19 related delays.

C.   County may seek to make changes in the Statement of Work or in the time or place of performance of the Services under this Contract. If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the Work under this Contract, the parties shall make an equitable adjustment in the contract price, the performance schedule, or both. Any such adjustment in the contract price or performance schedule shall be mutually satisfactory to County and Contractor. Price increases and/or extensions of time shall not be binding upon either party unless evidenced by a modification to this Contract

signed by the parties hereto. Contractor shall not be required to accomplish the agreed upon changes until a mutually agreed upon change order approved in writing by County is received by the Contractor (hereinafter, a "Change Order").

D.   To the extent that any of the assumptions or responsibilities set forth in the Statement of Work are incorrect and such has an impact on the cost of work performed by Contractor under the Contract and/or the schedule, the parties agree that Contractor, or the County, may be entitled to an equitable adjustment to the Installation Schedule, Statement of Work, and to the Total Contract Price, and a modification to the Contract shall be agreed to by the parties.

E.   Although Contractor is afforded the opportunity to conduct site surveys in accordance with the Statement of Work, the parties understand and agree that there may be circumstances in which every detail is not known prior to Contractor's commencement of the work. In those rare instances when such circumstances have an impact on cost and/or schedule, the parties agree to work together to determine the best course of action and agree to negotiate in good faith a modification to the Contract. Notwithstanding anything to the contrary herein contained, other than the goods and services listed in the Statement of Work as Contractor's obligations, Contractor shall have no obligation to deliver goods and services not specified herein.

F.   Contractor reserves the right to swap, change or to discontinue any product covered by this Contract, provided that Contractor agrees to make available to the County a functionally equivalent replacement product equal to or better than the product discontinued at no additional cost to the County.

ARTICLE 17.   PAYMENT MILESTONES

See Exhibit C-3, Project Schedule, Pricing and Milestone Payments.

A.   Unless otherwise agreed by the parties, Contractor shall electronically submit invoices using Contractor's standard invoice template. County shall pay all invoices via Electronic Funds Transfer ("EFT") directly to Contractor's banking institution using Contractor's banking information and EFT instructions below, in accordance with Article 13.

L3Harris Technologies, Inc.
Bank of America, New York, NY 10038
Account No.: 4451124230
Routing/ABA (ACH ONLY): 111000012
Routing/ABA (Wire ONLY): 026009593

ARTICLE 18. INDEMNIFICATION AND INSURANCE

The Contractor shall be responsible for and agrees to indemnify and hold harmless and defend the County and its boards, commissions, agencies, officers and employees from and against all third party claims, demands and causes of actions for direct damages, for personal injuries (including death) or damage to real property or tangible personal property, directly resulting from the willful misconduct or negligent acts or omissions of Contractor, Contractor's officers, agents, employees, or subcontractors. The Contractor shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind or nature in the name of the County, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may issue thereon. The Contractor expressly understands and agrees that any insurance protection required by this Agreement or otherwise

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provided by the Contractor shall in no way limit the responsibility to indemnify, keep and save harmless and defend the County or its officers, employees, agents and instrumentalities as herein provided. County to notify and provide information and assistance.

Upon County's notification, the Contractor shall furnish to the Internal Services Department, Strategic Procurement Division, Certificates of Insurance that indicate that insurance coverage has been obtained, which meets the requirements as outlined below:

1.   Worker's Compensation Insurance for all employees of the Contractor as required by Florida Statute 440.

2.   Commercial General Liability Insurance on an occurrence basis in the amount of $300,000 combined single limit per occurrence and in the aggregate, for bodily injury and property damage. **Miami-Dade County must be shown as an additional insured with respect to this coverage.**

3.   Automobile Liability Insurance covering all owned, non-owned, and hired vehicles used in connection with the Services, in the amount of $300,000 combined single limit per accident for bodily injury and property damage.

4.   Professional Liability Insurance in the amount of $5,000,000 per claim.

The company must be rated no less than "A-" as to management, and no less than "Class VII" as to financial strength by A.M. Best Company, Oldwick, New Jersey, or its equivalent, subject to the approval of the County Risk Management Division.

OR

The company must hold a valid Florida Certificate of Authority as shown in the latest "List of All Insurance Companies Authorized or Approved to Do Business in Florida", issued by the State of Florida Department of Financial Services and are members of the Florida Guaranty Fund.

The mailing address of Miami-Dade County as the certificate holder must appear on the certificate of insurance as follows:

> **Miami-Dade County**
> **111 N.W. 1st Street**
> **Suite 1300**
> **Miami, Florida 33128-1974**

Compliance with the foregoing requirements shall not relieve the Contractor of this liability and obligation under this section or under any other section in this Agreement.

Award of this Contract is contingent upon the receipt of the insurance documents, as required, within ten (10) business days. If the insurance certificate is received within the specified timeframe but not in the manner prescribed in this Agreement, the Contractor shall have an additional five (5) business days to submit a corrected certificate to the County. If the Contractor fails to submit the required insurance documents in the manner prescribed in this Agreement within fifteen (15) business days, the Contractor shall be in default of the contractual terms and conditions and award of the Contract may be rescinded, unless such timeframe for submission has been extended by the County.

The Contractor shall assure that the Certificates of Insurance required in conjunction with this Section remain in full

force for the term of the Contract, including any renewal or extension periods that may be exercised by the County. If the Certificate(s) of Insurance is scheduled to expire during the term of the Contract, the Contractor shall submit new or renewed Certificate(s) of Insurance to the County a minimum of ten (10) calendar days before such expiration. In the event that expired Certificates of Insurance are not replaced or renewed to cover the Contract period, the County may suspend the Contract until the new or renewed certificates are received by the County in the manner prescribed herein. If such suspension exceeds thirty (30) calendar days, the County may, at its sole discretion, terminate the Contract for cause and the Contractor shall be responsible for all direct and indirect costs associated with such termination.

ARTICLE 19.   PATENTS

A.   Contractor warrants that the System Upgrade furnished hereunder shall be delivered free of any rightful claim of any third party for infringement of any United States patent or copyright. If County notifies the Contractor promptly after the receipt of any claim that the System Upgrade infringes a United States patent or copyright and gives Contractor information, assistance and exclusive authority to settle and defend such claim, Contractor at its own expense shall defend, or may settle, any suit or proceeding against County so far as based on a claimed infringement which breaches this warranty. If, in any such suit arising from such claim, the continued use of the System Upgrade for the purpose intended is enjoined by any court of competent jurisdiction, Contractor shall, at its expense and option, either: (1) procure for County the right to continue using the System Upgrade, or (2) modify the System Upgrade so that it becomes non-infringing, or (3) replace the System Upgrade or portions thereof so that it becomes non-infringing, or (4) remove the System Upgrade and refund the purchase price (less reasonable depreciation for use). The foregoing states the entire liability of Contractor for patent or copyright infringement by the System Upgrade and is subject to any limitation of total liability set forth in this Contract.

B.   The preceding subsection (A) shall not apply to: (1) any Subsystem of the System Upgrade which is manufactured to the County's design where such County design directives required a violation of a patent, or (2) the use of the System Upgrade in conjunction with any other apparatus or material not supplied by Contractor to the extent that such conjoined use causes the alleged infringement. As to any portion of the System Upgrade or use described in the preceding sentence, Contractor assumes no liability whatsoever for patent infringement.

C.   THE PATENT AND COPYRIGHT WARRANTY AND INDEMNITY OBLIGATIONS RECITED ABOVE ARE IN LIEU OF ALL OTHER PATENT AND COPYRIGHT WARRANTIES AND INDEMNITIES WHATSOEVER, WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED OR STATUTORY.

ARTICLE 20. MANNER OF PERFORMANCE

a)   The Contractor shall provide the Services described herein in a competent and professional manner in accordance with the terms and conditions of this Agreement.

b)   The Contractor agrees that at all times it will employ, maintain and assign to the performance of the Services a sufficient number of competent and qualified professionals and other personnel to meet the requirements to which reference is hereinafter made. The Contractor agrees to adjust its personnel staffing levels or to replace any of its personnel if so directed upon reasonable request from the County, should the County make a reasonable determination that Contractor, is not meeting the dates set forth in the Project Schedule for delivery of products and services or any individual is not performing in a manner consistent with the

requirements set forth in this Contract.

c)   The Contractor warrants and represents that its personnel have the proper skill, training, knowledge, and experience, as necessary to perform the Services described herein, in a competent and professional manner.

d)   The parties shall, at all times, cooperate with each other and coordinate its respective work efforts to most effectively and efficiently maintain the progress in performing the Services.

e)   The Contractor shall comply with all provisions of all federal, state and local laws, statutes, ordinances, and regulations that are applicable to the performance of this Agreement.

ARTICLE 21. <u>EMPLOYEES OF THE CONTRACTOR</u>

All employees of the Contractor shall be considered to be, at all times, employees of the Contractor under its sole direction and not employees or agents of the County.

ARTICLE 22. <u>INDEPENDENT CONTRACTOR RELATIONSHIP</u>

The Contractor is, and shall be, in the performance of all work services and activities under this Agreement, an independent contractor, and not an employee, agent or servant of the County. All persons engaged in any of the work or services performed pursuant to this Agreement shall, at all times, and in all places, be subject to the Contractor's sole direction, supervision and control. The Contractor shall exercise control over the means and manner in which it and its employees perform the work, and in all respects the Contractor's relationship and the relationship of its employees to the County shall be that of an independent contractor and not as employees and agents of the County.

The Contractor does not have the power or authority to bind the County in any promise, agreement or representation other than specifically provided for in this Agreement.

ARTICLE 23. <u>AUTHORITY OF THE COUNTY'S PROJECT MANAGER</u>

a)   The parties hereby acknowledge and agree that each party's Project Manager will address and determine in the first instance all questions of any nature whatsoever arising out of, under, or in connection with, or in any way related to or on account of, this Agreement including without limitations: questions as to the value, acceptability and fitness of the Services; questions as to either party's fulfillment of its obligations under the Contract; negligence, fraud or misrepresentation; before or subsequent to the Effective Date of the Contract; and claims for damages, compensation and losses.

b)   The Project managers must, in the final instance, seek to resolve every difference concerning the Agreement. If the Project Managers for each party are unable to resolve any disputes hereunder following thirty days after notice given of such dispute, each party shall appoint a senior executive to negotiate the dispute and the senior executives shall mutually agree to a third party to participate with them in a review of the dispute.

c)   If the parties are unable to resolve the dispute by agreement, either party may request that the dispute be submitted to non-binding mediation by serving a written request for mediation with the other party. The mediation shall be conducted by a single mediator selected by mutual agreement of the parties. The parties agree to participate in good faith in the mediation process. In the event the dispute is not resolved by mediation, either party may pursue appropriate legal remedies. The cost for the mediation shall be split

equally between the parties, and each party shall be responsible for its own costs of mediation. Venue for the mediation shall be in Miami Dade County and mediation shall, unless otherwise agreed, extend not more than one (1) day.

ARTICLE 24. MUTUAL OBLIGATIONS

a)   This Agreement, including attachments and appendices to the Agreement, shall constitute the entire agreement between the parties with respect hereto and supersedes all previous communications and representations or agreements, whether written or oral, with respect to the subject matter hereto unless acknowledged in writing by the duly authorized representatives of both parties.

b)   Nothing in this Agreement shall be construed for the benefit, intended or otherwise, of any third party that is not a parent or subsidiary of a party or otherwise related (by virtue of ownership control or statutory control) to a party.

c)   In those situations where this Agreement imposes an indemnity obligation on the Contractor, the County may, at its expense, elect to participate in the defense if the County should so choose. Furthermore, the County may at its own expense defend or settle any such claims if the Contractor fails to diligently defend such claims, and thereafter seek indemnity for costs from the Contractor.

ARTICLE 25. QUALITY ASSURANCE/QUALITY ASSURANCE RECORD KEEPING

The Contractor shall maintain, and shall require that its subcontractors and suppliers maintain, complete and accurate records to substantiate compliance with the requirements set forth in the Scope of Services. The Contractor, it's subcontractors, and suppliers, shall retain such records, and all other documents relevant to the Services furnished under this Agreement for a period of three (3) years from the expiration date of this Agreement and any extension thereof.

ARTICLE 26. AUDITS

The County, or its duly authorized representatives and governmental agencies, shall until the expiration of three (3) years after the expiration of this Agreement and any extension thereof, have access to and the right to examine and reproduce any of the Contractor's books, documents, papers and records and of its subcontractors and suppliers which pertain to Additional Services rendered hereunder to the County. Such records shall subsequently conform to Generally Accepted Accounting Principles requirements, as applicable, and shall only address those transactions related to this Agreement.

Pursuant to Section 2-481 of the Code of Miami-Dade County, the Contractor will grant access, upon receipt of reasonable written notice and reasonable request, to the Commission Auditor to all financial and performance related records, property, and equipment purchased in whole or in part with government funds. The Contractor agrees to maintain an accounting system that provides accounting records that are supported with adequate documentation, and adequate procedures for determining the allowability and allocability of costs.

ARTICLE 27. SUBSTITUTION OF PERSONNEL

In the event the Contractor wishes to substitute personnel for the key personnel identified by the Contractor's Proposal,

the Contractor must notify the County in writing and request written approval for the substitution at least ten (10) business days prior to effecting such substitution. Such substituted personnel must possess the same or better experience and qualifications as the personnel identified in the contractor's proposal.

ARTICLE 28. CONSENT OF THE COUNTY REQUIRED FOR ASSIGNMENT

The Contractor shall not assign, transfer, convey or otherwise dispose of this Agreement, including its rights, title or interest in or to the same or any part thereof without the prior written consent of the County.

ARTICLE 29. SUBCONTRACTUAL RELATIONS

a)   Contractor may subcontract any portion of the work to be performed by Contractor hereunder provided the Contractor shall be responsible for the performance and work of any such subcontractors. Nothing herein shall prohibit Contractor from subcontracting any or all of its duties and obligations hereunder. In no event shall the existence of a subcontract release or reduce the liability of the Contractor to the County for any breach in the performance of Contractor's duties. All such subcontractors shall meet all State and County ordinances, rules and regulations for conducting business with the County.

b)   All Subcontractors are required to protect the confidentiality of the County's and Contractor's proprietary and confidential information.

ARTICLE 30.   EXCUSABLE DELAYS

A.   Contractor and County mutually agree that any interruptions to this project associated to the effects of COVID-19 shall not result in cost increase or any other financial penalties to the County.

B.   Contractor shall not be liable for delays in delivery or failure to perform due directly or indirectly to: (1) causes beyond Contractor's reasonable control, (2) Acts of God, acts (including failure to act) of any governmental authority (de jure or de facto), wars (declared or undeclared), riots, revolutions, strikes or other labor disputes, fires, floods, sabotage, nuclear incidents, earthquakes, storms, epidemics, (3) Contractor's inability to timely obtain necessary materials, items, components or services from suppliers who are affected by the foregoing circumstances, or (4) the failure of the County to perform its obligations hereunder in a timely manner. The foregoing shall apply even though any of such causes exists at the time of signature of the Contract. Upon the occurrence of a Force Majeure Event, the time period for performance of the obligation excused under this Article 30(A) shall be extended by the period of the excused delay, together with a reasonable period, to reinstate compliance with the terms of the Contract, but at no additional cost to the County.

C.   In the event of any delay or failure excused by this Article 30 Contractor shall as soon as practical notify County and shall at the same time, or at the earliest practical date after such notice, specify the revised delivery and performance dates. In the event of such delay, the time of delivery and/or performance shall be extended for a mutually agreed upon time period.

D.   All references in this Article to the Contractor shall be deemed to include subcontractors and suppliers, all of whom shall be considered as agents of the Contractor.

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ARTICLE 31.   <u>DUTY TO COOPERATE</u>

The parties acknowledge and agree that there are elements of work that may be required that for various reasons are unknown at this time and/or for which responsibility to either party has not been assigned hereunder. The parties agree to work in good faith to capture any additional elements of work or obligations within the Total System Price contained herein, but also agree that neither party shall be obligated to perform elements of work not otherwise already set forth herein.

ARTICLE 32.   <u>TESTING AND ACCEPTANCE</u>

[Note: These provisions shall apply to System Upgrade in total]

A.   Upon completion of work by the Contractor on the System Upgrade and the provision of written notification thereof to County, County shall have Fifteen (15) business days to review the work performed before commencement of the Acceptance Tests. The County and the Contractor shall jointly commence the mutually agreed upon Acceptance Tests on the date specified in Contractor's notice (or other mutually agreeable date) and a representative of the Contractor and a representative of the County shall sign off on the applicable System Upgrade Final System Acceptance Certificate (a copy of which is attached hereto as Exhibit D). If the System Upgrade does not fulfill the requirements of the Acceptance Tests, the Contractor shall correct the defects at no additional cost to County as soon as possible on an agreed upon schedule. Upon correction of any such defects, the Acceptance Tests for the applicable System Upgrade shall be repeated in accordance with the procedures set forth in this Article. Successful completion of the Acceptance Test followed by execution of the required certificate of acceptance will initiate the Warranty Period for a given System Upgrade. Final System Acceptance shall occur when the Infrastructure Hardware and Software pertaining to the Infrastructure Hardware for the System Upgrade as a whole have been furnished, delivered, installed, tested, and accepted as functioning and the County has executed a certificate of acceptance in the form provided as part of Exhibit D, Functional Test Procedures.

B.   If County commences use of any System Upgrade for its intended purpose, other than for the express purpose of training or testing as mutually agreed upon by Seller and County in writing or as set forth below, prior to Final System Acceptance, the System Upgrade shall be deemed accepted by County. The use of the applicable System Upgrade for its intended purpose shall be deemed to have occurred when County commences to use the System Upgrade for its communications. The Warranty Period for the System Upgrade put into use together with the associated installation Services shall be deemed to have commenced concurrently with the use of the applicable System Upgrade for its intended purpose. By exception, the System Upgrade shall not be deemed accepted by the County, notwithstanding use of the system by the County, where the Contractor has failed or refused to correct identified deficiencies which have prevented the successful completion of the applicable system acceptance test. In such event, the Warranty Period for the System Upgrade shall not be deemed to have commenced.

C.   As used in the Contract, Acceptance Date shall mean and Acceptance of a particular Subsystem of the System Upgrade shall be deemed to occur upon the earlier of: (1) the date on which the Subsystem is deemed accepted pursuant to subsection (A) above, or (2) the date on which the Subsystem is deemed accepted pursuant to subsection (B) above.

D.   As used in the Contract, Final Acceptance Date shall mean, and Final Acceptance of the System Upgrade as a whole, shall be deemed to occur pursuant to either Subsection (A) above or Subsection (B) above.

E.   County and Contractor agree that in the process of completing the Acceptance Tests most, if not all, of the Acceptance Tests can be successfully completed with only a minor number of punchlist items. In such event, the County and Contractor will discuss and mutually and reasonably agree on how the punchlist items will be completed, the value of those items, and the "conditional acceptance" of the System Upgrade has occurred. For the purpose of initiating the Warranty Period, satisfying the Project Schedule requirements and the release of any retained funds (other than the value of the punchlist items) conditional acceptance shall constitute Acceptance of the System Upgrade. This methodology will apply only to milestone payments one thru 8. This conditional acceptance shall not, however, release Contractor from its obligations to complete the remaining punchlist items by the dates set forth on the punchlist schedule.

ARTICLE 33.   REVIEWING DELIVERABLES

The Contractor agrees to submit all Deliverables required to be submitted for review and approval by the County in accordance with the specific requirements in the Exhibit A, Statement of Work and as specified herein. The Contractor understands that the County shall have final approval on all Deliverables, which approval shall not be unreasonably withheld, conditioned, or delayed.

In reviewing the Deliverables, the Contractor understands that the County will provide the Contractor with:

   i. a written notification of the County's approval, or

   ii. a written notification that each Deliverable is approved subject to the Contractor providing prompt correction of a minor deficiency, or,

   iii. in the case of a Deliverable that does not meet the requirements of the Contract, a written notification of the County's disapproval. The County's disapproval notification will state with reasonable detail to sufficiently advise the Contractor of the basis on which the Deliverable was determined to be unacceptable.

The County agrees that failure to provide approval or non-approval within thirty (30) days of receipt of the Deliverable from the Contractor shall constitute approval of the Deliverable, but in no event shall approval under this Article 2 be deemed to impair that County's rights under the Acceptance Test Plan.

ARTICLE 34. P25 SOFTWARE LICENSE

A.   Subject to the terms and conditions of the P25 Software License Agreement attached hereto as Exhibit F, the County is granted a non-transferable, non-exclusive, perpetual, limited license to use the Software in conjunction with the System Upgrade purchased under this Contract. "Software" means the "Licensed Programs" as defined in the Software License Agreement.

B.   County shall be entitled during the term of the Software License Agreement to use the Licensed Programs without disturbance. Contractor represents that the Software License Agreement is not subject or subordinate to any right of Contractor's creditors, or if such subordination exists, that the agreement or instrument creating the same provides for non-disturbance of County.

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C.   The County shall have the right to reproduce documentation provided that any such reproduction is solely for the use of the County and that such reproduction shall be subject to the same restrictions on use and disclosure as may be contained in the Software License Agreement with respect to documentation.

D.   The County reserves the right to opt in or out of the Software Support Services at any time during the term of the Agreement.

ARTICLE 35.   COVERAGE

Contractor's representations concerning the distance at which usable radio signals will be transmitted and received by Infrastructure Hardware supplied hereunder are set forth in the Statement of Work.

Contractor's responsibilities regarding coverage shall be limited to those responsibilities set forth in Exhibit A, the Statement of Work.

ARTICLE 36. WARRANTIES

A.   "Hardware and Services

Contractor warrants for the following periods of time from the Acceptance Date (hereinafter referred to as the "Warranty Period"), that the Hardware and installation Services furnished by Contractor under this Agreement shall be free from defects in material and workmanship and shall conform to the Agreement specifications. Any Services provided during the Warranty Period are set forth in the Statement of Work. Any and all claims for breach of this warranty are conclusively deemed waived unless made within the Warranty Period.

1. for mobile and portable radios, twenty-four (24) months.
2. for all other Infrastructure Hardware, one (1) year.

B.   For purposes of this Warranty the batteries supplied by Contractor shall be deemed defective if: (1) the battery capacity is less than 80% of rated capacity; or (2) the battery develops leakage. Replacement batteries shall be warranted only for the remaining unexpired portion of the Warranty Period. This warranty becomes void if: (1) the battery has been subjected to any kind of misuse, detrimental exposure, or has been involved in an accident, or (2) the battery is used in equipment or service other than the Hardware for which it is specified.

C.   During the Warranty Period if any component of the Hardware or portion of the installation Services fails to meet the foregoing warranties, Contractor's sole obligation and County's exclusive remedy under this warranty shall be the correction by Contractor of the failure at Contractor's option: (1) by repairing any defective component of the Hardware, or (2) by furnishing any necessary repaired or replacement parts, or (3) by the redoing of the faulty installation. Any such failure, or the repair or replacement of the defective component or the redoing of any installation, shall not extend the Warranty Period. Where such failure cannot be corrected by Contractor's reasonable efforts, the parties may negotiate an equitable adjustment in price. Contractor will be responsible for all charges incurred in returning defective parts to Contractor's plant and shipping repaired or replacement parts to the County. All warranty labor must be performed by an authorized service group approved by Contractor either at its place of business, for mobile or portable equipment, or at the County's

location for fixed location equipment should Contractor determine that it is not feasible to return the fixed location equipment to Contractor's authorized service group.

D.　　Any additional purchases of equipment, including radios and installation services which may be purchased by the County under this Contract and delivered or performed by the Contractor after Final System Acceptance of the System Upgrade, shall be warranted on the same terms, limitations, and exclusions as are set forth herein, except that the warranty on the equipment and installation services shall be for a period of twenty-four (24) months for additional Terminal Hardware items from the date of delivery of that item of equipment, twelve (12) months for additional Infrastructure Hardware items from the date of delivery of that item of equipment, and twelve (12) months from the date of acceptance of that installation service.

E.　　Contractor's obligations shall not apply to: (1) defects which are the result of improper storage, use, or installation performed by other than the Contractor, (2) maintenance performed by someone other than the Contractor, or repairs performed by someone other than Contractor, or (3) Hardware which has been subjected to any other kind of misuse or detrimental exposure or has been involved in an accident, or (4) Hardware or installations altered or repaired by any party other than the Contractor without the Contractor's prior written consent.

F.　　THE WARRANTIES AND REMEDIES SET FORTH IN THIS Article AND IN THE SOFTWARE LICENSE AGREEMENT CONSTITUTE THE ONLY WARRANTIES WITH RESPECT TO THE HARDWARE, SOFTWARE AND SERVICES AND THE COUNTY'S EXCLUSIVE REMEDIES IN THE EVENT SUCH WARRANTIES ARE BREACHED. THEY ARE IN LIEU OF ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED, OR STATUTORY INCLUDING, WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL CONTRACTOR BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INDIRECT DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUES.

ARTICLE 37. INTERFERENCE

Radio System coverage and performance are subject to degradation due to anomalous propagation and interference beyond the reasonable control of Contractor, including system design. Contractor shall not be responsible for degradation or disruption of service caused by operation of other radio systems, or by natural phenomena or other interference over which the Contractor has no reasonable control. In the event of a case of degradation due to interference within the Contractor's reasonable control, Contractor will provide engineering support and resolve at its expense the cause of interference.

In the event of a case of degradation due to interference by an outside party, Contractor will provide engineering support to County at County's expense to support County's efforts in resolving the interference issue with the outside party. In addition, County shall inform Contractor of any known causes of interference, which obligation shall continue throughout the term of the Contract and shall be solely responsible to remediate all interference prior to the Effective Date of the Contract.

ARTICLE 38. ANNUAL APPROPRIATION

The County's performance and obligation to pay under this Contract is contingent upon an annual appropriation by the Board of County Commissioners. Cancellation will not cause any penalty or expense to the County, except as to the portions of payments agreed upon and for which funds have been appropriated and budgeted.

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ARTICLE 39. SEVERABILITY

If any provision of this Contract shall be held by a court or competent jurisdiction to be illegal, invalid or unenforceable, the remaining provisions shall remain in full force and effect.

ARTICLE 40.   TERMINATION AND SUSPENSION OF WORK

a)   The County may terminate this Agreement if an individual or corporation or other entity attempts to meet its contractual obligation with the County through fraud, misrepresentation or material misstatement.

b)   The County may, as a further sanction, terminate or cancel any other contract(s) that such individual or corporation or other entity has with the County and that such individual, corporation or other entity shall be responsible for all direct and indirect costs associated with such termination or cancellation, including attorney's fees.

c)   The foregoing notwithstanding, any individual, corporation or other entity which attempts to meet its contractual obligations with the County through fraud, misrepresentation or material misstatement may be debarred from County contracting for up to five (5) years in accordance with the County debarment procedures. The Contractor may be subject to debarment for failure to perform and all other reasons set forth in Section 10-38 of the Code of Miami-Dade County.

d)   In the event that the County exercises its right to terminate this Agreement, the Contractor shall, upon receipt of such notice, unless otherwise directed by the County:

   i.   stop work on the date specified in the notice ("the Effective Termination Date");

   ii.   take such action as may be necessary for the protection and preservation of the County's materials and property;

   iii.   cancel orders;

   iv.   assign to the County and deliver to any location designated by the County any non-cancelable orders for Deliverables that are not capable of use except in the performance of this Agreement and has been specifically developed for the sole purpose of this Agreement and not incorporated in the Services;

   v.   take no action which will increase the amounts payable by the County under this Agreement; and

e)   In the event that the County exercises its right to terminate this Agreement, the Contractor will be compensated as stated in the payment Articles herein for the:

   i.   portion of the Services completed in accordance with the Agreement up to the Effective Termination Date; and

   ii.   non-cancelable Deliverables that are not capable of use except in the performance of this Agreement and has been specifically developed for the sole purpose of this Agreement, but not incorporated in the Services. All Services performed, finished and unfinished Hardware, and Documentation

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Deliverables produced or made by Contractor for County, up to and including the date of termination, shall become the property of County and Contractor shall be entitled to receive full price accrued up to the point of termination.

f)   All compensation pursuant to this Article are subject to audit.

ARTICLE 41. EVENTS OF DEFAULT

a)   An Event of Default shall mean a breach of this Agreement by the Contractor. Without limiting the generality of the foregoing, and in addition to those instances referred to herein as a breach, an Event of Default shall include the following:

i.   the Contractor has not delivered Deliverables on a timely basis;

ii.   the Contractor has refused or failed to supply enough properly skilled staff personnel;

iii.   the Contractor has failed to make prompt payment to subcontractors or suppliers for any Services;

iv.   the Contractor has become insolvent (other than as interdicted by the bankruptcy laws), or has assigned the proceeds received for the benefit of the Contractor's creditors, or the Contractor has taken advantage of any insolvency statute or debtor/creditor law or if the Contractor's affairs have been put in the hands of a receiver;

v.   the Contractor has failed to obtain the approval of the County where required by this Agreement;

vi.   the Contractor has failed to provide "adequate assurances" as required under subsection b below;

vii.   the Contractor has failed in the representation of any warranties stated herein.

b)   When reasonable grounds for uncertainty exist with respect to the Contractor's ability to perform the Services or any portion thereof, the County may request that the Contractor, within the timeframe set forth in the County's request, provide adequate assurances to the County, in writing, of the Contractor's ability to perform in accordance with the terms of this Agreement. Until the County receives such assurances, the County may request an adjustment to the compensation received by the Contractor for portions of the Services which the Contractor has not performed. In the event that the Contractor fails to provide to the County the requested assurances within the prescribed timeframe, the County may:

i.   treat such failure as a repudiation of this Agreement; and

ii.   resort to any remedy for breach provided herein or at law, including but not limited to, taking over the performance of the Services or any part thereof either by itself or through others.

In the event the County shall terminate this Agreement for default, the County or its designated representatives may immediately take possession of all applicable equipment, materials, products, documentation, reports and data.

ARTICLE 42. NOTICE OF DEFAULT - OPPORTUNITY TO CURE

If an Event of Default occurs, the County may so notify the Contractor in writing ("Default Notice"), specifying the basis

for such default, and advising the Contractor that such default must be cured within thirty (30) days following the receipt of the Default Notice or this Agreement with the County may be terminated. The County may grant an additional period of such duration as the County shall deem appropriate without waiver of any of the County's rights hereunder, so long as the Contractor has commenced curing such default and is effectuating a cure with diligence and continuity during such thirty (30) day period or any other longer period which the County prescribes. The Default Notice shall specify the date the Contractor shall discontinue the Services upon the Termination Date.

ARTICLE 43. REMEDIES IN THE EVENT OF DEFAULT

If an Event of Default occurs, the Contractor shall be liable for all damages resulting from the default, including but not limited to:

a)   the difference between the cost associated with procuring Services hereunder and the amount actually expended by the County for re-procurement of Services, including procurement and administrative costs; and

b)   such other direct damages.

The Contractor shall also remain liable for any liabilities and claims related to the Contractor's default. The County may also bring any suit or proceeding for specific performance.

ARTICLE 44. INTENTIONALLY OMITTED

ARTICLE 45. CONFIDENTIALITY

a)   During the term of this Contract, it is anticipated that one party (hereafter the "Disclosing Party") may disclose to the other party (hereafter the "Receiving party") information which the Disclosing Party considers proprietary and confidential. Accordingly, with respect to any specifications, drawings, sketches, models, samples, tools, technical information, confidential business information or data, in written or other tangible form which: (1) has been designated in writing by the Disclosing Party as confidential or proprietary, or (2) is of the type that the Receiving Party customarily treats as confidential or proprietary, and which is furnished by the Disclosing Party to the Receiving party in contemplation of or under this Contract (hereafter "Information"), the Receiving Party shall, except as may be required by the Florida Public Records Act and the Florida Government in the Sunshine Law, for a period of ten (10) years after the effective date of this Contract, treat such Information as confidential information with the same degree of care as the Receiving Party affords to confidential information of its own of a similar nature and shall not reproduce any such information in whole or in part, except as specifically authorized in writing by the Disclosing Party.

b)   The provisions of the preceding subsection shall not apply to any Information which:

   i. Is or shall become publicly available without breach of this Article 45, on the part of the Receiving Party;
   ii. Is already known by the Receiving Party prior to receipt from the Disclosing Party;
   iii. Is independently developed by the Receiving Party;
   iv. Is rightfully obtained by the Receiving Party from third parties without restriction; or
   v. Is required to be disclosed by appropriate governmental or judicial order provided that Receiving party gives Disclosing Party prior written notice of such order and assists Disclosing party in taking reasonable actions to restrict such order.

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c) The provisions of this Article 45 shall survive the expiration or termination of this Contract.

d) The confidentiality obligations of this Article 45 shall not apply to Software, the confidentiality and other rights and obligations with respect to which are set forth in the Software License Agreement.

e) The County agrees to provide Contractor with immediate notice of all requests made for copies of specifications, drawings, sketches, models, samples, tools, technical information, confidential business information or data related to this Contract.

f) Notwithstanding the foregoing, the County's compliance with, or good faith attempts to comply with, the Florida Public Records Act shall not be considered a breach of this Article 45.

ARTICLE 46. LIMITATION OF LIABILITY

A. Except for Contractor's liability to third parties for its willful misconduct or negligent acts or omissions as more particularly described in Article 18, the total liability of the Contractor, including its subcontractors or suppliers, for all claims of any kind for any loss or damage, whether in contract, warranty, tort (including negligence or infringement), strict liability or otherwise, arising out of, connected with, or resulting from the performance or non-performance of this Contract or from the manufacture, sale, delivery, installation, technical direction of installation, resale, repair, replacement, licensing or use of any Hardware, Software or the furnishing of any Service, shall in no event shall it exceed the Total System Upgrade Price. Except as to title, any such liability shall terminate upon the expiration of the Warranty Period.

ARTICLE 47. AMENDMENTS

A. No modification, supplement, amendment, or other change to this Contract shall be binding on either party unless set forth in a legally authorized writing signed by both the County and the Senior Project Manager.

B. Changes in or modifications, termination or discharge of the Contract, in any form whatsoever, shall not be valid or enforceable unless in writing and signed by the party to be charged therewith or its duly authorized representative and by County; provided, however, that any change in or modification, termination or discharge of the Contract expressly provided for shall be effective as so provided.

ARTICLE 48. ADDITIONAL HARDWARE AND SERVICES PURCHASES

During the term of the contract, the County may purchase additional licenses, hardware, software, and/or services provided they are available. Each order must refer to this contract and must specify the pricing and delivery terms. The applicable provisions of this Contract will govern the purchase and sale of additional licenses, hardware, software, or services. Any modification to the Statement of Work of this Contract will require mutual written agreement between the Contractor and the County.

Contractor's catalog shall be referenced, and discount rate included in Exhibit C, Project Schedule, Pricing and Milestone Payments.

ARTICLE 49. PROPRIETARY INFORMATION

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See Article 45 of this Agreement

ARTICLE 50. INTENTIONALY OMMITED

ARTICLE 51. VENDOR REGISTRATION/CONFLICT OF INTEREST

a)   Vendor Registration

The Contractor shall be a registered vendor with the County – Internal Services Department, Strategic Procurement Division, for the duration of this Agreement. In becoming a registered vendor with Miami-Dade County, the Contractor confirms its knowledge of and commitment to comply with the following:

1.   *Miami-Dade County Ownership Disclosure Affidavit*
   (Section 2-8.1 of the Code of Miami-Dade County)

2.   *Miami-Dade County Employment Disclosure Affidavit*
   (Section 2.8.1(d)(2) of the Code of Miami-Dade County)

3.   *Miami-Dade County Employment Drug-free Workplace Certification*
   (Section 2-8.1.2(b) of the Code of Miami-Dade County)

4.   *Miami-Dade County Disability and Nondiscrimination Affidavit*
   (Section 2-8.1.5 of the Code of Miami-Dade County)

5.   *Miami-Dade County Debarment Disclosure Affidavit*
   (Section 10.38 of the Code of Miami-Dade County)

6.   *Miami-Dade County Vendor Obligation to County Affidavit*
   (Section 2-8.1 of the Code of Miami-Dade County)

7.   *Miami-Dade County Code of Business Ethics Affidavit*
   (Sections 2-8.1(i), 2-11.1(b)(1) through (6) and (9), and 2-11.1(c) of the Code of Miami-Dade County)

8.   *Miami-Dade County Family Leave Affidavit*
   (Article V of Chapter 11 of the Code of Miami-Dade County)

9.   *Miami-Dade County Living Wage Affidavit*
   (Section 2-8.9 of the Code of Miami-Dade County)

10. *Miami-Dade County Domestic Leave and Reporting Affidavit*
   (Article VIII, Section 11A-60 - 11A-67 of the Code of Miami-Dade County)

11. *Miami-Dade County E-Verify Affidavit*
   (Executive Order 11-116)

12. *Miami-Dade County Pay Parity Affidavit*
   (Resolution R-1072-17)

13. *Miami-Dade County Suspected Workers' Compensation Fraud Affidavit*
   (Resolution R-919-18)

14. *Subcontracting Practices*
   (Section 2-8.8 of the Code of Miami-Dade County)

15. *Subcontractor/Supplier Listing*
   (Section 2-8.1 of the Code of Miami-Dade County)

16. *Form W-9 and 147c Letter*
   (as required by the Internal Revenue Service)

17. *FEIN Number or Social Security Number*
   In order to establish a file, the Contractor's Federal Employer Identification Number (FEIN) must be provided. If no FEIN exists, the Social Security Number of the owner or individual must be provided. This number becomes Contractor's "County Vendor Number". To comply with Section 119.071(5) of the Florida Statutes relating to the collection of an individual's Social Security Number, be aware that the County requests the Social Security Number for the following purposes:

   - *Identification of individual account records*
   - *To make payments to individual/Contractor for goods and services provided to Miami-Dade County*
   - *Tax reporting purposes*
   - *To provide a unique identifier in the vendor database that may be used for searching and sorting departmental records*

18. *Office of the Inspector General*
   (Section 2-1076 of the Code of Miami-Dade County)

19. *Small Business Enterprises*
   The County endeavors to obtain the participation of all small business enterprises pursuant to Sections 2-8.1.1.1, 2-8.1.1.2 and 2-8.2.2 of the Code of Miami-Dade County and Title 49 of the Code of Federal Regulations.

20. *Antitrust Laws*
   By acceptance of any contract, the Contractor agrees to comply with all antitrust laws of the United States and the State of Florida.

b) Conflict of Interest and Code of Ethics

Section 2-11.1(d) of the Code of Miami-Dade County requires that any County employee or any member of the employee's immediate family who has a controlling financial interest, direct or indirect, with Miami-Dade County or any person or agency acting for Miami-Dade County, competing or applying for a contract, must first request a conflict of interest opinion from the County's Ethics Commission prior to their or their immediate family member's entering into any contract or transacting any business through a firm, corporation, partnership or business entity in which the employee or any member of the employee's immediate family has a controlling financial interest, direct or indirect, with Miami-Dade County or any person or agency acting for Miami-Dade County. Any such contract or business engagement entered in violation of this subsection, as amended, shall be rendered voidable. All autonomous personnel, quasi-judicial personnel, advisory personnel, and employees wishing to do business with the County are hereby advised they must comply with the applicable provisions of Section 2-11.1 of the Code of Miami-Dade County relating to Conflict of Interest and Code of Ethics. In accordance with Section 2-11.1 (y), the Miami-Dade County Commission on Ethics and Public Trust (Ethics Commission) shall be empowered to review, interpret, render advisory opinions and letters of instruction and enforce the Conflict of Interest and Code of Ethics Ordinance.

ARTICLE 52.   INSPECTOR GENERAL REVIEWS

Independent Private Sector Inspector General Reviews

Pursuant to Miami-Dade County Administrative Order 3-20, the County has the right to retain the services of an Independent Private Sector Inspector General (hereinafter "IPSIG"), whenever the County deems it appropriate to do so. Upon written notice from the County, the Contractor shall make available to the IPSIG retained by the County, all requested records and documentation pertaining to this Agreement for inspection and reproduction. The County shall be responsible for the payment of these IPSIG services, and under no circumstance shall the Contractor's prices and any changes thereto approved by the County, be inclusive of any charges relating to these IPSIG services. The terms of this provision apply to the Contractor, its officers, agents, employees, subcontractors and assignees. Nothing contained in this provision shall impair any independent right of the County to conduct an audit or investigate the operations, activities and performance of the Contractor in connection with this Agreement. The terms of this Article shall not impose any liability on the County by the Contractor or any third party.

Miami-Dade County Inspector General Review
According to Section 2-1076 of the Code of Miami-Dade County, Miami-Dade County has established the Office of the Inspector General which may, on a random basis, perform audits on all County contracts, throughout the duration of said contracts. The cost of the audit for this Contract shall be one quarter (1/4) of one (1) percent of the total contract amount which cost shall be included in the total contract amount. The audit cost will be deducted by the County from progress payments to the Contractor. The audit cost shall also be included in all change orders and all contract renewals and extensions.

Exception: The above application of one quarter (1/4) of one percent fee assessment shall not apply to the following contracts: (a) IPSIG contracts; (b) contracts for legal services; (c) contracts for financial advisory services; (d) auditing contracts; (e) facility rentals and lease agreements; (f) concessions and other rental agreements; (g) insurance contracts; (h) revenue-generating contracts; (I) contracts where an IPSIG is assigned at the time the contract is approved by the Commission; (j) professional service agreements under $1,000; (k) management agreements; (l) small purchase orders as defined in Miami-Dade County Implementing Order 3-38; (m) federal, state and local government-funded grants; and (n) interlocal agreements. ***Notwithstanding the foregoing, the Miami-Dade County Board of County Commissioners may authorize the inclusion of the fee assessment of one quarter (1/4) of one percent in any exempted contract at the time of award.***

Nothing contained above shall in any way limit the powers of the Inspector General to perform audits on all County

contracts including, but not limited to, those contracts specifically exempted above. The Miami-Dade County Inspector General is authorized and empowered to review past, present and proposed County and Public Health Trust contracts, transactions, accounts, records and programs. In addition, the Inspector General has the power to subpoena witnesses, administer oaths, require the production of records and monitor existing projects and programs. Monitoring of an existing project or program may include a report concerning whether the project is on time, within budget and in conformance with plans, specifications and applicable law. The Inspector General is empowered to analyze the necessity of and reasonableness of proposed change orders to the Contract. The Inspector General shall have the power to audit, investigate, monitor, oversee, inspect and review operations, activities, performance and procurement process, including but not limited to project design, specifications, proposal submittals, activities of the Contractor, its officers, agents and employees, lobbyists, County staff and elected officials to ensure compliance with contract specifications and to detect fraud and corruption.

Upon written notice to the Contractor from the Inspector General or IPSIG retained by the Inspector General, the Contractor shall make all requested records and documents available to the Inspector General or IPSIG for inspection and copying. The Inspector General and IPSIG shall have the right to inspect and copy all documents and records in the Contractor's possession, custody or control which, in the Inspector General's or IPSIG's sole judgment, pertain to performance of the contract, including, but not limited to original estimate files, change order estimate files, worksheets, proposals and agreements form and which successful and unsuccessful subcontractors and suppliers, all project-related correspondence, memoranda, instructions, financial documents, construction documents, proposal and contract documents, back-charge documents, all documents and records which involve cash, trade or volume discounts, insurance proceeds, rebates, or dividends received, payroll and personnel records, and supporting documentation for the aforesaid documents and records.

ARTICLE 53. LOCAL, STATE, AND FEDERAL COMPLIANCE REQUIREMENTS

Contractor agrees to comply, subject to applicable professional standards, with the provisions of any and all applicable Federal, State and the County orders, statutes, ordinances, rules and regulations which may pertain to the Services required under this Agreement, including, but not limited to:

a)   Equal Employment Opportunity (EEO), in compliance with Executive Order 11246 as amended and applicable to this Contract.

b)   Miami-Dade County Small Business Enterprises Development Participation Provisions, as applicable to this Contract.

c)   Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended.

d)   Section 2-11.1 of the Code of Miami-Dade County, "Conflict of Interest and Code of Ethics."

e)   Section 10-38 of the Code of Miami-Dade County, "Debarment of Contractors from County Work."

f)   Section 11A-60 - 11A-67 of the Code of Miami-Dade County, "Domestic Leave."

g)   Section 21-255 of the Code of Miami-Dade County, prohibiting the presentation, maintenance, or prosecution of false or fraudulent claims against Miami-Dade County.

h)   The Equal Pay Act of 1963, as amended (29 U.S.C. 206(d)).

i)   Section 448.07 of the Florida Statutes "Wage Rate Discrimination Based on Sex Prohibited."

j)   Chapter 11A of the Code of Miami-Dade County (§ 11A-1 et seq.) "Discrimination."

k)   Chapter 22 of the Code of Miami-Dade County (§ 22-1 et seq.) "Wage Theft."

l)   Chapter 8A, Article XIX, of the Code of Miami-Dade County (§ 8A-400 et seq.) "Business Regulations."

m)   Any other laws prohibiting wage rate discrimination based on sex.

Pursuant to Resolution R-1072-17, by entering into this Contract, the Contractor is certifying that the Contractor is in compliance with, and will continue to comply with, the provisions of items "h" through "m" above.

The Contractor shall hold all licenses and/or certifications, obtain and pay for all permits and/or inspections, and comply with all laws, ordinances, regulations and building code requirements applicable to the work required herein. Damages, penalties, and/or fines imposed on the County or Contractor for failure to obtain and maintain required licenses, certifications, permits and/or inspections shall be borne by the Contractor. The Project Manager shall verify the certification(s), license(s), permit(s), etc. for the Contractor prior to authorizing work and as needed.

Notwithstanding any other provision of this Agreement, Contractor shall not be required pursuant to this Agreement to take any action or abstain from taking any action if such action or abstention would, in the good faith determination of the Contractor, constitute a violation of any law or regulation to which Contractor is subject, including but not limited to laws and regulations requiring that Contractor conduct its operations in a safe and sound manner.

ARTICLE 54. NONDISCRIMINATION

During the performance of this Contract, Contractor agrees to not discriminate against any employee or applicant for employment because of race, color, religion, ancestry, national origin, sex, pregnancy, age, disability, marital status, familial status, sexual orientation, gender identity or gender expression, status as victim of domestic violence, dating violence or stalking, or veteran status, and on housing related contracts the source of income, and will take affirmative action to ensure that employees and applicants are afforded equal employment opportunities without discrimination. Such action shall be taken with reference to, but not limited to, recruitment, employment, termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on the job training.

By entering into this Contract, the Contractor attests that it is not in violation of the Americans with Disabilities Act of 1990 (and related Acts) or Miami-Dade County Resolution No. R-385-95. If the Contractor or any owner, subsidiary or other firm affiliated with or related to the Contractor is found by the responsible enforcement agency or the County to be in violation of the Act or the Resolution, such violation shall render this Contract void. This Contract shall be void if the Contractor submits a false affidavit pursuant to this Resolution or the Contractor violates the Act or the Resolution during the term of this Contract, even if the Contractor was not in violation at the time it submitted its affidavit.

ARTICLE 55. CONFLICT OF INTEREST

The Contractor represents that:

a)   No officer, director, employee, agent, or other consultant of the County or a member of the immediate family

or household of the aforesaid has directly or indirectly received or been promised any form of benefit, payment or compensation, whether tangible or intangible, in connection with the award of this Agreement.

b) There are no undisclosed persons or entities interested with the Contractor in this Agreement. This Agreement is entered into by the Contractor without any connection with any other entity or person making a proposal for the same purpose, and without collusion, fraud or conflict of interest. No elected or appointed officer or official, director, employee, agent or other consultant of the County, or of the State of Florida (including elected and appointed members of the legislative and executive branches of government), or a member of the immediate family or household of any of the aforesaid:

  i) is interested on behalf of or through the Contractor directly or indirectly in any manner whatsoever in the execution or the performance of this Agreement, or in the services, supplies or work, to which this Agreement relates or in any portion of the revenues; or

  ii) is an employee, agent, advisor, or consultant to the Contractor or to the best of the Contractor's knowledge any subcontractor or supplier to the Contractor.

c) Neither the Contractor nor any officer, director, employee, agency, parent, subsidiary, or affiliate of the Contractor shall have an interest which is in conflict with the Contractor's faithful performance of its obligation under this Agreement; provided that the County, in its sole discretion, may consent in writing to such a relationship, provided the Contractor provides the County with a written notice, in advance, which identifies all the individuals and entities involved and sets forth in detail the nature of the relationship and why it is in the County's best interest to consent to such relationship.

d) The provisions of this Article are supplemental to, not in lieu of, all applicable laws with respect to conflict of interest. In the event there is a difference between the standards applicable under this Agreement and those provided by statute, the stricter standard shall apply.

e) In the event Contractor has no prior knowledge of a conflict of interest as set forth above and acquires information which may indicate that there may be an actual or apparent violation of any of the above, Contractor shall promptly bring such information to the attention of the County's Project Manager. Contractor shall thereafter cooperate with the County's review and investigation of such information and comply with the instructions Contractor receives from the Project Manager in regard to remedying the situation.

ARTICLE 56. PRESS RELEASE OR OTHER PUBLIC COMMUNICATION

Under no circumstances shall the Contractor without the express written consent of the County:

a) Issue or permit to be issued any press release, advertisement or literature of any kind which refers to the County, or the Work being performed hereunder, unless the Contractor first obtains the written approval of the County. Such approval may be withheld if for any reason the County believes that the publication of such information would be harmful to the public interest or is in any way undesirable; and

b) Communicate in any way with any contractor, department, board, agency, commission or other organization or any person whether governmental or private in connection with the Services to be performed hereunder except upon prior written approval and instruction of the County; and

c) Except as may be required by law, the Contractor and its employees, agents, subcontractors and suppliers will not represent, directly or indirectly, that any product or service provided by the Contractor or such parties

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has been approved or endorsed by the County.

ARTICLE 57.   ENTIRE AGREEMENT

See Article 4 of this Agreement.

ARTICLE 58.   BINDING EFFECTS

The terms, conditions, and covenants of this Contract shall inure to the benefit of and be binding upon the parties hereto and their successors and assigns. This provision shall not constitute a waiver of any conditions prohibiting or limiting assignment.

ARTICLE 59.   NOTICE OF CLAIMS

Each party shall provide immediate written notice, to the extent legally permissible, of any legal action or suit filed against the party which may affect the performance of the party's duties under this Contract, and prompt written notice of any claim made against the party, which may result in litigation related in any way to this Contract, or which may affect the performance of the party's duties under this Contract.

ARTICLE 60.   GENERAL REPRESENTATIONS OF CONTRACTOR

A.   **No Collusion.** The Contract is made without any connection with any other person making a proposal for the same purpose or other persons interested with the undersigned in the Contract and is in all respects fair and without collusion of fraud. No commission person or officer or employee of County is interested directly or indirectly in any manner whatsoever, in or in the performance of the Contract or in the supplies, work or business to which it relates or any portion of the profits thereof.

B.   **No Litigation.** Except as specifically disclosed to County in writing prior to execution of the Contract, no claim, litigation, investigation or proceeding of or before any court, arbitrator or government authority is currently pending, nor to the knowledge of the Contractor, is any litigation or proceeding threatening against the Contractor or against its properties or revenues (i) which involves claims of defective design or workmanship in connection with any contract entered into by the Contractor or (ii) which, if adversely determined, would have an adverse effect on the business operations, property, financial or other conditions to the Contract.

C.   **No Gratuities.** Contractor warrants that no gratuities have been offered or given (in the form of entertainment, gifts or otherwise) to any official or employee of County with a view towards securing favorable treatment in the awarding or amending of the Contract or respect to evaluation of its performance. For breach or violation of the foregoing warranties, County shall have the right to cancel any contract without liability or at its discretion, deduct from the contract value or otherwise to recover the full amount of such commission, percentage, brokerage, contingent fees, or gratuities.

D.   **Conflict of Interest.** Contractor covenants that neither it nor an officer of the corporation or partner of the partnership, as the case may be, if the Contractor be a corporation or partnership, has any interests, nor shall it acquire any interests, either directly or indirectly which would conflict with any manner or degree with the

performance of the work hereunder, it further covenants that, in the performance hereof, no person having such interest shall be employed by it. It is expressly understood that the breach of any of the covenants contained in this paragraph is a material breach hereof and shall entitle County to recover immediate damages, as well as all monies paid hereunder.

E.   **No Conviction or Indictment.** Contractor hereby represents to the best of its knowledge neither it nor any of its personnel or shareholders have been subject to any investigation nor have any of them been convicted or indicted for commission of any crime involving misconduct, corruption, bribery, or fraud in connection with any public contract. Should any conviction or indictment be obtained, or any such investigation commence prior to the expiration of the Contract, regardless of the date of the occurrence giving rise to the subject conviction or indictment, it will be disclosed in writing to County. Contractor is advised that it must complete the Public Entity Crime Affidavit (PEC). This affidavit must be submitted to comply with Articles 287.132 and 287.133 of the Florida Statutes.

F.   **Interest of Members of, or Delegates to Congress.** In accordance with 18 U.S.C. § 431, no member of, or delegates to the Congress of the United States shall be admitted to a share or part of this Contract or to any benefit arising therefrom.

G.   **Conservation.** Contractor shall recognize mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6321 et seq.).

H.   **Relation with County.** The relationship of Contractor to County is that of an independent contractor, and Contractor, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that neither it or its subcontractors nor employees or agents will hold itself (themselves) out as proclaiming to be an officer or employee of County by reason hereof, and that neither it nor its subcontractors nor the employees or agents will, by reason hereof, make any claim, demand or application to, or offer any right or privilege applicable to any employee of County.

I.   **Spare Parts, Discontinued Equipment.** Contractor hereby affirms that spare parts for all Hardware (excluding Existing System hardware equipment and items) purchased under this Contract will be available for at least five (5) years following discontinuance of the product. In the event Contractor discontinues any product covered by this Contract, Contractor agrees to make available to the County a functionally equivalent replacement product, equal to or better than the product discontinued. As to spare parts for the System Upgrade, the Contractor will use best efforts to continue to provide equipment and support for the System Upgrade, except for products that have reached end of life or are no longer available.

ARTICLE 61.   BANKRUPTCY

The County reserves the right to terminate this contract, if, during the term of any contract the Contractor has with the County, the Contractor becomes involved as a debtor in a bankruptcy proceeding, or becomes involved in a reorganization, dissolution, or liquidation proceeding, or if a trustee or receiver is appointed over all or a substantial portion of the property of the Contractor under federal bankruptcy law or any state insolvency law.

ARTICLE 62.   GOVERNING LAW

This Contract, including appendices, and all matters relating to this Contract (whether in contract, statute, tort (such as

negligence, or otherwise)) shall be governed by, and construed in accordance with, the laws of the State of Florida. Venue shall be Miami-Dade County.

ARTICLE 63   COUNTY USER ACCESS PROGRAM (UAP)

a) User Access Fee

Pursuant to Section 2-8.10 of the Code of Miami-Dade County, this Contract is subject to a user access fee under the County User Access Program (UAP) in the amount of two percent (2%). All sales resulting from this Contract, or any contract resulting from the solicitation referenced on the first page of this Contract, and the utilization of the County Contract price and the terms and conditions identified herein, are subject to the two percent (2%) UAP. This fee applies to all Contract usage whether by County Departments or by any other governmental, quasi-governmental or not-for-profit entity.

The Contractor providing goods or services under this Contract shall invoice the Contract price and shall accept as payment thereof the Contract price less the 2% UAP as full and complete payment for the goods and/or services specified on the invoice. The County shall retain the 2% UAP for use by the County to help defray the cost of the procurement program. Contractor participation in this invoice reduction portion of the UAP is mandatory.

b) Joint Purchase

Only those entities that have been approved by the County for participation in the County's Joint Purchase and Entity Revenue Sharing Agreement are eligible to utilize or receive County Contract pricing and terms and conditions. The County will provide to approved entities a UAP Participant Validation Number. The Contractor must obtain the participation number from the entity prior to filling any order placed pursuant to this Section. Contractor participation in this joint purchase portion of the UAP, however, is voluntary. The Contractor shall notify the ordering entity, in writing, within three (3) business days of receipt of an order, of a decision to decline the order.

For all ordering entities located outside the geographical boundaries of Miami-Dade County, the Contractor shall be entitled to ship goods on an "FOB Destination, Prepaid and Charged Back" basis. This allowance shall only be made when expressly authorized by a representative of the ordering entity prior to shipping the goods.

The County shall have no liability to the Contractor for the cost of any purchase made by an ordering entity under the UAP and shall not be deemed to be a party thereto. All orders shall be placed directly by the ordering entity with the Contractor and shall be paid by the ordering entity less the 2% UAP.

c) Contractor Compliance

If a Contractor fails to comply with this Article, that Contractor may be considered in default by the County in accordance with Article 24 of this Contract.

ARTICLE 64   FIRST SOURCE HIRING REFERRAL PROGRAM

Pursuant to Section 2-2113 of the Code of Miami-Dade County, for all contracts for goods and services, the Contractor, prior to hiring to fill each vacancy arising under a County contract shall (1) first notify the South Florida Workforce Investment Board ("SFWIB"), the designated Referral Agency, of the vacancy and list the vacancy with SFWIB according to the Code, and (2) make good faith efforts as determined by the County to fill a minimum of fifty percent

(50%) of its employment needs under the County contract through the SFWIB. If no suitable candidates can be employed after a Referral Period of three to five days, the Contractor is free to fill its vacancies from other sources. Contractor will be required to provide quarterly reports to the SFWIB indicating the name and number of employees hired in the previous quarter, or why referred candidates were rejected. Sanctions for non-compliance shall include, but not be limited to: (i) suspension of contract until Contractor performs obligations, if appropriate; (ii) default and/or termination; and (iii) payment of $1,500/employee, or the value of the wages that would have been earned given the noncompliance, whichever is less. Registration procedures and additional information regarding the FSHRP are available at https://iapps.careersourcesfl.com/firstsource/.

ARTICLE 65.   PUBLIC RECORDS AND CONTRACTS FOR SERVICES PERFORMED ON BEHALF OF MIAMI-DADE COUNTY

The Contractor shall comply with the Public Records Laws of the State of Florida, including by not limited to, (1) keeping and maintaining all public records that ordinarily and necessarily would be required by the County in order to perform the service; (2) providing the public with access to public records on the same terms and conditions that the County would provide the records and at a cost that does not exceed the cost provided in Chapter 119, F.S., or as otherwise provided by law; (3) ensuring that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and (4) meeting all requirements for retaining public records and transferring, at no cost, to the County all public records in possession of the Contractor upon termination of the contract and destroying any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements upon such transfer. In addition, all records stored electronically must be provided to the County in a format that is compatible with the information technology systems of the County. Failure to meet any of these provisions or to comply with Florida's Public Records Laws as applicable shall be a material breach of this Agreement and shall be enforced in accordance with the terms and conditions of the Agreement.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT (305) 375-5773, ISD-VSS@MIAMIDADE.GOV, 111 NW 1st STREET, SUITE 1300, MIAMI, FLORIDA 33128

ARTICLE 66.   SURVIVAL

The parties acknowledge that any of the obligations in this Agreement will survive the term, termination and cancellation hereof. Accordingly, the respective obligations of the Contractor and the County under this Agreement, which by nature would continue beyond the termination, cancellation or expiration thereof, shall survive termination, cancellation or expiration hereof.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the contract date herein above set forth.

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Rev. 06/11/2019

Contractor

By: _Lori Rodriguez_

Name: __Lori Rodriguez__

Title: __Principle,Contracts Manager__

Date: __September 4, 2020__

Attest: _Sarah Elaine Wade_

Corporate Secretary/Notary Public

Miami-Dade County

By: _____

Name: __Carlos A. Gimenez__

Title: __Mayor__

Date: _____

Attest: _____

Clerk of the Board

Corporate Seal/Notary Seal

SARAH ELAINE WADE
NOTARY PUBLIC
REG. #7848772
MY COMMISSION EXPIRES
FEB. 28, 2023
COMMONWEALTH OF VIRGINIA

Approved as to form
and legal sufficiency

_____

Assistant County Attorney

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Rev. 06/11/2019

MIAMI-DADE COUNTY, FLORIDA PROCEDURES

EXHIBIT A, STATEMENT OF WORK

SR10A.4 UPGRADE AND

SIMULCAST EXPANSION

Table of Contents

As previously communicated, Harris Corporation and L3 Technologies announced plans to merge, bringing together two extraordinary and highly complementary technology portfolios to become one agile global aerospace and defense technology leader called L3Harris Technologies, Inc. This statement serves as notification that, effective June 29, 2019, the merger of Harris Corporation and L3 Technologies is complete.

As a result, Harris Corporation was renamed L3Harris Technologies, Inc. and L3 Technologies is now a wholly owned subsidiary of L3Harris Technologies, Inc. There is no legal entity change as a result of this merger. Also, at this time there will be no changes to accounting, estimating, billing and other business systems. We are in the process of evaluating the effect of this organizational change on our cost structure and will provide updates as changes become known.

Please be assured of our continued commitment to our relationship and to remaining focused on delivering excellent program execution throughout the integration process.

1. Overview

L3Harris is pleased to provide a firm fixed price proposal to Miami-Dade County to upgrade the existing PR9D Redundant Cores with new SR10A.4 Geo-Redundant High Availability (HA) Cores. The Primary Core will reside at DPCC and the Secondary Core will be geographically separated and reside at the Lightspeed location. Also included in this Proposal is the upgrade of three VIDA Console Exchanges (VCEs) located at each of the three Dispatch Locations - Lightspeed, DPCC, and SPCC. These improvements will create a high reliability platform upon which state-of-the-art public safety services are made available to the County's radio users.

L3Harris plans to upgrade all existing RF sites, as needed, to be compatible with the SR10A.4 cores, and also to support Distributed Control Point (DCP) functionality. The TCC location will continue to host the simulcast control point functionality for both Systems A and B.

Upgrading to SR10A.4 with DCP allows for the implementation of redundant simulcast control points, so this proposal design includes redundant control point functionality for both simulcast systems at the SPCC location.

The two System A auxiliary receiver (AuxRx) sites, Trail Glades and Palm Springs North, will be converted into full transmit/receive (TxRx) sites.

This proposal also includes additional descriptions for the following:

- One TxRx site for System A, located at Industrial Communications

- One TxRx site with redundant control point functionality for System A, located at Lightspeed

- One TxRx site with redundant control point functionality for System B, located at Lightspeed

- Enhanced Enterprise Network Manager – Enhanced ENM

- StatusAware server and licenses for 100 devices. This server collects location (GPS data) and status (presence data).

- Network Intrusion Detection System - NIDS

2. System Description

2.1 Overview of System Features

2.1.1 SR10.4 HA-NSC VIDA CORE

The SR10.4 VIDA core performs all the mission critical services required for a public safety LMR communication environment. The core resides on the VIDA Application Server (VAS) configured using the VMware vSphere hypervisor. VMware vSphere allows a single server to simultaneously run multiple operating systems (OS), each in an independent environment called a virtual machine (VM). The VAS automatically allocates the appropriate; RAM (memory), storage, and networking resources for each VM.

The hypervisor allows virtual machines residing on the VAS to operate with a degree of independence from the underlying physical hardware. Since virtual machines are decoupled from a specific set of physical hardware, virtualization allows for consolidation of physical computing resources (such as CPUs, memory, storage, and networking) into pools of resources that can be dynamically allocated to the VMs it supports.

Geographically-Separated Location HA provides a backup NSC that can be geographically separated from the main NSC. It provides for hardware and geographic redundancy. Location HA ensures network operation continues even if an entire building housing the primary NSC is compromised.

The VIDA cores configure based on the following concept:

- Critical services perform automatic failover to standby VMs

- Non-critical services require manual failover

Figure 1. Typical VIDA Premier VAS with Geo-Separated Location HA
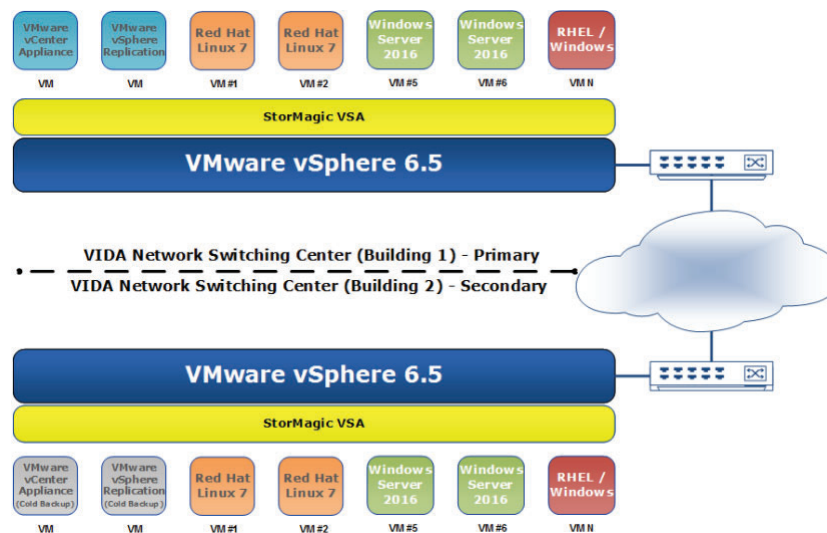
2.1.1.1 VIDA PREMIER NSC WITH GEOGRAPHICALLY SPLIT-HIGH AVAILABILITY REDUNDANCY

The VIDA solution provides full service high availability failover. For critical services on the primary core, the secondary core takes over in the event of a failover. VIDA provides robust performance without compromise; therefore, failover does not mean failure. VIDA networks employ the means to meet mission critical reliability, availability, and maintainability requirements, using centralized services that can include geographically split redundant servers. Operating at distinctly separate geographic and judiciously separated locations (yet fully network interconnected), the system provides an additional level of redundancy when compared to a co-located high availability redundant system configuration.

The following services are bundled into the SR10A.4 VIDA core offering for Miami-Dade:

- Voice Network Controller (VNIC) – Voice packet switching application

- Unified Administration Server (UAS) – System administration and provisioning

- Regional Network Manager (RNM) – Network Alarm management

- Basic Enterprise Network Manager (ENM) – Provides Cores monitoring

- Regional Site Manager [Pro] (RSM / RSM PRO)

- Active Directory – Network security (access control and group profiles)

- Transcoder (XCD) – Translates between varying vocoders in the digital domain (ADPCM for legacy systems, full rate AMBE, half rate AMBE and BeOn)

- SUMS 2.0 – Network security (patch management)

- Device Manager – Software configuration for infrastructure

- Activity Warehouse (AW)

- BeOn Foundation (10 end user licenses) – Interfaces radio systems to commercial 3G and 4G carriers

- Network Key Management Facility (KMF)

- McAfee® ePolicy Orchestrator (ePO)

- Information Backup - Unitrends

- Audit Logging – Splunk

2.1.1.2 VIDA PSAP CONNECT (REPLACEMENT FOR VCE)

The VIDA PSAP Connect supports the addition of a region connected to a VIDA Premier core to provide a specialized dispatch switching center configuration that enhances the flexibility, efficiency, and economy of VIDA dispatch solutions.

Under certain circumstances (system design configurations), the PSAP Connect may be used to consolidate dispatch center resources and devices (e.g.; consoles) into a local switch; subsequently connected to the primary NSC, which may be situated in a remote location. Such a configuration may be appropriate to support the needs of a dispatch operation having many consoles and other dispatch center-related equipment; equipment that is housed in a facility remotely located from the primary switching center.

3. Scope of Work

3.1 SR10A.4 Upgrade

To upgrade the Miami-Dade system currently running PR9D to SR10A.4 hardware and software, L3Harris will provide Miami-Dade the scope of services detailed below including:

- System Engineering
- Project Management
- Installation Services
- Staging, Shipping and Warehousing
- Training

Upon order, L3Harris will build and configure the new VIDA Cores to standard L3Harris configuration. After successful staging and testing, L3Harris will ship the equipment to a L3Harris local warehouse, then to the customer sites for installation into the designated equipment rooms.

The L3Harris team will power up the new equipment and perform a system health audit to verify proper installation and function of the new equipment. The L3Harris Team will then configure the new VIDA cores and prepare the system for cutover and acceptance testing.

3.1.1 Backhaul Upgrade

It is the responsibility of Miami-Dade County to have completed the upgrade of the backhaul connectivity to an adequate MPLS network, capable of supporting the full scope of the requested upgrade prior to work commencing on this project.

3.1.1.1 BACKHAUL TOPOLOGY AND BANDWIDTH REQUIREMENTS

The County backhaul upgrade must preserve all current DS1/T1 links and connections back to the existing PR9D core located at TCC until the SR10A.4 upgrade is completed. All project locations must be equipped with MPLS routers that can provide Ethernet connectivity to the new VIDA SAR and WAR routers.

Figure 2 illustrates L3Harris' understanding of the backhaul topology that will be made available to support the upgraded VIDA network.

Figure 2. Miami-Dade Provided Backhaul Topology that will be available for the VIDA SR10A.4 System
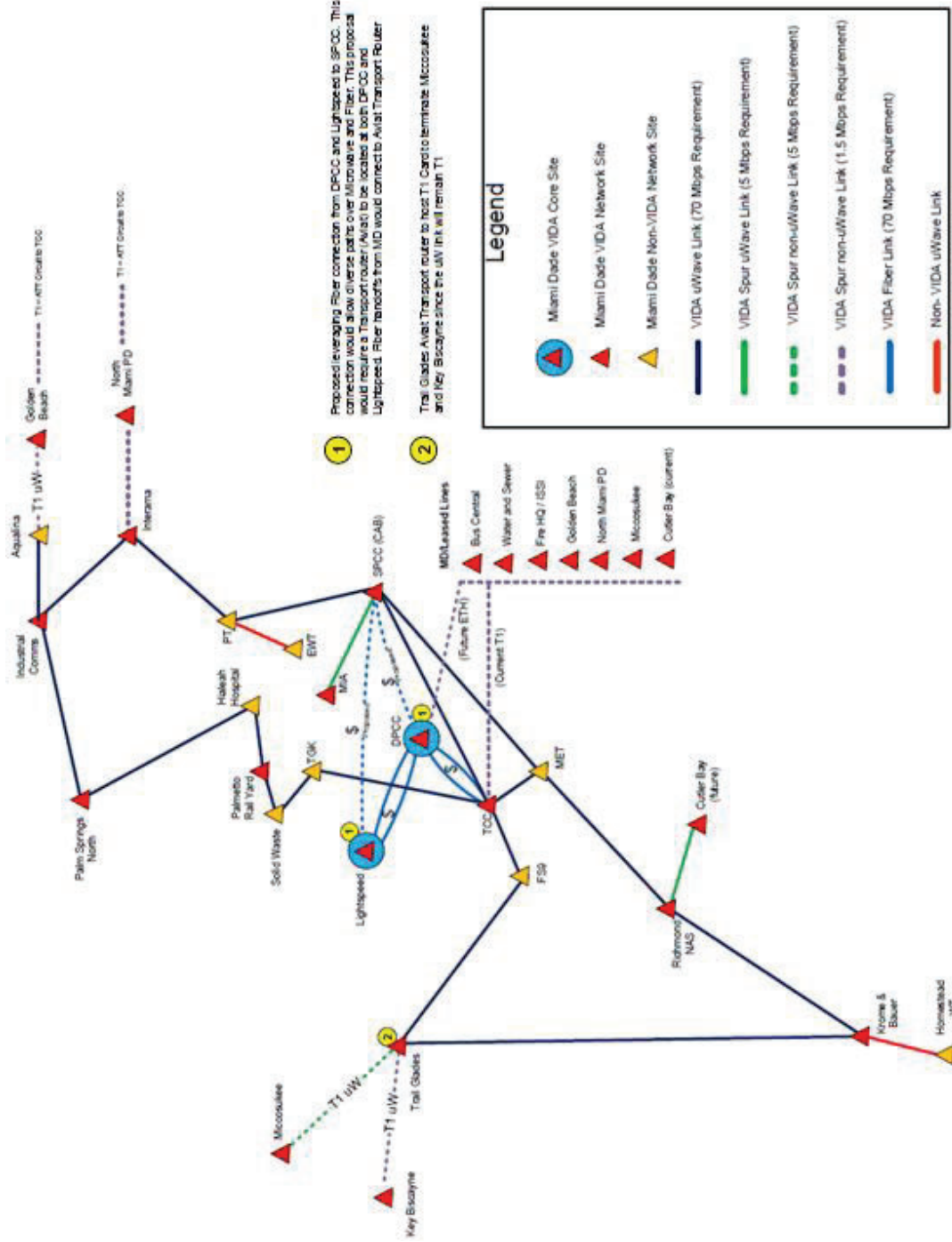
3.1.1.2 WAN CONNECTIVITY REQUIREMENTS

Figure 3 indicates the number of WAN Ethernet ports that the VIDA Network will require out of the Miami-Dade provided MPLS router at each project location.

Figure 3. WAN Connectivity Requirements

Site Names	WAN Connections
DPCC	5
SPCC	9
Lightspeed	5
TCC	5
Palm Springs North	4
Trail Glades	4
Richmond NAS	4
Krome & Bauer	4
Miami International Airport	4
Palmetto Rail Yard	4
Interama	4
Industrial Comm	4
Cutler Bay	2
Miccosukee	3
Golden Beach	1
Key Biscayne	1
North Miami PD	1
Fire EOC	1
RDCS #1	1
RDCS #2	2

3.1.1.3 EXISTING DS/T1 BANDWIDTH REQUIREMENTS

Figure 4 indicates the estimated simulated DS1/T1 bandwidth of the existing North and South loops that constitute the County's current DS1/T1 plan. The maximum estimated bandwidth to simulate all existing DS1s over the new microwave system will be close to 70 Mbps. DS1 cards will need to be implemented with the new microwave system to preserve the existing DS1 connections back to the PR9D core. Once the upgrade is transitioned to the new core, these DS1 connections can be removed. Please note this estimate is based on the current DS1/T1 plan where some DS1s may not be used which can lower the bandwidth estimate of the existing system. Once a system audit is conducted, L3Harris will provide final bandwidth figures.

Figure 4. Bandwidth Estimate for Existing DS1/T1 Microwave Loops
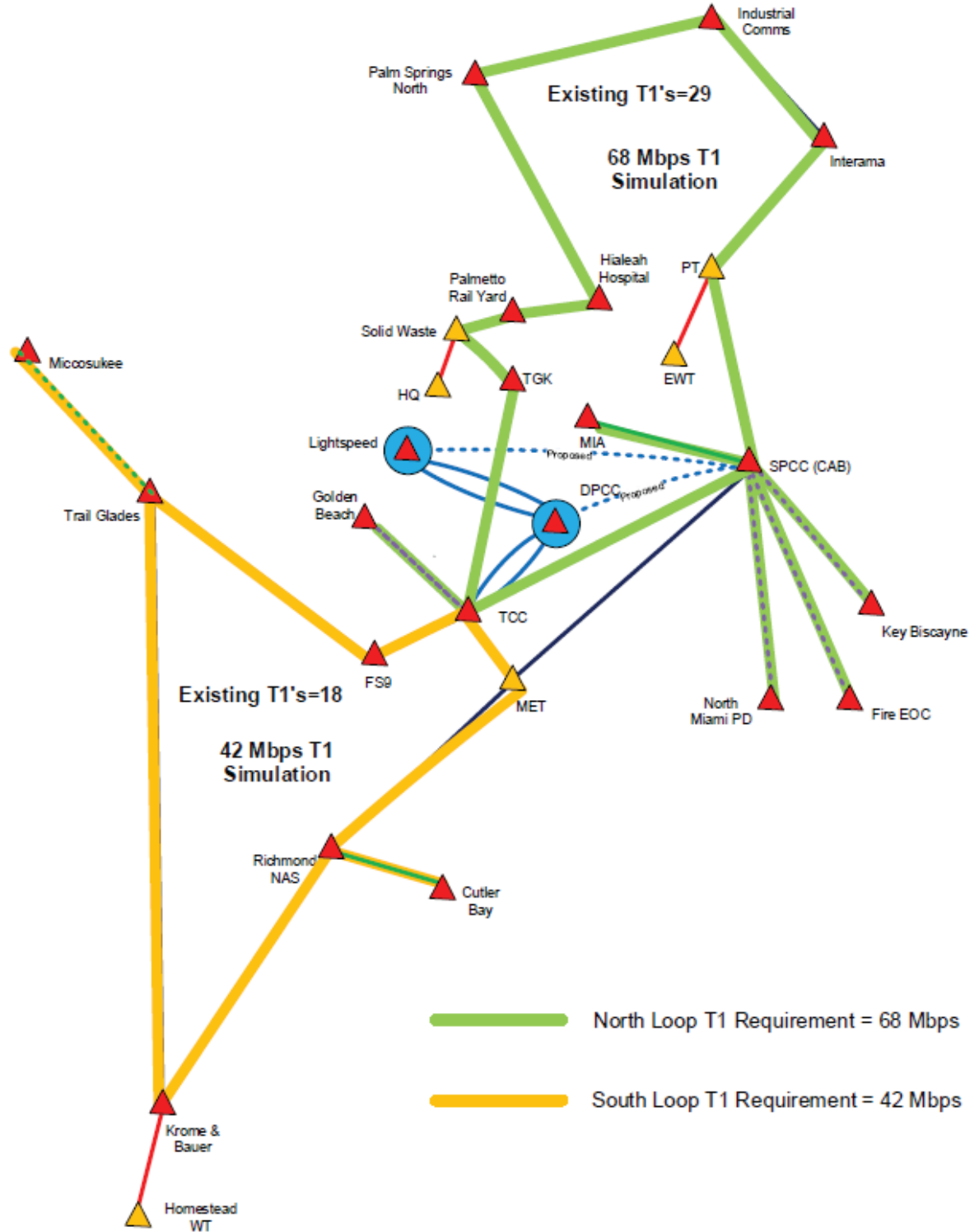
3.1.2   Network Upgrade

- L3Harris will conduct an audit of the existing NSC network configurations, WAN configurations, IP Plan and existing NSC drawings.

- L3Harris will document the recommended changes from PR9D to SR10A.4 based on results from the network audit.

- L3Harris will develop factory network equipment configurations for the new core and validate these configurations during staging including implementing the existing WAN side of the WARs.

- L3Harris will provide standard VIDA NSC network equipment and configure new NSC WAR Routers to provide backward compatibility with existing site network equipment.

- L3Harris will replace all existing site routers and switches at the 9 Simulcast RF sites on System-A. L3Harris will provide redundant routers at these locations.

- L3Harris will replace all existing site routers and switches at the 11 Simulcast RF sites on System-B. L3Harris will provide redundant routers at these locations.

- L3Harris will replace all existing site routers and switches for all multisites. L3Harris will provide redundant routers for only System C , Miccosukee.

- L3Harris will replace all existing site routers at dispatch locations (Lightspeed, DPCC, SPCC, Fire EOC and North Miami Beach PD). L3Harris will provide redundant routers at these locations except North Miami Beach PD.

3.1.3   Core Upgrade

L3Harris is replacing the existing Network Switching Center (NSC) running PR9D with a Geo-HA VIDA Premier Core, featuring a primary NSC cabinet at DPCC and secondary cabinet at Lightspeed.

L3Harris is also replacing PR9D VCE controllers with Geo-HA VIDA Connect PSAP Cores. Note that although these are capable of geographical separation, both primary and secondary NSC cabinets will be adjacently installed at each of the three dispatch center locations.

L3Harris will transfer L3Harris valid licenses currently in use throughout the system.

Engineering services are included for equipment ordering, configuring, staging and testing at the Factory, and for power-up, final configuration, equipment transition, and Functional Acceptance Test (FATP) of new SR10.4 HA-NSC at the designated locations in the field.

Real-Time Applications and Services

- Voice Network Interface Controller (VNIC)

- Transcoding (XCDR)

- Inter Sub System Interface (ISSI)

- BeOn Foundation (BeOn) – 10 end user licenses

ADMINISTRATION AND MANAGEMENT APPLICATIONS AND SERVICES

- Unified Administration System (UAS)
- Regional Network Manager (RNM)
- Regional System Manager (RSMPro)
- Active Directory (AD)

CYBERSECURITY SERVICES

- Active Directory (AD)
- McAfee® ePolicy Orchestrator (ePO)
- Security Update Management Service (SUMS)
- Internet Firewall (IFW)
  - One per each VIDA Premier NSC cabinet (two)
- Regional Firewall and Host Intrusion Detection
  - Regional Firewalls (RFWs)
    - One per each VIDA Premier NSC cabinet
  - Anti-Virus/Anti-Malware
    - New McAfee Endpoint Security
    - Manage with ePolicy Orchestrator
  - Information Backup
    - Unitrends
  - Audit Logging
    - Splunk for centralized log collection and event correlation

CORE UPGRADE EQUIPMENT

One SR10A.4 VIDA Premier Core, with Geographical High Availability (Geo-HA) consisting of:

- One Primary Network Switching Center (NSC) Cabinet at DPCC
- One Secondary NSC Cabinet at Lightspeed

Three SR10A.4 VIDA PSAP Connect Cores, equipped for Geographical High Availability (Geo-HA), although co-located in the proposed design:

- VIDA PSAP Connect Core for Lightspeed, with co-located primary and secondary NSC cabinets.
- VIDA PSAP Connect Core for SPCC, with co-located primary and secondary NSC cabinets.
- VIDA PSAP Connect Core for DPCC, with co-located primary and secondary NSC cabinets.

ISSI REDUNDANCY (NEW)

This procurement will include necessary product, equipment and services to support ISSI redundancy.

L3Harris will leverage the existing licensing for ISSI software and one (1) external connection with 10 talkpaths. Necessary services for configuring Miami-Dade's side of primary and redundant ISSI is included in the pricing. However, the equipment and services required for the external entities are not part of this contract.

L3Harris is also including the licensing for two (2) additional external connections with 10 talkpaths each. Implementation of those connections will require additional physical connectivity and implementation services not included in the proposal.

The demarcation point for the secondary ISSI is the IFW interface port. Miami-Dade is responsible for connectivity to the external systems.

- Existing Active Directory user accounts will be migrated to the new system during the upgrade.

3.1.4 Control Point and Simulcast Cell Upgrade

The control points of systems A and B will be updated to feature Distributed Control Point functionality and to be compatible with the SR10A.4 VIDA cores. In addition to TCC, the SPCC location will also be capable to assume the role of control point.

- Equipment for System A simulcast system TxRx Sites, includes:
    - One set of redundant SecureSync GPS modules
    - Two Site Access Routers (in redundant configuration)
    - Four Ethernet Switches
    - One Network Sentry
    - One MME Data Controller (only at the control point locations – TCC and SPCC)
    - Twenty Traffic Controller Modules

- Equipment for System B simulcast system TxRx Sites, includes:
    - One set of redundant SecureSync GPS modules
    - Two Site Access Routers (in redundant configuration)
    - Four Ethernet Switches
    - One Network Sentry
    - One MME Data Controller (only at the control point locations – TCC and SPCC)

- Each System A TxRx site and AuxRx site will be reconfigured to be compatible with DCP simulcast mode of operation and the SR10A.4 core.

- Each System B TxRx site will be reconfigured to be compatible with DCP simulcast mode of operation and the SR10A.4 core.

3.1.5 Multi-Site Sites (non-simulcast), Systems C to K Upgrade

Each multi-site will be equipped with new Network Sentry's and MASTR V modules as required, and be reconfigured to be compatible with the SR10A.4 core.

- Equipment for System C, Miccosukee, including:
    - Two Site Access Routers (in redundant configuration)
    - One Ethernet Switch
    - One Network Sentry
    - Five Traffic Controller Modules

- Equipment for System D, TCC, including:
    - One Site Access Router
    - One Ethernet Switch
    - One Network Sentry
    - Three Baseband Modules
    - Five Traffic Controller Modules

- Equipment for System E, Golden Beach, including:
    - One Site Access Router
    - One Ethernet Switch
    - One Network Sentry
    - Three Traffic Controller Modules

- Equipment for System F, SPCC, including:
    - One Site Access Router
    - Three Ethernet Switches
    - One Network Sentry
    - Fifteen Traffic Controller Modules

- Equipment for System G, Miccosukee, including:
    - One Site Access Router
    - One Ethernet Switch
    - One Network Sentry
    - Five Traffic Controller Modules

- Equipment for System H, RDCS #1, including:
    - One Site Access Router
    - Three Ethernet Switches

- – One Network Sentry
  - – Five Baseband Modules
  - – Ten Traffic Controller Modules

- Equipment for System I, RDCS #2, including:
  - – One Site Access Router
  - – One Ethernet Switch
  - – One Network Sentry
  - – Five Traffic Controller Modules

- Equipment for System J, RDCS #2, including:
  - – One Site Access Router
  - – One Ethernet Switch
  - – One Network Sentry
  - – Three Baseband Modules
  - – Five Traffic Controller Modules

- Equipment for System K, Key Biscayne, including:
  - – One Site Access Router
  - – One Ethernet Switch
  - – One Network Sentry
  - – Five Traffic Controller Modules

3.1.6 Migration Strategy

3.1.6.1 SUMMARY

The migration strategy for the Miami-Dade system will consist of the following steps:

- SR10.4 NSC Core Infrastructure Install

- Turn up and cut over new core

- Install new Network Sentry, SecureSync GPS modules, networking equipment and MME controllers (Control Point locations only) in existing equipment racks for all systems. The timing of this work will be dictated by the operational criticality of each RF system.

- SR10A.4 upgrade of multi-sites in the following order:
  - – System D
  - – System H (RDCS #1)
  - – Systems I and J (RDCS #2)
  - – System F
  - – System G

- System E
- System C
- System K

- SR10A.4 upgrade of System A

- SR10A.4 upgrade of System B

As each phase completes, the system is evaluated for functionality based on the Functional Test Procedures and stability (burn-in) before proceeding to the next phase. Execution of the Functional Test Procedures in Appendix C shall prove out the proper functionality of the system. Any changes to the Functional Test Procedures are subject to a change order that is mutually agreed upon by the County and L3Harris.

3.1.6.2 METHODOLOGY

The upgrade of the entire system will be based on the following premises, actions and principles:

- The upgraded backhaul will have been proven capable of fully supporting, in parallel, the bandwidth requirements of both PR9D and SR10A.4 operations. We are including bandwidth calculations in section 3.1.1.3.

- The upgrade methodology described herein is unique to Miami-Dade and, as such, some of the steps to be taken have not been fully vetted to the level dictated by L3Harris quality standards.   To mitigate this circumstance, the methodology will be thoroughly tested at a L3Harris test facility, and at the field, as permitted by Miami-Dade typical operation, during early preparatory upgrade stages.   However, due to the complexity and high traffic of the Miami Dade system, this planned testing may not reveal all the issues that could potentially arise. The following is a list of topics and technical risks that will be specially considered during the upgrade methodology's vetting process:

  - Compatibility between the SR10A.4 core and the PR9D MUX based linear simulcast control point. Basic functional compatibility will be determined by L3Harris lab test but there is the possibility that some special functions used in Miami Dade operations will not behave as intended until the whole upgrade is completed. L3Harris has built into the plan robust fallback strategies to mitigate the risk of impactful operational changes introduced by the execution of the upgrade plan.

  - Existing potentially undesirable radio behaviors that could be dictated by personalities currently in use. These behaviors include reported issues of users typically registered on System A not been able to automatically roam back to their home system after having been required to temporarily roam to System B.

  - Incompatibility between radio, console and base station code (exception or otherwise) currently in use by Miami-Dade, and the proposed SR10A.4 upgrade. Updates to radio code or changes to radio personalities are outside the scope of this upgrade

  - Coverage analysis for the simulcast systems operating without SPCC (by-pass site). Early predictions have shown that it might be required to power off sites in addition to SPCC to avoid undesirable levels of TDI during its upgrade to SR10A.4. Final analysis has not been completed yet, and it is pending MD's validation of L3Harris configuration data.

    – There will not be an opportunity to test the upgraded simulcast systems, when they achieve full 20-channel capacity, prior to placing them in operation at full load. This is also a risk that is mitigated by the fallback plan.

As alluded to previously, the upgrade methodology described herein is customized and specific only to Miami-Dade's current system architecture. Therefore, the proposed approach will require vetting through preliminary testing in a lab environment prior to implementing the upgrade in the field. If the pre-testing shows the methodology to not be a valid approach or unforeseen migration issues arise during the upgrade, L3Harris will work with Miami-Dade to determine an alternative methodology. Adjustments to the current upgrade plan methodology or the development of a new methodology may result in additional effort, which will require a mutually agreed upon change order to account for subsequent impacts to cost and/or schedule.

■ The replacement SR10A.4 cores will support RF sites running PR9D software for a period no longer than 6 months. This is referring to the timeframe where the PR9D sites are operating on the SR10A.4 cores.

■ The upgrade of the RF sites will be performed system by system, in reverse order of operational criticality and complexity, in order to minimize impact to field operations and to compile and implement lessons learned throughout the process.

    – The amount of work during the RF sites upgrade and cutover window will be minimized by preparation, installation pre-work, and by the use of spare and temporarily repurposed MASTR V modules for fast field swapping during RF system upgrade.

    – Installation and pre-wiring of all replacement hardware inside the existing equipment racks of the equipment currently running PR9D software.

    – Replacement of Traffic Controller modules that cannot support SR10A.4 software, where applicable.

    – Purchase of cache of SR10A.4-compatible Baseband Modules that can be made available at the TxRx site for fast swapping and simple fall-back during the cutover window.

■ The registration of radios onto the SR10A.4 simulcast system must be carefully managed to minimize the occurrence multiple simultaneous registrations that could overload the system's control channels and translate into service outages in the order of minutes.

Figure 5 contains the high level steps of the migration plan for Miami-Dade. Please refer to Appendix A: Upgrade Migration Plan for more details.

Figure 5. High Level Steps of the Upgrade Migration Plan

Item #	Activity Description
1	Backhaul Upgrade
2	System Audits
3	Detailed Upgrade Plan Creation
4	DCP Enhanced Bypass Plan Development
5	SR10A.4 VIDA Cores Production and Staging
6	Adjust initial upgrade plan due to any findings during testing
7	Installation of SR10A.4 VIDA cores, power up, fine tuning.

Item #	Activity Description
8	Bypass Tests for Systems A and B
9	Commissioning of Upgraded VIDA Cores – Prework
10	Commissioning of Upgraded VIDA Cores – Cutover
12 to 19	Upgrade Multisites
20	Upgrade Pre-work for the Simulcast Systems
21	"DCP Simulcast Testing Using 4 Upgraded Channels Performed on System A"
22	"Upgrade System A to SR10A.4 - DCP Simulcast Reverse Bypass Upgrade"
23	Upgrade Pre-work for System B
24	"Upgrade System B to SR10A.4 - DCP Simulcast Reverse Bypass Upgrade"

3.2 System A Site Expansion

The proposed System A site expansion converts the two receive-only sites at Palm Springs North and Trail Glades to full transmit-receive.

Figure 6 shows the resultant System A configuration following site expansion.

Figure 6. System A after Expansion

Palm Springs
20-MASTR-V
System A
New Remote Site

System A Simulcast Distributed
Control Point (DCP2) – SPCC

System A
DCP Site
SPCC
20-MASTR-V
Repeaters

Richmond
20-MASTR-V
Repeaters
System A
Remote Site

Trail Glades
20-MASTR-V
System A
New Remote Site

Krome & Bauer
20-MASTR-V
Repeaters
System A
Remote Site

Wide Area IP Network –
(New Microwave and Fiber,
County Provided)

Airport
20-MASTR-V
Repeaters
System A
Remote Site

Palmetto Rail Yard
20-MASTR-V
Repeaters
System A
Remote Site

Interama
20-MASTR-V
Repeaters
System A
Remote Site

System A Simulcast Distributed Control Point (DCP1)
TCC

System A
DCP Site
TCC
20-MASTR-V
Repeaters

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3.3 Equipment and Services

L3Harris will provide two (2) RF sites, operating on the County's twenty (20) 800 MHz System A channels in P25T Phase 1 and 2 modes at following locations:

- Palm Springs North

- Trail Glades

3.3.1.1 PALM SPRINGS NORTH

L3 Harris will provide the following equipment and services for this location:

- Twenty (20) MASTR V base stations and simulcast site common equipment featuring:
  - Redundant SecureSync Frequency Standards and associated GPS antenna systems
  - Redundant Site Access Routers with Ethernet IP connectivity

- Two (2) Transmit antenna subsystem each including 10-channel transmit combiner, power monitoring subsystem, transmit antenna, associated coaxial cable, and surge protection.

- One (1) UPS with a runtime of two hours.

- The existing Receive antenna subsystem will be re-used.

Associated services include system engineering, project management, factory staging, freight to Miami, FL, installation, functional testing and coverage characterization.

3.3.1.2 TRAIL GLADES

L3 Harris will provide the following equipment and services for this location:

- Twenty (20) MASTR V base stations and simulcast site common equipment featuring:
  - Redundant SecureSync Frequency Standards and associated GPS antenna systems
  - Redundant Site Access Routers with Ethernet IP connectivity

- Two (2) Transmit antenna subsystem each including 10-channel transmit combiner, power monitoring subsystem, transmit antenna, associated coaxial cable, and surge protection.

- One (1) UPS with a runtime of two hours.

- The existing Receive antenna subsystem will be re-used.

Associated services include system engineering, project management, factory staging, freight to Miami, FL, installation, functional testing and coverage characterization.

3.3.2   System A Timing Optimization

Following completion of site upgrades and additions, the System A simulcast timing will be verified, and a timing optimization of the entire system A simulcast system will be performed.

3.4 Training

Miami-Dade County will require training on the upgraded P25 communications system for technical personnel responsible for network and site maintenance. Training will be required on the Network Switching Centers due to the migration to a virtual machine environment, and on the MASTR V base stations and P25 simulcast systems due to changes in equipment configuration and implementation of a Distributed Control Point architecture.

L3Harris will conduct two on-site training courses; a 1½-day SR10A Network Upgrade course and a 4½-day MASTR V & Simulcast System Maintenance course. These courses will be conducted two times each on mutually agreeable dates for up to ten participants per session at a facility provided by the County. Access to network and site equipment will be required.

The following is a brief description of each course.

3.4.1 SR10A Network Upgrade Course

This course focuses on the network architecture due to transitioning from a PR9 to an SR10A network. Topics covered include the following:

- Comparison of a PR9 and SR10A network architecture

- Introduction to VMWare and navigating vSphere

- VMWare Snapshot Manager basics and limitations

- VMWare replication

- Overview of failover operation

- Introduction to the Enterprise Network Manager (ENM)

3.4.2 MASTR V & Simulcast System Maintenance Course

This course covers the theory of operation and maintenance procedures for the MASTR V base station used in an SR10A P25 radio system. Topics covered include station architecture, module overview, software overview, network configuration, station configuration, troubleshooting and testing. Additionally, the course provides system technicians with the knowledge and skills to operate, maintain, and troubleshoot a P25 Distributed Control Point simulcast system. Topics include simulcast system operation and concepts, such as capture, and non-capture zones and delay spread, signal flow, GPS timing synchronization and alignment, distributed control point architecture and configuration, bypass operation, and system troubleshooting and replacement of failed components.

3.5 Additional Sites

3.5.1 System A

This proposal also includes additional information for the following:

- One TxRx site for System A, located at Industrial Communications.

- One TxRx site with redundant control point functionality for System A, located at Lightspeed.

3.5.1.1 EQUIPMENT AND SERVICES

L3Harris will provide two (2) RF sites, operating on the County's twenty 800 MHz System A channels in P25T Phase 1 and 2 modes, each including:

- Twenty (20) MASTR V base stations and simulcast site common equipment featuring:
    - Redundant SecureSync Frequency Standards and associated GPS antenna systems
    - Redundant Site Access Routers with Ethernet IP connectivity

- Two (2) Transmit antenna subsystem each including 10-channel transmit combiner, power monitoring subsystem, transmit antenna, associated coaxial cable, and surge protection.

- One (1) Receive antenna system including antenna, tower-top amplifier (TTA) with Test Port, transmission lines, and receiver multicoupler.

Additional pricing includes equipment and physical installation of the infrastructure within the shelter.

3.5.2 System B

This proposal also includes additional information for the following:

- One TxRx site with redundant control point functionality for System B, located at Lightspeed.

3.5.2.1 EQUIPMENT AND SERVICES

L3Harris will provide one (1) RF sites, operating on the County's twenty 800 MHz System B channels in P25T Phase 1 and 2 modes, each including:

- Twenty (20) MASTR V base stations and simulcast site common equipment featuring:
    - Redundant SecureSync Frequency Standards and associated GPS antenna systems
    - Redundant Site Access Routers with Ethernet IP connectivity

- Two (2) Transmit antenna subsystem each including 10-channel transmit combiner, power monitoring subsystem, transmit antenna, associated coaxial cable, and surge protection.

- One (1) Receive antenna system including antenna, tower-top amplifier (TTA) with Test Port, transmission lines, and receiver multicoupler.

Optional pricing includes equipment and physical installation of the infrastructure within the shelter.

3.6 Additional Information

3.6.1 Enhanced Enterprise Network Management – Enhanced ENM

In addition to providing Core monitoring, Enhanced ENM allows for consolidated network monitoring in a single management window, including integration with the Regional Network Manager.

3.6.2 Network Intrusion Detection System - NIDS

As installed and configured within VIDA secure networks, NIDS analyzes IP traffic over the connected network, and detects undesirable network access. The NIDS works among a series of networked on-site sensors and/or Cisco ASA with FirePOWER Services firewalls that communicate over IP to a management console.

The Defense Center management console can analyze IPS events, configure and distribute IPS policies, automatically download, and apply updates. The Defense Center software is installed on a virtual machine.

The Cisco ASA with FirePOWER Services (ASA FirePOWER devices), included for each NSC cabinet in the VIDA network as part of the NIDS solution, provides the first-line system policy and passes traffic to the FireSIGHT System for access control, intrusion detection and prevention, discovery, and advanced malware protection.

3.6.3 StatusAware

The StatusAware Service (SA-Svc) collects location (GPS data) and status (presence data) information from communications devices and stores it into a central presence service. An entity which shares its GPS and presence data is referred to as a "*presentity*." Such communication devices may include BeOn Clients, P25 radios and dispatch consoles.

The StatusAware service can be configured to solicit location updates from radios classified as either Harris Tier 2 radios or as Non-Harris Tier 2 radios in the system database managed by the UAS. Each classification (or radio type) can be configured with a different set of default triggers or can be configured to use the same trigger settings. The supported Tier 2 location reports are defined as:

- Periodic: The "operational" trigger that can be configured as either a periodic interval or periodic distance-based trigger. This trigger is required when configuring your system.

- Emergency: A periodic trigger that causes a GPS location report to be sent by the radio once emergency mode is entered, and periodically at a specified distance or interval thereafter until emergency mode is exited.

- Immediate-Location-Report: These reports are sent in response to the configured triggers, the SA-svc supports the ability for HEXP watchers to request an immediate polled location of Tier 2 radios.

■ Unsolicited-Location-Reports: These reports are sent when the MDT or User commands the location report.

The StatusAware service programs the radios with trigger conditions and then receives the location updates. One key advantage StatusAware has over any third-party AVL application is a connection to the VNICs in the VIDA system. Every time a radio registers or de-registers for voice services on the VIDA system, StatusAware is notified. If radios stop sending updates while still registered, StatusAware detects missed updates and re-sends the location request to restart updates. When radios are not present, StatusAware does not have to periodically poll to see if the radio is present. This saves a lot of background IP data calls – preserving system capacity.

This addition includes pricing for 100 presentities . The testing of the StatusAware server will require radios equipped with GPS functionality or BeOn clients to function as presentities, and at least a Windows-based BeOn PC client to function as a watcher.

The optimal way to display location (GPS data) and status (presence data) of users on the field is integrating StatusAware with a CAD system. Adding GPS traffic into the system requires detailed RF capacity studies that L3Harris will be happy to facilitate.

In order to benefit from the StatusAware service, portables and mobiles in the field need to be equipped with a GPS receiver, have the GPS and/or In-band GPS feature enabled, and be properly configured via radio programming.

3.6.4   SR10A.6 Release Note

It is anticipated that during the deployment of the SR10A.4 replacement cores for Miami-Dade, the next Public Safety software release will be available for early adopters. Due to Miami-Dade's heavy traffic demand, L3Harris strongly recommends Miami-Dade consider an upgrade to that release only after SR10A.6 has been fielded and verified.

3.6.5   SOFTWARE SERVICES

L3Harris has proposed the following to Miami-Dade: Preferred Technical Support; Security Update Management Service+ (SUMS+); and Software Managed Services (SMS).

3.6.5.1 PREFERRED TECHNICAL SUPPORT

Product Specialists and System Engineers in Technical Assistance Center (TAC) bolster the technical expertise of front-line personnel. TAC is available to support customers with answers to technical and user support questions about operations, programming, software, maintenance and troubleshooting issues. Calls to TAC are logged and assigned a tracking number for more efficient handling of your specific situation and resolutions are added to our knowledge base to quickly resolve any future issues efficiently. TAC Support provides basic assistance, including:

■ Technical assistance on systems and terminal equipment.

■ 8-5 M-F assistance, 5 days a week, excluding national holidays.

3.6.5.2 SECURITY UPDATE MANAGEMENT SERVICE+ (SUMS+)

SUMS+ provides periodic security updates to participating customers plus a dedicated delivery server platform that includes:

- Automatic management of patches for multiple operating systems and applications across thousands of endpoints on the system network.

- Reduction of security and compliance risks by slashing install times from weeks to days or hours

- Greater visibility into patch compliance with flexible, real-time status monitoring and reporting

- Up-to-date visibility and control from a single management console

Each security update delivery includes Software Release Notes. These technical documents detail: Installation instructions; Software and hardware compatibility information, where applicable; and Product Vulnerability Alert (PVA) resolution or mitigation information
SUMS+ releases are thoroughly tested with L3Harris System Releases to ensure the third-party software patches are compatible with the Core applications.

3.6.5.3 SOFTWARE MANAGED SERVICE (SMS)

SMS provides new releases of system software tailored to each customer's system. These releases contain improvements and enhancements for current generation system software, as well as occasional new product capability and the ability to enable licensed features. As a plus, 3rd party support management for the VIDA core and Network Sentries is being included under the SMS service. Keeping the infrastructure software up to date is vital to maintaining the value of the initial purchases so future capabilities can be deployed to the system's users. Under SMS, customers will receive:

- Periodic software releases for system and programming software components

- Software release notes and features summary with each release

- A System configuration audit is performed with initial subscription

- Current release as supported by the customer hardware at enrollment

- Remote Software installation support from the Preferred Technical Support service

- Software replacement services if media becomes corrupt or damaged

- Enhancements for existing features

- New features built upon earlier generations of software capability to enable new licensed features

- License and/or support renewals of third-party software and hardware used in the L3Harris system core and Network Sentries

3.7 Acceptance Testing

Execution of the Functional Test Procedures in Appendix C shall prove out the proper functionality of the system. Any changes to the Functional Test Procedures are subject to a change order that is mutually agreed upon by the County and L3Harris.

3.8 System Documentation

L3Harris will provide typical as-built documentation for system upgrades which include:

- Rack configuration drawings

- Revised network schematics

- S/W Audit

- Configuration Files

- Technical Manuals and Users Guides for the new components

4. Project Implementation Plan

4.1 Project Execution

4.1.1 contract award

Per the meeting with the County on September 10, 2019, the anticipated contract award date is March 16, 2020. However, L3Harris understands that this date must be mutually agreed upon and is subject to change.

4.1.1.1 KICKOFF MEETING AND PRELIMINARY PLANNING REVIEW

The project manager will initiate the project with a Project Kick-off Meeting followed by a Preliminary Upgrade Planning Review.

The objectives of the meeting include:

- Introduction of all project participants
- Review of the roles of the project participants
- Review of the overall project scope and objectives
- Review of the current site status
- Review planned post-upgrade system configuration
- Review migration strategy and functional test plans
- Review the current frequency plan
- Review the preliminary project schedule
- Schedule site surveys with Miami-Dade, and/or site owner designated representatives

4.1.1.2 CUSTOMER DESIGN REVIEW (CDR)

The L3Harris Team uses the information obtained during the kick-off meeting, preliminary planning review, and site surveys, along with regulatory and engineering documentation, to deliver the final system design at the CDR. The design drawings and documentation are presented during the CDR with the County.

Figure 7. Kick-off, Preliminary Planning Review, and CDR Responsibility Matrix

Tasks	L3Harris	County	Comments
Kick-off, Preliminary Planning Review, and CDR Preparation			
Assemble project team and travel to the Miami-Dade	X		
Assemble County team for kick-off meeting		X	
Provide location in appropriate conference room or training facility		X	

Tasks	L3Harris	County	Comments
Review SR10A.4 Upgrade Contract Requirements	X	X	
Present preliminary information on sites and design	X		
Provide information and status on sites, frequencies, leases, etc.		X	
Provide a team and propose a schedule for site surveys	X		
Arrange access to sites and confirm site survey schedule		X	
Provide site-knowledgeable personnel (County and site owner reps, as appropriate) to accompany the project team on site surveys		X	
Conduct site survey(s) and visual grounding inspections, and provide recommendations for site improvements at the Palm Springs North and Trail Glades sites	X		
Provide site plans and applicable electrical and layout plans		X	
Provide up-to-date tower and foundation drawings along with a current mapping of installed antennas and cabling for the Palm Springs North and Trail Glades sites		X	
Perform structural analyses at Palm Springs North and Trail Glades sites		X	Needed for permitting
Provide network backhaul requirements	X		
Provide MPLS Microwave Backhaul based on L3Harris networking requirements including: - Perform backhaul characterization tests as per L3Harris guidelines, and provide to L3Harris - Procure Aviat MPLS routers for locations that are not serviced by the upgraded microwave system - Create a separate VPLS for L3Harris that keeps the VIDA network segregated		X	
Conduct full system audit to verify all existing HW/SW*	X		
Conduct system health check and test current bypass capabilities *	X		
Remedy any deficiencies found during the system audit and system health check		X	
Develop tower antenna placement plans for Palm Springs North and Trail Glades sites	X		
Develop frequency plans (Palm Springs North and Trail Glades sites)	X		
Provide radio personality information and traffic loading data to allow for analysis and testing prior to finalizing detailed upgrade plan		X	
Develop coverage maps	X		
Develop site electrical loads (Palm Springs North and Trail Glades sites)	X		
Develop Preliminary SR10A.4 Upgrade/Migration Plan	X		
Develop formal project schedule	X		

Tasks	L3Harris	County	Comments
Prepare functional acceptance test procedure (ATP) documents	X		
Prepare one set of FCC license applications for the County's submission (Palm Springs North and Trail Glades	X		If additional license application coordination is agreed upon, a change will be issued.
Submit FCC license applications		X	
CDR Deliverables			
System block diagrams	X		
List of deliverable equipment for each site	X		
Tower antenna placement drawings (Palm Springs North and Trail Glades sites)	X		
Antenna system drawings (Palm Springs North and Trail Glades sites)	X		
Coverage prediction maps	X		
Frequency plans (Palm Springs North and Trail Glades sites)	X		
Combiner plans (Palm Springs North and Trail Glades sites)	X		
Shelter floor plan drawings (as applicable)	X		
Rack elevation drawings (as applicable)	X		
AC power and BTU requirements for new equipment	X		
Preliminary SR10A.4 Upgrade/Migration Plan, which includes Project Team roles, responsibilities, structures and tasks and delineating L3Harris and Miami-Dade responsibilities	X		
Develop Functional ATP	X		
Develop the project schedule	X		
Obtain FCC licensed frequencies that meet contour limits and fulfill the frequency plan, in accordance with the project schedule (may occur post CDR)		X	
CDR			
Provide deliverables for review	X		
Review CDR deliverables		X	
Provide location for the CDR meeting		X	
Approve the design following CDR meeting (within 10 business days)		X	

*The purpose of the system audit and health check is to baseline the current system configuration and performance. Part of the system health check includes putting the simulcast into bypass operations. This could be impactful to the system and will be scheduled with the County. Any maintenance deficiencies and non-standard customizations made by the County found during the system audit and health check that could interfere with the upgrade plans will need to be remedied by the County prior to L3Harris moving forward with the system upgrade. Any changes may result in a change order to be mutually agreed upon by the County and L3Harris.

4.1.2   L3Harris reverse bypass and site compatibility testing

Prior to manufacturing and testing the equipment in the L3Harris factory, the L3Harris Engineering Team will conduct a series of tests to verify proper operation between the SR10A.4 VIDA Core and linear simulcast PR9D site infrastructure and other ancillary devices (e.g. Maestro consoles, interop gateways, etc.) configured to County's current equipment parameters.

4.1.3   Manufacturing and Staging

The project team will procure material and schedule manufacturing using its Enterprise Resource Planning system. The factory will receive orders to manufacture the equipment. In addition, vendor/subcontractor items will be ordered. Factory specifications will define the test for each individual rack of equipment.

After manufacturing and test, factory technicians and system engineers will assemble the equipment in the factory staging facility. The system engineers will work with staging technicians to make all intra-rack connections for each site's equipment. Ethernet cable connections will simulate transmission networks and ensure NSC cores connect to the network switches and consoles. Technicians will set the IP addresses and verify operation of the network.

Figure 8. Manufacturing Responsibility Matrix

Tasks	L3Harris	County	Comments
Place orders with the factory	X		
Place orders with key suppliers/vendors	X		
Manufacture all P25 SR10A.4 equipment infrastructure	X		
Assemble, configure & test equipment in Lynchburg staging area	X		
Break down equipment and make ready to ship	X		

4.1.4   Shipping, Warehousing and Inventory

At the end of staging, the equipment will be prepared for delivery to Miami-Dade County. Each rack will be crated to ensure safe transportation. L3Harris arranges to ship equipment and materials to a L3Harris-provided storage area near the point of installation where it will be received. At the storage area, the equipment is inventoried, and the material is collected for delivery to the installation sites.

Figure 9. Shipping, Warehouse & Inventory Responsibility Matrix

Tasks	L3Harris	County	Comments
Ship equipment to storage location local to Miami-Dade County	X		
Provide temporary storage prior to installation	X		
Inventory equipment	X		
Validate L3Harris equipment inventory		X	

Tasks	L3Harris	County	Comments
Collect all equipment on a per site basis, ready for the installation teams	X		

4.1.5 Site development

After CDR approval, the L3Harris Team places orders for site development materials and services. We coordinate shipments with the suppliers based on the project schedule to ensure parts and materials are available as needed at each site. Typically, the site development work occurs in parallel to radio system equipment manufacturing and staging. We then perform site development in accordance with L3Harris' best practices and industry standards.

L3Harris' assumption in the prior proposal submission was that no site development was required for the SR10A.4 upgrade. However, per the previous meeting with the County on September 10, 2019, it was determined that two sites (Palm Springs North and Trail Glades) require site development upgrades as outlined below.

4.1.5.1 PALM SPRINGS NORTH

The Palm Springs North site will require furnishing and installing a new UPS, bypass switch, and subpaneling to support the new System A RF equipment. In addition to the UPS work, electrical circuits will be wired from the new UPS subpanel to the new P25 equipment rack locations. L3Harris will also furnish and install new TX antenna systems and perform sweep testing.

Figure 10. Palm Springs North Site Responsibility Matrix

Tasks	L3Harris	County
General Site Tasks		
Provide access to all buildings and sites, including temporary ID badges for L3Harris project team		X
Provide adequate road access for delivery vehicles		X
Clean up site and remove all installation debris	X	
Remove any hazardous material found on site		X
Ensure that no utility transformers additions or upgrades will be required to provide the adequate AC power needed for the site		X
Develop sites and install materials in accordance with industry and L3Harris standards	X	
Provide existing site documentation		X
Existing Tower		
Provide current tower and foundation drawings along with a current mapping of installed antennas and cabling		X
Identify specific tower attachment points to mount new antennas per the system design	X	
Confirm availability of tower attachment points for L3Harris antennas		X
Strengthen or replace tower (if required by structural analysis results)		X

Tasks	L3Harris	County
Provide space on existing tower to mount new system antennas at L3Harris specified locations		X
Ensure adequate space is available on cable ice bridge, and tower cable ladders, to support new cable runs		X
Install new TX antenna(s) using appropriate side arms and mounting hardware	X	
Install TX antenna coax, connectors and jumpers, using cable clamps to properly secure cable to tower, and add grounding kits at the top, bottom, and on ice bridge	X	
Provide RX antenna, coax, connectors and jumpers, using cable clamps to properly secure cable to tower, and add grounding kits at the top, bottom, and on ice bridge		X
Provide tower top amplifier(TTA) with test line		X
Install antenna lightning protection devices on each new transmission line LMR run after it enters shelter via cable entry port; ground device to main ground bus bar	X	
Tag and identify each new antenna line	X	
Sweep test each new antenna line in accordance with L3Harris' "Transmission Line Analysis (Antenna Sweep) procedure	X	
Existing Shelter		
Provide floor space in existing RF shelter for new RF equipment racks and UPS used in the new design		X
Provide wall space in existing RF shelter for new UPS bypass switch and subpaneling		X
Provide adequate shelter utility AC electrical power, single-point ground system, HVAC, and backup generator power		X
Provide (3) cable entry ports for new coax runs		X
Upgrade existing interior/exterior ground system (if applicable)		X
Provide additional cable ladder for new equipment row (if applicable)		X
Prepare and submit electrical permits on behalf of the County	X	
Install new UPS with bypass switch, distribution breaker panel, conduit, and wire outlets above new racks (circuit wiring not assumed to exceed 25')	X	

4.1.5.2 TRAIL GLADES

The Trail Glades site will require furnishing and installing a new UPS, bypass switch, and subpaneling to support the new System A RF equipment. In addition to the UPS work, electrical circuits will be wired from the new UPS subpanel to the new P25 equipment rack locations. L3Harris will also furnish and install new TX antenna systems, TTA with test line, and perform sweep testing.

Figure 11. Trail Glades Site Responsibility Matrix

Tasks	L3Harris	County
General Site Tasks		
Provide access to all buildings and sites, including temporary ID badges for L3Harris project team		X
Provide adequate road access for delivery vehicles		X
Clean up site and remove all installation debris	X	
Remove any hazardous material found on site		X
Ensure that no utility transformers additions or upgrades will be required to provide the adequate AC power needed for the site		X
Develop sites and install materials in accordance with industry and L3Harris standards	X	
Provide existing site documentation		X
Existing Tower		
Provide current tower and foundation drawings along with a current mapping of installed antennas and cabling		X
Identify specific tower attachment points to mount new antennas per the system design	X	
Confirm availability of tower attachment points for L3Harris antennas		X
Strengthen or replace tower (if required by structural analysis results)		X
Provide space on existing tower to mount new system antennas at L3Harris specified locations		X
Ensure adequate space is available on cable ice bridge, and tower cable ladders, to support new cable runs		X
Install TX new antenna(s) using appropriate side arms and mounting hardware	X	
Install TX antenna coax, connectors and jumpers, using cable clamps to properly secure cable to tower, and add grounding kits at the top, bottom, and on ice bridge	X	
Provide RX antenna, coax, connectors and jumpers, using cable clamps to properly secure cable to tower, and add grounding kits at the top, bottom, and on ice bridge		X
Install new tower top amplifier (TTA) with one half inch test line	X	
Install antenna lightning protection devices on each new transmission line LMR run after it enters shelter via cable entry port; ground device to main ground bus bar	X	
Tag and identify each new antenna line	X	
Sweep test each new antenna line in accordance with L3Harris' "Transmission Line Analysis (Antenna Sweep) procedure	X	
Existing Shelter		
Provide floor space in existing RF shelter for new RF equipment racks and UPS used in the new design		X
Provide wall space in existing RF shelter for new UPS bypass		X

Tasks	L3Harris	County
switch and subpaneling		
Provide adequate shelter utility AC electrical power, single-point ground system, HVAC, and backup generator power		X
Provide (3) cable entry ports for new coax runs		X
Upgrade existing interior/exterior ground system (if applicable)		X
Provide additional cable ladder for new equipment row (if applicable)		X
Prepare and submit electrical permits on behalf of the County	X	
Install new UPS with bypass switch, distribution breaker panel, conduit, and wire outlets above new racks (circuit wiring not assumed to exceed 25')	X	

4.1.6   New Cores/existing site upgrades and migration

Upon completion of the site development and factory testing, the project team's first installation priority will be to work with Miami-Dade to coordinate the installation and upgrade activities.

The installation team will install the new equipment at the locations determined in the system design and integrate the proposed subsystems as described in the Scope of Work to provide an end-to-end network solution.

The installation plans will be developed during the detailed planning phase of the project (leading up to CDR). The installation plan will coordinate all activities of the project team, minimizing conflicts and ensuring that system implementation proceeds efficiently. Where currently operational communications equipment co-exists with the installation of new equipment, the project team will take great care to ensure that there is little or no disruption in service.

Please refer to Appendix A for responsibilities associated with the migration.

4.1.7   New Site Expansion installation, commissioning and optimization

In addition to the existing site upgrades, L3Harris will also be converting two existing auxiliary receive (AuxRx) sites to transmit/receive (TxRx) sites. Activities pertaining to these sites include new RF equipment installation, commissioning, optimization, and integration into the existing simulcast system. Tasks associated with these sites are outlined below.

Figure 12. Upgrade for Aux-Rx Sites To TX Sites

Tasks	L3Harris	County	Comments
Install and configure One Site Access Router	X		
Install and configure Four Ethernet Switches	X		
Install and configure One Network Sentry	X		

Tasks	L3Harris	County	Comments
Install and configure Twenty Traffic Controller Modules	X		
Install and configure Seven Baseband Modules	X		
Remove existing KVM from current Aux RX rack and install in new TX/RX rack	X		

Figure 13. System Optimization Matrix

Tasks	L3Harris	County	Comments
Commission Palm Springs North and Trail Glades onto System A	X		
Verify P25 system levels and parameters are set	X		
Verify system database is installed and operating correctly	X		
Verify proper dispatch operation	X		
Verify proper P25 system functional operation	X		
Verify proper network switching operation	X		

4.1.8 Acceptance Testing

Systems functional acceptance testing will be performed according to the agreed upon ATP and system contract. The project team will notify Miami-Dade when installation and optimization are complete, and the system has cutover and acceptance testing can occur.

The system engineer will provide documentation defining each of the test areas. The ATP procedures contain a short description, test methodology, and a record form for logging results and acceptance signatures for each test. A punch list will document any issues found. The goal of the team will be their quick resolution. Upon satisfactory completion of the Functional Test Procedures, the project manager will present the system acceptance documentation to Miami-Dade. Execution of the Functional Test Procedures in Appendix C shall prove out the proper functionality of the system. Any changes to the Functional Test Procedures are subject to a change order that is mutually agreed upon by the County and L3Harris.

Figure 14. Final Testing & Acceptance Responsibility Matrix

Tasks	L3Harris	County	Comments
Execute Functional Test Procedures	X	X	
Resolve Any Functional Test Issues	X		
Verify Functional Test Results		X	
Collect & Archive System Configurations	X		
Provide updated documentation	X		

Tasks	L3Harris	County	Comments
Notify that all work is complete, terms are satisfied, and issues resolved	X		
Accept final drawing package		X	
Sign letter of final system acceptance		X	

4.1.9   Project Schedule

A preliminary project schedule is included in Appendix B. The schedule will be re-baselined and provided when the CDR is conducted with the County.

5. Equipment List & Pricing

5.1 Equipment List

CORE EQUIPMENT – DPCC AND LIGHTSPEED

Item	Qty
Server, VIDA Premier, SR10A.4, Geo-HA Redundant Configuration	2
Package, Be-On Foundation	
Software, Radio TextLink, VM	
Software, ISSI Gateway, VM	
Software, RNM Application	
Software, Basic ENM Application	
Software, Premier Core	
Software, KMF VM	
Software, Epolicy VM	
Software, SUMS Application	
Server, Unitrends Backup Appliance	
Server, Splunk for centralized log collection (replaces TIBCO Appliance)	
Network Equipment, including: Firewall, ASA5506-X Firewall, ASA5508-X Router, C881-K9,ADV IP SVC ISSI Application Router, ISR,C1111-4P,SEC Router, ISR4331,APPX LIC Switch, Catalyst 3650 24P IP	2

PSAP CONNECT EQUIPMENT – LIGHTSPEED (REPLACES VCE)

Item	Qty
Server, VIDA Connect, SR10A.4, Redundant Configuration	2
Software, Connect Core, VM	
Network Equipment, PSAP Connect, including: Router, ISR4321	2
Network Equipment, Consoles, including Router, ISR, C1111-4P Switch, Cisco 2960 PLUS (Quantity of 2)	2

PSAP CONNECT EQUIPMENT – SPCC (REPLACES VCE)

Item	Qty
Server, VIDA Connect, SR10A.4, Redundant Configuration	2
Software, Connect Core, VM	

Item	Qty
Network Equipment, PSAP Connect, including: Router, ISR4321	2
Network Equipment, Consoles, including: Router, ISR, C1111-4P Switch, Cisco 2960 PLUS	2

PSAP CONNECT EQUIPMENT – DPCC (REPLACES VCE)

Item	Qty
Server, VIDA Connect, SR10A.4, Redundant Configuration	2
Software, Connect Core, VM	
Network Equipment, PSAP Connect, including: Router, ISR4321	2
Network Equipment, Consoles, including: Router, ISR, C1111-4P Switch, Cisco 2960 PLUS	2

DISPATCH CENTER – NORTH MIAMI BEACH PD

Item	Qty
Replacement Site Access Router - Router, ISR, C1111-4P	1
Replacement Ethernet Switch - Switch, Cisco 2960 PLUS	1

DISPATCH CENTER – FIRE EOC*

Item	Qty
Replacement Site Access Router - Router, ISR, C1111-4P	2
Replacement Ethernet Switch - Switch, Cisco 2960 PLUS	2

*: Physical ISSI server is replaced by redundant virtual machine ISSI configuration, hosted by the VIDA Premier Cores. Two ISSI Application Routers (IARs), one for each VIDA Premier location, are included in the proposal. Each of the IARs is paired with one of the ISSIs and functions as a "gateway" for the redundant ISSIs.

INTEROPERABILITY GATEWAY NETWORKING EQUIPMENT – TCC

Item	Qty
Site Access Router - Router, ISR, C1111-4P	1
Ethernet Switch - Switch, Cisco 2960 PLUS	1

RF SITE EQUIPMENT – SYSTEM A, TCC

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables; MME	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1
Distributed Control Point Software, Primary DCP	1 Lot

RF SITE EQUIPMENT – SYSTEM A, SPCC

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables; MME	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1
Distributed Control Point Software, Secondary DCP	1 Lot

RF SITE EQUIPMENT – SYSTEM A, RICHMOND NAS

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM A, KROME & BAUER

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM A, AIRPORT

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM A, PALMETTO RAIL YARD

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM A, INTERAMA

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Traffic Control Modules	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM A, PALM SPRINGS NORTH

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 lot
MASTR V 800 MHz Base Stations (Transmit/Receive)	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Ethernet Switches	4
Network Sentry, G4	1
P25 Phase 2, Per Channel	20
10-Channel Transmitter Combiners	2
Transmit Antenna Systems (Antennas, Transmission Lines, Connectors, Surge Protectors, Cable Jumpers)	2
UPS with a runtime of two hours.	1

RF SITE EQUIPMENT – SYSTEM A, TRAIL GLADES

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 lot
MASTR V 800 MHz Base Stations (Transmit/Receive)	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Ethernet Switches	4
Network Sentry, G4	1
P25 Phase 2, Per Channel	20
10-Channel Transmitter Combiners	2
Transmit Antenna Systems (Antennas, Transmission Lines, Connectors, Surge Protectors, Cable Jumpers)	2
UPS with a runtime of two hours.	1

RF SITE EQUIPMENT – SYSTEM B, TCC

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables; MME	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1
Distributed Control Point Software, Primary DCP	1 Lot

RF SITE EQUIPMENT – SYSTEM B, INDUSTRIAL COMMUNICATIONS

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, TRAIL GLADES

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, PALM SPRINGS NORTH

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, CUTLER BAY

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, RICHMOND NAS

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, SPCC

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables; MME	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1
Distributed Control Point Software, Secondary DCP	1 Lot

RF SITE EQUIPMENT – SYSTEM B, KROME & BAUER

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, AIRPORT

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, PALMETTO RAIL YARD

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM B, INTERAMA

Item	Qty
Redundant SecureSync Oscillators, mounting accessories and cables	1 Lot
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Ethernet Switches	4
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM C, MICCOSUKEE

Item	Qty
Replacement Site Access Router; Redundant Site Access Router	1 each
Replacement Traffic Control Modules	5
Replacement Ethernet Switch	1
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM D, TCC

Item	Qty
Replacement Site Access Router	1
Replacement Baseband Processor Module	3
Replacement Traffic Control Modules	5
Replacement Ethernet Switch	1
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM E, GOLDEN BEACH

Item	Qty
Replacement Site Access Router	1
Replacement Traffic Control Modules	3
Replacement Ethernet Switch	1
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM F, SPCC

Item	Qty
Replacement Site Access Router	1
Replacement Traffic Control Modules	15
Replacement Ethernet Switches	3
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM G, MICCOSUKEE

Item	Qty
Replacement Site Access Router	1
Replacement Traffic Control Modules	5
Replacement Ethernet Switch	1
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM H, RDCS#1

Item	Qty
Replacement Site Access Router	1
Replacement Baseband Processor Modules	5
Replacement Traffic Control Modules	10
Replacement Ethernet Switch	3
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM I, RDCS#2

Item	Qty
Replacement Site Access Router	1
Replacement Traffic Control Modules	5
Replacement Ethernet Switch	1
Replacement Network Sentry, G4	1

RF SITE EQUIPMENT – SYSTEM J, RDCS#2

Item	Qty
Replacement Site Access Router	1
Replacement Baseband Processor Modules	3
Replacement Traffic Control Modules	5
Replacement Ethernet Switch	1
Replacement Network Sentry, G4	1

SITE EQUIPMENT – SYSTEM K, KEY BISCAYNE

Item	Qty
Replacement Site Access Router	1
Replace Ethernet Switch	1
Replace Network Sentry, G4	1

MASTRV MODULES FOR CARD SWAPPING

Item	Qty
Baseband Processor Module	50

ADDITIONAL RF SITE EQUIPMENT – SYSTEM A, LIGHTSPEED

Item	Qty
P25 Trunking Simulcast Common Equipment (Incl Redundant SecureSync, MME)	1 lot
MASTR V 800 MHz Base Stations (Transmit/Receive)	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Ethernet Switches	4
Network Sentry, G4	1
P25 Phase 2, Per Channel	20
Distributed Control Point Software, Secondary DCP	1 Lot
10-Channel Transmitter Combiners	2
Transmit Antenna Systems (Antennas, Transmission Lines, Connectors, Surge Protectors, Cable Jumpers)	2
Receive Antenna System (Antenna, TTA, Transmission Lines, Connectors, Surge Protectors, RX Multicoupler)	1

ADDITIONAL RF SITE EQUIPMENT – SYSTEM A, INDUSTRIAL COMMUNICATIONS

Item	Qty
P25 Trunking Simulcast Common Equipment	1 lot
MASTR V 800 MHz Base Stations (Transmit/Receive)	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Ethernet Switches	4
Network Sentry, G4	1
P25 Phase 2, Per Channel	20
10-Channel Transmitter Combiners	2
Transmit Antenna Systems (Antennas, Transmission Lines, Connectors, Surge Protectors, Cable Jumpers)	2
Receive Antenna System (Antenna, TTA, Transmission Lines, Connectors, Surge Protectors, RX Multicoupler)	1

ADDITIONAL RF SITE EQUIPMENT – SYSTEM B, LIGHTSPEED

Item	Qty
P25 Trunking Simulcast Common Equipment (Incl Redundant SecureSync, MME)	1 lot
MASTR V 800 MHz Base Stations (Transmit/Receive)	20
Replacement Site Access Router; Redundant Site Access Router	1 each
Ethernet Switches	4
Network Sentry, G4	1
P25 Phase 2, Per Channel	20
Distributed Control Point Software, Secondary DCP	1 Lot
10-Channel Transmitter Combiners	2
Transmit Antenna Systems (Antennas, Transmission Lines, Connectors, Surge Protectors, Cable Jumpers)	2
Receive Antenna System (Antenna, TTA, Transmission Lines, Connectors, Surge Protectors, RX Multicoupler)	1

ADDITIONAL L3HARRIS SOLUTIONS AND SERVICES (NOT INCLUDED IN THE BASE OF THE PROPOSAL)

Item	Qty
L3HARRIS SYMPHONY DISPATCH CONSOLES – Approximate value of $7,000,000.00 for a total of seventy-five (75) Symphony Dispatch Consoles Each L3Harris Symphony console is equipped with accessories and features that are equal or similar to the Harris Maestro IP consoles including the Console bundle, Symphony license, licenses for patching and individual calls, 2 speakers, call director, conventional controls, paging capability, AES/DES encryption, remote aux I/O, marker tone, call alert, discreet listening, radio unit monitor, embedded web browser, 27" monitor HD, earbud headset, computer keyboard, mouse, adapter wireless headset, 12 inch gooseneck microphone, jack box 6-wire, dual footswitch, console workstation with PC and audio board, and Miami-Dade customized keypad.	75

Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
1	**Backhaul Upgrade**	**MD**	**All Sites**	**Done by 12/2019**	**Unknown**	
	Provide L3H MPLS backhaul requirements per site	L3H	All VIDA Network Locations		N	
	Upgrade backhaul connectivity as per L3H recommendations	MD			Unknown	
	Perform backhaul characterization tests to confirm links can handle proposed system upgrade.	MD			N	
2	**System Audits**	**L3H**	**TCC**	**2 weeks**	**N**	
	Audit the existing NSC network configurations, WAN configurations, IP Plan and existing NSC drawings. Audit RF subsystem configuration parameters. Validate, update RAPTR as-built projects.		TCC		N	
	Health Check - This will focus on any existing issues that may interfere with database migrations, and with the system reacting adversely to a coexistence of an SR10A.4 core and PR9D RF subsystems.		TCC		N	
3	**Detailed Upgrade Plan Creation**			**3 Weeks**	**N**	
	Provide radio personalities information	MD			N	
	Provide traffic loading data for traffic analysis	MD			N	
	Run traffic analysis for each reduced capacity scenario proposed in the plan	L3H			N	This will support the scheduling of reduced capacity plan steps.
	Run coverage predictions for each reduced coverage scenario proposed in the plan	L3H			N	This will support the scheduling of reduced coverage plan steps.
	Create step by step plan	L3H			N	
	Approve step by step plan	MD			N	
4	**DCP Enhanced Bypass Plan Development**	**L3H, MD**	**Lynchburg, Miami**	**2 Days**	**N**	
5	**SR10A.4 VIDA Cores Production and Staging**	**L3H**	**Lynchburg**	**16 weeks**	**N**	
	Capture existing customer databases and convert to SR10A.4	L3H	TCC		N	
	Develop factory network equipment configurations for the new core and validate these configurations during staging including implementing the existing WAN side of the	L3H	Lynchburg		N	
	Provide standard VIDA NSC network equipment and configure new NSC WAR Routers to provide backward compatibility with existing site network equipment	L3H	Lynchburg	16 weeks	N	
	Test "Reverse Bypass" upgrade/cutover methodology with customer's personalities	L3H	Lynchburg		N	
	Test 4-channel (step 1) upgrade methodology with customer's personalities	L3H	Lynchburg		N	
6	**Adjust initial upgrade plan due to any findings during testing**	**L3H**	**Lynchburg**	**1 - 3 weeks**		Although not anticipated, adjustments in upgrade plan methodology that result in additional effort will require a change order.

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Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
7	Installation of SR10A.4 VIDA cores, power up, fine tuning.	L3H; Cooper	DPCC, Lightspeed, SPCC	6 weeks	Y	
	Premier NSC1	Cooper	DPCC		N	
	Premier NSC2	Cooper	Lightspeed		N	
	PSAP Connect NS1	Cooper	Lightspeed	2 weeks	N	
	PSAP Connect NS2	Cooper	Lightspeed		N	
	PSAP Connect NS1	Cooper	SPCC		N	
	PSAP Connect NS2	Cooper	SPCC		N	
	PSAP Connect NS1	Cooper	DPCC		N	
	PSAP Connect NS2	Cooper	DPCC		N	
	Power up of the New VIDA Premier cores, connect to MPLS backhaul (on a VLAN separate from the existing cores), health check new cores, verify virtual machine, redundancy mechanisms. Lastly we'll do a quick health check on the current sites to confirm they are all functioning properly on the current cores)	L3H	DPCC, Lightspeed, SPCC	2 weeks	N	
	Perform SUMS upgrades, system backups, outstanding IPN's/ISN's	L3H	TCC	2 weeks	N	
8	Bypass Tests for Systems A and B	L3H, Cooper, MD	RF Locations	2 days	Y	
	Test System A normal bypass	L3H, Cooper, MD	RF Locations	4 Hours	Y	System to remain in Bypass for a period of time acceptable to MD. We are testing to ensure that Bypass works as expected prior to upgrade.
	Test System A Reverse Bypass	L3H, Cooper, MD	RF Locations	4 Hours	Y	System to remain in Reverse Bypass for a period of time acceptable to MD. We are testing to ensure that Reverse Bypass works as expected prior to upgrade.
	Test System B Normal Bypass	L3H, Cooper, MD	RF Locations	4 Hours	Y	System to remain in Bypass for a period of time acceptable to MD. We are testing to ensure that Bypass works as expected prior to upgrade.
	Test System B Reverse Bypass	L3H, Cooper, MD	RF Locations	4 Hours	Y	System to remain in Reverse Bypass for a period of time acceptable to MD. We are testing to ensure that Reverse Bypass works as expected prior to upgrade.
9	Commissioning of Upgraded VIDA Cores - Prework	L3H, Cooper	Core locations	17 Days	Y (Minor)	
	Conduct training for MD, L3H and CG personnel that will participate in the VIDA Cores upgrade.	L3H	Miami	3 days	N	This activity will ensure that all participants in the upgrade process understand it and are aware of their roles.
	Verify all new cores are ready for cutover	L3H, Cooper, MD	Miami	2 days	N	Verify cables are labeled and ready, sites will be visited by L3H Lead/CSE to confirm.
	Remove all Windows computers (dispatch consoles, Network Sentry devices), from the current Active Directory Domain	L3H, Cooper	Multiple Locations	2 weeks	Y (Minor)	This is prework done in advance to reduce service interruption while the cores are being replaced. Individual dispatch console being removed from domain will be out of service for approximately 1 hour while backups and removal is done.
	Freeze all customer database updates	MD		N/A	Y (Minor)	Customer will not be able to make database changes.
	Capture existing customer databases and convert to SR10A.4.	L3H		2 days	Y (Minor)	Applications will be unavailable while databases are exported.

Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
10	Commissioning of Upgraded VIDA Cores - Cutover		Core locations	3 weeks and 1 day	Y	After this step is complete, all existing sites, consoles and other communication resources will be operating under the control of the SR10A.4 VIDA cores.
	Remove PR9D VCE's from the network. Dispatchers will have to switch to backup radios.	L3H, Cooper, MD	PSAP Connect Locations		Y	
	Remove PR9D NSC's from the network. Multisite functionality, access to gateways and logging recorders is temporarily lost.	L3H, Cooper, MD	TCC		Y	
	Connect SR10A.4 VIDA Premier Cores into the network	L3H, Cooper, MD	DPCC, Lightspeed	4 hours	Y	Every new shift of radio users returning to work will need to be instructed to reset her/his radio to become operational in the SR10A.4 controlled environment.
	Connect SR10A.4 VIDA PSAP Connect Cores into the network	L3H, Cooper, MD	PSAP Connect Locations		Y	VCE's and cores must be replaced at the same time, we cannot have multiple versions of VNIC communicating with each other, there is a risk of corruption.
	Preliminary Functional Testing	L3H, Cooper, MD		4 hours	N	
	Test and Burn-In new configuration to prove stability	L3H, Cooper, MD		1 week	N	
	Add all dispatch consoles to current Active Directory Domain.	L3H, Cooper, MD	Multiple locations	2 weeks	Yes (minor)	Individual dispatch console being worked on will be out of service for approx. 1 hour. (added a week to be more realistic).
11	Upgrade System D to SR10A.4	L3H, Cooper, MD	TCC	7 Days	N	
	Conduct training for MD, L3H and CG personnel that will participate in the multisites' upgrade.	L3H	Miami	2 days	N	This activity will ensure that all participants in the upgrade process understand it and are aware of their roles.
	Remove site from service	L3H, Cooper, MD	TCC		N	
	Replace router, switch, NWS, baseband and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	3 Days	N	
	Perform FTP	L3H, Cooper, MD	TCC		N	
	Perform Load Testing	L3H, Cooper, MD	TCC	2 Days	N	
12	Upgrade System H to SR10A.4	L3H, Cooper, MD	TCC	3 Days	N	
	Remove site from service	L3H, Cooper, MD	TCC		N	
	Replace router, switches, NWS, baseband and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	3 Days	N	
	Perform FTP	L3H, Cooper, MD	TCC		N	
13	Upgrade System I to SR10A.4	L3H, Cooper, MD	TCC	3 Days	N	
	Remove site from service	L3H, Cooper, MD	TCC		N	
	Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	3 Days	N	
	Perform FTP	L3H, Cooper, MD	TCC		N	
14	Upgrade System J to SR10A.4	L3H, Cooper, MD	TCC	3 Days	N	
	Remove site from service	L3H, Cooper, MD	TCC		N	
	Replace router, switch, NWS, baseband and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	3 Days	N	
	Perform FTP	L3H, Cooper, MD	TCC		N	
15	Upgrade System F to SR10A.4	L3H, Cooper, MD	TCC	1 Day	Y	
	Remove site from service	L3H, Cooper, MD	TCC		Y	
	Replace router, switches, NWS traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	1 Day	Y	
	Perform FTP	L3H, Cooper, MD	TCC		Y	

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Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
16	**Upgrade System G to SR10A.4**	**L3H, Cooper, MD**	**TCC**	**1 Day**	**Y**	
	Remove site from service	L3H, Cooper, MD	TCC		Y	
	Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	1 Day	Y	
	Perform FTP	L3H, Cooper, MD	TCC		Y	
17	**Upgrade System E to SR10A.4**	**L3H, Cooper, MD**	**TCC**	**1 Day**	**Y**	
	Remove site from service	L3H, Cooper, MD	TCC		Y	
	Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	L3H, Cooper, MD	TCC	1 Day	Y	
	Perform FTP	L3H, Cooper, MD	TCC		Y	
18	**Upgrade System C to SR10A.4**	**L3H, Cooper, MD**	**TCC**	**1 Day**	**Y**	
	Remove site from service	L3H, Cooper, MD	TCC		Y	
	Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME. Add redundant router.	L3H, Cooper, MD	TCC	1 Day	Y	
	Perform FTP	L3H, Cooper, MD	TCC		Y	
19	**Upgrade System K to SR10A.4**	**L3H, Cooper, MD**	**TCC**	**1 Day**	**Y**	
	Remove site from service	L3H, Cooper, MD	TCC		Y	
	Replace router, switch and NWS. Upgrade code and personalities for existing baseband and traffic controller modules. Upgrade MME.	L3H, Cooper, MD	TCC	1 Day	Y	
	Perform FTP	L3H, Cooper, MD	TCC		Y	
20	**Upgrade Pre-work for the Simulcast Systems**	**Cooper, L3H**	**All RF Simulcast Locations**	**7 weeks and 2 days**	**N**	**This is pre-work, to be executed prior to cutover days**
	TX-Rx System A and B Existing Locations: Install SecureSync module (Redundant), Network Sentry, router (redundant), switches, MME (only at control point locations)	Cooper, L3H	All RF Simulcast Locations	2 weeks	N	Parallel (to equivalent existing equipment/subsystem) installation and wiring.
	AuxRx Sites (System A): Complete the physical installation of the 20-channel TxRx site equipment.	Cooper, L3H	Trail Glades, Palm Springs North	2 weeks	N	Only inside-the-shelter install work at this time (no tower work). New traffic controllers and baseband modules (from the TX-RX configuration) will be temporarily used to upgrade the existing AuxRX sites to SR10A.4.
	Card Staging: Stage new and reclaimed BB's and new TC's. Location of staging to be determined.	L3H, Cooper, MD	Lynchburg or Miami	3 weeks	N	
	Conduct training for MD, L3H and CG personnel that will participate in System's A upgrade.	L3H	Miami	2 days	N	This activity will ensure that all participants in the upgrade process understand it and are aware of their roles.

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Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
21	DCP Simulcast Testing Using 4 Upgraded Channels Performed on System A	L3H, Cooper, MD	All System A RF locations	1 week (tentative)	Y	System A operates at a reduced channel capacity (16 Channels). MD will choose a time window of a few consecutive days during which traffic loading is such that can be supported with 16 channels while maintaining a GOS of 1%. MD may temporarily move some System A user agencies to System B to lighten the traffic load. This step will culminate at 6PM of the day before the day expected to have the lowest overnight traffic of the chosen time period.
	Power off channels 17 to 20 at all sites	MD, Cooper	All System A RF locations		Y	
	Swap baseband modules and traffic controllers.	L3H, Cooper, MD	All System A RF locations		Y	Using cache of spare baseband modules and replacement TC's.
	Disconnect channels 17-20 from existing SAS3 and connect to new SAS 4	MD, Cooper	All System A RF locations	1 Day	Y	
	Configure this 4-channel subsystem as a new simulcast cell, with a new system ID. Power PA's on.	L3H, Cooper, MD	All System A RF locations		Y	
	Test the new cell using reprogramed radios.	L3H, Cooper, MD	All System A RF locations	1 Day	Y	Deployed user radios will not have access to this new simulcast system.
	Perform Load testing	L3H, Cooper, MD	All System A RF locations	2 Days	Y	
	Test for as many days as traffic loading study supports	L3H, Cooper, MD	All System A RF locations	X Days	Y	
	Power PA's down.	MD, Cooper	All System A RF locations		Y	
	Restore IP configuration to final SR10A.4 IP plan (if necessary depending on IP strategy)	L3H	All System A RF locations	1 Day	Y	
22	Upgrade System A to SR10A.4 - DCP Simulcast Reverse Bypass Upgrade		All System A RF locations	1 week	Y	Following is an indication of the effects on the system during the progression of the upgrade: - Reduced coverage footprint for one hour, since SPCC (and possibly one or two additional sites) are out. - Total unavailability for 1 minute. - Transient state (managed radio registration) for 20 minutes. Reduced coverage (only SPCC is in operation). - Steady enhanced by-pass state for 4 hours. Reduced coverage (only SPCC is in operation) - System A's full capacity should be restored 4 hours after SPCC was firstly removed from operation.
	Power off PA's on bypass site (SPCC) and possibility one or two additional sites; and disconnect from network (users are on remaining sites).	L3H, Cooper, MD	SPCC		Y	System A will be operating with a reduced in-building coverage footprint consistent with the loss of SPCC and one or two additional sites.
	Upgrade the SPCC by swapping baseband modules and traffic controllers. SPCC will be configured as control point #2.	L3H, Cooper, MD	SPCC	2 hours	Y	Using cache of spare baseband modules and replacement TC's. The new personalities will be setup with enhanced bypass feature.
	Power off PA's on remaining Non-Bypass sites and disconnect from network.	L3H, MD, Cooper	Non bypass sites		Y	System A is completely off the air.
	Connect upgraded Enhanced Bypass (SPCC) site to network and turn on PA's.	L3H, MD, Cooper	SPCC		Y	At this point users start registering with this site in a managed fashion. System A will only be covered by SPCC, but it will enjoy full VIDA network functionality (dispatching, multisiting, access to gateways, logging recorder, etc.)

Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
	Upgrade Interama, TCC and Krome & Bauer sites, simultaneously, by swapping basebands and traffic controllers. TCC will be configured as control point #1.	L3H, Cooper, MD	Interama, TCC, Krome & Bower	2 hours	Y	
	Upgrade remaining sites using traditional upgrade method (Loading code and personalities on-site at each location).	L3H, Cooper, MD	Remaining sites	2 hours	Y	
	Connect upgraded non-bypass sites to the network and turn on PA's	L3H, Cooper, MD	Non bypass sites		Y	System A's capacity and coverage footprint is completely restored.
	Perform FTP as permitted by fully loaded simulcast system.	L3H, Cooper, MD	SPCC	2 hours	N	
	Burn-In period	L3H, Cooper, MD	N/A	1 Week	N	
23	**Upgrade Pre-work for System B**	**L3H, Cooper, MD**	**All System B RF locations**	**4 weeks and 1 day**	**Y (Minor)**	**This is pre-work, to be executed prior to cutover days**
	Card Replacement/Hardware Downgrade: Using TC's reclaimed from previously upgraded sites, replace all existing SR10A4 TC's in system B card swap sites: SPCC, Interama, TCC, Krome & Bower , so they can be used in card swapping upgrade methodology.	L3H, Cooper, MD	SPCC, Interama, TCC, Krome & Bower	2 weeks	Y (Minor)	We will not have sufficient TC's to stage in advance unless we execute a "temporary hardware downgrade." This process can be done one site or channel at a time to minimize operational impact.
	Card Staging: Using a mixture of reclaimed BB's and TC's, upgrade and stage System B SPCC, Interama, TCC, Krome & Bower cards. Location of staging to be determined.	L3H, Cooper, MD	Lynchburg or Miami	2 weeks	N	
	Conduct training for MD, L3H and CG personnel that will participate in System's B upgrade.	L3H, Cooper, MD	Miami	1 day	N	This activity will ensure that all participants in the upgrade process understand it and are aware of their roles.

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Item #	Activity Description	Responsible	Site	Duration / Timeframe	Affects System Capacity / Operation (Y, N)	Comments
24	**Upgrade System B to SR10A.4 - DCP Simulcast Reverse Bypass Upgrade**	**L3H, Cooper, MD**	**All System B RF locations**	**1 week**	**Y**	**Following is an indication of the effects on the system during the progression of the upgrade:** **- Reduced coverage footprint for one hour, since SPCC (and possibly one or two additional sites) are out.** **- Total unavailability for 1 minute.** **- Transient state (managed radio registration) for 20 minutes. Reduced coverage (only SPCC is in operation).** **- Steady enhanced by-pass state for 4 hours. Reduced coverage (only SPCC is in operation)** **- System B's full capacity should be restored 4 hours after SPCC was firstly removed from operation.**
	Power off PA's on bypass site (SPCC) and possibility one or two additional sites; and disconnect from network (users are on remaining sites).	L3H, Cooper	SPCC		Y	System B will be operating with a reduced in-building coverage footprint consistent with the loss of SPCC and one or two additional sites.
	Upgrade the SPCC by swapping baseband modules and traffic controllers. SPCC will be configured as control point #2.	L3H, Cooper	SPCC	2 hours	Y	Using repurposed baseband and traffic controller modules.
	Power off PA's on remaining Non-Bypass sites and disconnect from network.	MD, Cooper	Non bypass sites		Y	System B is completely of the air.
	Connect upgraded Enhanced Bypass (SPCC) site to network and turn on PA's.	MD, Cooper	SPCC		Y	At this point, users start registering with this site in a managed fashion. System B will only be covered by SPCC, but it will enjoy full VIDA network functionality (dispatching, multisiting, access to gateways, logging recorder, etc.)
	Upgrade Interama, TCC and Krome & Bauer sites, simultaneously, by swapping basebands and traffic controllers. TCC will be configured as control point #1.	L3H, Cooper, MD	Interama, TCC, Krome & Bower	2 hours	Y	
	Upgrade remaining sites using traditional upgrade method (Loading code and personalities on-site at each location).	L3H, Cooper, MD	Remaining sites	2 hours		
	Connect non-bypass sites to the network and turn on PA's	L3H, Cooper, MD	Non bypass sites		N	System B's capacity and coverage footprint is completely restored.
	Perform FTP as permitted by fully loaded simulcast system.	L3H, Cooper, MD	SPCC	2 hours	N	
	Burn-In period	L3H, Cooper, MD	N/A	1 Week	N	

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Task Name	Duration	Start	Finish
County upgrades to existing MPLS network complete	*0 days*	*Mon 8/24/20*	*Mon 8/24/20*
Miami-Dade SR10A.4 P25 Upgrade	**490 days**	**Mon 8/24/20**	**Fri 7/22/22**
Contract Signed	0 days	Mon 8/24/20	Mon 8/24/20
Customer Kick-Off / Preliminary Planning Review / Customer Design Review	115 days	Mon 8/24/20	Fri 2/5/21
Customer Kick-off / Preliminary Planning Review planning and preparation	40 days	Mon 8/24/20	Mon 10/19/20
FCC Licensing Activities	**115 days**	**Mon 8/24/20**	**Fri 2/5/21**
Produce the necessary documentation for Region 9 (requires County approval prior to submission)	6 wks	Mon 8/24/20	Mon 10/5/20
RPC review period and approval	8 wks	Tue 10/6/20	Tue 12/1/20
AAHTO/APOCO processing	1 wk	Wed 12/2/20	Tue 12/8/20
FCC Review & Licensing Granted	*2 mons*	*Wed 12/9/20*	*Fri 2/5/21*
Conduct Customer Kick-off Meeting / Preliminary Planning Review	1 day	Tue 10/20/20	Tue 10/20/20
Provide updated MPLS backhaul requirements per site to the County (if required)	0 days	Tue 10/20/20	Tue 10/20/20
Participate in site surveys (as required) and visually inspect grounding system (noting any deficiencies for County remediation)	4 days	Wed 10/21/20	Mon 10/26/20
Conduct system audits to ensure the current migration plan is accurate according to latest system configs	10 days	Wed 10/21/20	Tue 11/3/20
Detailed Upgrade Plan Creation	**20 days**	**Wed 11/4/20**	**Wed 12/2/20**
Conduct system health checks - initiative is focused on identifying any reverse capability issues between PR9D and SR10A system revisions and testing	10 days	Wed 11/4/20	Tue 11/17/20
Provide radio personalities information	*0 days*	*Tue 11/17/20*	*Tue 11/17/20*
Run coverage predictions for each reduced coverage scenario proposed in the plan	10 days	Wed 11/18/20	Wed 12/2/20
Provide traffic loading data for traffic analysis	*0 days*	*Tue 11/17/20*	*Tue 11/17/20*
Run traffic analysis for each reduced capacity scenario proposed in the plan	10 days	Wed 11/18/20	Wed 12/2/20
Customer Design Review (CDR)	**24 days**	**Wed 11/25/20**	**Thu 12/31/20**
CDR preparation (includes further development and vetting of step-by-step PR9D to SR10A migration plan and bypass planning and development)	5 days	Thu 12/3/20	Wed 12/9/20
Develop drawings for permitting acquisition	10 days	Wed 11/25/20	Wed 12/9/20
Conduct structural analysis on Trail Glades and Palm Springs North sites modeling new antenna system loading - structural remediation to begin	10 days	Wed 11/25/20	Wed 12/9/20
Perform backhaul characterization tests to confirm links can handle the proposed system upgrade	*0 days*	*Wed 12/9/20*	*Wed 12/9/20*
Conduct CDR meeting with the County and submit CDR documentation (along with migration plan)	4 days	Thu 12/10/20	Tue 12/15/20
CDR approved by the customer	*0 days*	*Thu 12/31/20*	*Thu 12/31/20*
Site Development	**70 days**	**Wed 12/22/21**	**Wed 3/30/22**
Procure material for 3rd party equipment (antenna systems, UPS material, misc electrical material)	8 wks	Wed 12/22/21	Wed 2/16/22
Permitting Acquisition Activities	12 wks	Wed 12/22/21	Wed 3/16/22
Palm Springs North	**5 days**	**Wed 3/16/22**	**Wed 3/23/22**
Provide UPS and RF equipment rack space, wall space for new UPS by-pass switch and subpanel, and utility AC power to support the new UPS	*0 days*	*Wed 3/16/22*	*Wed 3/16/22*
Install UPS, bypass switch, sub-paneling, and wiring of circuits to future rack location	2 days	Thu 3/17/22	Fri 3/18/22
County to provide antenna space on tower per the proposed design parameters	*0 days*	*Fri 3/18/22*	*Fri 3/18/22*
Install antenna systems (coax and antennas)	2 days	Mon 3/21/22	Tue 3/22/22
Conduct antenna sweep testing	0.5 days	Wed 3/23/22	Wed 3/23/22
Perform site inspection	0.5 days	Wed 3/23/22	Wed 3/23/22

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SR10A.4 Upgrade and Simulcast Expansion
Miami-Dade County,Florida

Exhibit C-1
Project Schedule

M-1 | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 | M10 | M11 | M12 | M13 | M14 | M15 | M16 | M17 | M18 | M19 | M20 | M21 | M22 | M23 | M24 | M25

Task Name	Duration	Start	Finish
Trail Glades	**5 days**	**Wed 3/23/22**	**Wed 3/30/22**
Provide UPS and RF equipment rack space, wall space for new UPS by-pass switch and subpanel, and utility AC power to support the new UPS	*0 days*	*Wed 3/23/22*	*Wed 3/23/22*
Install UPS, bypass switch, sub-paneling, and wiring of circuits to future rack location	2 days	Thu 3/24/22	Fri 3/25/22
County to provide antenna space on tower per the proposed design parameters	*0 days*	*Fri 3/25/22*	*Fri 3/25/22*
Install antenna systems (coax and antennas)	2 days	Mon 3/28/22	Tue 3/29/22
Conduct antenna sweep testing	0.5 days	Wed 3/30/22	Wed 3/30/22
Perform site inspection	0.5 days	Wed 3/30/22	Wed 3/30/22
Site Development Complete	**0 days**	**Wed 3/30/22**	**Wed 3/30/22**
Internal Reverse By-pass Testing, Manufacturing and Internal Factory Testing of SR10A VIDA Cores / Networking Equipment	**152 days**	**Mon 1/18/21**	**Wed 8/18/21**
Internal Product Testing Prior to Staging	**40 days**	**Mon 1/18/21**	**Fri 3/12/21**
Test SR10A.4 Core with linear simulcast PR9D site infrastructure in Harris testing center (includes set up, testing, and results presentation to the	40 days	Mon 1/18/21	Fri 3/12/21
Place Orders	**4 days**	**Mon 2/15/21**	**Thu 2/18/21**
Manufacturing	**50 days**	**Wed 2/17/21**	**Tue 4/27/21**
Internal Factory Staging	**80 days**	**Wed 4/28/21**	**Wed 8/18/21**
Capture existing customer databases and convert to SR10A.4	3 wks	Wed 4/28/21	Tue 5/18/21
Develop factory network equipment configurations for the new core and validate these configurations during staging including implementing the	3 wks	Wed 5/19/21	Wed 6/9/21
Provide standard VIDA NSC network equipment and configure new NSC WAR Routers to provide backward compatibility with existing site network	4 wks	Thu 6/10/21	Wed 7/7/21
Test "Reverse Bypass" upgrade/cutover methodology with customer's personnel	2 wks	Thu 7/8/21	Wed 7/21/21
Test 4-channel (step 1) upgrade methodology with County's personalities	2 wks	Thu 7/22/21	Wed 8/4/21
Infrastructure Hardware Internal Factory Staging Complete	**0 days**	**Wed 8/4/21**	**Wed 8/4/21**
Adjust initial upgrade plan due to any findings during testing	2 wks	Thu 8/5/21	Wed 8/18/21
System Infrastructure Shipment and Delivery Acceptance	**0 days**	**Wed 8/11/21**	**Wed 8/11/21**
System Upgrades / Commissioning / Optimization	**181 days**	**Thu 8/19/21**	**Mon 5/2/22**
Physical Installation of VIDA cores	**32 days**	**Thu 8/19/21**	**Fri 10/1/21**
Premier NSC1	2 days	Thu 8/19/21	Fri 8/20/21
Premier NSC2	2 days	Mon 8/23/21	Tue 8/24/21
PSAP Connect NS1	1 day	Wed 8/25/21	Wed 8/25/21
PSAP Connect NS2	1 day	Thu 8/26/21	Thu 8/26/21
PSAP Connect NS1	1 day	Fri 8/27/21	Fri 8/27/21
PSAP Connect NS2	1 day	Mon 8/30/21	Mon 8/30/21
PSAP Connect NS1	1 day	Tue 8/31/21	Tue 8/31/21
PSAP Connect NS2	1 day	Wed 9/1/21	Wed 9/1/21
Power up of the VIDA Premier cores, connect to MPLS backhaul, health check, verify virtual machine, redundancy mechanisms	2 wks	Thu 9/2/21	Wed 9/15/21
Perform SUMS upgrades, system backups, outstanding IPN's/ISN's	2 wks	Thu 9/16/21	Wed 9/29/21
Test System A normal bypass	0.5 days	Thu 9/30/21	Thu 9/30/21
Test System A Reverse Bypass	0.5 days	Thu 9/30/21	Thu 9/30/21
Test System B Normal Bypass	0.5 days	Fri 10/1/21	Fri 10/1/21
Test System B Reverse Bypass	0.5 days	Fri 10/1/21	Fri 10/1/21
Commissioning of Upgraded VIDA Cores - Prework	**17 days**	**Mon 9/27/21**	**Tue 10/19/21**
Conduct training for MD, L3H and CG personnel that will participate in the VID	3 days	Mon 9/27/21	Wed 9/29/21

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Task Name	Duration	Start	Finish
Verify all new cores are ready for cutover	2 days	Thu 9/30/21	Fri 10/1/21
Remove all Windows computers (dispatch consoles, Network Sentry devices), from the current Active Directory Domain	2 wks	Mon 10/4/21	Fri 10/15/21
Freeze all customer database updates	0 days	Fri 10/15/21	Fri 10/15/21
Capture existing customer databases and convert to SR10A.4.	2 days	Mon 10/18/21	Tue 10/19/21
Commissioning of Upgraded VIDA Cores - Cutover	**16 days**	**Wed 10/20/21**	**Wed 11/10/21**
Remove PR9D VCE's from the network. Dispatchers will have to switch to back	1 hr	Wed 10/20/21	Wed 10/20/21
Remove PR9D NSC's from the network. Multisite functionality, access to gateways and logging recorders is temporarily lost.	1 hr	Wed 10/20/21	Wed 10/20/21
Connect SR10A.4 VIDAPremier Cores into the network	1 hr	Wed 10/20/21	Wed 10/20/21
Connect SR10A.4 VIDA PSAP Connect Cores into the network	1 hr	Wed 10/20/21	Wed 10/20/21
Preliminary Functional Testing	0.5 days	Wed 10/20/21	Wed 10/20/21
Test and Burn-In new configuration to prove stability	1 wk	Thu 10/21/21	Wed 10/27/21
Add all dispatch consoles to current Active Directory Domain.	2 wks	Thu 10/28/21	Wed 11/10/21
VIDA Core Cutover & Conditional Acceptance	**0 days**	**Wed 11/10/21**	**Wed 11/10/21**
Upgrade System D to SR10A.4	**12 days**	**Tue 11/9/21**	**Wed 11/24/21**
Conduct training for MD, L3H and CG personnel that will participate in the mu	2 days	Tue 11/9/21	Wed 11/10/21
Remove site from service	1 day	Thu 11/11/21	Thu 11/11/21
Replace router, switch, NWS, baseband and traffic controller modules with equipment already loaded with the right code and personalities; upgrade	2 days	Fri 11/12/21	Mon 11/15/21
Perform Functional Test Plan (FTP)	2 days	Tue 11/16/21	Wed 11/17/21
Evaluate performance of PR9D multi-site operation on new SR10A.4 core	1 wk	Thu 11/18/21	Wed 11/24/21
Upgrade System H to SR10A.4	**3 days**	**Fri 11/26/21**	**Tue 11/30/21**
Remove site from service	1 day	Fri 11/26/21	Fri 11/26/21
Replace router, switches, NWS, baseband and traffic controller modules with equipment already loaded with the right code and personalities; upgrade	1 day	Mon 11/29/21	Mon 11/29/21
Perform FTP	1 day	Tue 11/30/21	Tue 11/30/21
Upgrade System I to SR10A.4	**3 days**	**Wed 12/1/21**	**Fri 12/3/21**
Remove site from service	1 day	Wed 12/1/21	Wed 12/1/21
Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	1 day	Thu 12/2/21	Thu 12/2/21
Perform FTP	1 day	Fri 12/3/21	Fri 12/3/21
Upgrade System J to SR10A.4	**3 days**	**Mon 12/6/21**	**Wed 12/8/21**
Remove site from service	1 day	Mon 12/6/21	Mon 12/6/21
Replace router, switch, NWS, baseband and traffic controller modules with equipment already loaded with the right code and personalities; upgrade	1 day	Tue 12/7/21	Tue 12/7/21
Perform FTP	1 day	Wed 12/8/21	Wed 12/8/21
Upgrade System F to SR10A.4	**3 days**	**Thu 12/9/21**	**Mon 12/13/21**
Remove site from service	1 day	Thu 12/9/21	Thu 12/9/21
Replace router, switches, NWS traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	1 day	Fri 12/10/21	Fri 12/10/21
Perform FTP	1 day	Mon 12/13/21	Mon 12/13/21
Upgrade System G to SR10A.4	**3 days**	**Tue 12/14/21**	**Thu 12/16/21**
Remove site from service	1 day	Tue 12/14/21	Tue 12/14/21
Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	1 day	Wed 12/15/21	Wed 12/15/21
Perform FTP	1 day	Thu 12/16/21	Thu 12/16/21

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Task Name	Duration	Start	Finish
Upgrade System E to SR10A.4	**3 days**	**Fri 12/17/21**	**Tue 12/21/21**
Remove site from service	1 day	Fri 12/17/21	Fri 12/17/21
Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME.	1 day	Mon 12/20/21	Mon 12/20/21
Perform FTP	1 day	Tue 12/21/21	Tue 12/21/21
Upgrade System C to SR10A.4	**3 days**	**Wed 12/22/21**	**Mon 12/27/21**
Remove site from service	1 day	Wed 12/22/21	Wed 12/22/21
Replace router, switch, NWS and traffic controller modules with equipment already loaded with the right code and personalities; upgrade MME. Add	1 day	Thu 12/23/21	Thu 12/23/21
Perform FTP	1 day	Mon 12/27/21	Mon 12/27/21
Upgrade System K to SR10A.4	**3 days**	**Tue 12/28/21**	**Thu 12/30/21**
Remove site from service	1 day	Tue 12/28/21	Tue 12/28/21
Replace router and NWS	1 day	Wed 12/29/21	Wed 12/29/21
Perform FTP	1 day	Thu 12/30/21	Thu 12/30/21
Systems C-K Upgrade Cutover & Conditional Acceptance	**0 days**	**Thu 12/30/21**	**Thu 12/30/21**
Simulcast Systems Upgrade Pre-work	**27 days**	**Fri 12/31/21**	**Mon 2/7/22**
TX-Rx System A and B Existing Locations: SecureSync module (Redundant), Network Sentry, router (redundant), switches, MME (only at control point	2 wks	Fri 12/31/21	Thu 1/13/22
AuxRx Sites (System A) Complete the physical installation of the 20-channel TxRx site equipment @ Trail Glades & Palm Springs sites (do not activate)	2 wks	Fri 1/14/22	Thu 1/27/22
Card Staging: Stage new and reclaimed BB's and new TC's. Location of staging	3 wks	Fri 1/14/22	Thu 2/3/22
Conduct training for MD, L3H and CG personnel that will participate in System	2 days	Fri 2/4/22	Mon 2/7/22
DCP simulcast testing using 4 upgrade channels (performed on System A)	**15 days**	**Tue 2/8/22**	**Mon 2/28/22**
Power off channels 17 to 20 at all sites	0.5 days	Tue 2/8/22	Tue 2/8/22
Swap baseband modules and traffic controllers.	2 days	Tue 2/8/22	Thu 2/10/22
Disconnect from existing SAS and connect to new SAS 4	0.5 days	Thu 2/10/22	Thu 2/10/22
Configure this 4-channel subsystem as a new simulcast cell, with a new system ID. Power PA's on.	2 days	Fri 2/11/22	Mon 2/14/22
Test the new cell using reprogramed radios.	2 days	Tue 2/15/22	Wed 2/16/22
Perform load testing	1 wk	Thu 2/17/22	Wed 2/23/22
Test for as many days as traffic loading study supports	2 days	Thu 2/24/22	Fri 2/25/22
Power PA's down.	0.5 days	Mon 2/28/22	Mon 2/28/22
Restore IP configuration to final SR10A.4 IP plan	0.5 days	Mon 2/28/22	Mon 2/28/22
Upgrade System A to SR10A.4 - DCP Simulcast Reverse Bypass Upgrade	**6 days**	**Tue 3/1/22**	**Tue 3/8/22**
Power off PA's on bypass site (SPCC) and disconnect from network (users are on remaining sites)	1 hr	Tue 3/1/22	Tue 3/1/22
Upgrade the SPCC by swapping baseband modules and traffic controllers. SPCC will be configured as control point #2.	2 hrs	Tue 3/1/22	Tue 3/1/22
Power off PA's on Non-Bypass sites and disconnect from network.	1 hr	Tue 3/1/22	Tue 3/1/22
Connect upgraded Enhanced Bypass (SPCC) site to network and turn on PA's.	1 hr	Tue 3/1/22	Tue 3/1/22
Upgrade Non-Bypass sites, simultaneously, by swapping Baseband's and traffic controllers on sites that have the card replacement upgrade procedure. On sites that do not have replacement baseband modules we will	1 hr	Tue 3/1/22	Tue 3/1/22
Connect upgraded non-bypass sites to the network and turn on PA's	1 hr	Tue 3/1/22	Tue 3/1/22
Perform FTP as permitted by fully loaded simulcast system.	1 hr	Tue 3/1/22	Tue 3/1/22
Burn in Period Post System A upgrades	1 wk	Wed 3/2/22	Tue 3/8/22
Systems A Upgrade Cutover & Conditional Acceptance	**0 days**	**Tue 3/8/22**	**Tue 3/8/22**

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Task Name	Duration	Start	Finish
Upgrade pre-work for System B	**21 days**	**Wed 3/2/22**	**Wed 3/30/22**
Card Replacement/Hardware Downgrade: Using TC's reclaimed from previously upgrades sites, replace all existing SR10A.4 TC's in System B, so they can be used in card swapping and upgrade methodology.	2 wks	Wed 3/2/22	Tue 3/15/22
Card Staging: Stage new and reclaimed BB's and new TC's. Location of staging	2 wks	Wed 3/16/22	Tue 3/29/22
Conduct training for MD, L3H and CG personnel that will participate in System	1 day	Wed 3/30/22	Wed 3/30/22
Upgrade System B to SR10A.4 - DCP Simulcast Reverse Bypass Upgrade	**6 days**	**Thu 3/31/22**	**Thu 4/7/22**
Power off PA's on bypass site (SPCC), Trail Glades and Palm Springs North; and disconnect from network (users are on remaining sites)	1 hr	Thu 3/31/22	Thu 3/31/22
Upgrade the SPCC by swapping baseband modules and traffic controllers. SPCC will be configured as control point #2.	2 hrs	Thu 3/31/22	Thu 3/31/22
Power off PA's on remaining Non-Bypass sites and disconnect from network.	1 hr	Thu 3/31/22	Thu 3/31/22
Connect upgraded Enhanced Bypass (SPCC) site to network and turn on PA's.	1 hr	Thu 3/31/22	Thu 3/31/22
Upgrade Non-Bypass sites, simultaneously, by swapping baseband and traffic controllers on card swap option sites and upgrading and reconfiguring traffic controllers; and baseband modules on non-card swap option sites. TCC will	1 hr	Thu 3/31/22	Thu 3/31/22
Connect non-bypass sites to the network and turn on PA's	1 hr	Thu 3/31/22	Thu 3/31/22
Perform FTP as permitted by fully loaded simulcast system.	1 hr	Thu 3/31/22	Thu 3/31/22
Burn in Period Post System B upgrades	1 wk	Fri 4/1/22	Thu 4/7/22
Systems B Upgrade Cutover & Conditional Acceptance	**0 days**	**Thu 4/7/22**	**Thu 4/7/22**
Core System Optimization	**17 days**	**Fri 4/8/22**	**Mon 5/2/22**
Trail Glades and Palm Springs sites commissioning onto System A	1 day	Fri 4/8/22	Fri 4/8/22
Verify P25 system levels and parameters are set	3 days	Mon 4/11/22	Wed 4/13/22
Verify system database is installed and operating correctly	2 days	Thu 4/14/22	Fri 4/15/22
Verify proper dispatch operation	3 days	Mon 4/18/22	Wed 4/20/22
Verify proper P25 system functional operation	1 day	Thu 4/21/22	Thu 4/21/22
Verify proper network switching operation	1 wk	Fri 4/22/22	Thu 4/28/22
Notify customer that system is ready for test	0 days	Thu 4/28/22	Thu 4/28/22
Post Upgrade Performance Testing	**28 days**	**Fri 5/6/22**	**Wed 6/15/22**
Functional Test	**23 days**	**Fri 5/6/22**	**Wed 6/8/22**
Perform VIDA Core & VCE/PSAP Connects Tests	5 days	Fri 5/6/22	Thu 5/12/22
Perform Test at each RF Site	10 days	Fri 5/13/22	Thu 5/26/22
Submit Functional test report / documentation to Customer	3 days	Fri 5/27/22	Wed 6/1/22
Functional test approved by Customer	**1 day**	**Wed 6/8/22**	**Wed 6/8/22**
System Acceptance Testing Complete	**0 days**	**Wed 6/8/22**	**Wed 6/8/22**
Project Closure Tasks	**5 days**	**Wed 6/15/22**	**Wed 6/22/22**
Final System Acceptance	**0 days**	**Wed 6/15/22**	**Wed 6/15/22**
Submit Certificate of Acceptance Form to Customer	0 days	Wed 6/15/22	Wed 6/15/22
Sign Letter of System Acceptance	**0 days**	**Wed 6/22/22**	**Wed 6/22/22**
Warranty	**0 days**	**Wed 6/22/22**	**Wed 6/22/22**
Warranty Start	0 days	Wed 6/22/22	Wed 6/22/22

L3HARRIS P25 UPGRADE AND EXPANSION SOLUTION TO MIAMI-DADE COUNTY

Line Item	Description	List Price	Extended Price
SR10A.4 HA VIDA Premier Core		$2,164,165.34	**$1,696,217.88**
	Location HA VIDA Premier Core - DPCC - Lightspeed	$2,164,165.34	**$1,696,217.88**
ISSI Expansion (Previously included in VIDA Premier Core)		$150,000.00	**$112,500.00**
	LICENSE, ISSI GATEWAY TALKPATH (20 Qty)	$50,000.00	**$37,500.00**
	LICENSE,ISSI EXTERNAL SYS CONN,PREMIER (2 Qty)	$100,000.00	**$75,000.00**
Networking Equipment (Routers, Switches, and Related Accessories)		$32,353.40	**$29,118.00**
	SPCC - Redundant	$5,860.90	**$5,274.80**
	DPCC - Redundant	$5,860.90	**$5,274.80**
	Lightspeed (ICF) - Redundant	$8,909.80	**$8,018.80**
	Fire EOC (4 Consoles) - Redundant	$5,860.90	**$5,274.80**
	NMPD (2 Consoles) - Non-Redundant	$2,930.45	**$2,637.40**
	TCC (9 UAC Cards) - Non-Redundant	$2,930.45	**$2,637.40**
PSAP Connect		$947,732.96	**$744,894.09**
	SPCC - 13 Maestros - 3 UAC Cards	$299,244.32	**$235,798.03**
	DPCC - 19 Maestros - 3 UAC Cards	$314,244.32	**$247,048.03**
	Lightspeed (ICF) - 27 Maestros - 3 UAC Cards	$334,244.32	**$262,048.03**
Existing Site Equipment Upgrade		$2,008,571.53	**$1,636,939.00**
	System A Site Equipment Upgrade Subtotal	$667,737.24	**$550,563.40**
	SYSTEM A - TCC - TXRX (DCP L1 - 1) - 20CH 800MHZ - Redundant Router	$200,894.12	**$159,729.70**
	SYSTEM A - SPCC - TXRX (DCP L1 - 2) - 20CH 800MHZ - Redundant Router	$150,894.12	**$122,229.70**
	SYSTEM A - RICHMOND NAS - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM A - KROME & BAUER - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM A - AIRPORT - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM A - PALMETTO RAIL YARD - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM A - INTERAMA - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	System B Site Equipment Upgrade Subtotal	$920,496.44	**$765,446.60**
	SYSTEM B - TCC - TXRX (DCP L1 - 1) - 20CH 800MHZ - Redundant Router	$200,894.12	**$159,729.70**
	SYSTEM B - SPCC - TXRX (DCP L1 - 2) - 20CH 800MHZ - Redundant Router	$150,894.12	**$122,229.70**
	SYSTEM B - RICHMOND NAS - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - KROME & BAUER - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - AIRPORT - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - PALMETTO RAIL YARD - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - INTERAMA - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - TRAIL GLADES - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - PALM SPRINGS NORTH - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - INDUSTRIAL COMM - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	SYSTEM B - CUTLER BAY - TXRX (L2) - 20CH 800MHZ - Redundant Router	$63,189.80	**$53,720.80**
	System C-K Site Equipment Upgrade Subtotal	$420,337.85	**$320,929.00**
	SYSTEM C - MICCOSUKEE - 5-800MHz CH - Redundant Router	$47,276.45	**$36,173.80**

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L3HARRIS P25 UPGRADE AND EXPANSION SOLUTION TO MIAMI-DADE COUNTY

Line Item	Description	List Price	Extended Price
	SYSTEM D - TCC - 5-800MHz CH - Single Router	$45,870.45	$34,908.40
	SYSTEM E - GOLDEN BEACH - 3-800MHz CH - Single Router	$45,870.45	$34,908.40
	SYSTEM F - SPCC - 15-700MHz CH - Single Router	$48,919.35	$37,652.40
	SYSTEM G - MICCOSUKEE - 5-700MHz CH - Single Router	$45,870.45	$34,908.40
	SYSTEM H - RDCS 1 - 10-800MHz CH - Single Router	$48,919.35	$37,652.40
	SYSTEM I - RDCS 2 - 5-800MHz CH - Single Router	$45,870.45	$34,908.40
	SYSTEM J - RDCS 2 - 5-700MHz CH - Single Router	$45,870.45	$34,908.40
	SYSTEM K - KEY BISCAYNE - 5-700MHz CH - Single Router	$45,870.45	$34,908.40
Upgrade MASTR V Modules		$828,000.00	$602,250.00
	Upgrade MASTR V Baseband Swap Modules (Qty 50)	$125,000.00	$75,000.00
	Upgrade MASTR V Baseband Modules (Qty 11)	$27,500.00	$20,625.00
	Upgrade MASTR V Traffic Control Modules (Qty 193)	$675,500.00	$506,625.00
P25 Phase 2 software feature for all existing MASTR V repeaters		$3,971,000.00	$2,978,250.00
	Feature, Software, P25 Phase 2 (Quantity of 418)	$3,971,000.00	$2,978,250.00
System A Coverage Expansion		$2,140,042.56	$1,711,444.56
	TRAIL GLADES - TXRX (L2) - 20CH 800MHZ - - Redundant Router	$934,492.03	$719,824.83
	PALM SPRINGS NORTH - TXRX (L2) - 20CH 800MHZ - - Redundant Router	$927,128.03	$713,197.23
	Site Civils (Antenna Installations & Sweeps, UPS installation and Wiring electrical circuits to anticipated equipment installation locations)	$278,422.50	$278,422.50
Professional Services		$2,767,043.50	$2,767,043.50
	Engineering & Design Services	$1,527,900.00	$1,527,900.00
	Program Management	$669,002.50	$669,002.50
	Site Management	$150,000.00	$150,000.00
	Staging and Freight	$174,515.00	$174,515.00
	Installation	$202,991.00	$202,991.00
	Training	$42,635.00	$42,635.00
Radio Accessories		$363,185.00	$181,841.56
	MAMW-NCP9E - Control Unit,CH721,Scan,Remote Mount (247 Qty)	$21,040.00	$78,889.33
	MAMW-NZN7R - ACCESSORIES,XG-75M/M7300 REMOTE MOUNT (357 Qty)	$35,785.00	$62,610.66
	AN-125001-004 - Antenna,Base,Thick Roof Mount Low Loss (421 Qty)	$128,520.00	$31,007.70
	MAMW-NMC7Z - MICROPHONE,STD,STRAIGHT CONNECTOR (263 Qty)	$177,840.00	$9,333.87
Core Upgrade Subtotal		**$15,372,094.29**	**$12,460,498.59**
Additional Discounts			**-$4,829,111.19**
	Existing License Credit (See License Credit Tab)		-$1,807,125.00
	Prior Contract – Radio Accessories Reconciliation		-$181,841.56
	Prior Contract – Radio Reconciliation (One time system discount)		-$1,500,000.00
	Additional One Time System Discount for Core Upgrade Project		-$1,340,144.63
	Core Upgrade Sale Price (does not include taxes)	**$15,372,094.29**	**$7,631,387.40**

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L3HARRIS P25 UPGRADE AND EXPANSION SOLUTION TO MIAMI-DADE COUNTY

Line Item	Description	List Price	Extended Price
Additional Pricing			
Coverage Expansion		$3,050,363.73	$1,688,109.99
	SYSTEM A - Lightspeed (ICF) - TXRX (DCP L1 - 3) - 20CH 800MHZ - - Redundant Router	$1,047,921.85	$812,248.93
	SYSTEM A - INDUSTRIAL COMM - TXRX (L2) - 20CH 800MHZ - - Redundant Router	$954,520.03	$738,612.13
	SYSTEM B - Lightspeed (ICF) - TXRX (DCP L1 - 3) - 20CH 800MHZ - - Redundant Router	$1,047,921.85	$812,248.93
	One Time Discount if all 3 Coverage Expansions are executed at time of purchase		-$675,000.00
	**NOTE: Above pricing only includes equipment and installation services of physical equipment inside the shelter		
ENM Upgrade (Previously included in VIDA Premier Core)		$222,350.00	$195,975.00
	Enhanced Enterprise Network Manager (includes equipment and all services)	$222,350.00	$195,975.00
NIDS		$21,882.00	$19,693.80
	Network Intrusion Detection System (includes equipment and all services)	$21,882.00	$19,693.80
Status Aware (Previously included in VIDA Premier Core)		$68,600.00	$59,850.00
	Status Aware Server with 100 monitored devices (includes equipment and all services)	$68,600.00	$59,850.00
Software Services		$4,120,000.00	$4,120,000.00
	Software Managed Services (SMS) 10 Years ($300,000 billed annually)	$3,000,000.00	$3,000,000.00
	**NOTE: SMS includes 3rd Party License Renewals at the cores and network sentry		
	Security Update Management Services (SUMS) 10 Years ($112,000 billed annually)	$1,120,000.00	$1,120,000.00
	**NOTE: SMS and SUMS above do not include Hardware Refresh. Hardware Refresh may be required to install SMS or SUMS in later years of the 10-year period.		
Additional Pricing Subtotal		$3,363,195.73	$6,083,628.79
	Total Pricing (does not include taxes)	$22,855,290.02	$13,715,016.19

Optional L3Harris Hardware/Software Purchases at a discount rate of 25% off of then current L3Harris catalog price.

Optional equipment subtotal (estimated amount)	**$7,000,000**	
Total Estimated Cost (including optional purchases)	**$20,715,016.19**	

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Project Payment Milestones

MILESTONE PAYMENT	MILESTONE DESCRIPTION	MILESTONE PERCENTAGE	MILESTONE AMOUNT	CUMULATIVE PAYMENTS	ANTICIPATED PROJECT MONTH
1	Contract Signing and Project Mobilization	10%	763,138.74	763,138.74	1
2	Radio Accessories	0%	0.00	763,138.74	1
3	Customer Design Review	15%	1,144,708.11	1,907,846.85	5
4	SR10A Product Testing	20%	1,526,277.48	3,434,124.33	8
5	Equipment Staging @ Factory	5%	381,569.37	3,815,693.70	13
6	Infra Equipment Delivery	15%	1,144,708.11	4,960,401.81	14
7	Installation of VIDA Cores	5%	381,569.37	5,341,971.18	15
8	VIDA Core Cutover & Conditional Acceptance	10%	763,138.74	6,105,109.92	16
9	Site Development (Billed Monthly for 4 months)	8%	610,510.99	6,715,620.91	17-20
10	Site Development Completion (including all permits, drawings, punchlist items)	2%	152,627.75	6,868,248.66	22
11	Final System Acceptance	10%	763,138.74	7,631,387.40	23
	Total		**7,631,387.40**		

Terminal Hardware:

One Hundred Percent (100%) of the purchase price of Terminal Hardware shall be invoiced upon shipment of unit on a per unit basis.

Additional Hardware, Software and Services

One Hundred Percent (100%) of the purchase price of products purchased from the L3Harris Catalog shall be invoiced upon shipment.

One Hundred Percent (100%) of the purchase price of services purchased from L3Harris Catalog shall be invoiced upon completion.

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FUNCTIONAL TEST PROCEDURES

Customer:
Miami-Dade County

Prepared by:
Juan Mocci

Revision History		
Date	Revision	Description
9/25/2019	000	Initial Release
10/08/2019	001	Added PR9D Issues Tests

TABLE OF CONTENTS

Functional Test Plan Acceptance

This Functional Test Plan has been fully and successfully completed with all action items resolved.

Miami-Dade Representative

L3Harris Representative

_____
Signature

_____
Signature

_____
Printed Name and Title

_____
Printed Name and Title

_____
Date

_____
Date

About this Document

This document was specifically prepared for the customer shown below. Each section of this document is individually maintained in the L3Harris Document Control System.

Customer: Miami-Dade County, Florida

Prepared By: Juan Mocci

Document Usage

Many of the tests in this document will need to be run on multiple pieces of equipment. For tests that need to be run multiple times, log in the comment section of the result box the identifier of the equipment tested. Although specific tests are not included relating to electrical measurements or timing parameters of equipment, these tests and levels are conducted and recorded as part of L3Harris' standard production and/or installation practices. These parameters include but are not limited to:

- Transmit Frequency and Deviation
- Output and Reflected Power
- Receiver Sensitivity
- Receiver Multicoupler Gain (if applicable)
- Receiver Preamplifier Gain (if applicable)
- Combiner Loss (if applicable)
- Audio line out
- Audio line in

Subscriber Unit Usage

All tests for Subscriber (Terminal) Units in this document will be performed with L3Harris Subscriber Units unless the test setup identifies another Vendor's Subscriber Unit to be used.

1. Introduction

This System Test Plan is designed to validate the installation and functionality of a L3Harris P25 trunked LMR system at the SR10A.4 release.

This document defines the plan for conducting tests, and analyzing the test results, to show that the system satisfies the requirements of the applicable specification.

Tests are performed in the order they appear in the test plan, and test procedures, or as required by the L3Harris systems engineer. Test results will be recorded in the appropriate test procedure referenced by this document.

Test procedures prescribed have been developed and rigorously vetted by L3Harris engineering to provide extensive functional verification of the system features under test.

1.1 Roles and Responsibilities

A team consisting of at least one L3Harris system engineer and one Miami-Dade representative to act as a witness to the testing is required to execute the test plan. It may be necessary for a secondary team, consisting of an additional L3Harris employee and a Miami-Dade witness, to be present at another location to test certain features such as multisite calls, or for the secondary team to initiate site alarms so that the primary team can observe them from a system management terminal (SMT).

An L3Harris employee will execute the test steps recorded in the test plan using the LMR equipment, with optional assistance from Miami-Dade representatives. Additional personnel may attend as desired, or as required, to provide access or escort others to certain locations, such as RF shelters.

Access for the entire team must be provided to Miami-Dade facilities including, the Network Switching Center (NSC) locations, RF site shelters, and dispatch locations. For secure facilities, appropriate access permissions must be granted prior to the testing events.

1.2 Testing Prerequisites

The LMR system will be delivered and installed at the designated site locations. Following installation, L3Harris will perform Site Performance Validation to confirm the system readiness for test.

Site Performance Validation consists of setting site configurations, aligning stations, and optimizing system timing parameters. Equipment settings are measured, and levels recorded by L3Harris as part of the L3Harris standard installation practices. L3Harris will provide these site alignment measurements as part of the final documentation package. These parameters include:

- Transmit frequency and deviation
- Output and reflected power
- Receiver sensitivity

- Receiver multicoupler gain (if applicable)

- Receiver preamplifier gain (if applicable)

- Time domain reflectometry of transmission line

- Combiner loss (if applicable)

- Audio line out

- Audio line in

Prior to conducting the testing, a system audit will have been performed to verify software of the appropriate system release version has been installed on each platform.

Prior to conducting the testing procedures detailed in this document, L3Harris and Miami-Dade representatives will agree upon the dates and times of the test.

For secure facilities, appropriate access permissions must be requested and granted prior to the testing events.

1.3 Systems and Sites to be Tested

L3Harris will test the P25 trunked LMR system installed at each of the Miami-Dade locations.

1.4 Pass/Fail Criteria

Criteria for Pass / Fail is determined by execution of the test procedures in the Acceptance Test Plan. If a feature test is successfully executed, that feature is deemed to be compliant and results in a PASS. If a failure occurs, the failed test may be repeated to address missed steps or configuration requirements overlooked during execution.

If a certain piece of equipment is deemed to be malfunctioning, and duplicate spare equipment is available to replace it, the test may be executed using the spare equipment. If the feature test is successful executed on the spare equipment, the feature will be deemed compliant and result in a PASS. At such time as the original piece of equipment is repaired or replaced, and is able to function as designed, the original equipment will be returned to service and tested to ensure functionality.

If a feature is found to be non-compliant, L3Harris address the non-compliance and retest it. Until successful re-test, the feature is deemed to be non-compliant and results in a FAIL

If there is an inconsistency in operation observed during a test, the test may be re-executed to determine if the inconsistency can be repeated. If the inconsistency is unable to be reproduced, the feature will be deemed compliant and result in a PASS. If the inconsistency persists, but the test is successfully executed, the feature will be deemed compliant and result in a PASS.

If it is necessary to defer a test for any reason, it may be marked as not yet evaluated (NYE). The test may be executed, with appropriate witnessing, at any time afterward to change the result to a PASS.

1.5 Trouble Reporting

Any issues found during testing will first be recorded in the comments section of the appropriate test procedures, and then reported directly to the L3Harris program manager to be logged in the project issues log for corrective action.

Failures must be appropriately addressed. For hardware failures occurring during test events, failed hardware will be removed from the system being tested and turned over to L3Harris' quality organization for repair or replacement.

1.6 Test Procedures

The following list of test procedures will be used to validate system functionality:

- SR10A4 NSC Functional Test Procedures

- Site and Subscriber Unit Functional Test Procedures

- Simulcast Functional Test Procedures

- Console Functional Test Procedures MaestroIP

1.7 Safety

L3Harris will take reasonable safety precautions ensure personnel against harm while operating within and traversing the installations.

General safety guidelines for portable radios:

- Do not hold onto the antenna when the radio is powered on.

- To ensure you do not exceed FCC RF exposure compliance requirements always keep the antenna at least 0.43 inches (1.1 cm) away from the body and 0.98 inches (2.5 cm) from the face when transmitting.

- Do not use the portable radio with a damaged or missing antenna. A minor burn may result if skin comes into contact with a damaged antenna. Replace a damaged antenna immediately. Operating a portable radio with the antenna missing could cause personal injury, damage the radio, and may violate FCC regulations.

- Use only manufacturer-approved antennas. Use of unauthorized antennas, modifications or attachments could cause damage to the radio unit and may violate FCC regulations.

- RF energy from portable radios may affect some electronic equipment. Most modern electronic equipment in cars, hospitals, homes, etc., is shielded from RF energy. However, in areas in which you are instructed to turn off two-way radio equipment, always observe the rules. If in doubt, turn it off!

L3Harris engineering will identify environmental detriments prior to testing if deemed applicable. L3Harris will make adjustments to the extent required to address any such deficiencies deemed to present a danger to either system performance or personnel safety. Examples include excessive temperature variations, contaminants, hazardous materials, or obstructions to LMR equipment.

2. SR10A4 NSC Functional Test Procedures

2.1 VIDA Unified Administration Server (UAS)

2.1.1 Active Directory Control of UAS User Accounts

Purpose: SR10A.4 or later: Transition from managing UAS-user accounts in the UAS application to AD instead.

New systems will be shipped w/ AD control instead of UAS application user control.

Existing systems may choose to switch to AD control or continue to use the existing accounts in UAS.

Expected Results: Demonstrate for SR10A.4 or later UAS Login; the UAS uses Active Directory Configured User Login with AD Username & Password.

Setup All users configured in Active Directory prior to UAS Login.

UAS Users are added to AD 'Active Directory Users & Computers' > within vida.local area > VIDA Users > VIDA Administrators > "each User defined here".

For "User X", within "Properties" > "Member of" Tab; User X needs appropriate "VIDA UAS access group".

Execution:

Login into UAS with AD User Login. Use AD Username and Password. With SR10A.4 or later, UAS web login interface will pass Username and Password to Active Directory for authentication.

☐ Verify user has logged into the UAS.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

2.1.2   Create an Agency Level Administrator Account in the UAS

Purpose: Demonstrate the capability to create Agency Admin Accounts in the UAS.

Expected Results: Test demonstrates that an Administrative User has the ability to create a new UAS User Account.

Setup: The user will need system level access to an UAS.

Execution:

In Active Directory; select an existing Active Directory User account or create a new one.

Add the UAS user groups "VIDA UAS System Users" and "UAS RSA Users" to the Active Directory User account.

Verify the account is "Unix Enabled".

Browse to the UAS at the address of 'https://s0u1uas.vida.local:8443/nas'.

Log into the UAS with the Account from Step 1 & 2.

You will receive an error stating that the User Account does not have a scope defined. This is normal.

Log out and Log into the UAS with an existing Administrator Account such as RootUser.

Navigate to Administration -> Admin Class and select the RSA class check box.

Once you select the Admin Class click Modify, this will open the Admin Class Detail window.

Select the user from Steps 1&2 on the left side and click the right pointing arrow to add the user.

Once the user has been added select OK.

Select save to download and click 'OK'.

Log out of the current session.

Log in with the newly created account.

The" scope defined error" should no longer be present, and you should have access to all RSA functions.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

2.1.3   Dynamic Regroup from the UAS

Purpose: Demonstrate ability to dynamically regroup Subscriber units from the UAS.

Expected Results: Test will combine selected talk groups into a single interop group.

Setup: Radios must have "Allow P25T Unsolicited Dynamic Regroup" checked in the radio personality under General Options.

Ensure Radio IDs & TG IDs are uploaded to the Site.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST2 P25	TEST2	1
Radio 3	LIDT003	TG TEST3 P25	TEST3	1

Execution:

At the UAS, select 'Regroup' tab and 'Regroup Profile'.

Click 'Add' to add profile detail; name Group 'Regroup1', and Description 'Regroup1 Test'.

☐ Define regroup profile; select Test Agency and 'TGTEST3'.

☐ Select 'OK' and save changes to the UAS.

Click 'End User Group' and click 'Add'. Name Group 'Regroup1' and Description 'Regroup1 test'.

☐ Select Test Agency from 'Select a Scope' drop down box.

☐ Add 'Radio 1' and 'Radio 2' to the 'Selected' windows.

☐ Select 'OK' to close 'End User Group Detail'.

☐ Click 'Save' button to Download the new regroup.

Click 'Define Regroup' and click 'Add' to name the Regroup 'Regroup1' and Description 'Regroup1 test'.

☐ Change 'Profile Name' to 'Regroup1' and change 'End User Group Id' to 'Regroup1'.

☐ Click 'OK' and save to click 'Save' the changes to the UAS.

Click 'Manage Regroup' check the box for 'Regroup1' and select the button for 'Regroup'.

☐ Click 'Save' to start Regroup.

☐ Verify that Radio 1 and Radio 2 are forced to 'TGTEST3'.

At 'Radio 1' and 'Radio 2', attempt to change talk groups away from 'TGTEST3'

☐ Verify that both radios are forced to remain on 'TGTEST3'.

PTT 'Radio 1' on 'TGTEST3'.

☐ Verify that 'Radio 3' hears audio on 'TGTEST3' and can respond.

Clear the dynamic regroup from the UAS client.

☐ Verify 'Radio 1' and 'Radio 2' are no longer forced to 'TGTEST3' (i.e., they can select other predefined Talk-Groups).

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.1.4   Unit Deregistration

Purpose: Demonstrate that a radio will automatically deregister when the radio is
                     turned off.

Expected Results: Test will show the radio that is off will not create traffic load demand.

Setup: Radio 1 is only radio on 'Talk Group A' for this test.

All other radios should be on different talk groups.

UAS>System Properties>Protocol Timer>Radio Re-Registration Timer for P25 Trunked Sites must
be lowered to a minimum value to test this feature. It is typically setup for 360 minutes. Set the
timer for 2 minutes and note the "calculated" value of "VNIC Remove Demand Timer". The VNIC
Remove Demand Timer value is the "wait time" to see the radio be "deregistered" by the system
after losing connectivity. Restart the VNIC following the change.

Be sure to set the timer back to 360 minutes following the test.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Console	LIDT101	TG TEST1 P25	TEST1	1

Execution:

On a client computer, open the windows internet explorer and browse to
https://s0u1rnm.vida.local/nmc and log in with an Active Directory account. Choose System Map
and select 'Launch Application' button. Open Realtime tab and Click Mobiles.

☐ Verify Radio 1 LID is shown registered on the site.

PTT Console on TG TEST1 and verify it communicates on the system to Radio 1.

☐ Return call from Radio 1 to Console on TG TEST1.

Turn off Radio 1 and wait for expiration of the radio timeout period.

Refresh RNM Mobiles screen periodically and verify Radio 1 deregistered after VNIC Remove
Demand Timer has passed.

PTT Console on TG TEST1, after the expiration of the timeout.

☐ Verify no channel is assigned to site, since no demand exists at the sites.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.1.5   Unit Enable/Disable from the UAS

Purpose: Demonstrate the ability to disable a lost/stolen radio from the UAS.

Expected Results: Test will disable & re-enable a designated radio.

Setup: Ensure radios can communicate together on same TG.

Verify all sites are connected to the NSC and are online.

[Note: If a radio is encrypted, Unit Disable will automatically delete the encryption key from the radio, as it is disabled. To restore unit functionality for an encrypted radio, the radio must have the encryption key re-installed.]

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 4	LIDT004	TG TEST1 P25	TEST1

Execution:

In the UAS Select TG TEST1 on Radios 1, 2, and 4.

☐   Verify that the radios can communicate.

From the UAS:

☐ Click Radio 4 ENABLE/DISABLE.

☐ Under the UNIT Enable/Disable tab, enter the ID of radio 4 to be modified.

☐ Select the DISABLE button and check the status.

☐ Attempt to PTT Radio 4 and verify that it will not communicate with the other encrypted radios

☐ PTT Radio 1 and verify that Radio 4 cannot receive the call.

Enable the ID of Radio 4.

☐ Verify that the Enable/Disable screen indicates that the Current State of the radio is Enabled.

☐ Confirm that the radios can communicate in unencrypted mode.

Switch off Radio 4 and disable it from the Enable/Disable screen.

☐ Switch on the radio and verify that, on logging into the site, it becomes disabled.

☐ Verify that the State settings change to Disabled and that the radios cannot communicate.

Enable Radio 4.

☐ Verify that radios can communicate in unencrypted mode.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.2 Network Management

2.2.1   Real-time Site Monitoring (RNM)

Purpose: Demonstrate the capability to monitor real-time call activity from the RNM.

Expected Results: This test will show active call traffic on specific talk groups and Caller IDs.

Setup: Administrator access to the RNM.

Radio 1 and 2, Console A operating on a site & NSC under test, both programmed with Group A.

Execution:

On a client computer, open the windows Internet Explorer and browse to https://s0u1rnm.vida.local/nmc and log into the RNM.

- ☐ Choose the System Map and select the 'Launch Application' button.
- ☐ Open the Real-time tab and Click Site Activity.
- ☐ Select the site and expand.

Check the box next to the channels and select to add the channels to the target list. Select the 'ok' button to launch the application.

Place a group call from Radio 1 to Radio 2 on the site.

- ☐ Verify the event viewer displays the Talkgroup ID and Caller ID.
- ☐ Verify the state changes from Free to Talk.
- ☐ Verify the TG Alias displays the Group Number.

Place an emergency call from Radio 1 to Radio 2 on the site.

- ☐ Verify the event viewer displays the Emergency indication.
- ☐ Verify the event viewer displays the Talkgroup ID and Caller ID.

Place an Individual Call from Radio 1 to Radio 2 on the site.

- ☐ Verify the event viewer displays an Individual Call on the channel.
- ☐ Verify the VNIC-assigned Talk Group ID changes with each transmission.

For P25 Phase 2: Verify the P25 Phase 2 RF Traffic Channels are sub-divided into two bearers (2-slot TDMA) when all Radios on the Talk Group are Phase 2 capable.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.2.2 Regional Network Manager Monitor System Alerts (RNM)

Purpose: Demonstrate the capability to monitor system alerts from the RNM.

Expected Results: This test will show system level equipment icons.

Setup: Administrator access to the RNM.

Execution:

On a client computer, open the windows Internet Explorer and browse to https://s0u1rnm.vida.local/nmc and log into the RNM.

Choose the system map and select the 'Launch Application' button. Select the 'Network' tab and expand the tree in the left-hand panel until you can see a site in the right-hand panel.

☐ Verify the Infrastructure is presented.

☐ Select an object and right click to select properties to view information related to the object.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.2.3   RF System Alarms Indications are reported. (RNM)

Purpose: Demonstrate the capability to monitor system faults & alarms at the RNM.

Expected Results: Site equipment will send alarms to the RNM.

Setup: Need access to the site under test and the regional RNM. The alarm will need to be generated by equipment being physically powered-down or reset. Note the time of the alarm condition for later tests.

On the RNM Domain screen, verify all map icons are either green or blue.

On the Fault Browser screen, delete any prior alarms.

Execution:

On a client computer, open the windows Internet Explorer and browse to https://s0u1rnm.vida.local/nmc and log in with an Active Directory account.

- ☐ Choose the system map and select the 'Launch Application' button.
- ☐ Select the 'Network' tab and expand the Tree in the Left-Hand Panel until a site is in the right-hand panel.

Generate an alarm on a device (see chart) by powering down or otherwise disabling the device.

- ☐ Verify that the RNM Network Viewer indicates a site alarm for the affected device.
- ☐ Review alarm details by doing a Right Mouse Click on an Alarm Object. Select the desired menu option.
- ☐ Verify Alarm is listed in the Fault Browser.

Turn the device back ON.

- ☐ Verify that the device alarm clears and displays green.

Repeat steps 4-6 for all equipment listed in the below chart.

Substitute https://s0u2rnm.vida.local/nmc and repeat test steps 2-6 for the second RNM.

Record the results below for each site.

(Note: This form can be modified to reflect actual as-built alarms)

Results			
Tester:		Date:	
Alarm #	Name	Pass/Fail	Remarks
1	Traffic Controller		Press the reset button on the TC and watch for the alarm
2	Router		Remove cable from Gi0/0 (interface to SAS)
3	Switch		Remove a cable from a PLAN port
4	PA		Disable one of the site PAs

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.2.4 Network Sentry Site Alarm Indications are reported. (RNM)

(FIELD TEST ONLY)

Purpose: Demonstrate the capability to monitor site faults & alarms at the RNM.

Expected Results: Site level equipment will indicate faults & alarms at the RNM. During Factory testing the alarm will be simulated by changing the active state polarity. During Field acceptance testing the jumper alarm contacts will be opened or closed to simulate an alarm. An actual alarm could be monitored if the contacts have been connected.

Setup: This test verifies that the Site & Shelter Alarms are connected to the new system and alarm names are programmed to show the alarm types and locations. Site specific digital alarm inputs connected to the alarm management system (Network Sentry) alarm unit.

Execution:

On a client computer, open the windows Internet Explorer and browse to https://s0u1rnm.vida.local/nmc and log in with the Active Directory account.

Choose the system map and select the 'Launch Application' button.

Select the 'Network' tab and expand the tree in the left-hand panel until you can see a site in the right hand panel.

Select a physical site to test alarm inputs.

Create a condition that will either simulate an alarm (jumper alarm contacts) or the actual event to trigger each alarm

☐ Verify that the alarm is detected and displayed in the RNM Network Viewer and is listed in the Fault Browser

Clear the alarm condition

☐ Observe that the alarm indication has cleared in both the Network Viewer and the Fault Browser

☐ Repeat for each alarm and for each site in the system.

☐ Record the results below for each site.

(Note: This form can be modified to reflect actual as-built alarms).

Site #: _____   **Site Name:** _____

Results			
Tester:		Date:	
Alarm #	**Name**	**Pass/Fail**	**Remarks**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.2.5   Enterprise Network Management Display Verification (ENM)

Purpose: Demonstrate ENM monitoring capabilities.

Expected Results: Monitor various components of the LMR System.

Setup: The ENM Product must be configured in Active Directory, in the "VIDA ENM Administrators" group.

The User must log into the ENM with an Administrator Account.

Execution:

Open Internet Explorer and browse to https://s0u0enm.vida.local

On the left side of the screen select "Maps" heading and "Maps Dashboard" sub-heading. From here you can select the type of map you would like to view.\

Verify that geographical maps display System and NSC information as configured.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

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2.2.6 Enterprise Network Manager Alarm and Alert Test (ENM)

Purpose: Demonstrate the capability to monitor system faults & alarms at the ENM.

Expected Results: ENM will detect in system status by displaying the appropriate alarm.

Setup: Need access to the system under test and the ENM. The alarm will need to be generated by equipment being powered-down or reset.

The ENM Product must be configured in Active Directory, in the "VIDA ENM Administrators" group.

The User must log into ENM with an Administrator Account.

Execution:

On a client computer, open Windows Internet Explorer and browse to https://s0u0enm.vida.local. Log in with the Active Directory account.

On the left side of the screen select "Maps" heading and "Maps Dashboard" sub-heading. Then select "System" map. At the "System" map, select the Icon for the NSC that you will be working on.

Generate an alarm on a device (see chart below) by powering down or otherwise disabling the device.

The machine will take a few minutes to shut down.

☐ Verify after a few minutes that the host will be highlighted red, and the icon in the "Status" column will turn red.

Turn the Device back on:

☐ Verify after a few minutes the icon in the "Status" column will turn green. (It may take some time for the red highlight to clear).

Repeat steps 1 - 5 for all equipment listed in the below chart.

(**Note**: This form can be modified to reflect actual as-built alarms)

Results				
NSC1				
Tester:		Date:		
Alarm #	**Name**	**Description**	**Pass/Fail**	**Remarks**
1	NSS	Network Switching Service		
2	ISSI	Inter Sub-System Interface		
3	ADSA	Active Directory Server (A, B, C)		
4	RCA/SCA	Root Certificate Authority/Subordinate Certificate Authority		
5	VCC (vCenter)	VCenter Computer		
6	VREP	Virtual Replication Server		
7	UAS	Unified Administration System		
8	RSM/PRO	Regional Site Manager		
9	LAP (BeOn)	LMR Access Point		
10	RNM	Regional Network Manager		
11	VPS	Vida Presence Server		
12	TXT	TextLink Server		
13	EDTA	eData Server		
14	KMF	Key Management Facility		
15	EPO	ePolicy Orchestrator		
16	SUMS	Security Update Management Service		
17	BAK	Backup Server (Unitrends)		
18	DFC	Defense Center Server		
19	NIDS	Network Intrusion Detection		
20	SMT	System Management Terminal		
21	Console-Dispatch (CON)	Console		
22	VMT	Virtual Management Terminal		
23	XCD	Transcoder		

Results				
NSC2				
Tester:		Date:		
Alarm #	**Name**	**Description**	**Pass/Fail**	**Remarks**
1	NSS	Network Switching Service		
2	ISSI	Inter Sub-System Interface		
3	ADSA	Active Directory Server (A, B, C)		
4	SCA	Subordinate Certificate Authority		
5	PRO	Regional Site Manager		
6	LAP (BeOn)	LMR Access Point		
7	RNM	Regional Network Manager		
8	VPS	Vida Presence Server		
9	EDTA	eData Server		
10	BAK	Backup Server (Unitrends)		
11	DFC	Defense Center Server		
12	NIDS	Network Intrusion Detection		
13	VMT	Virtual Management Terminal		
14	XCD	Transcoder		

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.3 Cybersecurity Testing

2.3.1 Active Directory

Purpose: The purpose of this test is to view the GPO structure on an Active Directory server.

Expected Results: The GPO structure is valid.

Setup: None

Execution:

Remote Desktop into an Active Directory Server.

Open AD Users/Groups

☐ Validate that the computer accounts are in the appropriate containers.

☐ Verify VIDA administrator accounts exist.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.3.2   ePolicy Orchestrator

Purpose: The purpose of this test is to verify that ePolicy Orchestrator is communicating with its end devices and that it will report actions that have been taken by McAfee Antivirus on a remote computer.

Expected Results: ePolicy Orchestrator is accessible and displays valid reporting.

Setup: None

Execution:

Use Internet Explorer on a client PC to navigate to the McAfee E-Policy Orchestrator server located at "https:/s0u1epo.vida.local:8443".

Log in using proper credentials

- ☐ Use local account user "xAdministrator"
- ☐ Go to System Tree.
- ☐ Expand VIDA groups
- ☐ Verify all servers have been added to their appropriate containers (corresponding to Active Directory).

Results	Date:		Pass/Fail:
Tester:			
Comments:			

2.3.3   Unitrends System Backup

Purpose: The purpose of this test is to verify that the Unitrends server has a schedule for performing backups of network computers and that it can display the backup status of those computers

Expected Results: The test will verify that Backup is configured.

Setup: None

Execution:

Use Internet Explorer on a client PC to navigate to the Unitrends Backup servers:

- ☐ s0u1bak.vida.local located at "https://10.128.0.145"
- ☐ s0u2bak.vida.local located at "https://10.128.0.177"

Log in using credentials for "vida\vida".

Go to the Main Screen.

Bottom Corner of Main Screen is box "BACKUP COPY _ HOT TARGETS".

Click on number of backed up hosts. Scroll down to view Assets.

- ☐ Verify that devices are visible and backups are configured.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.3.4 Intrusion Detection

Purpose: The purpose of this test is to verify that the Cisco FireSIGHT is communicating with its IDS sensors at remote sites across the network.

Expected Results: Cisco FireSIGHT is communicating with its IDS sensors.

Setup: None

Execution:

Use Internet Explorer on a client PC to navigate to the Cisco FireSIGHT server at https://s0u1dfc.vida.local" or "https://10.128.0.135".

Log in using proper credentials.

Go to Cisco FireSIGHT Dashboard

Click Operations. Go to Sensors

☐ Verify that all Sensors are visible.

NOTE: There is only one Cisco FireSIGHT Server with two sensors (one at each NSC) reporting to it.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.3.5 SUMS

Purpose: Demonstrate the SUMS server is communicating with the remote client.

Expected Results: Test will verify the SUMS server is communicating with the remote clients and that the remote clients are updated.

Setup: None

Execution:

Remote Desktop into the SUMS server 's0u1sum'.

Launch the 'IBM Endpoint Manager Console' and log into the console with the SUMS administers user.

Expand 'Sites' 'Custom Sites' 'Vida' and select 'Subscribed Computers'

- ☐ Verify that each Computer is listed, in the "Subscribed Computers" window
- ☐ Check to make sure that each computer has reported to the SUMS server within the last 30 minutes by checking the 'Last Report Time' column.
- ☐ To check to make sure all the Subscriber Computers are updated by selecting the 'Baseline' in the left-hand window.
- ☐ Make sure the 'Baseline' window is empty or all computers in the window are gray.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

2.4 Over the Air Rekeying (OTAR)

2.4.1   Generating a system UKEK

Purpose: Test is setup to verify the KMFs ability to create a UKEK.

Expected Results: KMF will create a UKEK.

Setup: Test requires a computer that is on the IP network and has 'L3Harris Key Manager' installed and running.

Log into the KMF with the administrator level Active Directory Account

Open the 'Network KMF Management'

Select UKEK tab

Change 'Save As' text field to '\\fileshare\fileshare\kmf_files\ProvisionFile.ukek'

Generate UKEK file by selecting the 'Export UKEK' button

Select 'SLN Bindings' tab

Change 'Save As' text field to '\\fileshare\fileshare\kmf_files\SlnBindingsReport/xml'

Generate bindings by selecting 'Generate SLN Bindings Report'. This file will be used in a later test.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

2.4.2   UKEK a Radio

Purpose: Test is setup to verify the KMFs ability to load UKEKs into a radio.

Expected Results: Radio should accept the UKEK file developed by the KMF.

Setup: Test requires a computer that is on the IP network and has 'L3Harris Key Manager' installed and running.

Three radios programmed with a TG utilizing an AES encryption key.

All radios should be feature encrypted and enabled for OTAR operation.

Two radios should have keys and one radio should not have keys.

In test "Unit Enable/Disable from the UAS" the keys were removed from radio LIDT005.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 5	LIDT005	TG TEST1 P25	TEST1

Execution:

On a computer with 'L3Harris Key Manager' installed, save the file at '\\fileshare\fileshare\kmf_files\ProvisionFile.ukek' to the local computer.

Start 'L3Harris Key Manager' and connect the radio to the local computer.

Select 'Tools' -> 'Key Load Wizard' to open key load wizard

Select 'Next' -> Load a UKEK file into one or more devices" and open the UKEK file in step 1 and select 'Next'

Once the UKEKs are loaded select 'Next'

Choose the com port

Power on the radio and put the radio into Key Load Mode

Select 'Load' to load UKEK into the radio.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

2.4.3 Warm starting a radio from the UAS Key Management Application

Purpose: This will test the system's ability to push encryption keys to a radio and the radio to hear other radios on the encrypted talk group.

Expected Results: Radio will accept keys from the system and be able to communicate with other encrypted radios on an encrypted talk group.

Setup: Test requires 3 radios with a TG utilizing an AES encryption key.

Radios and TG need to be in a test crypto net in the UAS Key Management Application.

Radios should be both features encrypted & enabled for OTAR operation.

Two radios should have working encryption, and Radio 5 should have the UKEK load but no keys.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 5	LIDT005	TG TEST1 P25	TEST1

Execution:

PTT all three radios

- ☐ Radios 1 and 2 should communicate normally
- ☐ Radio 1 and 2 should hear calls from radio 5 but radio 5 should not be able to hear calls from the encrypted radios

From the UAS, warm start Radio 5.

- ☐ The UAS will report "Warm Starting".

After the operation is complete, refresh the UAS screen.

- ☐ Verify the UAS reports "Warm Started Success" for Radio 5.

Again, PTT radio 1 on the encrypted talk group and talk.

- ☐ Radio 1's transmit (TX) indicator should turn on and be amber.
- ☐ Verify that radio 2 and 5 now decrypt the call's audio.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

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2.4.4   Rekeying and Changing Over a Crypto Net from the UAS

Purpose: Test will show that the system can change encryption keys to a new set of keys.

Expected Results: After this test is complete, the radio will be able to communicate with the new set of keys sent by the system

Setup: Test requires 3 radios programmed with a TG utilizing an AES encryption key.

Radios and TG need to be in a test crypto net in the UAS Key Management Application.

All radios should be feature encrypted and enabled for OTAR.

Radios should have been warm started previously.

If a console and/or GWB are present in the system, then these devices should be included in this test also. They need to be in the same test crypto net as the radios and be programmed with the test talk group. They should have been warm started previously.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 5	LIDT005	TG TEST1 P25	TEST1

Execution:

Put radios 1, 2 and 5 on the encrypted talk group.

☐ Verify that all 3 radios can transmit and receive on the encrypted talk group.

Leave radios 1 and 2 powered on and power off Radio 5.

From UAS, rekey the crypto net. The UAS will report "Rekeying" for the crypto net.

Select report icon for the crypto net.

☐ Radios 1 and 2 should be shown as "Rekeyed."

☐ Any consoles and/or GWB's should also be shown as "Rekeyed."

☐ Radio 5 should be shown as "Rekey Failed."

From UAS, change over the crypto net. It should report "Changing Over" for the crypto net.

After the operation is complete, refresh the UAS screen. It should report "Changing Over Complete" for the crypto net

Turn on Radio 3. PTT radio 1 on the encrypted talk group and talk. The transmit (TX) indicator should turn on and be amber at radio 1.

☐ Verify that radio 2 but not 3 decrypt the call's audio.

☐ Verify that any consoles and/or GWB's decrypt the call's audio also.

PTT Radio 3 on the encrypted talk group and talk.

☐ The transmit (TX) indicator should turn on and be amber at Radio 3.

☐ Verify that radios 1 and 2 decrypt the call's audio.

☐ Verify that any consoles and/or GWB's decrypt the call's audio.

From UAS, do an end user level rekey on Radio 3 for that crypto net.

☐ The UAS will report "Rekeying" for Radio 3.

After the operation is complete, refresh the UAS screen. It should now show "Rekeyed" for Radio 3.

☐ Select the report icon for the crypto net. Radios 1, 2, and 3 will be shown as "Rekeyed."

☐ From the UAS, do an end user change over on Radio 3 for the test crypto net. The UAS will report "Changing Over" for Radio 3.

Again, PTT radio 1 on the encrypted talk group and talk.

☐ Verify that Radio 1's transmit (TX) indicator turns amber.

☐ Verify that radio 2 and 3 decrypt the call's audio.

☐ Verify that any consoles and/or GWB's decrypt the call's audio also.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.4.5 Zeroizing a Radio from the UAS Key Management Application

Purpose: Test will verify system's ability to delete keys from a radio that was encrypted.

Expected Results: A radio that has keys and can communicate with other encrypted radios, and will have the keys removed so the radio cannot communicate with other encrypted radios.

Setup: 3 radios programmed with a TG utilizing an AES encryption key.

Radios and TG need to be in a test crypto net in the UAS Key Management Application.

All radios should be feature encrypted and enabled for OTAR.

The radios should have been warm started previously.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 5	LIDT005	TG TEST1 P25	TEST1

Execution:

Put radios 1, 2 and 3 on the encrypted talk group.

☐ Verify that all 3 radios can transmit and receive on the encrypted talk group.

From the UAS, zeroize Radio 3.

☐ The UAS will report "Zeroizing" for Radio 3 with the date and time updating to reflect the date and time the operation was initiated.

☐ After the operation is complete, refresh the UAS screen. Verify the UAS reports "Zeroized" for Radio 3.

PTT radio 1 on the encrypted talk group and talk.

☐ The transmit (TX) indicator should turn on and be amber at radio 1.

☐ Verify that radio 2 decrypts the call's audio.

☐ Radio 3 should hear garbled audio or muted audio.

☐ Verify the receive indicator is amber on both radios and the ID of radio 1 should be seen at both radios 2 and 3.

☐ Verify Radio 3 shows "No Key 0" when it is PTT'ed on the encrypted talk group.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.5 Activity Warehouse

2.5.1   Site Activity using the Activity Warehouse

Purpose: Demonstrate the capability to create various agency level system usage reports.

Expected Results: Test will create an Agency level user report.

Setup: Ensure radio traffic has occurred across the network recently. If necessary or desired, place some calls with a known radio ID on multisite talk groups prior to running the test for reference during the test.

Execution:

Log into the SMT PC as a System level administrator.

Open Internet Explorer and browse to 'https://s0u1pro.vida.local/reports' and log in with active directory credentials.

Select Activity Reports → Call Activity

☐   Enter the time period for the report (example: 2-hour window before this test).

Enter additional report information required.

Click on "View Report"

☐   Check to make sure that there is call activity.

NOTE: These reports can be up to 2 hours behind.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.6 Trunked Logging Recorder

2.6.1 Group Call

Purpose: Confirms group call audio is captured, recorded and accessible on the logging recorder

Expected Results: Calls are captured, recorded and accessible.

Setup:

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG 64051 P25	64051
Radio 2	LIDT002	TG 64051 P25	64051
Radio 3	LIDT003	TG 64051 P25	64051

Execution:

PTT Radio 1 and talk.

☐ Audio should be heard on Radio 2. Note the Start time of the call and the approximate duration.

Retrieve the call from the Logging Recorder.

☐ Verify the Caller, Callee, Start Time, and duration.

☐ The Caller should be the LID for Radio 1 and the Callee should be the GID for 64051. Verification should include the User ID (LID), Group ID (GID) and its Alias as defined by the UAS.

☐ Verify that the call is identified as a Group Call.

Playback the audio.

☐ Confirm that the playback audio is all recorded and intelligible.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.6.2   Emergency Group Call

Purpose: Confirms emergency group call audio is captured, recorded and accessible on the logging recorder

Expected Results: Emergency Calls are captured, recorded and accessible.

Setup:

Radio Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG 64051 P25	64051
Radio 2	LIDT002	TG 64051 P25	64051
Radio 3	LIDT003	TG 64051 P25	64051

Execution:

Press the Emergency call button on radio 2. Talk during the Hot Mic transmit time.

Clear the emergency with the radio 1.

Retrieve the call from the Logging Recorder.

- ☐ Verify the Caller.
- ☐ Verify the Callee.
- ☐ Verify the start time.
- ☐ Verify the duration.
- ☐ The Caller should be the LID for Radio 2 and the Callee should be the GID for the Home Group.
- ☐ Verification should include the User ID (LID), Group ID (GID) and its Alias as defined by the UAS.
- ☐ Verify that the call is identified as an Emergency.
- ☐ Playback the audio and confirm that it is all recorded and intelligible.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

2.7 VIDA Interoperability Gateway Test

2.7.1 Local Interoperability

Purpose:　　　　The purpose of this test is to verify correct functionality of the Interoperability Gateway.

Expected Results:　　Verify that the Interoperability Gateway connects via 4-wire audio connections in its Universal Access Cards(UAC) cards to interoperability radio units (mobile or desktop). The Gateway also connects to a router and the Network Switching Center (NSC) to provide call functionality across the network.

Setup: None

Execution:

Select Inter-op group 1 on the radio.

Initiate a call from the radio to group 1

☐ Verify that audio is heard on inter-op group 1 radio.

Initiate a call from the inter-op group 1 radio to group 1

☐ Verify that audio is heard on the radio.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

2.8 High Availability NSS Switchover

2.8.1 High Availability Wide Area Router Failure

Purpose: Demonstrate capabilities of the system to work after a WAR failure

Expected Results: System components that are set-up with High Availability will continue to work after a WAR failure.

Setup: These tests are setup to be run twice, once on each router. So, after completing step 4 restart the WAR router if not already running wait 20 minutes, and rerun the tests for the second router. These tests will simulate a WAR failure by disconnecting it from the Wide Area Network, so the WAR to WAN connection will need to be known.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG 64051 P25	64051	1
Radio 2	LIDT002	TG 64051 P25	64051	1
Radio 3	LIDT003	TG 64051 P25	64051	1
Radio 4	LIDT004	TG TEST2 P25	TEST2	2

Execution:

Use Radio 1 to initiate a call

☐ Verify that the call is heard on the Radio 2. Keep the call active during fail-over.

Use Radio 3 to initiate a call

☐ Verify that the call is heard on Radio 4. Keep the call active during fail-over.

Log in to s0u1nss and s0u2nss; change your user to the Root User; and enter the password.

Type 'HArunning' into both NSSs, one will report that it is the 'Stand By' and one will report that it is the 'Primary'. Note the name of the Primary NSS and the Primary WAR.

Description	Test Run 1	Test Run 2
Primary NSS Name		
Primary WAR Name		
Primary RNM Name		
Primary RSM Name		
Time of Server Reboot		

Log into the WAR that is associated with the 'Primary' NSS. "Reload" the WAR router.

☐ The call from Radio 3 to Radio 4 will be dropped.

☐ The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC.

☐ Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

Wait 20 minutes for the two NSS servers to synchronize and replicate their databases.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.8.2   Unit 1 NSS Switchover

Purpose: Confirm when the primary NSS losses power, it will fail over to the second NSS. Secondary NSS with take over the function of the primary NSS and restart multi-site (console) call traffic.

Expected Results: Test will simulate NSS failure of the active NSS, and show the redundant NSS will restart call handing functionality. The calls between the radios (1 & 2) on the same site will operate normally during the failover, the call between radios (3 & 4) on different sites will drop for about 40 seconds. During the failover the console will lose connectivity to the system for about 40 seconds.

Setup: To start this test, the VNIC needs to be on s0u1nss; if it is not, start with Unit 2 NSS Switchover Test and perform this test after that test. Open a terminal screen. For single site simulcast system only, ignore radios 1 and 2.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST1 P25	TEST1	1
Radio 3	LIDT003	TG TEST2 P25	TEST2	1
Radio 4	LIDT004	TG TEST2 P25	TEST2	2
Console	LIDT101	TG TEST1 P25	TEST1	
Console	LIDT101	TG TEST2 P25	TEST2	

Execution:

Log into both NSS's.

Open a terminal window and login as a 'Super User'.

Type 'HArunning' in to both terminal windows. The server that displays 'Running as Primary' is the primary.

Start calls with Radio 1, 3, listen to the calls with Radios 2, 4 and the Console.

Create a NSS failure, on the Primary Network Switching Server (NSS), by initiating a "HArestart" command in the NSS window.

☐ Primary NSS gives an alert message and goes down.

☐ The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC. The call from Radio 3 to Radio 4 will be dropped.

☐ Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

On the RNM, verify:

☐ NSS1, MDIS, and VNIC icons turn red.

☐ NSS2, MDIS, and VNIC icons turn green.

☐ RNM reports NSS1, MDIS, and VNIC failure messages.

- Verify the call between Radio 1 and Radio 2 continues to be heard on Radio 2, then drop the test call.
- After failover, verify that multi-site Group and Individual radio calls can be made between Radio 3 and Radio 4.
- Verify NSS in step 5 comes back into standby operation.
- Verify NSS1 Icon turns blue on RNM.

Wait 20 minutes for the two NSS servers to synchronize and replicate their databases.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

2.8.3   Unit 2 NSS Switchover

Purpose: Confirm when the secondary NSS losses power, it will fail over to the primary NSS. The primary NSS with take over the function of the secondary NSS and restart multi-site call (console) traffic.

Expected Results: Test will simulate NSS failure and show the redundant NSS will restart call handing functionality. The calls between the radios (1 & 2) on the same site will operate normally during the failover, the call between radios (3 & 4) on different sites will drop for about 40 seconds. During the failover the console will lose connectivity to the system for about 40 seconds.

Setup: To start this test the VNIC needs to be on s0u2nss; if it is not, start with Unit1 NSS Switchover Test and perform this test after that test. Open a terminal screen. For single site simulcast system only, ignore radios 1 and 2.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST1 P25	TEST1	1
Radio 3	LIDT003	TG TEST2 P25	TEST2	1
Radio 4	LIDT004	TG TEST2 P25	TEST2	2
Console	LIDT101	TG TEST1 P25	TEST1	
Console	LIDT101	TG TEST2 P25	TEST2	

Execution

Log into both NSS's.

Open a terminal window and login as a 'Super User'.

Type 'HArunning' in to both terminal windows. The server that displays 'Running as Primary' is the primary.

Start calls with Radio 1, 3, listen to the calls with Radios 2, 4 and the Console.

Create a NSS failure, on the Primary Network Switching Server (NSS), by initiating a "HArestart" command in the NSS window.

☐ Primary NSS gives an alert message and goes down.

☐ The call from radio 1 to 2 will continue and the console will lose connectivity to the VNIC. The call from Radio 3 to Radio 4 will be dropped.

☐ Verify that after a short delay, the Backup server NSS2 automatically takes over as the primary server.

On RNM, verify:

☐ NSS1, MDIS, and VNIC icons turn red.

☐ NSS2, MDIS, and VNIC icons turn green.

☐ RNM reports NSS1, MDIS, and VNIC failure messages.

☐ Verify call between Radio 1 and Radio 2 continues to be heard on Radio 2, then drop the test call.

☐ After failover, verify that multi-site Group and Individual radio calls can be made between Radio 3 and Radio 4.

☐ Verify NSS in step 5 comes back into standby operation.

☐ Verify NSS1 Icon turns blue on RNM.

Wait 20 minutes for the two NSS servers to synchronize and replicate their databases.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3. Site and Subscriber Functional Test Procedures

SUBSCRIBER UNIT USAGE

All tests for subscriber (radio) units outlined in this document are performed with L3Harris subscriber units unless the test setup identifies another vendor's subscriber unit for testing.

3.1 P25 Trunked Calls and Site Features

Purpose: Demonstrate radio communications at the system level.

Expected Results: Verify the System can provide radio communications.

Setup: All tests in this section assume that the UAS setup matches the configuration in this test. All testing in this section is to be done with Phase 1 radios.

3.1.1 Transmit Grant Tone

Purpose: Demonstrate the system channel grant tone is heard on the radio.

Expected Results: This test will show that the radio will play a grant tone when the radio is assigned a working channel.

Setup: One radio with valid ID and a valid group on selected system. Grant tone (ready-to- talk tone) enabled in radio personality as applicable for specific radio type being tested.

Execution:

Press PTT button on radio with valid group selected.

Verify grant tone is heard at radio when working channel access is granted.

Note: If the call is queued, the grant tone will be delayed until the call is assigned a working channel.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.2   Out of Range Tone on PTT

Purpose: Test demonstrates the radios out of range tone.

Expected Results: When the radio losses connectivity with the control channel the radio plays a tone to make the user aware that it has lost connectivity to the control channel.

Setup: One radio with a valid ID and a valid group on selected system. System scanning should be disabled in the radio personality as necessary for specific radio type being tested.

Execution:

With valid group selected, and radio initially logged into and monitoring the control channel on the selected system, reduce the signal strength reaching the radio by some means (ex. unscrewing and removing the portable radio antenna, or moving further from the site).

- ☐ Verify that the radio indicates loss of control channel on the display when the received signal strength is sufficiently reduced (i.e. out of range of system).
- ☐ Press PTT button on radio and verify that an out of range tone is heard at the radio.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.3 Group Test Call

Purpose: A group test call will show that the site will allow a radio to communicate using a group call.

Expected Results: Test will demonstrate that all radios assigned to a common group will hear a call and all radios assigned to an uncommon group will not hear the call.

Setup: Make sure scan is turned OFF on the radios.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 3	LIDT003	TG TEST1 P25	TEST1

Execution:

PTT radio 1 and talk.

☐ The transmit (TX) indicators should turn on at radio 1.

☐ Audio should be heard in radios 2 and 3.

☐ The ID of radio 1 should be seen on Radios 2 and 3.

Set radio 3 to (TGTEST2 P25). PTT on radio 1 and talk.

☐ The transmit (TX) indicators should turn on at radio 1.

☐ Audio should be heard in radio 2 only.

☐ The ID of radio 1 should be seen at radio 2 only.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.4   Individual (Private) Call

Purpose: Verify the site will allow two radios to communicate on a private call.

Expected Results: Test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup:

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 3	LIDT003	TG TEST1 P25	TEST1

Execution:

On radio 1, select the Individual Call Function, and select a pre-stored radio 2 ID, or enter radio 2's ID.

PTT radio 1 and make a test call.

☐ Verify that radio 2 receives the call and displays the ID of radio 1.

☐ Verify that radio 3 remains idle.

Release the PTT on radio 1 and immediately PTT on radio 2.

☐ Verify that radio 1 receives the call and displays the ID of radio 2.

☐ Verify radio 3 remains idle.

On radio 1, select the Individual Call Function, and select pre-stored radio 3 ID, or enter radio 3's ID, and PTT radio 1.

☐ Verify that radio 3 receives the call and displays the ID of radio 1.

☐ Verify that radio 2 remains idle.

Release the PTT on radio 1 but do not immediately PTT radio 3.

☐ Verify that radio 3 gives a call back Alert (WHC- "Who Has Called") Indication.

Make the return call from radio 3 back to radio 1.

☐ Verify that radio 1 receives the call and displays the ID of radio 3.

☐ Verify radio 2 remains idle.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.5 Multisite Group Call

Purpose: This test will demonstrate that the system will allow a group call to function in a multisite environment.

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call regardless of the site they are affiliated with.

Setup: Radios must be affiliated with sites with VNIC connectivity (wide area communications).

Description	Radio LID	Site AFF	TG Description	TG ID
Radio 1	LIDT001	Site 21	TG TEST1 P25	TEST1
Radio 2	LIDT002	Site 21	TG TEST1 P25	TEST1
Radio 3	LIDT003	Site 25	TG TEST1 P25	TEST1

Execution:

PTT radio 1 and talk.

The transmit (TX) indicators should turn on at radio 1.

Radios 2 and 3 should hear the call.

Switch all radios to TG TST51 to test phase 2 multisite.

Repeat steps 1 and 2.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.6 Multisite Announcement Group Call

Purpose: This test will demonstrate that the system will allow an announcement group call to function in a multisite environment.

Expected Results: The test will demonstrate that all radios assigned to a common group will hear a call, although some of the radios are at distant sites and all radios assigned to an uncommon group will not hear the call.

Setup: Groups TEST1 and TEST2 are in announcement group TEST7 per test group structure. Ensure scan is turned OFF.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	AN TEST7 P26	TEST7	1
Radio 2	LIDT002	TG TEST1 P26	TEST1	1
Radio 3	LIDT003	TG TEST2 P25	TEST2	2
Radio 4	LIDT004	TG TEST8 P25	TEST8	1

Execution:

PTT radio 1 and talk.

The transmit (TX) indicators should turn on at radio 1.

☐ Audio should be heard on radios 2 and 3.

☐ ANNOUNCE should be displayed on radios 2 and 3.

☐ Radio 4 should not receive announcement call.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.7   Multisite Emergency

Purpose: This test is set up to demonstrate the multisite emergency.

Expected Results: This test will verify that the system will not drop a channel to assign a channel an emergency in FMDA mode.

Setup: This test requires six radios and two working talk paths on the site. Disable channels (if necessary) until there is only two working talk paths on the site.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TST101 P25	TST101	1
Radio 2	LIDT002	TG TST102 P25	TST102	1
Radio 3	LIDT003	TG TST103 P25	TST103	1
Radio 4	LIDT004	TG TST101 P25	TST101	2
Radio 5	LIDT005	TG TST102 P25	TST102	2
Radio 6	LIDT006	TG TST103 P25	TST103	2

Execution:

Disable channels at site 1 and site 2 so the sites only have two working talk paths.

PTT radio 1 and 2 to busy up the sites.

Declare an emergency on radio 3.

☐   radio 3 Should enter the queue.

Un-key radio 2.

☐   Verify radio 3 is assigned the call.

Un-key all radios and clear the emergency with the radio 1.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.8   Multisite Emergency Group Call

Purpose: Demonstrate the capability of the system to process an emergency group call.

Expected Results: This test will verify that when a radio indicates an emergency group call, all other radios in the group indicate an emergency and the emergency can be cleared by an administrator radio.

Setup: Program three radios with the same emergency home group. Set the supervisor (radio 1) & radio 2 to the home group. Set radio 3 to a different group (not home group). A console will be used to clear the emergency.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST1 P25	TEST1	2
Radio 3	LIDT003	TG TEST3 P25	TEST3	1

Execution:

Press the Emergency call button on radio 1 and talk within the pre-defined Emergency Auto-key time, and/or PTT radio 1 during or just after that time.

- ☐ Verify that radio 1 indicates the "TX EMER" declaration and that it reverts to the home group.
- ☐ Verify radio 2 (on site 2) indicates a "RX EMER" and hear audio on the emergency home group.
- ☐ Verify radio 3 does not display the emergency.

Clear the emergency with the console.

- ☐ Verify the emergency clears in the radios.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.9   Transmit Denied (for Invalid Radio ID)

Purpose: Demonstrate that a radio can be denied system access.

Expected Results: Radio with invalid ID will not be able to transmit or receive on the system.

Setup: Program system so that radio ID is not valid on the site under test. Download database to site.

Execution:

Program radio 1 with an invalid ID

PTT radio 1

☐ Verify the radio is prohibited access to system and the radio displays "Invalid ID"

Reprogram the radio to the original personality.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

3.1.10 Recent User Priority

Purpose: Demonstrate system's ability to prioritize recent users in queueing situations.

Expected Results: When radios of the same priority level enter the queue, one that has been recently active will exit the queue first.

Setup: This test requires four radios and two working channels.

Disable channels (if necessary) until there are two working channels at the site. Set the radio according to the table below. This test is to be run with no other users on the system and at intervals as set in the recent caller interval (a time of greater than 10 seconds is recommended for the test, which is configurable in the traffic controller module). *This will only work if preformed quickly.*

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST2 P25	TEST2
Radio 3	LIDT003	TG TEST3 P25	TEST3
Radio 4	LIDT004	TG TEST4 P25	TEST4

Execution:

PTT and release radio 1 (establish a recent user entry).

PTT Radios 3 and 4 and hold on transmit to busy both working channels.

PTT and release radio 2 (queue a call less recent than radio 1).

PTT and release radio 1 (queue the recent user).

Unkey Radio 4.

☐ Verify that radio 1 un-queues and transmits.

Unkey all radios.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.11 Call Priority for Group IDs

Purpose: Demonstrate the system's ability to allow a user with a higher priority to be assigned a channel before a user with a lower priority, despite who enters the queue first.

Expected Results: This test will verify that a user who has a higher priority will be assigned a channel before users with a lower priority regardless of who entered the queue first. In this test radio 4 should get the first available channel, because it has a higher priority, and radio 3 will be assigned a channel next because it has a lower priority.

Setup: This test requires two working channels on the site. Disable channels (if necessary) until there are two working channels on the site. Setup the radio according to the table below. This test is to be run with no other users on the system.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST2 P25	TEST2
Radio 3	LIDT003	TG TEST3 P25	TEST3
Radio 4	LIDT004	TG TEST4 P25	TEST4

Execution:

PTT radios 2 and 4 and hold on transmit to busy both working channels.

PTT and release radio 1 (medium priority entry into the queue).

PTT and release radio 3 (high priority entry into the queue).

Un-key radio 4

☐ Verify that radio 3 un-queues and keys.

Un-key radio 2

☐ Verify that radio 1 un-queues and keys.

Un-key all radios.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

3.1.12 Emergency Call Priority for Group IDs

Purpose: Demonstrate the system's ability to allow a user that declares an emergency to be assigned a channel before other users, despite queue entry sequence or priority level.

Expected Results: This test will verify that radio 1 is assigned a channel before radio 2 although radio 2 has a higher priority and entered the queue first.

Setup: This test requires four radios and two working channels on the site. Disable channels (if necessary) until there is only two working channels on the site.

Description	Radio LID	TG Description	TG ID
radio 1	LIDT001	TG TEST1 P25	TEST1
radio 2	LIDT002	TG TEST2 P25	TEST2
radio 3	LIDT003	TG TEST3 P25	TEST3
Radio 4	LIDT004	TG TEST4 P25	TEST4

Execution:

PTT radios 3 and 4 and hold on transmit to busy both working channels.

PTT and release radio 2 (high priority entry into the queue).

Declare an emergency on radio 1 (medium priority entry into the queue but now at Emergency Priority).

☐ Verify that the emergency is displayed on the console. (Audio will follow when a working channel is freed).

Un-key Radio 4

☐ Verify that radio 1 un-queues and is assigned a channel without having to PTT. (Key the radio within the specified auto key time in order to keep the channel).

Un-key all radios and clear the emergency with radio 1.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.13 Group Scan

Purpose: Verify when scan is enabled, calls from groups in the radio's scan list are received.

Expected Results: In this test the radio will play calls from multiple talk groups while scan is enabled.

Setup: All radios for this test need to have scan ability.

Radio 1 set up with TGTEST1 P25 and TGTEST2 P25 in the scan list, TGTEST1 P25 selected, and group scan initially disabled.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1

Execution:

Place a call from radio 2 on TGTEST1 P25.

☐ Verify the call is received and audio is heard on radio 1 on TGTEST1.

On radio 2, change to TGTEST2. Place a call from radio 2 on talk TGTEST2 P25.

☐ Verify the call is not received by radio 1.

Enable group scan on radio 1.

Place another call from radio 2 on talkTGTEST2 P25.

☐ Verify that the call is now received, and audio is heard on radio 1.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.14 Priority Scan

Purpose: Demonstrate groups assigned a higher priority in the scan list override groups of a lower priority.

Expected Results: Radio will play calls with a higher level of priority.

Setup: Set radio 1 to priority scan TGTEST1 P25, and scan (at lower priority – 3 bars) TGTEST2 P25. Set radio 1 to TGTEST3. Have scan enabled on radio 1.

Description	Radio LID	TG Description	TG ID
Radio 1 (SCAN)	LIDT001	TG TEST3 P25	TEST3
Radio 2	LIDT002	TG TEST2 P25	TEST2
Radio 3	LIDT003	TG TEST1 P25	TEST1

Execution:

Have radio 1 selected to TGTEST3 P25. Place a call from radio 2 on TGTEST2 P25.

☐ Verify radio 1 scans to TGTEST2 P25 and hears audio from radio 2. Continue transmitting from radio 2.

Place a call from radio 3 on TGTEST1 P25. [radio 2 is still transmitting on TGTEST2 P25.]

☐ Verify radio 1 priority scans to TGTEST1 P25 and hears audio from radio 3.

Unkey all radios and turn off scan.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.15 Transmit Busy Lockout

Purpose: Demonstrate a radio cannot key on a group, on which a group call is already active.

Expected Results: A radio will not be allowed to transmit on a talk group while a different radio is transmitting on the same talk group.

Setup: Talk group used for test must be set up as transmission trunked. This feature does not apply to message trunked calls.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1

Execution:

Place a call from radio 1 on selected talk group by pressing and holding the PTT button.

☐ Verify the call is received and audio is heard on radio 2.

While the call is in progress, press the PTT button on radio 2.

☐ Verify that radio 2 does not transmit over (step on) the call in progress. (A double bump busy sound will be heard).

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.16 Continuous Control Channel Update

Purpose: This test will demonstrate that a radio will join a call that is already in progress

Expected Results: This test will verify that a radio will join a call that is already in progress.

Setup:

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1

Execution:

Set both radios to the test group.

Turn radio 2 OFF.

Key radio 1 and hold. Turn ON the radio 2 (and set it to the test group if necessary).

☐ Verify that the second radio joins the call in progress and hears audio from the call in progress.

Unkey radio 1.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.17 Convert to Callee

Purpose: Demonstrate when radios are simultaneously keyed, only one radio is given talk privilege.

Expected Results: When two radios on the same talkgroup are keyed simultaneously, only one radio will receive access to the working channel. The other radio will play the audio from the first.

Setup: Test of single site simultaneous call arbitration. radio 1 and radio 2 are registered on the same site and talk group.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST1 P25	TEST1	1

Execution:

Set two radios to the same site and group.

Key both radios at the same time.

- ☐ Verify that one radio ends up transmitting and the other ends up receiving.
- ☐ Verify that the call audio is routed and received by one of the units although the PTT is pressed.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.18 Multisite Routing (for Multisite Logout)

Purpose: Demonstrate the system will not route a call to a site if all the radios logged into the site have moved to a different site.

Expected Results: When the radio moves away from a site, the system will not route calls to the site that it has roamed away from.

Setup: site 1 and 2 should be selected so radio 2 can log into site 1 and then site 2.

The primary objective of this test is to demonstrate that the system routes calls to site 2 whenever a unit (i.e. radio 2) is logged onto site 2 and does not route calls to site 2 when no units are logged into site 2. radio 1 logged into site 1 and radio 2 logged into site 2.
Ensure no other radios logged into system during this test.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST1 P25	TEST1	2

Execution:

Key radio 1 on Site 1.

☐ Verify channel assignments occur on site 2. Un-key radio.

Move radio 2 from site 2 to Site 1. Key radio 2 (radio 2 is no longer logged into site 2).

☐ Verify no channel assignments occurs on site 2, since no radios are logged into site 2. Unkey radio 2.

Key radio 1.

☐ Verify no channel assignments occurs on site 2, since no radios are logged into site 2. Unkey radio 1.
Move radio 2 from site 1 to site 2. Key radio 2.

☐ Verify a channel assignment occurs on site 2. Unkey radio 2.

Key radio 1.

☐ Verify channel assignment on site 2, since radio 2 is logged into site 2. Unkey radio 1.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

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3.1.19 Site Trunking (Failsoft) Indication

Purpose: Demonstrate that radio displays a fail soft icon, when the site is unable to communicate with the system/network.

Expected Results: This test will verify that the radio will display an 'F' when the site it is logged into is not connected to the system.

Setup: Radios must be programmed to display fail soft.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST1 P25	TEST1	1
Radio 3	LIDT003	TG TEST1 P25	TEST1	2

Execution:

PTT radio 1

☐ Verify that the radio 1, radio 2, and radio 3 can communicate on the system.

Disconnect the network connection from the network switching center to the site router, causing loss of communication from the site back to the network switching center.

☐ Verify that radio 1 and radio 2 indicate a fail soft alarm ("F") on their displays, this may take several minutes.

PTT radio 1 on talkgroup A. Verify audio is heard at radio 2. Verify audio is not heard on radio 3.

Re-connect the network from the network switching center to the site router.

☐ Verify the fail soft alarm disappears on the radios and that communications with radio 3 is reestablished.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.20 Unconfirmed Call (Multisite Late-Enter)

Purpose: Verify a radio will late enter an ongoing group call made from another site.

Expected Results: A radio creates demand for talkgroups even when no channels are available at a site. Ongoing calls on a talkgroup will be joined as channel resources become available.

Setup: site 1 should only have one working channel, disable all other working channels at site 1.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST2 P25	TEST2	1
Radio 3	LIDT003	TG TEST1 P25	TEST1	2
Radio 4	LIDT004	TG TEST1 P25	TEST1	2

Execution:

Key up radio 2 on site 1 and hold the call up. [Then there are no channels available to process a call on TGTEST1 on site 1.]

Key up radio 3 on TGTEST1 on site 2 and hold the call up.

- ☐ Verify that radio 3 should get the grant tone and the call should go through to radio 4 on site 2.
- ☐ Since site 1 has no channels available, the call should not go through to radio 1 on Site 1.

While radio 2 is still keyed up, free up a channel on site 1 by unkeying radio 2.

- ☐ Verify that the call from radio 3 gets routed to site 1 and that radio 1 late-enters into the call on that site.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.1.21 Confirmed Call

Purpose: Demonstrate that the system allows confirmed calls.

Expected Results: The radio will be briefly queued before being allowed to talk while the system attempts to wait until there are available channels; or the call confirmed call timer expires.

Setup: In the system, enable "Confirm Call" on TGTEST1. Ensure that the group is set up for multisite operation. For this test, set the "Confirmed Call Timeout" to a default of 1 second in the site via device manager.

site 1 should only have one working channel, disable all other working channels at site 1.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST2 P25	TEST2	1
Radio 3	LIDT003	TG TEST1 P25	TEST1	2
Radio 4	LIDT004	TG TEST1 P25	TEST1	2

Execution:

Key up "radio 2 on Site 1, TGTEST2, and hold the call up.

Key up radio 3 on TGTEST1, on site 2, and hold the call up.
- ☐ Verify the confirmed call is not allowed to proceed, until the "Confirmed Call Timeout" period has expired.
- ☐ When the timer expires, the call will proceed, but only to site 2.
- ☐ Verify Radio 4 late enters in the call from radio 3.
- ☐ Verify radio 1 does not get the call from radio 3, since site 1 does not have any available channels.

radio 2 is still keyed. Now, unkey radio 2, to free up the channel on Site 1.
- ☐ Verify the call from radio 3 gets routed to site 1 and radio 1 late-enters into the call.

Repeat test. Key up radio 2 on site 1, TGTEST2 and hold the call up.

Key up radio 3 on TGTEST1, on site 2, and hold the call up.
- ☐ Verify radio 4 hears the call.

Unkey radio 2, before the "Confirmed Call Timeout" period expires.
- ☐ Verify the call from radio 3, site 2 is heard on radio 1, site 1, and late-enters on radio 1.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

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3.1.22 Roaming/ProRoam

Purpose: This test will demonstrate the ability of radios to scan and find adjacent site control channels as a user travels (or roams) between LMR sites or simulcast cells.

Expected Results: As the signal quality degrades the radio will scan the adjacent control channels and log on to adjacent available control channel.

Setup: The two radios used for this test must be capable (feature encrypted) and programmed for ProRoam.

The radios must be valid on the two sites (site 1 and site 2) being used to conduct the tests. site 1 and site 2 should have overlapping coverage to verify priority system scan (if tested). Log radio 1 and radio 2 onto Site 1. Ensure the radios are communicating.

Verify that the tone suppress option is not selected in the personality so that an audible tone can be heard once the radios switch systems. Program both radios for dynamic scan mode.

To test Priority System Scan (a.k.a., Preferred Site), ensure only radio 1 has one of the sites (Site 1) used for the test as its priority system. Have radio 2's Priority System Scan site set to a site not near the sites used in this test (i.e., not site 1 or site 2).

Note that the display and indications of each model of radio differ. This test describes the general procedure for ProRoam roaming. Refer to the specific radio operator's manual or the ProRoam Release Notes for details.

Execution:

Start with both radios at site 1.

Begin traveling toward an area where the coverage from site 2 is stronger than the coverage from site 1.

As you travel away from site 1 and towards site 2, the signal quality will deteriorate. Once the signal level of site 2 exceeds the programmed ProRoam parameters in the personality

☐ radio 1 and radio 2 will switch to the site 2.

☐ The radios will generate audible tones and will visually indicate that they have switched to site 2 cell.

☐ After the radios have both switched to the site 2 cell, verify communications continue.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.1.23 Priority System Scan / Preferred Site

Purpose: This test will demonstrate the radios ability to prefer one site over another site.

Expected Results: As the signal degrades the radio will switch to the preferred site although the signal strength of the preferred site is lower than the non-preferred site.

Setup: The two radios used for this test must be capable (feature encrypted) and programmed for ProRoam. The radios must be valid on the two sites (site 1 and site 2) being used to conduct the tests. site 1 and site 2 should have overlapping coverage to verify Priority System Scan (if tested).

Verify that the Tone Suppress option is not selected in the personality so that an audible tone can be heard once the radios switch systems. Program both radios for Dynamic Scan mode. To test Priority System Scan (a.k.a., Preferred Site), ensure only radio 1 has one of the sites (Site 1) used for the test as its Priority System. Have radio 2's Priority System Scan site set to a site not near the sites used in this test (i.e., not site 1 or site 2). Note that the display and indications of each model of radio differ.

This test describes the general procedure for ProRoam roaming. Refer to the specific radio operator's manual or the ProRoam Release Notes for details. Log radio 1 and radio 2 onto the site 1 used for this test. Ensure the radios are communicating on this system.

Execution:

Continued from roaming test.

Begin slowly travelling from site 2 back to the coverage of Site 1.

As you travel from site 2 back to Site 1, radio 1 will log back onto site 1 (its Priority System) as soon as an acceptable signal is available, even if site 2 has a stronger signal.

radio 2 will roam onto site 1 only when its signal is stronger than the signal of site 2. Verify that radio 1 scans back to site 1 sooner than does radio 2.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

3.2 Unencrypted / Encrypted Calls

Radios need to have encryption keys loaded prior to doing the tests in this section.

3.2.1   Encrypted Group Call Test

Purpose: Encrypted call test will demonstrate that radios that have the encryption keys will hear encrypted calls and radios that do not have encryption keys will not hear encrypted calls.

Expected Results: Radios 1 and 2 will hear encrypted calls, and radio 5 will not hear encrypted calls because it does not have encrypted keys. All the radios will hear unencrypted calls

Setup: Radios 1 and 2 should have encryption keys and be set to encryption mode. Radio 5 should not have encryption keys and be set to encryption mode.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TST51 P25	TST51
Radio 2	LIDT002	TG TST51 P25	TST51
Radio 5	LIDT005	TG TST51 P25	TST51

Execution:

PTT radio 1 and talk.

- ☐ Audio should be heard on radio 2
- ☐ No audio should be heard on radio 5

PTT Radio 5 and talk.

- ☐ Audio should be heard on radio 1 and 2
- ☐ Radio 5 should display that it does not have a key

Results	Date:	Pass/Fail:
Tester:		
Comments:		

3.2.2 Encrypted Individual (Private)

Purpose: The individual call test will verify that the site will allow two radios to communicate on a private call

Expected Results: Test will demonstrate that two radios can communicate on an individual call and other radios will not hear the private conversation.

Setup: Set radios 1, 2, and 3 to (TGTEST1) per test group structure. All radios should not be in encrypted mode but have encryption keys.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDT001	TG TEST1 P25	TEST1
Radio 2	LIDT002	TG TEST1 P25	TEST1
Radio 3	LIDT003	TG TEST1 P25	TEST1

Execution:

On radio 1, select the Individual Call Function, and select pre-stored radio 2 ID, or enter radio 2's ID, and PTT radio 1.

Verify that radio 2 receives the call and displays the ID of radio 1. Verify that radio 3 remains idle.

Release the PTT on radio 1 and immediately PTT on radio 2.

Verify that radio 1 receives the call and displays the ID of radio 2. Verify radio 3 remains idle.

On radio 1, select the Individual Call Function, and select pre-stored radio 3 ID, or enter radio 3's ID, and PTT radio 1.

Verify that radio 3 receives the call and displays the ID of radio 1. Verify that Radio 6 remains idle.

Release the PTT on radio 1 but do not immediately PTT radio 3. Verify that radio 3 gives a Call Back Alert (WHC- "Who Has Called") indication. Then make the return call from radio 3 back to radio 1.

Verify that radio 1 receives the call and displays the ID of radio 3. Verify radio 2 remains idle.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

4. Simulcast Sites, Functional Test Procedures

4.1 Control Point Movement

4.1.1 DCP Forced Control Point Movement

Purpose: This test will demonstrate the DCP system can move the control point in response to user command.

Expected Results: This test will verify that the Control Point can be moved from the active site to an alternate Control Point Site. After the control point is switched to the alternate Control Point the system should operate normally.

Setup: The DCP system is operating with an active control point and at least two sites are enabled to be the control point.

Execution:

1. Log into the RNM

2. In Network view identify the site which is the active control point.

3. Right click on the control point site icon and select "Change Control Point to Best Site Available".

4. Verify system is still functioning (i.e. voice calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged').

5. Verify that the RNM indicates a different site as control point and the previous control point is now a TX site. (note – a CP only site displays "zzzz" when it is not the active control point.)

6. On the RNM right click on the previous control point site and select "Change to be the Control Point".

7. Verify system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged').

8. Verify that the RNM indicates the control point has moved to the site selected in step 6 and the previous control point is now a TX site. (note – a CP only site displays "zzzz" when it is not the active control point.)

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

4.1.2 DCP Control Point Movement in Response to Faults at the Active Control Point

Purpose: This test will demonstrate that the Control Point will move in response to failures at the active Control Point.

Expected Results: This test will verify that the DCP system will move the active Control Point to an alternate control point site when the active control point experiences failures. After the Control Point moves the old control point should drop into bypass and the rest of the system should operate normally as a Simulcast cluster.

Setup: The DCP system is operating with an active control point and is properly configured with at least two sites enabled to be the control point.

Execution:

Verify system is functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged').

1. At the control point site disconnect the 1pps cable from GPS B.

2. Verify the system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged') and control point has not moved. The traffic controllers at the control point display 'CC xx' and 'TC xx' when idle; at a satellite site the traffic controllers display "TR xx' where xx is the channel number. (>

3. At the control point site disconnect the 1pps cable from GPS A.

4. Verify that the control point moved to next ranked site and the old control point is now in bypass. The traffic controllers at the control point display 'CC xx' and 'TC xx' when idle: Any channels that are configured to be active at the old control point site when it is in bypass will have all their status LED red. In bypass all the traffic controllers display 'CC xx' and 'TC xx' when idle and the status LED will be red.

5. Verify the RNM indicates the new control point and shows the old control point site is now in bypass.

6. Verify the simulcast system is still functioning (i.e. calls can be made – between radios and a radio and console and optionally data calls can be made (e.g. radios can be 'pinged').

7. Restore the connections to the GPS receivers at the site in bypass (the old control point site).

8. Verify that the site exits bypass and joins the simulcast cluster.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

4.2 P25 Simulcast Bypass Operation

Program the MASTR V modules (both Control Points and Transmit Sites) to the Final Configuration. Refer to the installation manual for the guide to setting TX Traffic Controllers / CP Traffic Controllers personality parameters.

Verify the BYPASS plan has been reviewed and approved by customer representative. This procedure makes assumptions on bypass sites before implementation and test of the System. After WMS/Panther signal strength data collection, final decision will be made on the actual bypass "ON" and "OFF" sites.

Prepare a minimum of two terminal radios programmed to operate on the active BYPASS site and the main simulcast system.

4.2.1   Site OFF – Final Configuration

Purpose: Confirm sites configured to be in the "OFF" condition during BYPASS are in the expected BYPASS mode.

Expected Results: The "OFF" site traffic controllers have no control channel.
Setup: Sites intended to be "OFF" in event of BYPASS must have all channels set to disabled (unchecked in Device Manager, TC personality).

Execution:

At one of the sites designated as an "off" site, create a condition to force BYPASS by disconnecting the router to MPLS connection. All other sites will have the HPAs
disabled locally.

- ☐ Verify transmit site is in BYPASS mode.
- ☐ The Traffic Controller module display indicates "TC" instead of "TR". Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.

1. Observe the repeater (station) Traffic Controller modules.
   - ☐ Verify there is no active control channel.

☐ Verify no stations are keyed or producing RF power.

2. Restore the site to normal by returning the site to simulcast mode by reconnecting the router to MPLS connection.

☐ Verify transmit site is in normal simulcast mode. The Traffic Controller modules will indicate "TR(n)", where n is the channel number.

3. Repeat steps 1-3 for the remaining "OFF" bypass sites in the simulcast system under test.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

4.2.2   Site ON (Trunking) – Final Configuration

Purpose: Confirm sites configured to be in the "ON" condition during BYPASS are in the expected BYPASS mode.

Expected Results: The "ON" site traffic controllers have a control channel and calls to terminal radios can be initiated.

Setup: Sites intended to be "On" in event of BYPASS must be properly configured and have all channels set to enabled (checked in Device Manager, TC personality).

Execution:

Create a condition to force BYPASS by disconnecting the router to MPLS connection.

☐ Verify transmit site is in BYPASS mode. BYPS LED on Baseband module and the Traffic Controller module display indicates either "TC" or "CC" instead of "TR.

☐ Observe the stations/repeater Traffic Controller modules. Verify there is an active control channel on one of the Traffic Controller modules. The remaining repeater/stations Traffic Controller modules will indicate "TC".

☐ Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.

☐ Verify a terminal radio set to the system programmed for the site in BYPASS with the correct site ID recognizes the site's control channel data.

1. Key the terminal radio on a group call.

   ☐ Verify a working channel assignment is made within the channel group allowed in the personality.

   ☐ Verify the call is heard on a second terminal radio set to the active BYPASS system.

2. Restore the site to simulcast mode by reconnecting the router to MPLS connection.

   ☐ Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate "TR(n).

3. Repeat steps 1-3 for remaining "ON" bypass sites in the simulcast system under test.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

4.2.3   Control Point Trunking Reset Control

Purpose: A properly set up Simulcast BYPASS system will disable CP Traffic Controller modules associated with active channels at a TX site operating in BYPASS. This keeps the remaining sites operating in Simulcast mode from being assigned to channels expected to be active at the site in BYPASS. Sites programmed to be OFF in BYPASS will not require any Traffic Controller modules to be held OFF.

Expected Results: This test will verify that the Control Point Traffic Controller modules will be held OFF corresponding to the active channels at a site, due to the TX site being in BYPASS. Setup: System must be properly set with final bypass plan configured in control point and site control modules.

Execution:

Force a TX site that will become active into BYPASS by disconnecting the router to MPLS connection.

- ☐ Verify TX site is in BYPASS mode.
- ☐ Verify transmit site is in BYPASS mode. Traffic Controller module display indicates either "TC" or "CC" instead of "TR".
- ☐ Verify the CP Traffic Controller modules on the channels intended to be OFF are held OFF.

1. Observe the RNM screen for the simulcast system.

   - ☐ Verify the channels intended to be OFF at the Control Point are reported as OFF (RED).

2. Restore the site to simulcast mode by reconnecting the router to MPLS connection.

   - ☐ Verify the TX site Traffic Controller modules revert to normal Simulcast.
   - ☐ Verify the CP Traffic Controller modules associated with the site in BYPASS are returned to normal.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

4.2.4   Bypass – Site Minimum Channels

Purpose: Confirm a site enters bypass when active channels fall below site minimum channels setting.

Expected Results: The site enters bypass mode.

Setup: Sites are configured with cluster minimum channels set to 6 and site minimum channels to 7. Bypass Plan: TR Site 1 Ch 3,4,5; TR Site 2 Ch 6,7,8; TR site 3 Ch 9,10,11 TR Sites 4 and 5 dark.

Note: Settings and bypass plan can be customer final settings; execution will have to adjust to accommodate those settings.

Execution:

At TR site 1 disable channels 8 - 11 using the TX disable switch on the PA (only channels 1-7 are still functioning).

- ☐ Verify system and site still functioning in simulcast; the disabled channels 8 -11 are in alarm state at the control point site.
- ☐ At TR site 1 the Traffic Controller modules displays still indicates "TR" not "TC" or "CC". Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.

1. At the same site disable channel 7 using the TX disable switch on the PA.
   - ☐ Verify system is still functioning in simulcast. Control Point ch 3,4 and 5 in alarm state.
   - ☐ Verify TR site 1 is in bypass. The Traffic Controller module display indicates "TC" instead of "TR". All channels status indicates alarm. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator always on.

2. At the same site restore all channels back to service (enable the PA using the TX disable switch on the PA).
   - ☐ Verify transmit site 1 is in normal simulcast mode. The Traffic Controller modules will indicate "TR(n)", where n is the channel number.
   - ☐ Verify all channels are in service at the control point.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

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4.2.5   Bypass – Cluster Minimum Channels – TR Site Failures

Purpose: Confirm all sites enter bypass when available channels fall below the cluster minimum channels setting. Depending upon the system size, bypass plan and which channels have been failed a subset of sites may subsequently come out of bypass and operate as a cluster before any channels are restored to service.

Expected Results: All site in the system enter bypass mode.

Setup: Sites are configured with cluster minimum channels set to 6 and site minimum channels set to 7 (these settings are normally lower; they are set high to simplify testing).

Execution:

At TR site 1 disable channels 8 - 11 using the TX disable switch on the PA (only channels 1-7 are still functioning).

☐ Verify system and site still functioning in simulcast; the disabled channels 8 -11 are in alarm state at the control point site.

☐ At TR site 1 the Traffic Controller modules displays still indicates "TR" not "TC" or "CC". Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator.

1. At the same site disable channel 7 using the TX disable switch on the PA.

   ☐ Verify system is still functioning in simulcast. Control Point ch 3,4 and 5 in alarm state.

   ☐ Verify TR site 1 is in bypass. The Traffic Controller module display indicates "TC" instead of "TR". All channels status indicates alarm. Note: TC= Working Traffic Channel, standalone mode, TR=Working Channel, simulcast mode, and Control Channel, simulcast mode is indicated by the transmit LED indicator always on.

2. At the same site restore all channels back to service (enable the PA using the TX disable switch on the PA).

   ☐ Verify transmit site 1 is in normal simulcast mode. The Traffic Controller modules will indicate "TR(n)", where n is the channel number.

   ☐ Verify all channels are in service at the control point.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

4.2.6 Site ON (Trunking) – Enhanced Bypass Final Configuration

Purpose: Confirm sites configured to be in the "ON" condition during BYPASS are in the expected BYPASS mode and can connect to VNIC.

Expected Results: The "ON" site traffic controllers have a control channel and calls between terminal radios and dispatch can be made.

Setup: Sites intended to be "On" in event of BYPASS must be properly configured and have all channels set to enabled (checked in Device Manager, TC personality).

Execution:

Create a condition to force BYPASS that does not disrupt network connectivity by logging into both GPS receivers and configuring their notifications to set the major alarm threshold to minimum satellites 12 and duration below threshold 5 seconds. This will cause the GPS receivers to set a major alarm after 5 seconds.

Configure Notifications from Spectracom GPS Receivers

- ☐ Navigate to: Management > Notifications
- ☐ In the Events window pane, click the GPS tab.
- ☐ Set the Major Alarm Threshold as follows:
  - Minimum Satellites: 12
  - Duration Below Threshold: 5
- ☐ Click: [Submit]

Verify transmit site is in BYPASS mode. The Traffic Controller module display indicates either "TC" or "CC" instead of "TR".

- ☐ Observe the stations/repeater Traffic Controller modules. Verify there is an active control channel on one of the Traffic Controller modules. The remaining repeater/stations Traffic Controller modules will indicate "TC".
- ☐ Verify the station appearing as control channel is keyed, producing RF power and modulated with control channel data.
- ☐ Verify a terminal radio set to the system programmed for the site in BYPASS with the correct site ID recognizes the site's control channel data.

1. Key the terminal radio on a group call.
   - ☐ Verify a working channel assignment is made within the channel group allowed in the personality.

2. Restore the site to simulcast mode by restoring the GPS major alarm notification threshold to minimum satellites = 1 and duration = 345600 for both GPS receivers.
   - ☐ Verify transmit site is in normal simulcast mode. Traffic Controller modules indicate TR(n).

Results	Date:	Pass/Fail:
Tester:		
Comments:		

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5. Maestro Dispatch Feature Set

5.1 Transmitting with a Microphone (Group Calls, I Calls)

Purpose: Confirms the console operator can initiate communication with a terminal radio using the console select functions and foot pedal, for both Group and I Calls.

Expected Results: Confirms communication with the terminal radio

Setup: Radio set to TGTEST1 and program a console module with TGTEST1

Execution:

Press the INSTANT TX function (for example right mouse button) on the module with the test group.

☐ Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard on the radio.

1. Release the Instant TX key

2. Press the SELECT button on the module with the test group.

   ☐ Verify that the SELECT indication for that module becomes highlighted.

3. Press the SELECT TX function.

   ☐ Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard on the radio.

   ▪

4. Release the SELECT TX function.

5. Make TGTEST1 the selected talk group by:

6. Select the module for 'TGTEST1'

7. Select 'Module Select'

   ☐ Verify that the module name is highlighted green.

8. Press the PTT foot pedal.

   ☐ Verify that a channel access tone is heard, the XMT indicator is displayed and that the call is heard on the radio.

9. Release the foot pedal.

■

Results	Date:		Pass/Fail:
Tester:			
Comments:			

5.2 Receiving Calls (Unit ID Display, Talk group ID Display, Aliasing)

Purpose: Confirm the console operator can receive communications from a terminal radio, using both talkgroup and individual calling.

Expected Results: Communications are initiated and received on the appropriate speaker (select or unselect) and the radio's ID is displayed.

Setup: Console should have talk groups TEST1 and TEST2 programmed with TEST1 selected and Radio set to TGTEST2

5.3 Talk Group Call

Execution:

Key the radio

☐ Verify that the call is heard at the unselect speaker and that the calling radio ID and the Call Indicator are displayed.

Select the console module with the test group.

Switch the radios to TGTEST1 and key the radio.

☐ Verify that the call is heard at the select speaker

☐ Verify that the calling radio's ID and the Call Indicator are displayed.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

5.4 Individual Call (Unit – Unit)

Execution:

Program a module with the ID of the test radio.

Momentarily press the module configured for the radio.

☐ Verify the radio ring it will take about 10 seconds and displays 'INDV' and consoles 'ID"

Respond to the console by PTTing the radio,

☐ Verify that the call is heard at the select speaker

☐ Verify that the calling radio's ID and the Call Indicator are displayed.

End the call by pressing the clear button on the radio.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

5.5 Emergency Call and Emergency Alarm

Purpose: Confirms the console indicates an emergency declared by a terminal radio and can reset and clear the emergency.

Expected Results: The console indicates and can clear the emergency.

Setup: This test requires a test radio capable of generating and clearing an emergency (i.e. Supervisor Radio).

Description	Radio LID	TG Description	TG ID
Radio 1	LIDTEST1	TG TEST1 P25	TEST1

Execution:

SELECT the talk group module TEST1 in the console.

Using the test radio, declare an emergency on the test group.

- ☐ Verify the module turns red,
- ☐ The 'EMER' flag is briefly displayed in the module,
- ☐ The ID/Name of the test radio is displayed,
- ☐ The emergency message is displayed in the message window,
- ☐ The message window is under the title "MaestroIP" and the emergency alert tone is heard on the console.

Open the 'Emer Menu', pick the module with the emergency and depress 'Alarm Reset'.

- ☐ Verify the alert tone is silenced on the console, but the emergency is still displayed.

With the console, select and transmit on the group with the emergency.

- ☐ Verify the test radio receives the call, and is still in emergency mode.

Clear the emergency using the 'EMER CLR' key.

- ☐ Verify the module no longer indicates an emergency.

Transmit on the radio

- ☐ Verify the emergency is cleared and normal group calls have resumed.

With the test group selected on the console, declare an emergency on the test group by pressing the 'Emer Declare'.

- ☐ Verify the console and radio have the same indications as steps 2 to 4.

Acknowledge by hitting 'Alarm reset". Clear the emergency with the console.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

5.6 System Wide Call (All Call & Announcements)

Purpose: Confirm the console can initiate system wide calls.

Expected Results: The console can initiate both All Calls and Announcement Calls.

Setup: Program console modules with the 'TGTEST0 P25' talk group

Description	Radio LID	TG Description	TG ID
Radio 1	LIDTEST1	TG TST51 P25	TST51
Radio 2	LIDTEST2	TG TST52 P25	TST52
Radio 3	LIDTEST3	TG TEST1 P25	TEST1
Radio 4	LIDTEST4	TG TEST2 P25	TEST2

Execution:

Press INSTANT TX on the module with 'TGTEST0 P25'.

□ Verify that a channel access tone is heard,

□ XMT indicator is displayed,

□ The call is heard at all radios.

Release the Instant TX key.

Press INSTANT TX on the module with 'TGTST51 P25'.

□ Verify that a channel access tone is heard,

□ XMT indicator is displayed,

□ The call is heard at Radios 1.

□ Verify Radios 2, 3 and 4 did not hear the audio.

Release the Instant TX key.

Press INSTANT TX on the module with 'TGTEST1 P25'.

□ Verify that a channel access tone is heard,

□ XMT indicator is displayed,

□ The call is heard at Radios 3.

□ Verify that Radios 1, 2 and 4 did not hear the audio.

□ Release the Instant TX key.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

5.7 Alert Tones

Purpose: Confirm the console can initiate alert tones which can be heard at the terminal radio.

Expected Results: The tones can be initiated and heard.

Setup: Console 1 programmed with TGTST52, and TGTST51 selected.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDTEST1	TG TST51 P25	TST51
Radio 2	LIDTEST2	TG TST52 P25	TST52

Execution:

Make TGTST51 P25 the selected talk group.

☐ Verify that the SELECT indication for that module becomes highlighted in green.

1. Press and hold the foot pedal or SELECTED TX key on the Maestro.

Radio 1 will receive the call.

While still transmitting, press one of the three ALERT TONE keys (Alert, Pulse, Warble) from the Emergency Menu.

☐ Verify the ALERT TONE is received by Radio 1.

☐ The ALERT TONE is heard on the console (to hear the tones on the console, press and hold the foot pedal and listen for the tone on the SELECT speaker).

While not transmitting, press and hold one of the ALERT TONE keys.

☐ Verify the console transmits on talkgroup, TGTST51 P25, Radio 1 receives the call

The ALERT TONE is heard by Radio 1

The ALERT TONE console (to hear the tone on the console,

Press and hold one of the alert tone keys

☐ Listen for the tone on the SELECT speaker).

When the ALERT TONE key is released

☐ Verify the call on Radio 1 drops.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

5.8 Console Pre-Empt

Purpose: Confirm the console can pre-empt an ongoing call between terminal radios.

Expected Results: The call started by the radio will be interrupted by the console.

Setup: Console 1 programmed with talk-group TGTST51 P25

Description	Radio LID	TG Description	TG ID
Radio 1	LIDTEST1	TG TST51 P25	TST51
Radio 2	LIDTEST2	TG TST51 P25	TST51

Execution:

Key Radio 1 on the test group and hold the call up.

☐ Verify that audio is heard at Radio 2 and the console.

Key the console on the test group and hold the second, pre-empting call up.

☐ Verify that the XMT indicator is displayed along with the pre-empted caller LID and CALL indicator.

☐ Verify that the second radio begins to hear the console audio and not the first radio call.

☐ Verify that the pre-empted radio audio is still heard on the pre-empting console.

Un-key the first radio.

☐ Verify that the pre-empted caller LID and CALL indicators are removed and the pre-empted radio audio is no longer heard on the pre-empting console.

Un-key the console.

☐ Verify that the call drops.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

5.9 Simulselect

Purpose: Confirms operation of the Console Simulselect feature, which allows multiple talk groups to be selected for communication simultaneously.

Expected Results: The Console can select multiple talk groups and communication is allowed.

Setup Console 1 programmed with talk groups TGTST51 P25, TGTST52 P25, TGTST53 P25, and TGTST54 P25.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDTEST1	TG TST51 P25	TST51
Radio 2	LIDTEST2	TG TST52 P25	TST52
Radio 3	LIDTEST3	TG TST53 P25	TST53
Radio 4	LIDTEST4	TG TST54 P25	TST54

Execution:

Create Simulselect group on the 4 test group modules

Place a call on the Simulselect group

☐ Verify that the call is heard all four radios.

Place a call from each radio

☐ Verify that only the console hears the call from the radio transmitting.

Deactivate the Simulselect group.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

5.10   Patch

Purpose: Confirms the console patch feature creates shared communication between multiple selected talk groups.

Expected Results: The patched talk groups can communicate.

Setup   Console 1 programmed with talk groups TGTST51 P25, TGTST52 P25, TGTST53 P25, and TGTST54 P25.

Description	Radio LID	TG Description	TG ID
Radio 1	LIDTEST1	TG TST51 P25	TST51
Radio 2	LIDTEST2	TG TST52 P25	TST52
Radio 3	LIDTEST3	TG TST53 P25	TST53
Radio 4	LIDTEST4	TG TST54 P25	TST54

Execution:

Create patch on PATCH 1 with all four groups above.

Place a call from the newly created patch

☐ Confirm that the call is heard on all the radios

Place a call from each radio

☐ Confirm that each call is heard on the console and at each radio.

Deactivate the patch.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

5.11 Console to Console Intercom

Purpose: Confirm multiple consoles can communicate using the Intercom feature.

Expected Results: Intercoms can be created on the consoles.

Setup: Establish two consoles (A and B) to test the Cross Mute function. The Consoles must be on the same NSC. Program and select a test group on both consoles.

Execution:

On Console A, program a module with the console ID of Console B, and make this module the selected talk group.

On Console B, program a module with the console ID of Console A, and make this module the selected talk group.

Transmit with Console A on the module for Console B.

- ☐ Verify on Console A that 'XMIT' is displayed in the module.
- ☐ Verify that on Console B, 'BUSY' is displayed in the module. Release the transmit from Console A.

Answer the call at Console B by transmitting from Console B on the module for Console A.

- ☐ Verify on Console B that 'XMIT' is displayed in the module.
- ☐ Verify that on Console A, 'BUSY' is displayed in the module.

Release the transmit from Console B.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

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5.12 Console to Console Cross-mute

Purpose: Confirm creation of a cross-mute of another console to quiet the muted consoles audio on the local console.

Expected Results: The cross-muted console's audio cannot be heard on the local console.

Setup: Establish two consoles (A and B) to test the Cross Mute function. The Consoles must be on the same NSC. Program and select a test group on both consoles.

Execution:

Place a call on console A on the test group.

☐ Verify that console B can hear console A in the select speaker.

1. At console B, mute console A.

2. Place a call on console A on the test group

☐ Verify that it cannot be heard at console B.

3. Restore the desired Cross Mute setup.

Results	Date:		Pass/Fail:	
Tester:				
Comments:				

5.13   Call History

Purpose: Confirms a history of calls processed at the console.

Expected Results: The history is accessible and valid.

Setup: This test compares programmed module call activity to the history scroll lists. Utility page, dispatch menu will be selected. Select either the "Select History" or "Unselect History".

Execution:

Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the unselect call history list.

☐ Compare these calls with known activity.

1. Press the 'Scroll Up' and 'Scroll Down' buttons to scroll through the selected call history list.

   ☐ Compare these calls with known activity.

2. Press the 'Esc' button to exit the history scroll mode.

3. To monitor call history on a single group, use the 'module history' button on the 'module modify' menu.

4. Use the 'scroll up' and 'scroll down' buttons to scroll through the calls for the picked module.

   ☐ Compare these calls with known activity.

Results	Date:		Pass/Fail:
Tester:			
Comments:			

5.14 Group Emergency and Unit Alert with MaestroIP

Purpose: Confirm the console receives a group emergency and an emergency unit alert declared by a terminal radio. Confirm the console can reset and clear the unit alert and reset and cancel the group emergency.

Expected Results: Demonstrate the MaestroIP Console can indicate the emergency unit alert and the group emergency. The console can also clear the unit alert and cancel the group emergency.

Setup: Radios 1 & 2 have "Emergency Alarm" enabled in the personalities.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDTEST1	TG 64152 P25	64152	1
Radio 2	LIDTEST2	TG 64152 P25	64152	2

Execution:

Select TDMA TG 64152 on the console.

On Radio 1, declare an emergency on TG 64152. PTT on the group and talk.

Verify Radio 2 on Site 2 receives the emergency.

On the console:

- ☐ Verify TG 64152 Module turns red.
- ☐ The 'EMER' flag is briefly displayed in the TG module.
- ☐ The ID/Name of the test radio is displayed in the TG module.
- ☐ The group emergency message is displayed in the message window.
- ☐ The unit alert is displayed in the Emergency Alarm Screen.
- ☐ The group emergency alarm tone, the emergency unit alert tone and the radio group call audio is heard on the console.

To clear the group emergency alarm tone on the console, open the 'Emer Menu', select the module with the emergency and depress 'ALARM RESET'.

- ☐ Verify the alarm tone is silenced on the console.
- ☐ The group emergency is still displayed on the talk group module
- ☐ The emergency unit alert is displayed in the Emergency Alarm Screen.

On the console, select and transmit on TG 64152:

- ☐ Verify Radio 1 and 2 both receive the emergency call.

Clear the group emergency on Radio 1.

- ☐ Verify the console TG Module no longer indicates a group emergency.
- ☐ Verify the group emergency is no longer seen on Radio 1 and Radio 2.

PTT on Radio 1, to do a group call:

- ☐ Verify an emergency group call goes to the console on the Module for TG 64152 and to Radio 2.

- ☐ (This occurs, since the Emergency Unit Alert is still active on TG 64152.)

On the console:

- ☐ Clear the Group Emergency Alarm Tone and Group Emergency using the 'ALARM RESET' key and then the 'EMER Clr' key.

- ☐ Verify the console talk group module no longer indicates a group emergency.

- ☐ Verify Radio 1 and Radio 2 no longer indicate a group emergency.

- ☐ Clear the Emergency Unit Alert on the Console's Emergency Alarm Menu.

PTT on Radio 1 on TG 64152, to do a group call:

- ☐ Verify a group call without an emergency is seen and heard at the console and Radio 2.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

5.15   OTAR Encryption for MaestroIP Console

5.15.1 UKEK and MaestroIP

Purpose: This test is setup to test the KMFs ability to make UKEK files the console can use.

Expected Results: The console should accept the UKEK file developed by the KMF.

Setup: This test requires three radios programmed with a talk group utilizing an AES encryption key. All radios should be feature encrypted and enabled for OTAR operation.

Execution:

On a console download and save the files '\\fileshare\fileshare\kmf_files\SlnBindingsReport.xml' and '\\fileshare\fileshare\kmf_files\ProvisionFile.ukek' to the local console.

Start the console application.

With an encrypted radio make a call on an encrypted talkgroup,

☐   the radio with encryption should play the call,

☐   the console will not because it does not have keys.

Select 'Maestro Conductor Application' from the lower right hand side to the console desktop.

Select 'Load Encryption' this will bring up a window were the binding and UKEK can be loaded into the console.

Select the button next to the 'UKEK' text field and select the UKEK saved in step 1.

Select the button next to the 'binding' text field and select the binding saved in step 1.

Close the 'Load Encryption' pop up.

With an encrypted radio make a call on an encrypted talkgroup

☐   the radio with encryption should play the call,

☐   the console will now play the call.

Choose the talkgroup that the radios are on and select the 'Private' button, this will make the console switch the talkgroup to encrypted mode, the console will display 'PVT' on the talkgroup button.

PTT the console the call should be heard on the encrypted radios.

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Results	Date:		Pass/Fail:	
Tester:				
Comments:				

5.15.2 Warm Starting a MaestroIP from the UAS Key Management Application

Purpose: This will test the system's ability to push encryption keys to a console.

Expected Results: The UAS will push keys to the console to allow for communicate on an encrypted talk group.

Setup: This test requires three radios programmed with a talkgroup utilizing an AES encryption key. The radios and talkgroup need to be in a test crypto net in the UAS Key Management Application. All radios should be feature encrypted and enabled for OTAR operation. The radios should have their UKEK's loaded but not have any traffic encryption keys. (Delete Keys if required)

Execution:

Attempt to switch a talk group to encrypted mode by selecting the talk group and selecting the private button.

- ☐ Verify that console will not allow you to encrypt the talkgroup because the console does not have the encryption keys.

From the UAS, warm start the console. After the operation is complete, refresh the UAS screen.

- ☐ The UAS will report warm started success the console.

Attempt to switch a talk group to encrypted mode by selecting the talk group and selecting the private button.

- ☐ The console will now allow you to encrypt the talkgroup because the console has the encryption keys.

PTT the console and the encrypted radios should hear the call.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

6. PR9D Issues Tests

6.1 Talkgroup Denied Based on Valid Coverage Class

Purpose: Confirm that the issue <u>"UAS not capable of limiting groups from systems."</u> is solved by the SR10A.4 upgrade.

Expected Results: A radio will hunt for a control channels and attempt to register when it finds one, but it will be denied if its selected talkgroup is not valid on the site.

Setup: At the UAS, modify talkgroup TEST1's by replacing its "valid coverage" value with one that excludes System B. Confirm that test radios are programmed to prefer System A.

Description	Radio LID	TG Description	TG ID	Site
Radio 1	LIDT001	TG TEST1 P25	TEST1	1
Radio 2	LIDT002	TG TEST2 P25	TEST2	1

Execution:

☐ Chose an A+B simulcast location that can be temporarily disabled. Make sure that test radios can only receive RF signal from that particular site.

☐ Disable System B. PTT both Radios and verify they get a grant tone and can communicate.

☐ Disable System A. Then enable System B. Verify that only Radio 2 registers with System A. Radio 1 will not register with System B.

☐ Enable System A. Verify that Radio 1 registers and is able to make calls.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

6.2 UAS' Subscriber Unit Report

Purpose: Confirm that the issues "the subscriber unit report exports decimal values for columns like IP, ESN and status change instead of the actual information." and "the reference id value of the agency id must be entered instead of the actual agency id value." are solved by the SR10A.4 upgrade.

Expected Results: The subscriber unit report correct values for columns like IP, ESN and status change.

Setup: Log in as a UAS System Administrator.

Execution:

☐ Select the **System** tab and in the Left Navigation Panel expand the **Reports** to display the Reports' menu options.

☐ Click **Subscriber Unit** to display the "Subscriber Unit" report screen.

☐ Enter the Subscriber Unit filter data and click the **Apply** button.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

6.3 UAS' Voice End User Report

Purpose: Confirm that the issue "the reference id value of the agency id must be entered instead of the actual agency id value." is solved by the SR10A.4 upgrade.

Expected Results: The subscriber unit report correct values for columns like IP, ESN and status change.

Setup: Log in as a UAS System Administrator.

Execution:

☐ Select the **System** tab and in the Left Navigation Panel expand the **Reports** to display the Reports' menu options.

☐ Click Voice End User to display the "Voice End User" report screen.

☐ Enter the Subscriber Unit filter data and click the **Apply** button.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

6.4 Reduced Capacity Tx-Rx Site Goes Dark

Purpose: Confirm that the feature "Monitor simulcast sites and when the number of out of service channels exceeds 25% of the simulcast channels at that site, remove that site from the simulcast cluster or service." is possible with the SR10A.4 upgrade.

Expected Results: A simulcast site will go dark if it has 6 or more channels out of service, and the rest of the sites in the cell will continue operating at full channel capacity.

Setup: Verify that all TX-RX sites are configured to go dark when the number of channels out of service exceeds 5.

Execution:

☐ Chose an A+B simulcast location that can be temporarily disabled.

☐ Put 5 System A channels out of service at this location. Verify that all System A sites continue operating at the reduced capacity of 15 channels.

☐ Disable a 6th channel. Verify that this particular location goes dark, but the rest of System A operates at full capacity (20 channels).

☐ Put all 6 channels back in service.

☐ Repeat for System B.

Results	Date:	Pass/Fail:
Tester:		
Comments:		

7. Appendix A – Acronyms and Definitions

Acronym	Definition
AD	Active Directory
AES	Advanced encryption standard
ATP	Acceptance test procedure
CAI	Common air interface (usually in reference to P25)
CME	Cisco Mobility Exchange (Telco Interconnect)
CNM	Central Network Manager, a L3Harris product
Confirmed Call	A confirmed call is a special type of call where the call is queued until all sites have resources available, or until the confirmed call timer expires (configurable, typically one or two seconds)
COTS	Commercial-off-the-shelf
CPC	Channel performance criterion
DAQ	Delivered audio quality
DES	Digital encryption standard
LMR	Enterprise land mobile radio
ESN	Electronic serial number (64 bits)
FDMA	Frequency division multiple access
GID	Group ID (16 bit). This corresponds to a talkgroup. The group ID is unique within a VNIC and can be reused on other VNICs within the same WACN. Some of the older P25 documents refer to the GID as a talkgroup ID (TGID)
HA	High availability
Individual Call	An individual call is a private call between one user and another. It can be between two radios, or between one radio and a dispatch console
KEK	Key Encryption Key
KID	16-bit encryption key ID
KMF	Key Management Facility
KMM	Key Management Message
LAN	Local area network
MASTR V	A L3Harris base station product
MES	Mobile end system, a subscriber radio
MME	Miniature mobility exchange, which consists of L3Harris software running on a SitePro card at the base site. The MME runs the SNDCP layer of the data protocol and is the equivalent of the P25 RFG (RF Gateway)
N(S)	A 3-bit sequence number for the packet data unit
NSC	Network switching center
NSS	Network switching server

Acronym	Definition
NWS	Network Sentry
OTAP	Over-the-air-programming
OTAR	Over-the-air-rekeying
P25	Project 25, a suite of standards for digital radio communications, developed by the Association of Public Safety Communications Officials (APCO) under the TIA TR-8 engineering committee, and published as the TIA-102 set of documents
Priority Talkgroup	The priority talkgroup selected on the subscriber device. Usually this is the talkgroup that the radio will transmit on when the user presses PTT
ProFile	A L3Harris product used for configuring radios over the P25 radio channel
ProScan	A L3Harris software algorithm used for radio roaming
PTT	Push-to-talk
RAR	Regional access router
RF	Radio frequency
RNM	Regional network manager
RSM	Regional site manager, a server that runs the RSM, Activity Warehouse and Device Manager applications
RSSI	Received signal strength indicator
RVM	Regional VIDA Manager, a server that runs the UAS and RNM applications
SAN	Storage area network
SMT	System management terminal.
SU	Subscriber unit. In the P25 world, an SU is a mobile or portable radio
SUT	System under test
SUMS	Security Update Management Service (a L3Harris product)
SUMSplus	Version of SUMS
TAC	Technical Assistance Center, a L3Harris service
TDMA	Time division multiple access
TEK	Traffic Encryption Key
TGID	Talkgroup ID (16 bit, equivalent to GID). The P25 documents usually use GID but some of the older documents use TGID
Traffic Controller	Software entity that resides in a base station at the site and generates the P25 control channel
Tx	Transmit
UAC	Unified audio card
UAS	Unified administration server
UKEK	User Key Encryption Key
UPS	Uninterrupted power supply
VAS	VIDA Application Server
VIDA	Voice, Interoperability, Data, Access (a L3Harris system product)
VLAN	Virtual local area network

Acronym	Definition
VM	Virtual machine
VNIC	Voice network Interface Controller, the L3Harris voice switch
VPN	Virtual private network
VTI	VIDA Telephone Interconnect
WACN	Wide area communication network (20 bit network ID, part of SUID). This is a customer network that can include many VNICs
WAR	Wide area router
Zeroize	A P25 control channel command which causes the mobile radio to erase its encryption keys (but then requires manual loading to restore encryption keys)

L3HARRIS TECHNOLOGIES, INC.
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1. WARRANTY

A. Seller warrants to the original purchaser for use (hereinafter "Buyer") that Equipment manufactured by or for the Seller shall be free from defects in material and workmanship and shall conform to its published specifications. With respect to all non-Seller Equipment, Seller gives no warranty, and only the warranty, if any, given by the manufacturer shall apply. Rechargeable batteries are excluded from this warranty but are warranted under a separate Rechargeable Battery Warranty (ECR-7048).

B. Seller's obligations set forth in Paragraph C below shall apply only to failures to meet the above warranties occurring within the following periods of time from date of sale to the Buyer and are conditioned on Buyer's giving written notice to Seller within thirty (30) days of such occurrence:

1. for fuses and non-rechargeable batteries, operable on arrival only.

2. for service parts, ninety (90) days.

3. for mobile and portable radios ("Subscriber Units"), twenty-four (24) months.

4. for Unity® model Subscriber Units, thirty-six (36) months.

5. for radio accessories, one (1) year.

6. for all other equipment of Seller's manufacture, one (1) year

C. During the Warranty Period, if equipment fails to meet the foregoing warranties, Seller shall, at its option, correct the failure by: (1) repairing defective or damaged parts or equipment, or (2) making available any necessary repaired or replacement parts, or (3) by providing new or refurbished parts or new or refurbished equipment. Seller will be responsible for shipping charges incurred in returning repaired parts, replacement parts, or equipment to Buyer. All warranty work must be conducted during normal business hours at Seller's place of business. Any repaired or replacement parts or equipment furnished hereunder shall be warranted for the remaining unexpired portion the original Warranty Period of that part or equipment. The original Warranty Period shall not be extended. Where such failure cannot be corrected by Seller's commercially reasonable efforts, Seller will refund to Buyer the fees paid for the parts or equipment less depreciation.

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B. The preceding paragraph shall not apply to any Equipment or part manufactured to Buyer's design, or to the use of any Equipment or part furnished hereunder in conjunction with any other equipment, in a combination not furnished by Seller as a part of this transaction. As to any such Equipment, part, use or combination, Seller assumes no liability whatsoever for patent infringement.

4. **COVERAGE, INTERFERENCE, AND THIRD-PARTY FACILITIES**

Representations concerning the distance at which usable radio signals will be transmitted and received by the Equipment supplied hereunder shall not be binding upon the Seller unless reduced to a writing signed by an official of Seller in Lynchburg, Virginia, and made a part of this instrument. Radio systems are subject to degradation of service from natural phenomena and other causes beyond the reasonable control of the Seller such as motor ignition and other electrical noises, and interference from other users assigned to the same or adjacent frequencies. The Seller cannot be responsible for interference or disruption of service caused by operation of other radio systems or by natural phenomena or by motor ignition or other interference over which there is no reasonable control. Such interference and noise can be minimized by addition (at Buyer's expense) of corrective devices adapted for particular locations and installations. Seller will make recommendations as to the use of such devices; however, total freedom from noise and interference cannot be guaranteed. In the event Buyer utilizes facilities or services supplied by others such as Common Carrier Services or shared services, Seller shall have no responsibility for the availability or adequacy of any such facilities or services.

5. **DELAYS**

Seller shall not be liable for delays in delivery or performance or for failure to manufacture or deliver or perform due to (i) causes beyond its reasonable control, or (ii) acts of God, acts of Buyer, acts of civil or military authority, governmental priorities, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (iii) inability on account of causes beyond the reasonable control of Seller or its suppliers to obtain necessary materials, components, services, or facilities. In the event of any such delay, the date of delivery or of performance shall be extended for a period equal to the time lost by reason of the delay.

6. **DELIVERY AND RISK OF LOSS**

Shipping dates are approximate and are based upon prompt receipt of all necessary information. Delivery will be made F.O.B. point of shipment to Buyer. Shipping and handling charges will be paid by or billed to the Buyer. Risk of loss or damages passes to Buyer upon delivery to the carrier.

7. **TERMS OF PAYMENT, LATE CHARGES**

Equipment on Buyer's order will be billed as shipments are made, and payment is due 30 days from the date of invoice unless stated otherwise on the accepted order. Installation, if any, will be billed upon completion and is due 30 days from the date of invoice. If manufacture or shipment is delayed by the Buyer, payment, based on the contract price and the percentage of completion, shall become immediately due. Equipment held for the Buyer shall be at its risk and expense. All amounts past due over thirty (30) days shall accrue interest from their due date at the rate of one and one-half percent (1-1/2%) per month (or such lesser rate as may be the maximum permissible rate under applicable law). If after default, this contract is placed with an attorney for collection, Buyer agrees to pay reasonable attorney's fees.

8. SECURITY TITLE

Security title and right of possession without legal process of the Equipment sold hereunder shall remain with the Seller until all payments hereunder (including deferred payments whether evidenced by note or otherwise) shall have been made in cash, and the Buyer agrees to do all acts necessary to perfect and maintain such right and security title in the Seller. It is the intention of the parties that the Equipment delivered hereunder shall remain personal property until all payments have been made in full.

9. TAXES

In addition to any price specified herein, Buyer shall pay the gross amount of any present or future sales, use, excise, value-added, or other similar tax applicable to the price, sale of any products or services furnished hereunder or to their use by Seller or Buyer, or Buyer shall furnish Seller with a tax exemption certificate acceptable to the taxing authorities.

10. CANCELLATION CHARGES

A. Buyer may cancel an accepted order in the following manner only: Prior to delivery, submit notice to the attention of Customer Service:

> L3Harris Technologies, Inc.
> Public Safety and Professional Communications
> 221 Jefferson Ridge Parkway
> Lynchburg, VA 24501
>
> PSPC_CustomerFocus@l3harris.com
> Fax 1-800-833-7592

B. Said notice must be received prior to delivery of any Equipment (including vendor items drop-shipped to the address appearing on the face of Buyer's Order) and must be accompanied by payment of cancellation charges equal to 15% of the cancelled portion of the order; (2) After delivery of any Equipment on Buyer's Order, the order may be canceled only with the Seller's written consent.

Request for cancellation should be addressed as instructed above and said request must be accompanied by payment of restocking charges equal to 25% of the total order price. Any deposit monies held by Seller will be credited against the cancellation or restocking charges.

11. GENERAL

A. Buyer is solely responsible for obtaining and complying with any necessary permits and licenses from the Federal Communications Commission, or any other Federal, State, or local governmental authority, related to the purchase, installation, erection, and operation of any Equipment purchased hereunder.

B. The provisions of these conditions of sale are for the benefit of the parties hereto and not for any other person. The delegation or assignment by Buyer of any or all of its duties or rights hereunder without Seller's prior written consent shall be void.

C. Seller will comply with applicable Federal, State and local laws and regulations as of the date of Seller's acceptance of Buyer's Order which relate to equal employment opportunity (including applicable provisions of Executive Order 11246, as amended), workmen's compensation, and the manufacture in Seller's facilities of the Equipment delivered hereunder (including applicable provisions of the Fair Labor Standards Act of 1938, as amended). The price and, if necessary, delivery of any Equipment will be equitably adjusted to compensate Seller for the cost of compliance with laws or regulations except as specified above.

D. A perpetual, nonexclusive, non-transferable, fully paid license is granted hereunder which gives the Buyer the right to use the software embedded in the products manufactured by the Seller, and any modifications thereof, only for Buyer's own use. The license granted hereunder may not be assigned or transferred without the prior written consent of the Seller.

E. The invalidity, in whole or in part, of any Article or paragraph hereof shall not affect the validity of the remainder of such Article or paragraph.

F. The validity, performance and all matters relating to the interpretation and effect of these conditions of sale and any amendment hereto shall be governed by the laws of the Commonwealth of Virginia.

G. These conditions of sale constitute the entire understanding between the Buyer and Seller concerning the subject hereof, and any representation, promise, understanding, proposal, agreement, warranty, course of dealing or trade

usage not expressly contained or referenced herein shall not be binding on Seller. No modification, amendment, recision, waiver or other change shall be binding on Seller unless assented to in writing by Seller. SELLER DOES NOT ASSUME ANY OBLIGATIONS OR LIABILITIES IN CONNECTION WITH THE SALE OF ITS EQUIPMENT OTHER THAN THOSE EXPRESSLY STATED IN THIS INSTRUMENT AND DOES NOT AUTHORIZE ANY PERSON (INCLUDING SELLER'S MANUFACTURER'S REPRESENTATIVES AND SALES AGENTS) TO ASSUME FOR SELLER ANY OTHER OBLIGATIONS OR LIABILITIES.

EXHIBIT F
SOFTWARE LICENSE AGREEMENT

This License Agreement ("Agreement") is made on ══════════, 2020 (the "Effective Date") between L3Harris Technologies, Inc., a Delaware Corporation, through its Communication Systems Segment, ("LICENSOR" or "L3Harris") with offices at 221 Jefferson Ridge Parkway, Lynchburg, VA 24501 and ══Miami-Dade County══ ("LICENSEE"). LICENSOR is the owner of certain wireless communications software programs and LICENSEE desires to obtain a license from LICENSOR to use such wireless communications programs.

1.0   Definitions.

1.1   "Designated Systems":   Means the L3Harris system(s), products, and Designated Terminals purchased by Buyer and identified in the Primary Agreement for which the Licensed Programs and documentation are intended to be used.

1.2   "Designated Terminals": Means the LICENSOR'S Terminals purchased by LICENSEE.

1.3   "Licensed Programs": The term Licensed Programs shall mean the wireless communications computer programs in software or firmware supplied under this Agreement by LICENSOR in binary object code format to the LICENSEE (stand alone or in conjunction with the purchase of a LICENSOR wireless communications system.) Licensed Programs shall also include all other material related to the Licensed Programs supplied by LICENSOR to LICENSEE hereunder, and which may be in machine readable or printed form, including but not limited to user documentation and/or manuals.

1.4   "Open Source Software": Means software with either freely obtainable source code, license for modification, or permission for free distribution.

1.5   "Open Source Software License": The terms or conditions under which the Open Source Software is licensed.

1.6   "Primary Agreement": The agreement to which this exhibit is attached.

1.7   "Third Party Software Products": Shall mean programs that are not developed by LICENSOR which are licensed/purchased by LICENSOR for inclusion in its products.

2.0   License Grant for Licensed Programs.

2.1   Subject to the terms of this License Agreement and the performance by Licensee of its obligations hereunder, LICENSOR hereby grants to Licensee, and Licensee hereby accepts from LICENSOR, (a) a personal, non-transferable, non-exclusive, perpetual, limited license to use the Licensed Programs in object code format only and (b) install and execute such Licensed Programs on Licensee's equipment and (c) which are to be used for internal business purposes only. All licensed programs under this License Agreement shall only be used in conjunction with the Designated System. This license does not transfer any right, title, or interest in the Licensed Programs. The license granted authorizes Licensee to use the Licensed Programs in object code format and does not grant any rights to source code.

2.2   LICENSEE will not reproduce, modify, or make derivative works of the Licensed Programs, except that LICENSEE may make one archival, and one inactive backup, copy of the Licensed Programs. In addition, LICENSEE, its agents, consultants and/or its subcontractors will not attempt to reverse engineer, decompile, or reverse-compile any software contained in the Licensed Programs and any attempt to do so shall be a material breach of this License Agreement. With respect to the Licensed Programs, LICENSEE will not alter, deface, discard, or erase any media, documentation, or LICENSOR or Third Party Licensor's trademarks or proprietary rights notices.

2.3   Third Party Software Products may be subject to additional license terms, which, if applicable, are set out in Product Specific License Terms delivered with each product. Additional To the extent applicable, LICENSEE shall comply with any additional Third Party Software Product license terms.

2.4   If the Software licensed under this License Agreement contains or is derived from Open Source Software, the terms and conditions governing the use of such Open Source Software are in the Open Source Software Licenses of the copyright owner and not this License Agreement and, to the extent applicable, LICENSEE will comply with the Open Source Software License terms. If there is a conflict between the terms and conditions of this License Agreement and the terms and conditions of the Open Source Software Licenses governing Licensee's use of the Open Source Software, the terms and conditions of the license grant of the applicable Open Source Software Licenses will take precedence over the license grants in this License Agreement. If requested by Licensee, L3Harris will use commercially reasonable efforts to: (i) determine whether any Open Source Software is provided under this License Agreement; (ii) identify the Open Source Software and provide Licensee a copy of the applicable Open Source Software License (or specify where that license may be found).

3.0   Protection and Security of Licensed Programs.

LICENSEE acknowledges and agrees that the Licensed Programs and any materials and/or documentation related thereto, and any portion thereof, supplied by LICENSOR hereunder are proprietary and confidential to LICENSOR or applicable third party licensors and are a valuable commercial asset of LICENSOR or their third party owners. LICENSEE also acknowledges and agrees that LICENSOR and/or the third party licensors have and shall retain all proprietary rights in their respective portions of the Licensed Programs and any materials and/or documentation related thereto. LICENSEE (i) shall respect such proprietary rights, (ii) shall protect LICENSOR and any third party licensor's proprietary rights at least to the extent that it protects its own proprietary information, or such (iii) shall not use the Licensed Programs nor any materials or documentation related thereto except for the purposes for which they are being made available as set forth in this Agreement and (iv) shall not reproduce, print, disclose, or otherwise make said Licensed Programs or materials and/or documentation related thereto available to any third party, in whole or in part, in whatever form, except as permitted in the terms of this Agreement.

4.0   Warranty

Seller warrants, for the greater of a period of one year or, if a longer warranty period for the product containing the Licensed Program is set forth in a Primary Agreement, the longer warranty period shall apply commencing with the date of Licensee's acceptance of their Designated System, that any Licensed Program furnished to Licensee under this License Agreement shall be capable of successfully operating on the Designated System in accordance with the logic defined in the operator's manuals when the system is supplied with correct input data. If, on the basis of evidence submitted to LICENSOR within the term of this warranty, it is shown that any Licensed Program does not meet this warranty, LICENSOR will, at its

option, either correct the defect or error in the Licensed Program, free of charge, or make available to Licensee a substitute program. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, implied or statutory. **NO IMPLIED OR STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, SHALL APPLY, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY LICENSOR.**

Licensed Programs which have been developed or are owned by a third party licensor and which are sublicensed by LICENSOR to LICENSEE hereunder shall be warranted to LICENSEE only to the extent that the licensor of such sublicensed programs warrants such sublicensed programs to LICENSOR.

In the event that the Licensed Programs do not conform to the representation above, LICENSEE's sole remedy and LICENSOR's sole and exclusive liability shall be to replace such Licensed Programs with the then current released version of such Licensed Programs.

5.0   Limitation of Liability.

5.1   THE LIMITATION OF LIABILITY PROVISION IN THE PRIMARY AGREEMENT SHALL GOVERN THIS LICENSE AGREEMENT AND SECTION 5.2 SHALL NOT APPLY. IF THERE IS NO LIMITATION OF LIABILITY PROVISION IN THE PRIMARY AGREEMENT, SECTION 5.2 SHALL APPLY.

5.2   IN NO EVENT WILL LICENSOR AND/OR ANY THIRD PARTY LICENSOR(S) BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY DAMAGES RESULTING FROM LOSS OF USE, LOSS OF DATA, LOSS OF PROFITS OR LOSS OF BUSINESS, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF LICENSOR AND/OR ITS THIRD PARTY LICENSOR(S) HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. LICENSOR'S AND THIRD PARTY LICENSORS', LIABILITY IN CONTRACT, TORT OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH THIS LICENSE AGREEMENT OR THE USE OF THE LICENSED PROGRAMS SHALL NOT EXCEED THE TOTAL COMPENSATION PAID TO LICENSOR BY LICENSEE FOR THE PRODUCTS CONTAINING THE LICENSED PROGRAMS.

6.0   Term and Termination.

6.1   LICENSOR reserves the right, in addition to any other remedies it may retain in this License Agreement or may be entitled to in law or equity (including immediate injunctive relief and repossession of all non-embedded Licensed Programs and documentation), to terminate this License Agreement at any time prior to the expiration of any Term in the event LICENSEE breaches any material term or condition or fails to perform or observe any obligations or covenants of this License Agreement and such failure and/or breach is not remedied within thirty (30) days of written notice from LICENSOR.

6.2   Within thirty (30) days after termination or expiration of this License Agreement, LICENSEE will return to LICENSOR all confidential material including but not limited to all copies, partial copies, and/or modified copies (if any) of Licensed Programs and any equipment owned by LICENSOR in LICENSEE's possession.

7.0   Assignment/Transfer.

This License Agreement, the licenses granted hereunder and the Licensed Programs provided to LICENSEE under this License Agreement may not be assigned, sub-licensed, or otherwise transferred by LICENSEE to any third party without LICENSOR's prior written consent, except that this license may be assigned if the Products containing the Licensed Programs are transferred but the new owner or user of the Products may only use the Licensed Programs in accordance with terms of this License Agreement. Subject to the foregoing, any assignee hereunder shall be subject to all of the terms, conditions and provisions of this License Agreement. Any attempt by LICENSEE to assign, sub-license, or transfer the Licensed Programs, or any of the rights or duties contained in this Agreement, without LICENSOR's prior written consent shall be void.

8.0   Severability.

If any term or provision of the License Agreement is determined by a court or government agency of competent jurisdiction to be invalid under any applicable statute or rule of law, such provision(s) are, to that extent, deemed omitted, but this License Agreement and the remainder of its provision shall otherwise remain in full force and effect.

9.0   Waiver.

No waiver will be implied from conduct or failure to enforce rights. No waiver will be effective unless in writing signed on behalf of the party against whom the waiver is asserted.

10.0   Compliance with Laws.

Licensee acknowledges that the Licensed Programs are subject to the laws and regulations of the United States and Licensee will comply with all applicable laws and regulations, including export laws and regulations of the United States. Licensee will not, without the prior authorization of L3Harris and the appropriate governmental authority of the United States, in any form export or re-export, sell or resell, ship or reship, or divert, through direct or indirect means, any item or technical data or direct or indirect products sold or otherwise furnished to any person within any territory for which the United States Government or any of its agencies at the time of the action, requires an export license or other governmental approval. Violation of this provision is a material breach of this Agreement.

11.0   Governing Law.

This License Agreement will be governed by the laws of the Unites States to extent that they apply and otherwise to the laws of the State of New York. The terms of the U.N. Convention on Contracts for the International Sale of Goods do not apply. The parties expressly agree that the Uniform Computer Information Transactions Act ("UCITA") applicable in any jurisdiction shall not apply to this Agreement.

12.0   U.S. Government.

If Licensee is the U.S. Government, the Licensed Programs and documentation qualify as "commercial items," as that term is defined at Federal Acquisition Regulation ("FAR") (48 C.F.R.) 2.101, consisting of

"commercial computer software" and "commercial computer software documentation" as such terms are used in FAR 12.212. Consistent with FAR 12.212, and notwithstanding any other FAR or other contractual clause to the contrary in any agreement into which the Agreement may be incorporated, Customer may provide to Government end user or, if the Agreement is direct, Government end user will acquire, the software and documentation with only those rights set forth in the Agreement. Use of either the software or documentation or both constitutes agreement by the Government that the software and documentation are "commercial computer software" and "commercial computer software documentation," and constitutes acceptance of the rights and restrictions herein.

13.0   Agreement.

This License Agreement may be part of a Primary Agreement between LICENSOR and LICENSEE for the purchased products by LICENSEE from LICENSOR. The Primary Agreement and this License Agreement contain the full understanding of the parties with respect to the subject matter hereof and which supersede all prior understandings and writings relating thereto and which shall become binding on the Effective Date of this License Agreement. No waiver, consent, modification, amendment, or change to the terms of this License Agreement shall be binding unless agreed to in a writing signed by LICENSEE and LICENSOR. If there is any conflict between the terms of the Primary Agreement and this License Agreement as to the Licensed Programs, the terms of this License Agreement will prevail.

14.0   Notices.

Notices shall be provided as set forth in the Primary Agreement. In the event there is no notice provision in the Primary Agreement, notices and other communications between the parties shall be transmitted in writing by certified mail or nationally recognized overnight courier service.

15.0   Survival.

Sections 2.2, 3, 5, 6, 8, 9, 11, and 13 of this License Agreement shall survive termination of this License Agreement.

[*End of Document*]

EXHIBIT G
SOFTWARE SERVICES AGREEMENT

THIS SOFTWARE SERVICES AGREEMENT ("Agreement") is made and entered into this _____ day of _____, by and between _____, (hereinafter referred to as "Customer") located at _____ and **L3HARRIS TECHNOLOGIES, INC.** (hereinafter referred to as "L3Harris"), a Delaware corporation, acting through its Communication Systems Segment located at 221 Jefferson Ridge Parkway, Lynchburg, VA 24501 (collectively referred to as the "Parties"). This Agreement shall begin on _____ ("Commencement Date") and shall continue for a ten (10) year period ("Term") through _____ ("Expiration Date").

This Agreement, along with its sections and attachments listed below, describes the terms and conditions for purchase of Services by Customer as described in this Agreement or other document(s) attached to and made part of this Agreement. In the event of any inconsistencies or conflicts within this Agreement, precedence shall be given to the documents in the order in which they are listed:

SECTION I	SCOPE
SECTION II	SERVICES
SECTION III	GENERAL TERMS AND CONDITIONS
SECTION IV	DEFINITIONS
ATTACHMENT A	EQUIPMENT LIST
ATTACHMENT B	SERVICE DESCRIPTIONS
ATTACHMENT C	POINT OF CONTACT, NOTICE, AND KEY CONTACTS

I. SCOPE

1. This Agreement contains the terms and conditions for Customer's purchase and L3Harris' delivery of the Services. L3Harris shall provide the Services described in this Agreement, including its attachments. L3Harris' obligations under this Agreement may be performed by L3Harris, its agents, representatives, subcontractors, or any combination thereof, at L3Harris' discretion. In addition to the General Terms and Conditions, the Service Descriptions included in Attachment B may contain terms and conditions specific to that particular Service.

2. At Customer's request and upon L3Harris' approval, L3Harris may also provide Demand Services for additional support beyond the Services.

3. The Services are defined within this Agreement and are limited to only those Services in Section II. ("Services") and further described in Attachment B ("Service Descriptions"). All Services provided under this Agreement are only applicable to the Equipment identified in Attachment A ("Equipment List"). Any Equipment not identified in the Equipment List is excluded from the Services.

II. SERVICES

Below sets forth the mutually agreed Services and options purchased by the Customer.

SERVICES	
Preferred Technical Support (8x5)	**INCLUDED**
Security Update Management Services (SUMS+)	$1,120,000
Software Managed Services	$3,000,000

TERM (Period of Performance)	ANNUAL SUPPORT FEES

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ANNUAL FEE	$412,000.00
TOTAL ANNUAL SUPPORT FEES (YEARS 1-10)	$4,120,000.00
Invoicing Interval: Annually	

Purchase Order Required ☐ Yes* ☐ No

*If a Purchase Order ("PO") is required by Customer, Customer must issue L3Harris a PO before the Commencement Date, otherwise L3Harris may invoice Customer without the issuance of a Customer PO.

III. GENERAL TERMS AND CONDITIONS

1.0 SUPPORT.

a. Subject to the terms and conditions of this Agreement, L3Harris agrees to perform Services during the Term for the Support Fees, as may be amended from time to time in accordance with this Agreement. Services shall be provided for the Equipment at the Customer site(s) described in Attachment A ("Equipment List") and, unless agreed otherwise in writing, L3Harris shall not be obligated to provide services for any products, software, site(s), or systems not identified in Attachment A ("Equipment List").

b. If Customer purchases additional equipment from L3Harris, then that equipment must be added to the Equipment List by a mutually agreed upon Amendment to this Agreement for L3Harris to provide Services for that new equipment. The Amendment must also amend Section II. ("Services") to account for the cost of providing Services for the additional equipment.

c. If Equipment cannot, in L3Harris' reasonable opinion, be properly or economically serviced for any reason, the Parties may agree upon a mutually agreed to Amendment to i) remove that Equipment from this Agreement or ii) modify the scope of Services related to that Equipment or iii) increase the price of providing Services for that Equipment.

2.0 DEMAND SERVICES.

a. **Demand Services Fees.** At Customer's request and upon L3Harris' approval, L3Harris may provide Demand Services for an additional fee. L3Harris shall provide a written quote for such Demand Services based upon the circumstances known at the time of the request and L3Harris shall perform such Demand Services only once the Parties have mutually agreed upon the scope and fees for such Demand Services.

b. **Writing Required.** Any Demand Services that L3Harris agrees to perform shall be clearly defined in a properly executed Amendment to this Agreement, purchase order, or separate agreement between the Parties.

c. **Emergency on Demand.** L3Harris may provide Demand Services in a manner not consistent with the requirements in this Section in an emergency, on a case-by-case basis, and at L3Harris' sole discretion.

d. **Excluded Services.** If Customer requests L3Harris to provide any Excluded Services listed in this Agreement, such Excluded Services will be considered Demand Services and will only be provided in accordance with this Section.

3.0 CONDITIONS OF SERVICE.

L3Harris' obligations to perform the Services are conditioned upon the following conditions being met:

a. Customer shall ensure Equipment is in good working order as of the Commencement Date and continues as such during the Term. Customer shall ensure Equipment is maintained per the recommended manuals. In addition to the Support Fees, Customer shall pay for Demand Services for any inspections performed by L3Harris to ensure Equipment is in good working order.

b. Parties shall work together to establish and maintain an Equipment List which will include serial numbers, if applicable, of all Equipment under this Agreement.

c. Customer shall promptly notify L3Harris of any Equipment failure or when any Equipment is lost, damaged, stolen, or taken out of service. L3Harris will respond to Customer's notification in a manner consistent with the Services of this Agreement.

d. Customer shall obtain and maintain all necessary permits required by Federal, state, tribal, or local governmental authority related to the Equipment and Services of this Agreement and remain in compliance with all such laws, rules, and regulations.

e. Customer has satisfied all their obligations under this Agreement.

4.0   EXCLUDED SERVICES.

Only the Services in Section II. ("Services"), as further described in Attachment B ("Service Descriptions"), shall be provided. The Services shall not include exclusions defined in other parts of this Agreement. Excluded Services are the following services excluded from the Services of this Agreement:

a. receiving Services for items not set out in Attachment A ("Equipment List") of this Agreement; or Equipment that has reached End of Life ("EOL") or End of Support ("EOS") or Equipment for which parts are not available.

b. correction of faults due to Customer's failure to meets its obligations outlined throughout this Agreement.

c. correction of faults, defects, or damage caused by any of the following: i) Customer's modification, neglect, or misuse of the Equipment; ii) use other than in the normal, customary, intended, and authorized manner, or use not in compliance with applicable industry standards or OEM specifications ; iii) excessive wear and tear, abuse, vandalism, theft or other criminal activity, accident, disaster, fire, flood, water, weather or environmental conditions, liquids, power surges, acts of God; iv) acts or omissions or delays by Customer or Third-Party; v) work performed on Equipment by Customer or Third-Parties who are not authorized by L3Harris to perform such work; or vi) force majeure event not otherwise described within this Section.

d. correction of faults in any equipment (whether or not supplied by L3Harris) not covered by this Agreement.

e. receiving any software unless expressly provided for as a Service under this Agreement.

f. implementation of changes to the Equipment or configurations which were not a requirement of the specifications for the Equipment listed in this Agreement or otherwise committed to by L3Harris in a properly executed agreement between the Parties.

g. correction of any fault which would be remedied by a software or routine maintenance or repair which is required by the specifications for the Equipment.

h. services for custom or special products; modified Equipment or software; upgrading or programming Equipment.

i. installation of software unless such installation is L3Harris' responsibility and falls within the defined Services of this Agreement.

j. receiving system configuration documents or system audit.

5.0   GENERAL CUSTOMER OBLIGATIONS.

Customer acknowledges that receipt of the Services and the amount of the Support Fee described in this Agreement are dependent on the prompt and proper performance of the Customer fulfilling the requirements under Conditions of Service and its obligations under this Agreement. Obligations require that Customer shall:

a. provide all information or services (including, but not limited to inventory/audits) under Customer's control relevant or pertaining to L3Harris' Services and/or pertaining to the software elements of any system with which the Equipment is interfacing so that L3Harris may perform its Services.

b. ensure that the personnel responsible for carrying out the General Customer Obligations outlined in this Section are suitably qualified, authorized, trained and/or experienced.

c. ensure systems backups (including all programs and data) and Equipment configuration records are kept up to date.

d. maintain confidentiality of any logon(s) and password(s) required to access Equipment or Services. Access to Tech-Link is only permitted for current Customer employees or contractors. Customer must manage and remove access rights for departing employees (for example by changing passwords) and L3Harris shall not be liable for any loss or damage incurred by Customer due to Customer's failure to comply with this clause.

e. cooperate with L3Harris and perform all efforts that are necessary to enable L3Harris to provide the Services to Customer.

f. waive Services, without reimbursement, for Services when L3Harris does not have access to provide the Services or when L3Harris is unable to provide Services due to Customer's or Third-Party's action or inaction.

g. provide L3Harris with at least two (2) Points of Contact, as described in Point of Contact Section of this Agreement.

h. perform and provide proof of performance of all routine and preventive maintenance and updates to software as recommended in Equipment manuals unless such maintenance is L3Harris' responsibility and falls within the defined Services of this Agreement.

6.0   SERVICE REQUEST PROCEDURE.

Customer shall:

a. require their users report issues to a designated Customer's Point of Contact.

b. require its Point of Contact to provide Notice to L3Harris when there is any activity that impacts the system, Equipment, or Services including system configuration changes.

c. submit a Service Request as set out in this Section of this Agreement with additional descriptions in Attachment B ("Service Descriptions").

d. immediately after making a Service Request for L3Harris support, provide L3Harris, where possible, with an example of the relevant defect or error.

e. keep L3Harris fully informed with up to date Equipment, site(s), and configuration details for the Equipment, including without limitation Equipment serial numbers, locations, contact information, and site personnel qualified to submit a Service Request.

f. have personnel with sufficient Equipment related training to be able to i) carry out basic operating system housekeeping, ii) work through complex procedures with remote guidance provided by L3Harris, and iii) carry out procedures as outlined by L3Harris within a reasonable time after such procedures have been received from L3Harris.

g. provide a mutually agreed form of communications link for remote diagnostics and promptly grant access rights to L3Harris and its subcontractors when required.

h. pay additional costs for Demand Services for additional efforts including Equipment aggregation management, delays in work, software or cable interface acquisition for non-L3Harris equipment, configuration or software changes, or repairs.

7.0   FEES AND PAYMENT TERMS.

a. Customer shall pay the Support Fees for Services and the Demand Services Fees for Demand Services.

b. L3Harris reserves the right to increase the Support Fees as Equipment is added or if Customer requests an increased level of service, or if there is any other variation requested by Customer to this Agreement.

c. Except as expressly provided in this Agreement, L3Harris may revise its Support Fees at any time by giving Customer notice not less than ninety (90) days before the rate change, provided that the revised rates are mutually agreed upon in writing. If the revised rates are not mutually agreed upon by the Parties within the ninety (90) day Notice period, L3Harris may terminate this Agreement in accordance with Section III.8.0. ("Term and Termination").

d. Payment terms shall be net thirty (30) days from the date of invoice. Support Fees will be billed in advance and in accordance with Section II. ("Services").

e. All fees payable under this Agreement are exclusive of sales, use, value added, goods and services taxes, or any customs, import or export duties, and should any such fees arise, these shall be payable by Customer. Where appropriate, such taxes will be added to the invoice, billed as a separate item, to the extent possible, and paid by Customer unless Customer provides L3Harris with evidence of payment or certificate of exemption.

f. To the fullest extent permissible by law, Customer waives its right of set-off. No payment is considered received until L3Harris has received cleared funds.

g. If Customer is overdue with any payment then, without prejudice to any other right or remedy available to L3Harris; i) Customer shall be liable to pay interest on the overdue amount at the rate of one and one-half percent (1.5%) per complete month until L3Harris has received payment of the overdue amount together with interest that has accrued; and ii) L3Harris may suspend contractual performance and/or exercise a lien over Equipment and any items returned for repair or replacement until Customer has made such overdue payment in full.

8.0   TERM AND TERMINATION.

a. The Term of this Agreement shall begin on the Commencement Date and shall continue through the Expiration Date as indicated in this Agreement.

b. In the event of: i) Customer's material breach because Customer fails to make any payment within thirty (30) days of the date of invoice, or ii) any other material breach of this Agreement by Customer which shall continue for thirty (30) or more days after Notice of such to Customer, L3Harris shall be entitled to avail itself cumulatively of any and all remedies available at law or in equity; a liquidated damage amount of ten (10) % of the remaining amount due for the Total Support Fees (including amounts for future years' services); and either: i) suspend performance of its obligations under this Agreement for as long as the breach remains uncorrected; or ii) terminate this Agreement by written Notice to Customer if the breach remains uncorrected. The amount due for services not rendered would be a liquidated damage which is necessary because the Services are not evenly distributed throughout the Term.

c. In the event of a material breach of this Agreement by L3Harris, Customer shall provide L3Harris with a reasonably detailed Notice of the breach. L3Harris will have thirty (30) days to provide a written plan to cure the default and begin implementing the cure plan immediately after the plan is approved by Customer. Customer shall not unreasonably disapprove of such cure plan. If L3Harris does not satisfy the requirements of this Section III.8.0c., Customer may terminate this Agreement effective upon giving a thirty (30) days' written Notice of termination.

d. L3Harris shall have the right to terminate this Agreement at any time by providing Customer thirty (30) days' Notice.

e. If L3Harris, in its sole discretion, provides Services after the termination or Expiration Date of this Agreement, the terms and conditions in effect at the time of the termination or Expiration Date will apply to those Services and Customer agrees to pay for such as Demand Services.

f. Any termination of this Agreement will not relieve either Party of obligations previously incurred pursuant to this Agreement, including payments which may be due and owing at the time of termination. All sums owed by Customer to L3Harris will become due and payable immediately upon termination of this Agreement. Upon the effective date of termination, L3Harris will have no further obligation to provide Services.

g. If L3Harris terminates as defined in Section III.8.0d, or if Customer terminates due to L3Harris default in accordance with Section III.8.0c. L3Harris shall refund to Customer a pro rata share of monies paid for Services not rendered.

9.0   SUBSTITUTION, END OF PRODUCTION.

a. L3Harris will generally support provisioning of its Equipment for a period of five (5) years after final production. L3Harris will endeavor to provide six (6) months advance notification of the final production date. Advance notification may be provided by L3Harris through any manner L3Harris deems appropriate. This may include notification through a(n): end-of-life notice, customer mailing, Tech-Link notice, letter, memo, or Amendment. L3Harris will utilize commercially reasonable efforts to assure its Equipment availability and shall not be liable to Customer for Equipment obsolescence or Equipment unavailability under this Agreement beyond L3Harris' commercially reasonable efforts. L3Harris may replace or repair Equipment with new or substitute products or parts, at its sole discretion, based on L3Harris' business needs.

b. Third-Party Equipment and Third-Party Support Agreements will be supported in accordance with the individual manufacturer's provisioning policy. L3Harris will utilize commercially reasonable efforts to assure Third-Party Equipment and/or Third-Party

Support Agreements are available for sale to Customer (at Customer's expense) to support its Services under this Agreement. L3Harris shall not be liable to Customer for Third-Party Equipment obsolescence or Third-Party Equipment and/or Third-Party Support Agreements unavailability under this Agreement beyond L3Harris' commercially reasonable efforts.

c.   At Customer's request, L3Harris shall provide to Customer an estimate of all charges for any required Third-Party Support Agreements; replacement parts or replacement equipment of any Equipment that has become obsolete or unavailable.

10.0   CONFIDENTIALITY.

a.   Nothing in this Agreement shall affect any related non-disclosure agreement between the Parties or other contractual obligations of confidentiality, which will continue in full force and effect and will apply to the subject matter of this Agreement. Customer shall not disclose Confidential Information to any Third-Party disclosed by L3Harris under or in relation to this Agreement.

b.   Each Party undertakes not to (and to procure that its employees and contractors will not) divulge the terms and conditions of this Agreement or any information of a confidential nature, including but not limited to Confidential Information, disclosed to it by the other, whether oral or written, and shall not use such information except as contemplated by this Agreement.

c.   The Party's obligations within this Section shall cease to apply to information which:

i.   is or becomes part of the public domain without violation of this Agreement;

ii.   is known and on record at the receiving Party before disclosure by the disclosing Party;

iii.   is lawfully obtained by the receiving Party from a Third-Party without similar restrictions to those herein contained;

iv.   is developed by the receiving Party completely independently of any such disclosure by the disclosing Party;

v.   is required to be disclosed by competent government or regulatory agencies, court or stock exchange provided, however, that the receiving Party shall notify the disclosing Party as soon as lawfully and practically possible of the requirement to make such a disclosure.

11.0   HEALTH, SAFETY, AND OTHER LAWS/REGULATIONS.

a.   Each Party shall comply with all relevant Health and Safety laws and regulations in all respects in relation to its obligations under this Agreement (including without limitation a safe working environment and methods of working), and each Party shall indemnify the other Party in respect of all costs, liabilities, damages or expenses incurred as a result of any failure to do so. In the event a work site or Equipment location is determined by L3Harris to pose a safety or health threat, L3Harris may cancel or suspend the Services without penalty and until threat no longer exists.

b.   L3Harris will comply with applicable Federal, State, and local laws and regulations as of the date of this Agreement which relate to equal employment opportunity (including applicable provisions of Executive Order 11246, as amended), workmen's compensation, Services provided, and the manufacture in L3Harris' facilities of the Equipment delivered hereunder (including applicable provisions of the Fair Labor Standards Act of 1938, as

amended). The price and, if necessary, delivery of any Equipment and Services will be equitably adjusted to compensate L3Harris for the cost of compliance with laws or regulations related to this Agreement.

12.0   SOFTWARE AND INTELLECTUAL PROPERTY RIGHTS.

a. All patents, trademarks, service marks, or business names, registered designs, copyrights, design rights, utility models, topography rights, applications to register any of the aforementioned rights, trade secrets, specifications, drawings, technical information, know-how and rights of confidence and any other intellectual or industrial property rights of any nature whatsoever in any part of the world ("IPR") arising under this Agreement, except to the extent that they comprise or incorporate IPR supplied by Customer, shall, as between the Parties, vest in and be owned by L3Harris absolutely and Customer shall acquire no right, title, or interest therein.

b. Any computer program, firmware, or other software forming part of the Equipment or supplied by L3Harris to Customer pursuant to this Agreement shall remain the exclusive property of L3Harris (or its licensee) and such software shall, unless otherwise agreed in writing, be licensed to Customer under the license terms applicable to the Equipment, software, or systems to which they relate.

c. Unless otherwise indicated, information provided to Customer via Tech-Link is copyrighted by and proprietary to L3Harris and may not be copied, reproduced, transmitted, displayed, performed, distributed, sublicensed, altered, stored for subsequent use, or otherwise used in whole or in part in any manner without L3Harris' prior written consent.

d. NOTHING IN THIS AGREEMENT OR OTHERWISE REQUIRES L3HARRIS EITHER TO DESIGN SOFTWARE UPDATES THAT REMAIN COMPATIBLE WITH DESIGNATED SYSTEMS OR TO PROVIDE ADDITIONAL PLATFORM COMPONENTS, UPGRADES AND UPDATES FOR THE OPERATION OF SOFTWARE UPDATES, AND CUSTOMER WAIVES ANY SUCH DUTY OR OBLIGATION BY L3HARRIS.   L3HARRIS SHALL HAVE THE RIGHT TO DISCONTINUE PROVIDING, AT ANY TIME IN L3HARRIS' DISCRETION, SERVICES IN SUPPORT OF ANY SOFTWARE, OR SOFTWARE UPDATES. NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT

e. All Software Updates and Security Updates shall be either shipped to the Customer Point of Contact via protective packaging or will be delivered electronically and available for download by Customer. In addition, each shipment or download of Software Updates shall contain at least one (1) set of software release notes detailing the contents of the Software Updates and providing installation instructions. In the event any software media incurs damage during shipment, then L3Harris shall provide replacements to Customer at no additional charge.

f. Customer agrees that if it makes any backup copies of any Software Update supplied by L3Harris, Customer will reproduce any copyright notice and/or proprietary notice appearing on and/or in such Software Update and will label all copies with all information, including part numbers and revision levels, provided on the original set of media provided by L3Harris. Nothing herein grants Customer any right to sublicense any software included in a Designated System or to distribute copies to any other person or entity, and such sublicensing and distribution is expressly prohibited.

g. Customer agrees not to modify, enhance or otherwise alter any Software Update unless specifically authorized in the user documentation provided by L3Harris with such Software Update or unless the prior written consent of L3Harris is obtained. Under no circumstance shall Customer create or permit the creation of any derivative work from any Software Update or the reverse engineering or replication of any Software Update.

h. Third-Party Software and Third-Party Support Agreements (relative to the Third-Party Software) will be supported in accordance with the individual manufacturer's provisioning policy. L3Harris will utilize commercially reasonable efforts to assure Third-Party Software and Third-Party Support Agreements are available for sale to Customer (at Customer's expense) to support its Services under this Agreement. L3Harris shall not be liable to Customer for Third-Party Software obsolescence or Third-Party Support Agreements unavailability under this Agreement beyond L3Harris' commercially reasonable efforts. At Customer's request, L3Harris shall provide to Customer an estimate of all charges for any required (and if available) Third-Party Support Agreements or Software of any Software that has become obsolete or unavailable.

13.0 FORCE MAJEURE.

L3Harris shall not be responsible for delays or failures in performance under this Agreement that are due to causes beyond its reasonable control including, but not limited to, acts of God, acts of government, war (declared or undeclared), insurrection, acts of terrorism, fires, severe weather, floods, earthquakes, epidemics, pandemics (including but not limited to COVID-19), quarantines, strikes, labor disputes, blackouts, embargoes, natural disaster, emergency conditions incompatible with safety or good quality workmanship, any similar unforeseen event that renders performance commercially implausible, or Force Majeure Event, or any other cause, whether similar or dissimilar to those enumerated. In the event such delays or failures interrupt L3Harris' Services to Customer, L3Harris shall promptly notify Customer of the circumstances and the anticipated delay. Subject to the delaying Party promptly notifying the other Party in writing of the reason for and likely duration of the delay, the performance of the delaying Party's obligations, to the extent affected by the delay, shall be suspended during the period that the cause persists provided that each Party shall use all reasonable efforts to avoid the effect of that cause provided that if performance is not resumed within ninety (90) days of that Notice the non-delaying Party may at any time thereafter, but in any event before resumption of obligations by the delaying Party by Notice, terminate the affected portion of this Agreement.

14.0 INDEPENDENT CONTRACTOR.

Nothing herein contained shall be construed to constitute the Parties hereto as partners or joint ventures or the agent of the other Party in any sense of these terms whatsoever, and no Party may act for or bind another Party in any dealings with a Third-Party.

15.0 DISPUTES.

The Parties shall attempt to resolve in good faith any disputes arising under or in relation to or in connection with this Agreement or its subject matter. If good faith negotiations between the Parties fail to resolve the dispute then, before issuing court proceedings, the Parties shall give due consideration to the use of mediation or alternative dispute resolution techniques and reference to independent experts.

16.0 JURISDICTION.

The construction, validity, and performance of this Agreement shall be governed and interpreted by the laws of the Commonwealth of Virginia, excluding its rules pertaining to conflict of laws. Customer consents to the personal jurisdiction of the state and federal courts within the Commonwealth of Virginia. Venue for any legal proceedings shall be in any state or federal court in the Commonwealth of Virginia, and the Parties waive all objections based on venue or forum non conveniens with respect to this Agreement.

17.0 WAIVER OF JURY.

By entering into this Agreement, L3Harris and Customer hereby expressly waive any rights either Party may have to a trial by jury of any civil litigation related to or arising out of this Agreement.

18.0 POINT OF CONTACT.

a. Customer shall appoint two or more individuals to each be a Point of Contact who will interface between the Customer and its employees and L3Harris.

b. Customer shall ensure each Point of Contact is an individual with sufficient technical expertise to be able to interact knowledgeably with L3Harris' technical support personnel.

c. Names; contact information; and areas of specialty, if applicable, for each Point of Contact will be provided by Customer prior to the Commencement Date and attached as Attachment C ("Point of Contact, Notice, and Key Contacts"), to this Agreement.

d. Customer shall provide Notice to L3Harris of any changes to Point of Contact information and shall submit a new Attachment C ("Point of Contact, Notice, and Key Contacts") within ten (10) business days of any significant modifications.

19.0 NOTICE.

Notices between the Parties shall be transmitted in writing by certified mail or nationally recognized overnight courier service to the Parties at the addresses set forth in Attachment C ("Point of Contact, Notice, and Key Contacts") of this Agreement and shall be deemed effective upon receipt by the receiving Party. Either Party may change its address by giving Notice in writing thereof to the other Party.

20.0 WARRANTY.

a. SERVICE WARRANTY. ALL SERVICES PROVIDED THROUGH THIS AGREEMENT SHALL BE PERFORMED IN A WORKMANLIKE MANNER. EXCEPT AS SPECIFIED IN THIS SECTION, L3HARRIS HEREBY DISCLAIMS AND CUSTOMER WAIVES ALL REPRESENTATIONS, CONDITIONS, AND WARRANTIES (WHETHER EXPRESS, IMPLIED, OR STATUTORY), INCLUDING WITHOUT LIMITATION, ANY WARRANTY OR CONDITION (A) OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, TITLE, SATISFACTORY QUALITY, QUIET ENJOYMENT OR ACCURACY, (B) ARISING FROM ANY COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE IN THE INDUSTRY. TO THE EXTENT AN IMPLIED WARRANTY CANNOT BE DISCLAIMED, SUCH WARRANTY IS LIMITED TO NINETY (90) DAYS. L3HARRIS MAY REPLACE OR REPAIR EQUIPMENT WITH

NEW OR SUBSTITUTE PRODUCTS OR PARTS, AT ITS SOLE DISCRETION, BASED ON L3HARRIS' BUSINESS NEEDS.

b. CUSTOMER REMEDY. CUSTOMER'S SOLE AND EXCLUSIVE REMEDY FOR BREACH OF WARRANTY UNDER THIS AGREEMENT SHALL BE, AT L3HARRIS' OPTION, RE-PERFORMANCE OF THE SERVICES, OR TERMINATION OF THIS AGREEMENT, AS APPLICABLE, CESSATION OR MODIFICATION OF THE APPLICABLE SERVICES AND RETURN OF THE PORTION OF THE SUPPORT FEES PAID TO L3HARRIS BY CUSTOMER FOR SUCH NON-CONFORMING SERVICES.

21.0 LIMITATION OF LIABILITY.

a. Nothing in this Agreement shall limit L3Harris' or its suppliers, agents, subcontractors, representatives' liability for personal injury or death caused by its negligence.

b. L3Harris' liability to Customer or to any Third-Party arising out of or in connection with this Agreement or any collateral contract, whether in contract, tort (including, without limitation, negligence) or otherwise shall be limited to the greater of i) amounts paid or payable by Customer to L3Harris for the applicable Services during the six (6) months preceding the event or circumstances giving rise to such liability or ii) one hundred thousand ($100,000) US dollars. The liability of L3Harris shall be cumulative and not per incident.

c. Subject to the exceptions set forth in this Section, in no event shall L3Harris or its suppliers, agents, subcontractors, representatives be liable for any incidental, special, punitive or consequential damages, lost profits or lost or damaged data, or any indirect damages, whether arising in contract, tort (including negligence) or otherwise even if such losses or damages were foreseen, foreseeable, known or otherwise.

22.0 COVERAGE, INTERFERENCE, AND THIRD-PARTY FACILITIES.

Representations concerning the distance at which usable radio signals will be transmitted and received by the Equipment supplied hereunder shall not be binding upon L3Harris unless reduced to a writing signed by an authorized representative of L3Harris and made a part of this Agreement. Radio systems are subject to degradation of service from natural phenomena and other causes beyond the reasonable control of L3Harris such as motor ignition and other electrical noises, and interference from other users assigned to the same or adjacent frequencies. L3Harris cannot be responsible for interference or disruption of services caused by operation of other radio systems or by natural phenomena or by motor ignition or other interference over which there is no reasonable control. Such interference and noise can be minimized by addition (at Customer's expense) of corrective devices adapted for locations and installations. L3Harris may, at Customer's request and at Demand Services, investigate interference reported by Customer, and make recommendations as to the use of such devices; however, total freedom from noise and interference cannot be guaranteed. In the event Customer utilizes facilities or services supplied by others such as common carrier services or shared services, L3Harris shall have no responsibility for the availability or adequacy of any such facilities or services.

23.0 INSURANCE.

L3Harris shall obtain and at all times during the Term of this Agreement keep in full force and effect comprehensive general liability and auto liability insurance policies issued by a company

or companies authorized to do business in the State(s) in which Customer's facilities are located, with liability coverage provided for therein in the amounts of at least $1,000,000.00 CSL (Combined Single Limits). Coverage afforded shall apply as primary and evidenced by a Certificate of Insurance ("COI"), upon Customer's request.

24.0 GENERAL.

a. The failure of either Party to enforce any provision of this Agreement does not constitute a waiver of such provision and shall in no way affect the right later to enforce the terms and conditions. All waivers must be provided in writing by the Party waiving their rights under this Agreement.

b. This Agreement cannot be amended, modified or any provisions waived orally. The Parties must execute an Amendment for any changes, amendments, or modifications to be effective.

c. If any part or parts of this Agreement are held illegal, invalid, or unenforceable by any court or administrative body of competent jurisdiction, such determination shall not affect the legality, validity, or enforceability of the remaining parts of this Agreement which shall remain in full force and effect. Where available, the Parties shall use commercially reasonable efforts to agree upon a new stipulation resembling the invalid one in commercial purpose and effect.

d. This Agreement may not be assigned by either Party without the consent of the other Party, which consent shall not be unreasonably withheld. Notwithstanding the immediately preceding sentence, L3Harris may: i) assign all its rights, obligations and liabilities under this Agreement to any subsidiary or parent company; or ii) assign its rights to monies due or payable under this Agreement; provided, that, L3Harris shall provide Customer with Notice of any such assignment. L3Harris' assignment of monies due or payable under this Agreement will not relieve L3Harris of any obligations or responsibilities to Customer hereunder.

25.0 MERGER/ENTIRE AGREEMENT.

This Agreement is the complete agreement between the Parties concerning the subject matter of this Agreement and replaces any prior implied, oral, or written communications between the Parties. There are no conditions, understandings, agreements, representations or warranties expressed or implied, that are not specified herein.

IV. DEFINITIONS

1. **AMENDMENT.** Means a written order, signed by both Parties, that amends, modifies, or waives any terms and conditions and/or Services of this Agreement.

2. **BUSINESS HOURS**. Means the hours of 8:00 a.m. to 5:00 p.m. local time, Monday through Friday excluding, national, state, and local holidays. Local time and local holidays are based on where the Customer's site(s) are located.

3. **COMMENCEMENT DATE**. Means the date on which the Term of this Agreement begins as outlined in the preamble of this Agreement.

4. **CONFIDENTIAL INFORMATION.** Means all pricing, software, technical, and IPR, commercial, financial, proprietary, trade secret, or other information and materials concerning the business and affairs of L3Harris.

5. **DEMAND SERVICES**. Means Service Requests beyond the scope of this Agreement. Demand Services may be performed for an additional cost, as determined by L3Harris. The installation, maintenance, repair, removal, reinstallation, and/or replacement of equipment not associated with the Services as defined in this Agreement shall be considered Demand Services. L3Harris has the right to reasonably refuse to provide Demand Services. Work performed outside of Business Hours may be considered Demand Services. Time lost or changes in the Services due to any delay caused by Customer's action or inaction may considered Demand Services.

6. **DESIGNATED SYSTEM(S).** Means the L3Harris system(s) purchased by Customer and identified in Equipment List. The Designated System does not include excluded products or other systems to which the Designated System may be linked.

7. **EMERGENCY CALLS**. Means calls received by L3Harris from Customer for Preferred Technical Support, as applicable, because of the Designated System being partially or completely off the air.

8. **EQUIPMENT.** Means the Designated System, for which Services are to be provided under this Agreement as identified exclusively and expressly outlined in the Equipment List attached to this Agreement as Attachment A ("Equipment List").

9. **EXCLUDED SERVICES.** Means the services specifically excluded in this Agreement as outlined within the Excluded Services of this Agreement, or other exclusions defined additionally in other parts of this Agreement.

10. **FORCE MAJEURE EVENT.** Means any event or circumstance or combination of events or circumstances that: i) is beyond the reasonable control of the affected party; ii) could not have been mitigated, avoided, or prevented through the exercise of reasonable care and precautions; and iii) materially and adversely affects the performance by such party of all or a part of its obligations under or pursuant to this Agreement. In addition to the events and causes listed in Force Majeure of this Agreement, Force Majeure Events include but are not limited to invasion, armed conflict or act of foreign enemy, blockade, revolution, rebellion, riot, civil commotion, sabotage; radioactive contamination or ionizing radiation; labor or material shortages that could not have been reasonably foreseen; any changes in law, including changes in tax laws; any lightning, hurricane, drought, tsunami, monsoon, tempest, storm, cyclone, volcano, mudslide, typhoon, tornado, or other unusually severe weather or act of nature; explosion or chemical contamination; any blight, famine, plague; any transportation accidents; suspension of flight operations due to inclement weather; delays of suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both L3Harris and its supplier.

11. **L3HARRIS LICENSED PROGRAMS**. Means all L3Harris software programs and associated documentation nonexclusively licensed to Customer by L3Harris for use solely with the Designated System(s).

12. **OPERATING SYSTEM PATCHES**. Means modifications made by vendors of Third-Party Software Products to address issues or provide Security Updates.

13. **OPERATING SYSTEM PATCH DISTRIBUTION**. Means providing Operating System Patches to which the Customer is entitled under this Agreement for the Security Update Management Service (SUMS+), if applicable.

14. **POINT OF CONTACT**. Means the person(s) identified in this Agreement., as designated by the Customer. The Point of Contact will be the primary interface between Customer's employees and L3Harris.

15. **SECURITY UPDATES**. Means updates to software meant to mitigate, address and/or resolve product security vulnerabilities in system components offered by L3Harris. These updates include Vendor Patches and/or Vendor Work-Arounds. Third-Party Product remediations and security policy updates provided by VIDA Secure Sentry, as applicable.

16. **SERVICE REQUEST**. Means the actions identified in under Service Request Procedure, and more specifically within the appropriate subsections of Attachment B ("Service Descriptions").

17. **SERVICE(S).** Means Services to be provided by L3Harris, as identified and limited in the Section I. ("Scope"), Section II. ("Services"), and more specifically described in the Attachments, to be performed on Equipment identified on the Equipment List, as applicable.

18. **SOFTWARE UPDATES**. Means L3Harris provided Software Updates for L3Harris Licensed Programs available for corrections, modifications, or minor enhancements to software for Equipment under this Agreement, including enhancements and/or corrections to existing features for the Equipment.

19. **SUMS+**. Means L3Harris' Security Update Management Service.

20. **SUPPORT FEES.** Means the amounts listed in Section II. ("Services") in USD.

21. **SYSTEM RELEASE.** Means a specific combination of platform, software and Operating System.

22. **TAC**. Means the L3Harris Technical Assistance Center.

23. **TECH-LINK.** Means the technical information section of L3Harris' web site. Access is restricted to authorized subscribers via a user ID and password login.

24. **THIRD-PARTY(IES).** Means any entity other than L3Harris that provides products or services to Customer, whether managed by or processed through L3Harris.

25. **THIRD-PARTY SOFTWARE PRODUCTS**. Means software owned by a party other than L3Harris excluding Original Equipment Manufacturer software licensed by L3Harris to Customer as part of the software.

26. **THIRD-PARTY SUPPORT AGREEMENT(S)**. Means Third-Party agreements provided by Third-Party to provide technical support for their Third-Party products whether hardware or software. These Third-Party Support Agreements are required in order for Customer to receive SUMS+, SMS, and VIDA Secure Sentry services, as applicable.

27. **VENDOR PATCHES**. Means software patches provided by Third-Party software vendors that mitigate, address and/or resolve issues with their provided software.

28. **VENDOR WORK-AROUNDS.** Means configuration and/or procedural changes provided by Third-Party software vendors that mitigate, address and/or resolve issues with their provided software.

L3HARRIS™

Intending to be bound hereby, the Parties hereto have caused this Agreement to be executed, as of the latest date below, by the Parties' duly authorized representatives.

L3HARRIS TECHNOLOGIES, INC.   **CUSTOMER**

By: _Lori Rodriguez_   By: _____

Name: _Lori Rodriguez_   Name: _____

Title: _Principle, Contracts Manager_   Title: _____

Date: _September 4, 2020_   Date: _____

ATTACHMENT A

EQUIPMENT LIST

The Services will apply for the following Equipment:

Where applicable, the Designated System will be defined as the following:

DESIGNATED SYSTEM

QTY	DESCRIPTION

ATTACHMENT B

SERVICE DESCRIPTIONS

26.0   PREFERRED TECHNICAL SUPPORT (8x5)

1. Service Description. Provides technical assistance to answer questions and help resolve issues during the hours of 8am-5pm EST.
2. Service Request. Customer's Point of Contact shall follow Section III.7 ("Service Request Procedure"), and specifically call L3Harris' Technical Assistance Center (TAC) at 1-800-528-7711 or email PSPC_TAC@harris.com.
3. Levels of Technical Assistance Support:
   a. Level 1 First Line Support. Means telephone helpdesk or answer center receiving Customer's inbound Service Requests via phone, web forms, or email. L3Harris Service representatives log, categorize, prioritize, and route incidents reported by Customers and can implement basic, documented break-fix tasks.
   b. Level 2 Second Line Support. Means troubleshooting of Customer Service Requests via L3Harris documented processes and workflows and maintaining a Run-Book which is used to record Service Requests and resolutions and assists in collaborating with any other support or dependency groups in case the incident has linkage to other support personnel or outside vendors.
   c. Level 3 Third Line Support. Means detailed troubleshooting of Service Requests by Harris technical experts who resolve issues that are typically difficult or subtle; participate in management, prioritization, minor enhancements, break fix activities, problem management, stability analysis; subject matter experts in technology platforms. L3 engineers may require root or administrator access to the Designated System. If a fix involves a major enhancement or a development, the problem is transferred to Harris engineering.
   a. Level 4 Product and Vendor Support. Means direct support by Harris or vendor product architects, engineers, software developers, or hardware designers. the Customer Service Request escalation process may involve product bugs, detailed configuration requirements, or other expert level guidance. Level 4 support is subject to the limitations of Third-Party Support Agreements and as indicated under the General Terms and Conditions section of this Agreement.
2. L3Harris Responsibilities:
   a. Provide Customer with Level 1 First Line Support through Level 4 Support during the hours of 8am-5pm (EST) for resolving issues with the Equipment.
   b. Provide Customer with access to Tech-Link.
   c. Coordination with On-site support services, as necessary. On-site support services are not included in Preferred Technical Support but may be purchased by the Customer as a Demand Services.

27.0   SECURITY UPDATE MANAGEMENT SERVICES (SUMS+)

1. Service Description. L3Harris shall provide periodic Operating System Patches as available and as described below to mitigate identified software vulnerabilities.
2. Service Request. No Service Request is needed. L3Harris shall notify Customer when Operating System Patches are available. For additional SUMS+ related Services, Customer's Point of Contact may contact PTS by calling 1-800-528-7711.
3. L3Harris Responsibilities:

a. Provide Operating System Patches. L3Harris shall provide periodic Operating System
    i. Patches as available and as described below to mitigate identified software vulnerabilities. Operating System Patches will contain at least one (1) set of software release notes detailing the contents of the Operating System Patches and will provide installation instructions. Operating System Patches provided by the Security Update Management Services (SUMS+) will include patches for the Third-Party operating systems used in the Designated System.
    ii. Operating System Patches Upon Enrollment. As determined by a system configuration baseline and documentation audit performed by L3Harris, L3Harris shall provide to Customer the Operating System Patches required, if any, to bring the L3Harris Operating System Patches within the Designated System(s) up to L3Harris current levels. This excludes updates to new versions of Third-Party Software Products. New versions of Third-Party Software Products are not included as part of SUMS+. Customer will be required to have current license, services, and/or support agreement(s) with Third-Party vendor(s) which allow for installation of Operating System Patches within the Designated System.
    iii. Subsequent Operating System Patch updates. During the Term, L3Harris shall provide Operating System Patches to Customer for Third-Party operating system software included in the Designated System.
b. Monitoring. L3Harris uses reasonable efforts to monitor pertinent governmental, vendor, independent sources, and open source information databases to identify vulnerabilities and subsequent resolutions applicable to Third-Party operating systems used by the Designated System(s). L3Harris shall identify and document latest known system vulnerabilities and compliance issues discovered and provide a status and recommendations report via Tech-Link.
c. Pretest the Operating System Patches. Operating System Patches are tested on dedicated security verification test systems to ensure proper system operation prior to general release.
d. Delivery. All Operating System Patches shall be provided to the Customer Point of Contact.
    i. L3Harris shall provide Customer with Operating System Patches, security release notes, and installation instructions as these Operating System Patches are made available.
    ii. Operating System Patches are electronically distributed to target devices via a client-server application running within the Designated System(s). This application provides the full scheduling capabilities should an application restart or server reboot be necessary to complete the update process.
    iii. L3Harris shall provide telephone support, through TAC, with respect to the installation of Operating System Patches.
    iv. On-site support for installation is not included in the service offering under this Attachment but may be purchased by the Customer separately. See the SUMS+ Installation Attachment.
4. In addition to the General Terms and Conditions, the Customer shall:
    a. Properly install the Operating System Patches as received and in the order L3Harris released them. If SUMS+ Installation is within the scope of this Agreement (See Section I. "Scope of Services"), then L3Harris shall install the Operating System Patches in accordance with the SUMS+ Installation Attachment B.
    b. Complete the Operating System Patch process on the target devices (e.g. rebooting the target devices) by following the instructions accompanying each Operating System Patches Update.
5. Limitations. The Operating System Patches provided by L3Harris are limited to L3Harris' current and current minus one System Release levels, therefore, Customer may be required to purchase and install, at Customer's expense, additional or upgraded hardware or software in order to take full advantage of Operating System Patches. NOTHING IN THIS AGREEMENT OR OTHERWISE

REQUIRES L3HARRIS PROVIDE UPDATES THAT REMAIN COMPATIBLE WITH DESIGNATED SYSTEM OR TO PROVIDE ADDITIONAL HARDWARE UNDER THIS AGREEMENT. No hardware refresh is included in SUMS.

6. Customer Delegation. Customer hereby delegates, grants, and assigns to L3Harris, acting as the Customer's agent, all approval rights relating to the selection of Operating System Patches. All approvals given to Third-Party vendors by L3Harris shall be deemed as being granted by the Customer.

7. Software License Agreement. As identified in the General Terms and Conditions, the Software License Agreement, applies to all Operating System Patches, which may be categorized as either "Third-Party Software Products" or "Open Source Software" within the Software License Agreement, depending on the type of Operating System Patch.

28.0 SOFTWARE MANAGED SERVICES (SMS)

1. Service Description. SMS provides periodic Software Updates to L3Harris applications. Third-Party license renewals at the cores and Network Sentry will also be provided as an extension of this service.

2. Service Request. No Service Request is needed. L3Harris shall notify Customer when SMS are available. For additional SMS related Services, Customer's Point of Contact may contact PTS by calling 1-800-528-7711.

3. L3Harris Responsibilities:
   a. L3Harris shall either ship Software Updates to Customer's Point of Contact via protective packaging containing a quantity of programmed software media or deliver electronically and make available for download by Customer. Hardware purchases or upgrades, at Customer's expense, may be necessary for Customer to fully implement the Software Updates.
   b. L3Harris shall provide at least one (1) set of software release notes detailing the contents of the Software Update and providing installation instructions.
   c. In the event any software media incurs damage during shipment, then L3Harris shall provide replacements to Customer at no additional charge.
   d. System Level Release Documentation. Prior to the general release of a major System Release by L3Harris for L3Harris Licensed Programs, L3Harris shall make available a system level release document announcing the impending release, and detailing its contents and impact, if any, on any other L3Harris hardware or software components.
   e. Manage Third-Party VIDA core and Network Sentry hardware and software support subscription services and licenses to ensure Customer can receive Security Updates, plus Level 3 Third Line Support and Level 4 Product and Vendor Support for Third-Party core hardware included in the Equipment List and its software. Subject to the limitations of Third-Party Support Agreements and as indicated under the General Terms and Conditions section of this Agreement, this service includes the purchase of Third-Party software subscription renewals and the purchase of new Third-Party software licenses- when necessary to provide the Service.

4. Compatibility with Hardware. Customer acknowledges that Software Updates may not operate on older hardware. NOTHING IN THIS AGREEMENT OR OTHERWISE REQUIRES L3HARRIS EITHER TO DESIGN UPDATES THAT REMAIN COMPATIBLE WITH DESIGNATED SYSTEM HARDWARE OR TO PROVIDE ADDITIONAL HARDWARE UNDER THIS AGREEMENT.

5. Additional Services Included.
   a. System Configuration Baseline and Documentation Update. As part of the initial enrollment process, L3Harris may deem it necessary to conduct a system audit of the Designated System(s) to be covered under this Agreement. If said audit is required, L3Harris or its subcontractor will conduct such audit. This audit will be used to verify Customer's first-year SMS fee and to

determine the System Release levels for Licensed Programs contained within the Designated System at the time of enrollment, together with any hardware updates necessary to accommodate Software Updates. Customer may incur additional costs for modifications or updates required to initiate the SMS.

    b. Installation Phone Support. Customer may use PTS telephone support with respect to the installation of Software Updates.

    c. Tech-Link. Customer, through the Customer Point of Contact, will have access to Tech-Link via a user ID and password authorization to access release documentation and downloadable distribution media.

6. Services Not Included. The following services and products are not included within the scope of this Agreement:

    a. Hardware Upgrades. If a Software Update requires a corresponding hardware change, Customer will be required to separately purchase the compatible hardware to fully install and utilize the Software Update. L3Harris will endeavor to notify Customer in advance of any hardware changes needed to implement a Software Update, via the system-level release documentation or other reasonable method of communication from L3Harris. No hardware refresh is included in SMS.

    b. Installation and Support. Customer agrees to install the Software Updates in accordance with the provided installation instructions found within the software release notes from L3Harris. Customer understands that software support provided by L3Harris is limited to L3Harris' current System Release and current minus 1 for the Equipment (e.g. System Release 1.5 and 1.4).

    c. Media Labeling. Customer agrees that if it makes backup copies of any Software Update supplied by L3Harris, Customer will reproduce any copyright notice and/or proprietary notice appearing on and/or in such Software Update and will label all copies with all information, including part numbers and revision levels, provided on the original set of media provided by L3Harris. Nothing herein grants Customer any right to sublicense any software included as part of the Equipment or to distribute copies to any other person or entity, and such sublicensing and distribution is expressly prohibited.

7. Customer Responsibilities:

    a. Customer shall not to modify, enhance or otherwise alter any Software Update unless specifically authorized in the user documentation provided by L3Harris with such Software Update or unless the prior written consent of L3Harris is obtained. Under no circumstance shall Customer create or permit the creation of any derivative work from any Software Update or the reverse engineering or replication of any Software Update.

    b. The installation of Software Updates may require a new version of one or more Third-Party software applications.

8. Software License Agreement. The Software License Agreement applies to all Software Updates.

ATTACHMENT C

POINT OF CONTACT, NOTICE, AND KEY CONTACTS

NOTICE TO L3HARRIS:

Name	_____
Title	_____
	_____
Address	_____
Address	_____

NOTICE TO CUSTOMER:

Name	_____
Title	_____
	_____
Address	_____
Address	_____

POINT OF CONTACT (For L3Harris):

Name	_____
Title	_____
Phone	_____
Expertise	_____

Name	_____
Title	_____
Phone	_____
Expertise	_____

KEY CONTACTS (For Customer):

Name	_____
Title	_____
Phone	_____
Expertise	_____

Name	_____
Title	_____
Phone	_____
Expertise	_____