COUNTY OF MONTEREY STANDARD AGREEMENT

This **Agreement** is made by and between the County of Monterey, a political subdivision of the State of California (hereinafter "County") and:
L3Harris Technologies, Inc.

(hereinafter "CONTRACTOR").

In consideration of the mutual covenants and conditions set forth in this Agreement, the parties agree as follows:

1.0 GENERAL DESCRIPTION:

The County hereby engages CONTRACTOR to perform, and CONTRACTOR hereby agrees to perform, the services described in **Exhibit A** in conformity with the terms of this Agreement. The goods and/or services are generally described as follows:

Provide:

NGEN Path Diversity from La Mesa Communications site

2.0 PAYMENT PROVISIONS:

County shall pay the CONTRACTOR in accordance with the payment provisions set forth in **Exhibit A**, subject to the limitations set forth in this Agreement. The total amount payable by County to CONTRACTOR under this Agreement shall not exceed the sum of:$ 71,644.70

3.0 TERM OF AGREEMENT:

3.01 The term of this Agreement is from June 1, 2020 to May 31, 2021 , unless sooner terminated pursuant to the terms of this Agreement. This Agreement is of no force or effect until signed by both CONTRACTOR and County and with County signing last, and **CONTRACTOR may not commence work before County signs this Agreement.**

3.02 The County reserves the right to cancel this Agreement, or any extension of this Agreement, without cause, with a thirty day (30) written notice, or with cause immediately.

4.0 SCOPE OF SERVICES AND ADDITIONAL PROVISIONS:

The following attached exhibits are incorporated herein by reference and constitute a part of this Agreement:

Exhibit A Scope of Services/Payment Provisions
Exhibit B Other: Addendum No. 1

L3Harris Technologies, Inc
6/1/2020-5/31/2021 $71,644.70

5.0 PERFORMANCE STANDARDS:

5.01 CONTRACTOR warrants that CONTRACTOR and CONTRACTOR's agents, employees, and subcontractors performing services under this Agreement are specially trained, experienced, competent, and appropriately licensed to perform the work and deliver the services required under this Agreement and are not employees of the County, or immediate family of an employee of the County.

5.02 CONTRACTOR, its agents, employees, and subcontractors shall perform all work in a safe and skillful manner and in compliance with all applicable laws and regulations. All work performed under this Agreement that is required by law to be performed or supervised by licensed personnel shall be performed in accordance with such licensing requirements.

5.03 CONTRACTOR shall furnish, at its own expense, all materials, equipment, and personnel necessary to carry out the terms of this Agreement, except as otherwise specified in this Agreement. CONTRACTOR shall not use County premises, property (including equipment, instruments, or supplies) or personnel for any purpose other than in the performance of its obligations under this Agreement.

6.0 PAYMENT CONDITIONS:

6.01 Prices shall remain firm for the initial term of the Agreement and, thereafter, may be adjusted annually as provided in this paragraph. The County does not guarantee any minimum or maximum amount of dollars to be spent under this Agreement.

6.02 Negotiations for rate changes shall be commenced, by CONTRACTOR, a minimum of ninety days (90) prior to the expiration of the Agreement. Rate changes are not binding unless mutually agreed upon in writing by the County and the CONTRACTOR.

6.03 Invoice amounts shall be billed directly to the ordering department.

6.04 CONTRACTOR shall submit such invoice periodically or at the completion of services, but in any event, not later than 30 days after completion of services. The invoice shall set forth the amounts claimed by CONTRACTOR for the previous period, together with an itemized basis for the amounts claimed, and such other information pertinent to the invoice. The County shall certify the invoice, either in the requested amount or in such other amount as the County approves in conformity with this Agreement and shall promptly submit such invoice to the County Auditor-Controller for payment. The County Auditor-Controller shall pay the amount certified within 30 days of receiving the certified invoice.

7.0 TERMINATION:

7.01 During the term of this Agreement, the County may terminate the Agreement for any reason by giving written notice of termination to the CONTRACTOR at least thirty (30) days prior to the effective date of termination. Such notice shall set forth the effective date of termination. In the event of such termination, the amount payable under this Agreement shall be reduced in proportion to the services provided prior to the date of termination.

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$71 644 70

7.02 The County may cancel and terminate this Agreement for good cause effective immediately upon written notice to CONTRACTOR. "Good cause" includes the failure of CONTRACTOR to perform the required services at the time and in the manner provided under this Agreement. If County terminates this Agreement for good cause, the County may be relieved of the payment of any consideration to CONTRACTOR, and the County may proceed with the work in any manner, which County deems proper. The cost to the County shall be deducted from any sum due the CONTRACTOR under this Agreement.

7.03 The County's payments to CONTRACTOR under this Agreement are funded by local, state and federal governments. If funds from local, state and federal sources are not obtained and continued at a level sufficient to allow for the County's purchase of the indicated quantity of services, then the County may give written notice of this fact to CONTRACTOR, and the obligations of the parties under this Agreement shall terminate immediately, or on such date thereafter, as the County may specify in its notice, unless in the meanwhile the parties enter into a written amendment modifying this Agreement.

8.0 INDEMNIFICATION:

CONTRACTOR shall indemnify, defend, and hold harmless the County, its officers, agents, and employees, from and against any and all claims, liabilities, and losses whatsoever (including damages to property and injuries to or death of persons, court costs, and reasonable attorneys' fees) occurring or resulting to any and all persons, firms or corporations furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims, liabilities, and losses occurring or resulting to any person, firm, or corporation for damage, injury, or death arising out of or connected with the CONTRACTOR's performance of this Agreement, unless such claims, liabilities, or losses arise out of the sole negligence or willful misconduct of the County. "CONTRACTOR's performance" includes CONTRACTOR's action or inaction and the action or inaction of CONTRACTOR's officers, employees, agents and subcontractors.

9.0 INSURANCE REQUIREMENTS:

9.01 **Evidence of Coverage:** Prior to commencement of this Agreement, the Contractor shall provide a "Certificate of Insurance" certifying that coverage as required herein has been obtained. Individual endorsements executed by the insurance carrier shall accompany the certificate. In addition, the Contractor upon request shall provide a certified copy of the policy or policies.

This verification of coverage shall be sent to the County's Contracts/Purchasing Department, unless otherwise directed. The Contractor shall not receive a "Notice to Proceed" with the work under this Agreement until it has obtained all insurance required and the County has approved such insurance. This approval of insurance shall neither relieve nor decrease the liability of the Contractor.

9.02 **Qualifying Insurers:** All coverage's, except surety, shall be issued by companies which hold a current policy holder's alphabetic and financial size category rating of not less than A- VII, according to

the current Best's Key Rating Guide or a company of equal financial stability that is approved by the County's Purchasing Manager.

9.03 **Insurance Coverage Requirements:** Without limiting CONTRACTOR's duty to indemnify, CONTRACTOR shall maintain in effect throughout the term of this Agreement a policy or policies of insurance with the following minimum limits of liability:

Commercial General Liability Insurance: including but not limited to premises and operations, including coverage for Bodily Injury and Property Damage, Personal Injury, Contractual Liability, Broad form Property Damage, Independent Contractors, Products and Completed Operations, with a combined single limit for Bodily Injury and Property Damage of not less than $1,000,000 per occurrence.
(Note: any proposed modifications to these general liability insurance requirements shall be attached as an Exhibit hereto, and the section(s) above that are proposed as not applicable shall be lined out in blue ink. All proposed modifications are subject to County approval.)

Requestor must check the appropriate Automobile Insurance Threshold:
Requestor must check the appropriate box.

[✓] **Agreement Under $100,000 Business Automobile Liability Insurance**: covering all motor vehicles, including owned, leased, non-owned, and hired vehicles, used in providing services under this Agreement, with a combined single limit for Bodily Injury and Property Damage of not less than $500,000 per occurrence.

[ ] **Agreement Over $100,000 Business Automobile Liability Insurance**: covering all motor vehicles, including owned, leased, non-owned, and hired vehicles, used in providing services under this Agreement, with a combined single limit for Bodily Injury and Property Damage of not less than $1,000,000 per occurrence.

(Note: any proposed modifications to these auto insurance requirements shall be attached as an Exhibit hereto, and the section(s) above that are proposed as not applicable shall be lined out in blue ink. All proposed modifications are subject to County approval.)

Workers' Compensation Insurance: if CONTRACTOR employs others in the performance of this Agreement, in accordance with California Labor Code section 3700 and with Employer's Liability limits not less than $1,000,000 each person, $1,000,000 each accident and $1,000,000 each disease.
(Note: any proposed modifications to these workers' compensation insurance requirements shall be attached as an Exhibit hereto, and the section(s) above that are proposed as not applicable shall be lined out in blue ink. All proposed modifications are subject to County approval.)

Professional Liability Insurance: if required for the professional services being provided, (e.g., those persons authorized by a license to engage in a business or profession regulated by the California Business and Professions Code), in the amount of not less than $1,000,000 per claim and $2,000,000 in the aggregate, to cover liability for malpractice or

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errors or omissions made in the course of rendering professional services. If professional liability insurance is written on a "claims-made" basis rather than an occurrence basis, the CONTRACTOR shall, upon the expiration or earlier termination of this Agreement, obtain extended reporting coverage ("tail coverage") with the same liability limits. Any such tail coverage shall continue for at least three years following the expiration or earlier termination of this Agreement.

(Note: any proposed modifications to these insurance requirements shall be attached as an Exhibit hereto, and the section(s) above that are proposed as not applicable shall be lined out in blue ink. All proposed modifications are subject to County approval.)

9.04   **Other Requirements:**

All insurance required by this Agreement shall be with a company acceptable to the County and issued and executed by an admitted insurer authorized to transact Insurance business in the State of California. Unless otherwise specified by this Agreement, all such insurance shall be written on an occurrence basis, or, if the policy is not written on an occurrence basis, such policy with the coverage required herein shall continue in effect for a period of three years following the date CONTRACTOR completes its performance of services under this Agreement.

Each liability policy shall provide that the County shall be given notice in writing at least thirty days in advance of any endorsed reduction in coverage or limit, cancellation, or intended non-renewal thereof. Each policy shall provide coverage for Contractor and additional insureds with respect to claims arising from each subcontractor, if any, performing work under this Agreement, or be accompanied by a certificate of insurance from each subcontractor showing each subcontractor has identical insurance coverage to the above requirements.

Commercial general liability and automobile liability policies shall provide an endorsement naming the County of Monterey, its officers, agents, and employees as Additional Insureds with respect to liability arising out of the CONTRACTOR'S work, including ongoing and completed operations, **and shall further provide that such insurance is primary insurance to any insurance or self-insurance maintained by the County and that the insurance of the Additional Insureds shall not be called upon to contribute to a loss covered by the CONTRACTOR'S insurance.** The required endorsement form for Commercial General Liability Additional Insured is ISO Form CG 20 10 11-85 or CG 20 10 10 01 in tandem with CG 20 37 10 01 (2000). The required endorsement form for Automobile Additional Insured endorsement is ISO Form CA 20 48 02 99.

Prior to the execution of this Agreement by the County, CONTRACTOR shall file certificates of insurance with the County's contract administrator and County's Contracts/Purchasing Division, showing that the CONTRACTOR has in effect the insurance required by this Agreement. The CONTRACTOR shall file a new or amended certificate of insurance within five calendar days after any change is made in any insurance policy, which would alter the information on the certificate then on file. Acceptance or approval of insurance shall in no way modify or change the indemnification clause in this Agreement, which shall continue in full force and effect.

CONTRACTOR shall always during the term of this Agreement maintain in force the insurance coverage required under this Agreement and shall send, without demand by County, annual certificates to County's Contract Administrator and County's Contracts/Purchasing Division. If the certificate is not received by the expiration date, County shall notify CONTRACTOR and CONTRACTOR shall have five calendar days to send in the certificate, evidencing no lapse in coverage during the interim. Failure by CONTRACTOR to maintain such insurance is a default of this Agreement, which entitles County, at its sole discretion, to terminate this Agreement immediately.

10.0 **RECORDS AND CONFIDENTIALITY:**

10.1 **Confidentiality:** CONTRACTOR and its officers, employees, agents, and subcontractors shall comply with any and all federal, state, and local laws, which provide for the confidentiality of records and other information. CONTRACTOR shall not disclose any confidential records or other confidential information received from the County or prepared in connection with the performance of this Agreement, unless County specifically permits CONTRACTOR to disclose such records or information. CONTRACTOR shall promptly transmit to County any and all requests for disclosure of any such confidential records or information. CONTRACTOR shall not use any confidential information gained by CONTRACTOR in the performance of this Agreement except for the sole purpose of carrying out CONTRACTOR's obligations under this Agreement.

10.2 **County Records:** When this Agreement expires or terminates, CONTRACTOR shall return to County any County records which CONTRACTOR used or received from County to perform services under this Agreement.

10.3 **Maintenance of Records:** CONTRACTOR shall prepare, maintain, and preserve all reports and records that may be required by federal, state, and County rules and regulations related to services performed under this Agreement. CONTRACTOR shall maintain such records for a period of at least three years after receipt of final payment under this Agreement. If any litigation, claim, negotiation, audit exception, or other action relating to this Agreement is pending at the end of the three-year period, then CONTRACTOR shall retain said records until such action is resolved.

10.4 **Access to and Audit of Records:** The County shall have the right to examine, monitor and audit all records, documents, conditions, and activities of the CONTRACTOR and its subcontractors related to services provided under this Agreement. Pursuant to Government Code section 8546.7, if this Agreement involves the expenditure of public funds in excess of $10,000, the parties to this Agreement may be subject, at the request of the County or as part of any audit of the County, to the examination and audit of the State Auditor pertaining to matters connected with the performance of this Agreement for a period of three years after final payment under the Agreement.

10.5 **Royalties and Inventions:** County shall have a royalty-free, exclusive and irrevocable license to reproduce, publish, and use, and authorize others to do so, all original computer programs, writings, sound recordings, pictorial reproductions, drawings, and other works of similar nature produced in the course of or under this Agreement. CONTRACTOR shall not publish any such material without the prior written approval of County.

11.0 NON-DISCRIMINATION:

11.01 During the performance of this Agreement, CONTRACTOR, and its subcontractors, shall not unlawfully discriminate against any person because of race, religious creed, color, sex, national origin, ancestry, physical disability, mental disability, medical condition, marital status, age (over 40), or sexual orientation, either in CONTRACTOR's employment practices or in the furnishing of services to recipients. CONTRACTOR shall ensure that the evaluation and treatment of its employees and applicants for employment and all persons receiving and requesting services are free of such discrimination. CONTRACTOR and any subcontractor shall, in the performance of this Agreement, fully comply with all federal, state, and local laws and regulations which prohibit discrimination. The provision of services primarily or exclusively to such target population as may be designated in this Agreement shall not be deemed to be prohibited discrimination.

12.0 COMPLIANCE WITH TERMS OF STATE OR FEDERAL GRANTS:

If this Agreement has been or will be funded with monies received by the County pursuant to a contract with the state or federal government in which the County is the grantee, CONTRACTOR will comply with all the provisions of said contract, to the extent applicable to CONTRACTOR as a subgrantee under said contract, and said provisions shall be deemed a part of this Agreement, as though fully set forth herein. Upon request, County will deliver a copy of said contract to CONTRACTOR, at no cost to CONTRACTOR.

13.0 INDEPENDENT CONTRACTOR:

In the performance of work, duties, and obligations under this Agreement, CONTRACTOR is always acting and performing as an independent contractor and not as an employee of the County. No offer or obligation of permanent employment with the County or County department or agency is intended in any manner, and CONTRACTOR shall not become entitled by virtue of this Agreement to receive from County any form of employee benefits including but not limited to sick leave, vacation, retirement benefits, workers' compensation coverage, insurance or disability benefits. CONTRACTOR shall be solely liable for and obligated to pay directly all applicable taxes, including federal and state income taxes and social security, arising out of CONTRACTOR's performance of this Agreement. In connection therewith, CONTRACTOR shall defend, indemnify, and hold County harmless from any and all liability which County may incur because of CONTRACTOR's failure to pay such taxes.

14.0 NOTICES:

Notices required under this Agreement shall be delivered personally or by first-class, postage pre-paid mail to the County and CONTRACTOR'S contract administrators at the addresses listed below:

FOR COUNTY:	FOR CONTRACTOR:
Steve Paxton, Radio Manager	Dan Kelleher
Name and Title	Name and Title
855 E. Laurel Drive Salinas, CA 93905	221 Jefferson Ridge Parkway Lynchburg, VA 24501
Address	Address
831-796-1463	650-333-8323
Phone:	Phone:

15.0 MISCELLANEOUS PROVISIONS.

15.01 **Conflict of Interest:** CONTRACTOR represents that it presently has no interest and agrees not to acquire any interest during the term of this Agreement, which would directly, or indirectly conflict in any manner or to any degree with the full and complete performance of the services required to be rendered under this Agreement.

15.02 **Amendment:** This Agreement may be amended or modified only by an instrument in writing signed by the County and the CONTRACTOR.

15.03 **Waiver:** Any waiver of any terms and conditions of this Agreement must be in writing and signed by the County and the CONTRACTOR. A waiver of any of the terms and conditions of this Agreement shall not be construed as a waiver of any other terms or conditions in this Agreement.

15.04 **Contractor:** The term "CONTRACTOR" as used in this Agreement includes CONTRACTOR's officers, agents, and employees acting on CONTRACTOR's behalf in the performance of this Agreement.

15.05 **Disputes:** CONTRACTOR shall continue to perform under this Agreement during any dispute.

15.06 **Assignment and Subcontracting:** The CONTRACTOR shall not assign, sell, or otherwise transfer its interest or obligations in this Agreement without the prior written consent of the County. None of the services covered by this Agreement shall be subcontracted without the prior written approval of the County. Notwithstanding any such subcontract, CONTRACTOR shall continue to be liable for the performance of all requirements of this Agreement.

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15.07 **Successors and Assigns:** This Agreement and the rights, privileges, duties, and obligations of the County and CONTRACTOR under this Agreement, to the extent assignable or delegable, shall be binding upon and inure to the benefit of the parties and their respective successors, permitted assigns, and heirs.

15.08 **Compliance with Applicable Law:** The parties shall comply with all applicable federal, state, and local laws and regulations in performing this Agreement.

15.09 **Headings:** The headings are for convenience only and shall not be used to interpret the terms of this Agreement.

15.10 **Time is of the Essence:** Time is of the essence in each and all of the provisions of this Agreement.

15.11 **Governing Law:** This Agreement shall be governed by and interpreted under the laws of the State of California; venue shall be Monterey County.

15.12 **Non-exclusive Agreement:** This Agreement is non-exclusive and both County and CONTRACTOR expressly reserve the right to contract with other entities for the same or similar services.

15.13 **Construction of Agreement:** The County and CONTRACTOR agree that each party has fully participated in the review and revision of this Agreement and that any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not apply in the interpretation of this Agreement or any amendment to this Agreement.

15.14 **Counterparts:** This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same Agreement.

15.15 **Authority:** Any individual executing this Agreement on behalf of the County or the CONTRACTOR represents and warrants hereby that he or she has the requisite authority to enter into this Agreement on behalf of such party and bind the party to the terms and conditions of this Agreement.

15.16 **Integration:** This Agreement, including the exhibits, represent the entire Agreement between the County and the CONTRACTOR with respect to the subject matter of this Agreement and shall supersede all prior negotiations, representations, or agreements, either written or oral, between the County and the CONTRACTOR as of the effective date of this Agreement, which is the date that the County signs the Agreement.

15.17 **Interpretation of Conflicting Provisions:** In the event of any conflict or inconsistency between the provisions of this Agreement and the Provisions of any exhibit or other attachment to this Agreement, the provisions of this Agreement shall prevail and control.

16.0 SIGNATURE PAGE.

IN WITNESS WHEREOF, County and CONTRACTOR have executed this Agreement as of the day and year written below.

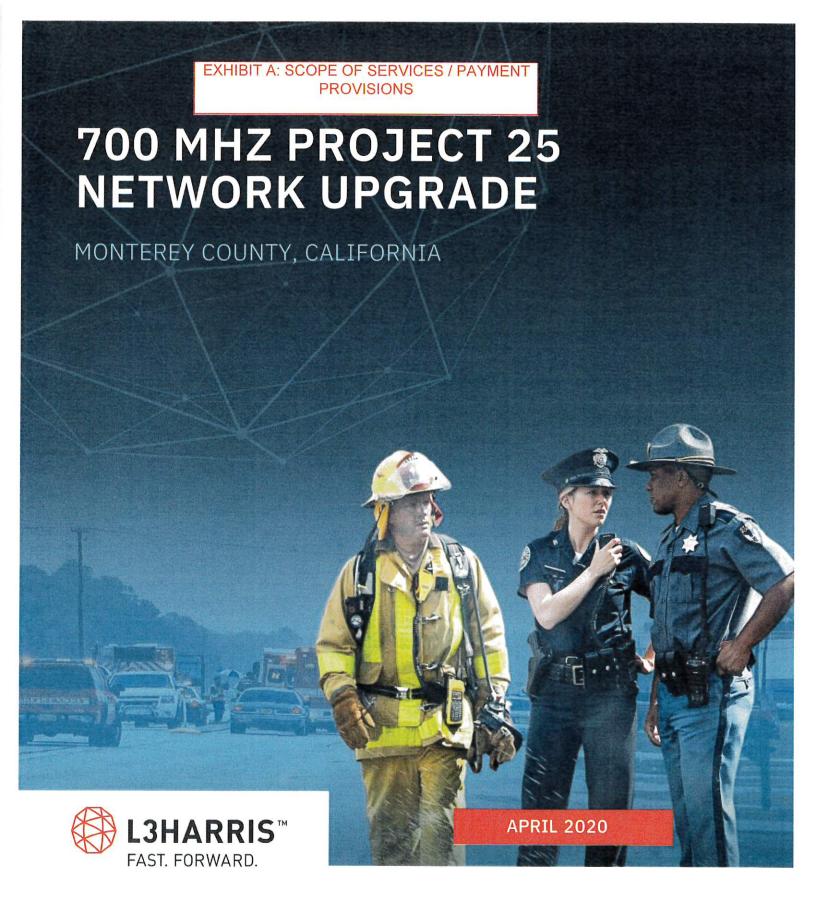| **COUNTY OF MONTEREY**	**CONTRACTOR**

COUNTY OF MONTEREY

By: _____
Contracts/Purchasing Officer

Date: _____

By: _____
Department Head (if applicable)

Date: _____

By: _____
Board of Supervisors (if applicable)

Date: _____

Approved as to Form[1]

By: _____
County Counsel

Date: _____

Approved as to Fiscal Provisions[2]

By: _____
Auditor/Controller

Date: _____

Approved as to Liability Provisions[3]

By: _____
Risk Management

Date: _____

CONTRACTOR

L3Harris Technologies, Inc.
Contractor's Business Name*

By: _____
(Signature of Chair, President, or
Vice-President) *   Contracts Manager

Andrew Wilson, Contracts Manager
Name and Title

Date: ___4/27/2020___

By: _____
(Signature of Secretary, Asst. Secretary,
CFO, Treasurer or Asst. Treasure) *
Chris Chaffee, Director, Contracts
Name and Title

Date: ___April 27, 2020___

County Board of Supervisors' Agreement Number:_____, **approved on (date):** _____

*INSTRUCTIONS: If CONTRACTOR is a corporation, including non-profit corporations, the full legal name of the corporation shall be set forth above together with the signatures of two (2) specified officers per California Corporations Code Section 313. If CONTRACTOR is a Limited Liability Corporation (LLC), the full legal name of the LLC shall be set forth above together with the signatures of two (2) managers. If CONTRACTOR is a partnership, the full legal name of the partnership shall be set forth above together with the signature of a partner who has authority to execute this Agreement on behalf of the partnership. If CONTRACTOR is contracting in an individual capacity, the individual shall set forth the name of the business, if any, and shall personally sign the Agreement or Amendment to said Agreement.

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[1]Approval by County Counsel is required
[2]Approval by Auditor-Controller is required
[3]Approval by Risk Management is necessary only if changes are made in paragraphs 8 or 9

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$71,644.70

700 MHZ PROJECT 25 NETWORK UPGRADE

MONTEREY COUNTY, CALIFORNIA

L3HARRIS™
FAST. FORWARD.

APRIL 2020

221 JEFFERSON RIDGE PKWY | LYNCHBURG, VA 24501 | L3HARRIS.COM | #L3HARRIS

Table of Contents

Monterey County Network Upgrade

System Description

L3Harris is pleased to provide a firm fixed quote to add a new link that connects La Mesa 700MHz LMR P25 site to the 911 Center and provide path redundancy over the radio system backhaul and MPLS services. Monterey County has secured a connection through AT&T services for a fiber backbone path to the Monterey County 911 Center. Monterey County will also provide a new microwave link between La Mesa, Monterey County Court House and Mt Toro that replaces the legacy TDM microwave radios with Ethernet microwave radios. A new 7705 SAR-8 will be added to the La Mesa site with TiMOS 9.0. All existing 7705 SAR-8 units will remain with TiMOS 6.0 which is compatible with TiMOS 9.0.

This firm fixed quote includes the following items.

1. The new MPLS Network upgrade will comprise of:
    a. Nokia 7705 SAR-8 with CSM 2 version modules (La Mesa Site)
    b. Network Optimization of Existing MPLS Network (5 Sites)
2. Test Plan
    a. A standard functionality test plan to test the new redundant link

Statement of Work (SOW)

The overall scope of the project will include several phases of implementation once a purchase order agreement is obtained. The phases will include design, procurement, planning, travel, on-site work and completion. Several steps need to be performed to add a new MPLS router at the La Mesa site.

Figure 1. Phased Responsibility Matrix

Tasks	L3Harris	Monterey County
MPLS Network Upgrade		
Design		
Determine the hardware and firmware compatibility required to perform the upgrade	X	
Perform a complete system audit and verify current configurations of the existing equipment	X	
Provide a detailed plan for an on-site upgrade considering Monterey County maintenance windows and outage estimates	X	
Coordination with Monterey County ITD team to determine all requirements	X	X
Agree on the upgrade plan – Design Review	X	X

Tasks	L3Harris	Monterey County
Procurement		
Create Customer Sales Order for equipment	X	
Order equipment	X	
Receive equipment	X	
Pre-configure equipment for field deployment	X	
Planning		
Determine a time frame and schedule to perform the upgrade (Network Engineering).	X	
Agree on dates to start the upgrade.	X	X
Travel		
Implementation System Engineer and Network Engineer travel to Monterey County to perform the upgrade	X	
On-Site Work		
Add a Nokia 7705 SAR-8 with CSM 2 version modules to the La Mesa Site in the space specified by Monterey County.	X	
Configure the CISCO site router such that it can be connected to the 7705 SAR-8 via ethernet connection to the specified port on the 7705 SAR-8.	X	
Perform and verify bandwidth and performance measurements of the installed AT&T fiber network links.		X
Identify the connection point from the fiber backhaul to the existing 7705 SAR-8 routers in the 911 Center. The connection is an existing AT&T aggregation switch ethernet port located in the 911 Center.		X
Provide connection to the 7705 SAR-8 router located in the NSC Rack in the equipment room through existing structured cabling patch panels.		X
Connect the La Mesa Site Router (SAR) to the new 7705 SAR-8 MPLS ports specified. Provide patches to existing 7705 network routers at the other sites to support addition of La Mesa 7705.	X	
Configure the CISCO site router at La Mesa to allow connection to the specified gigabit ethernet port.	X	
Verify network activity and ring protection is performing as designed by testing the link by disabling the different links at the La Mesa Site.	X	
Completion		
Completion of the on-site upgrades and testing will signify completion of the scope of the project.	X	

L3Harris Installation

The following installation standards shall be adhered to:

- All grounding shall be performed utilizing the proper wire size per the Contractor Standards. It shall be GREEN colored insulated wire and used at all install location (except for manufacture pre-built power cables which may have black ground wires). Proper size split bolts, c-taps and/or Cad-Weld shall be used, as determined by the application. This applies to all racks and each console position as well.

- All work shall be performed in a neat and professional workmanship-like manner with safety measures adhered to.

- All trash generated by L3Harris associated with the installation of assigned work scope shall be removed from the work site daily by L3Harris and disposed of properly and legally.

- If applicable, all outside hardware supplied by the L3Harris shall be made of galvanized steel or other acceptable non-rusting material and comply with L3Harris installation standards.

Exclusions by L3Harris

The following are excluded from this Statement of Work and therefore not included in the L3Harris budgetary quotation. All items listed below are assumed to be the responsibility of Monterey County.

- Site Civils
- Site Connectivity (fiber backhaul)
- Site Development Support
  - Rack Space

Standard Warranty

Warranty Support

L3Harris offers a standard one-year warranty on all proposed infrastructure equipment.

EQUIPMENT

Warranty provides that the hardware and installation services furnished by L3Harris shall be free from defects in material and workmanship.

During the Warranty if any Hardware component or portion of the installation Services fails to meet the warranty, L3Harris will remedy by: (1) repairing any defective component of the Hardware, or (2) by furnishing any necessary repaired or replacement parts, or (3) by correcting the faulty installation at no additional cost to the City.

All warranty labor will be performed by L3Harris at our facility, for mobile or portable equipment.

SOFTWARE

During the Software warranty, if the L3Harris licensed software does not successfully operate, the error or defect will be corrected free of charge or replaced with a substitute program.

Software Warranty provides corrections to software defects and known issues reported to L3Harris' Technical Assistance Center (TAC) during the warranty period at no additional cost to the County.

THIRD-PARTY WARRANTIES

L3Harris will ensure that warranty on any third-party Original Equipment Manufacturer (OEM) equipment and services sold by L3Harris meets the same warranty requirements and we will act on behalf of the County to coordinate and settle all warranty issues with any integrated third-party equipment or software companies throughout the warranty period.

L3Harris will transfer third-party warranties provided directly from equipment manufacturers to the County as part of the final acceptance. In the event that any third-party manufacturer warranty period is greater than one-year, we will recognize the OEM warranty for the specified equipment.

WARRANTY RETURNS PROCESS

Once the determination is made that equipment is in need of repair or replacement, we will follow these steps:

1. Technical Support creates a support case and will verify product part numbers, serial numbers and reasons for return and forward the approved request for processing.

2. A Customer Care Representative reviews all requests. We will provide an RMA number, required prior to return, along with a warranty replacement sales order number and instructions for return of the equipment.

3. Defective equipment ships back to L3Harris Depot Repair and Return.

4. We will repair or replace any equipment under warranty free of charge unless there is evidence of abuse or damage beyond the terms of the warranty.

5. Repaired or replaced unit ships back to the County.

6. We will close the RMA and update the tracking database

Requests for out of warranty repairs will require a purchase order. Out of warranty repairs are subject to a flat rate per unit fee regardless of fault found with the equipment.
Turn-around time for equipment repair or replacement is generally 10 business days.

DEPOT LEVEL REPAIR AND RETURN

The Depot Repair and Return Facility in Lynchburg, Virginia maintains a staff of certified master technicians and support personnel who have over four decades of experience providing high quality repairs and fast turnaround times for public safety and commercial customers. This facility is ISO 9001: 2008 certified and UL Listed. Master technicians using state-of-the-art test equipment verify that all repairs meet or exceed prescribed specifications. The Depot Repair and Return Facility utilize a stockroom of common repair parts to reduce repair time. Our technicians can repair over 95% of radio and infrastructure equipment on-site, decreasing turn-around time. Customers are encouraged to call in advance regarding equipment returns to verify inventory and serviceability.

DEMAND SERVICES

Demand Services consists of those services not included in our Scope of Work and shall be invoiced directly to the Customer on a time and materials basis. Such Demand Services include, but are not limited to the following:

- Installation, updating, upgrading, maintaining, or removing software, hardware, or non-L3Harris infrastructure after initial installation.

- Repair of equipment damaged by vandalism, abuse, neglect, or noncompliance to L3Harris recommended practices, to the extent such equipment damage is not caused by L3Harris or any of its agents.

- Damages due to acts of God or other uncontrollable events.

- Services that exceed 8 working days

EXCLUSIONS

Standard exclusions apply as referenced in the following documents:

- Standard Conditions of Sale

- U.S. Equipment Warranty

- U.S. Battery Warranty

SYSTEM ACCEPTANCE TEST PLAN

Customer: Monterey County
Prepared By: C. Inouye
Total Test Pages: 19

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: Monterey County

Prepared By: Craig Inouye

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

FUNCTIONAL TEST ACCEPTANCE

This Functional Test Acceptance Procedure has been fully and successfully completed with all Action Items resolved.

Customer Representative   **L3Harris Corporation Representative**

_____   _____
Signature   Signature

_____   _____
Printed Name and Title   Printed Name and Title

_____   _____
Date   Date

Introduction

This document describes required test procedures for characterizing a deployed microwave or fiber backhaul network for comparison with L3Harris WAN requirements. This document assumes that either L3Harris or a customer has responsibility for providing the backhaul between sites to establish connectivity back to the L3Harris VIDA Core.

VIDA Network WAN Requirements

To guarantee the quality of voice through the VIDA network, all WAN links will need to strictly adhere to the requirements provided in the following sections. Conformance with these design requirements is a necessary condition for L3Harris to meet the overall performance needs of the VIDA system. All of these requirements are necessary to provide a guaranteed level of service for voice quality. Failure to adhere to these requirements could result in poor audio quality.

Packet Loss Requirements

Due to the connectionless nature of UDP used in transmitting voice packets, minimal packet loss is tolerable in the VIDA network. However, any packet loss could result in degraded voice quality or loss of voice.

Minimum packet loss requirements per link are as follows for meeting a minimum of 99.999% two-way availability:

- Frame loss shall be less than 0.001% per link
- Out-of-Order packets shall be less than .001%

Performance testing to be measured based on the following:

- RFC 2544 standard to be used
- Length of test per link shall be 12 consecutive hours
- Length of end-to-end test shall be 12 consecutive hours in each direction

Evaluation of test results for a newly installed backhaul system will show whether a link or multiple links exhibit packet loss over time. This loss could result in noticeable degradation of voice quality. The backhaul should be designed with a high availability figure and large fade margins so that the total number of packets lost are minimized over a period of time instead of all at one instance. Frame loss measurements over a 12-hour period will reveal fading conditions in the microwave design that can cause minimal packet loss or severe packet loss.

Therefore, a new microwave or fiber link should be designed to yield 99.999% availability or better (per year) which will mean a certain number of packets can be lost over time due to a microwave link fade or other network conditions but not all lost at one instance. For example; a link that sustains a Layer 1 data rate of 1 Mbps with packets sized at 100 bytes over a 12-hour period could lose up to 450 packets and meet the 99.999% target over a 12-hour period. However, if a large percentage of the 450 packets are lost at one instance or multiple instances, this could indicate conditions that need further investigation.

Multi-Site and Console Site Jitter (One-way)

Jitter is the variability of packet delays within the same voice packet stream (talk spurt). The requirement is for the overall jitter to average near zero and to never build up to more than 60 msec one-way. Any streams with excessive jitter will be considered to have packet loss causing voice quality issues.

For example, if a voice packet were 60 milliseconds late, then it would be optimal for the next few voice packets to be early to get the average jitter back near zero. This will allow the voice buffer to build back to a stable point.

For allowable Simulcast Jitter, refer to the IP Simulcast Latency and Jitter section below.

Latency Requirements (One-way)

Some degree of latency, such as satellite links, can be supported within the VIDA network. Any latency within the system will need to stay constant to avoid jitter. Latency requirement differ based on the site type and traffic patterns. This section defines latency requirements for Multisite to NSC, NSC to NSC, Simulcast Site to Control Point, and Control Point to NSC.

Latency is measured one-way. Asymmetric latency is permitted if one-way measurements meet specifications below. Satellite links can be supported after system timers are modified to account for satellite delay.

- NSC Latency
  - NSC to NSC latency must be less than *(150ms)*
- Multisite Latency
  - Multisite to NSC latency must be less than *(150ms - NSC Latency)*
- Simulcast Latency
  - Simulcast Tx/Rx site to Control Point
  - Refer to the diagram and instruction in IP Simulcast Latency and Jitter section
  - Latency must be less than *(35ms)*
- Control Point Latency
  - Control Point to NSC latency must be less than (*150ms - Simulcast Latency$_{max}$ - NSC Latency*).

Bandwidth Requirements

All backhaul links that are provided will need to meet or exceed the bandwidth requirements established by L3Harris. Typically, L3Harris designs the backhaul topology to form a loop protected network so that if a link fails, there is a diverse path back to the VIDA Core. In a loop topology for this radio system, L3Harris recommends all links in a loop configuration to be a minimum of 155 Mbps (Ethernet based at 1518-byte packets) to support all bandwidth requirements for the Location HA VIDA Core, simulcast RF sites, Multi-sites and dispatch consoles. If a microwave spur link is only available for a particular site, L3Harris recommends a minimum of 1.5 Mbps allotment for the VIDA RF equipment. L3Harris will provide a final assessment of all site requirements during the contract design review.

Backhaul Design Best Practices

Customer provided backhaul should use the following requirement recommendations. These requirements will vary based on throughput requirements, link availability, and fade margin (microwave only) established by the customer.

1. Any new microwave or fiber network should provide MPLS routing for packet transport between all VIDA sites that connect to the VIDA Core. The provider of the backhaul will be responsible for meeting L3Harris' WAN requirements and provide the demarcation points for the VIDA equipment.

2. L3Harris' design goals are to provide a loop network configured as non-protected (1+0). The customer or L3Harris provided MPLS transport router will provide loop protection if a link fails and reroute network traffic in an opposite direction back to the VIDA Core.

3. All non-looped path segments (e.g. spur links) should be configured with monitored hot standby (1+1) radios that automatically switch over to a secondary radio if the primary radio fails. This type of link may or may not be connected to a MPLS transport router at the end of the spur and can be treated as a wireless Ethernet connection back to a MPLS transport router located at the main network loop.

4. Public safety grade two-way path availability should be no less than 99.999%.

5. Microwave fade margin should be at least 30 dB.

6. Unfaded Bit Error Rate for a single microwave link should not be less than 10 -10. This can include any point-to-point fiber links.

7. Faded BER for a microwave link should not be less than 10 -6. This BER threshold is typical for the set throughput of the microwave link which would be based on 99.999% availability at a minimum.

8. TX power at the microwave radio antenna port should be guaranteed by the microwave vendor.

9. Minimum RX input signal threshold for 10-6 BER should be guaranteed and measured from the microwave radio antenna port.

10. All microwave path calculations should be based on a fixed modulation rate for the required throughput.

11. The microwave radio and fiber equipment should be capable of passing 1572-byte packet sizes.

12. The microwave vendor's maximum link throughput design should be based on either 64-byte or 1518-byte packets to obtain the maximum Layer 2-bit rate.

Required Backhaul Characterization Tests

Microwave vendors typically design link throughput based on either 64-byte frames or 1518-byte frames. The following RFC 2544 based field tests and measurements are required to ensure the provided backhaul meets L3Harris' WAN requirements and bandwidth requirements:

- Throughput tests based on pre-defined frame sizes (64, 128, 256, 512, 1024, 1280 and 1518 bytes) to simulate various traffic conditions without errors per link and end-to-end.

- Ethernet latency and jitter measurements of each link and end-to-end using pre-defined frame sizes (64, 128, 256, 512, 1024, 1280 and 1518 bytes).

- Frame Loss Test - The test instrument will send traffic at maximum line rate for pre-defined frame sizes (64, 128, 256, 512, 1024, 1280 and 1518 bytes). Observe if the link or network dropped any frames.

- Back-to-Back Burst Test - a burst of back-to-back frames (maximum number of frames) is transmitted across the network with minimum interframe gap without errors. This test assesses the buffering capability of the network components.

RFC 2544 Base Test Procedures

1. Single Link Throughput Test Procedure using the Accedian MetroNID test set.

- This procedure can be continuously run at various time spans from 60 seconds, 12 hours or days.

- Setup test generator unit at Site A with IP Address 10.10.10.1 and the Loopback unit at Site B with IP Address 10.10.10.2 per test equipment procedures. Remove the MPLS router connection to the microwave radio on each end and connect the Test Generator and Loopback unit directly to the microwave radio Ethernet ports.

- Set the test generator starting with a 64-byte packet and the maximum known Layer 1 bit rate designed for the link.

- Run a continuous test with fixed data to determine if there are any frame losses. Should frame losses occur, step down the bit rate until no frame losses are detected. After the correct bit rate is found with no frame losses, run test for at least 60 seconds for the final validation.

- The following example of statistics should be recorded for each test frame size starting at 64 bytes.

Transmit statistics:

Transmitted packets:	47,748,176
Transmitted bytes:	4,774,817,720
L1 Rate (Mbps):	1.000
L2 Rate (Mbps):	0.834
State:	Running
Working rate:	Layer-1

Receive statistics:

Received packets:	47,747,572	OOO or duplicates:	0
Received bytes:	4,774,757,200	Number of gaps:	4
L1 Rate (Mbps):	1.000	Maximum gap:	4
L2 Rate (Mbps):	0.833		

Two-way delay:

Instantaneous (µs):	1038	Minimum (µs):	878
Average (µs):	2822	Maximum (µs):	8087

Two-way delay variation:

Instantaneous (µs):	958	Minimum (µs):	0
Average (µs):	1450	Maximum (µs):	5136

- **Note 1: Tests should include at least a 64-byte or 1518-byte frame size test which reflect typical microwave throughput specifications for various fixed modulation rates.**

- **Note 2: The Accedian MetroNID test set has an automated RFC-2544 test called TestSuite which can be setup to characterize the backhaul link before doing a 12-hour link test. TestSuite will automate and record data that can be done within an hour. Based on the results of this test, characterized measured throughput can be used to setup the 12-hour test. The following tests are included in the Accedian RFC-2544 TestSuite:**
    - **Throughput Test**
    - **Frame Loss Test**
    - **Ethernet latency and jitter measurements**
    - **Back-to-back frame test**

2. Single Link Throughput and Frame Loss Test – 12 Hours per Link

- Setup test generator unit at Site A with IP Address 10.10.10.1 and the Loopback unit at Site B with IP Address 10.10.10.2 per test equipment procedures. Remove the MPLS router connection on each end to the microwave radio and connect the Test Generator and Loopback unit directly to the microwave radio Ethernet ports.

- Run the Accedian RFC-2544 TestSuite to obtain link characterization results and save results as a text file. The results can be setup to characterize the maximum layer 1 and layer 2 rates at all of the frame sizes (64 – 1518-byte frames). The results will show the maximum Layer 1 Tx and Rx rate for each packet size. The maximum Layer 1 rate and packet size of 64 bytes can be used for the 12-hour test.

- Set the test generator using a 64-byte packet and maximum Layer 1 bit rate recorded from

the TestSuite throughput results. The 64-byte packet size is close to the 100-byte packet size used in VIDA.

- Run a continuous test with fixed data for 12 hours or 43,200 seconds using the maximum Layer 1 bit rate for a 64-byte packet.

- Observe that the Average Latency does not grow over time. Growing latency can mean the bit rate is too high and buffering is taking place. If the bit rate is not lowered when this is observed, packets will start dropping over time and the test will have to be restarted at a lower rate.

- Observe and record the Layer 1 and Layer 2 bit rates at the start of the test.

- The statistics should be recorded at the end of the 12-hour test.

- Calculate Frame Error rate (FER): FER = Total Packets lost/Total Packets Sent

- Calculate Availability for the 12-hour test: Availability = Total Packets Received/Total Packets Sent x 100 (Availability should be greater than 99.999%)

- **Note: The equivalent packet size for a VIDA system is 100 bytes. An alternate 12-hour test can be run with packet size set at 100 bytes and Layer 1 bit rate set at 1, 5, or 10 Mbps to determine if any packets are dropped over time.**

   3.   End-to-End RFC-2544 Test Procedure

- Setup test generator unit at NSC 1 location with IP Address 10.10.10.1 and the Loopback unit at the farthest site at the other end of the loop with IP Address 10.10.10.2 per test equipment procedures. For 7705 based backhaul systems, setup a known path within the 7705 router at each end of the loop so that a straight end-to-end path is introduced between point A and point B. This will insure connections between the Test Generator and Loopback unit are directly connected on each end over a multiple number of hops. VPLS services on each MPLS router end can be setup that is dedicated for the Accedian only. Note that ports 1 – 4 on the 7705 SAR-8 are typically setup as a VPLS service for the LMR system but are limited to 100 Mbps. If a SFP port is available on the SAR-8 Ethernet card, a VPLS service can be temporarily setup specific for this test in order to test the full throughput capability of the link above 100 Mbps. All other sites in between will be connected via the site MPLS router.

- **Note: An alternate way to test all microwave links without the MPLS inserted in an end-to-end configuration is jumper all microwave radios together to form a Layer 2 relay connection from point A to point B. The Accedian generator unit will be placed at point A and the loopback unit placed at point B.**

- Make sure that filters on the Accedian units are setup to prevent a multicast broadcast to the VIDA equipment.

- Run the Accedian RFC-2544 TestSuite to obtain the link characterization results.

- Once the RFC-2544 TestSuite results are complete and recorded, save the text file to be used for setting up a 12-hour link test.

4.   End-to-End Frame Loss Test – 12 Hours per direction

- Setup test generator unit at NSC 1 location with IP Address 10.10.10.1 and the Loopback unit at the farthest site at the other end of the loop with IP Address 10.10.10.2 per test equipment procedures. For 7705 based backhaul systems, setup a known path within the

7705 router at each end of the loop so that a straight end-to-end path is introduced between point A and point B. This will insure connections between the Test Generator and Loopback unit are directly connected on each end over a multiple number of hops. VPLS services on each MPLS router end can be setup that is dedicated for the Accedian only. Note that ports 1 – 4 on the 7705 SAR-8 are typically setup as a VPLS service for the LMR system but are limited to 100 Mbps. If a SFP port is available on the SAR-8 Ethernet card, a VPLS service can be temporarily setup specific for this test in order to test the full throughput capability of the link above 100 Mbps. All other sites in between will be connected via the site MPLS router.

- Make sure that filters are setup to prevent a multicast broadcast.

- Once the previous RFC-2544 TestSuite results are complete and recorded, set up the test generator using a 64-byte packet and the maximum known Layer 1 bit rate for the link. This can be obtained from the recorded TestSuite results for throughput if unknown. The results will show the maximum Layer 1 Tx and Rx rate for each packet size. The maximum Layer 1 rate and packet size of 64 bytes can be used for the 12-hour test.

- Initiate the continuous throughput test and observe and record the Layer 1 and Layer 2 bit rates at the start of the test.

- Run a continuous test with fixed data for 12 hours or 43,200 seconds.

- The statistics should be recorded at the end of the 12-hour test.

- Calculate Frame Error rate (FER): FER = Total Packets lost/Total Packets Sent

- Calculate Availability for the 12 hour test: Availability = Total Packets Received/Total Packets Sent x 100 (Availability should be greater than 99.999%)

- Repeat test in the opposite direction.

Acronyms and Definitions

ACI	Access Control Item (used with respect to computer system security)
Ack	Acknowledgement
AD	Active Directory
ADPCM	Adaptive Differential Pulse Code Modulation, a speech codec which can also digitize tones successfully
Advanced P25 Radio	A L3Harris radio which supports proprietary advanced P25 features, such as provisioning and emergency auto PTT
AES	Advanced Encryption Standard
AFC	Automatic Frequency Control
AGID	Announcement Group ID. The Announcement Group is a wider area talkgroup associated with the priority talkgroup. The VNIC maintains a database of GIDs and AGIDs, and during registration sends the appropriate AGID to the subscriber device, corresponding to his priority talkgroup. The radio then watches for voice calls addressed to the GID and AGID
ALGID	Algorithm ID, an 8-bit field which identifies the voice encryption algorithm
AM	Amplitude Modulation
AMBE	Advanced Multi Band Excitation is a voice codec developed by Digital Voice Systems Inc (DVSI) and used in P25
ANI	Automatic Number Identification
AOC	Agency Operations Center
API	Application Programming Interface
ARP	Address Resolution Protocol
ARQ	Automatic Repeat Request
AVL	Automatic Vehicle Location
Basic P25 Radio	A P25 radio which does not support the L3Harris proprietary features such as registration on conventional systems, provisioning and software download
BCH	A family of error correction and detection codes invented by Bose, Ray-Chaudhuri and Hocquenghem
C4FM	Compatible 4-level FM, an FM modulation technique that is similar to CQPSK modulation
CAD	Computer Aided Dispatch
CAI	Common Air Interface (usually in reference to P25)
CBC	Cipher Block Chaining
CCIR	Comite Consultatif Internationale pour la Radio, a forerunner of the ITU-R
CDPD	Cellular Digital Packet Data
CEB	Console Electronics Bank, a Motorola analog voice switch

CEC	Central Electronics Controller, a version of the L3Harris EDACS IMC which was used as a local voice switch for dispatch consoles
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)
COR	Carrier Operated Relay
COTS	Commercial Off The Shelf
CQPSK	Compatible QPSK, a form of QPSK modulation which is similar to C4FM modulation
CRC	Cyclic Redundancy Check, a form of error detection coding
CSMA	Carrier Sense Multiple Access, a means where many subscriber devices can share access to a radio channel and minimize the risk of collisions
CTCSS	Continuous Tone Coded Squelch System
DCOMP	Data Payload Compression, a four-bit field in the P25 SNDCP header which specifies the nature of user payload data compression (presently no compression is supported)
DES	Digital Encryption Standard
dibit	Two bits which represent an analog channel symbol
DM	Device Manager
DMZ	Demilitarized Zone
DNS	Domain Name Server
DoS	Denial of Service, a type of Internet attack
DTMF	Dual Tone Multi Frequency
DUID	Data Unit ID, a 4 bit field of the NID which indicates the format of the control channel packet
E&M	Ear and Mouth (a form of telephone signalling)
ECB	Electronic Code Book, a mode of AES operation
EDACS	Enhanced Digital Access Communications System, a proprietary L3Harris system
EIA	Electronics Industry Association
EIGRP	Enhanced Interior Gateway Protocol, a proprietary Cisco routing protocol
ERTT	Emergency Request To Talk
ES	Encryption Sync Word (240 bits). This includes the 72-bit Message Indicator (MI), 8-bit Algorithm ID (ALGID), and 16-bit Key ID (KID), which total 96 bits. A RS inner code adds 48 parity bits, then a Hamming outer code adds 96 parity bits for a total length of 240 bits
ESN	Electronic Serial Number (64 bits)
ETDU	Extended Terminator Data Unit
FDMA	Frequency Division Multiple Access
FEMA	Federal Emergency Management System (US Government)

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FIPS 140-2	Federal Information Processing Standard, publication 140-2. The title is "Security Requirements for Cryptographic Modules"
FLA	Four Letter Acronym (to be avoided if possible)
FM	Frequency Modulation
FMF	Full Message Flag, in packet data unit header blocks
FNE	Fixed Network Equipment. In the P25 world, the FNE is the network infrastructure including the base site and VNIC
Foreign Radio	A radio roaming to this site from another region or WACN
FS	Frame Synchronization (a 48-bit field in the control channel)
FSK	Frequency Shift Keying
FTP	File Transfer Protocol
FX	A comprehensive software maintenance program that provides semiannual upgrades to L3Harris developed software applications
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)
GMIM	Gateway MASTR III Interface Module, an interface controller card that plugs into the EDACS IMC
Golay	An error correcting code named in honor of Marcel Golay
GSM610	Full Rate digital speech coding standard initially developed for digital mobile phone systems with a 13.3 bit/s bit rate.
G-STAR	A type of tone signalling used by GE radio
GVIU	Gateway Voice Interface Unit, an interface controller card that plugs into the EDACS IMC
HA	High Availability
H-CPM	Harmonized Continuous Phase Modulation (used for the P25 Phase 2 inbound channel)
H-DQPSK	Harmonized differential Quadrature Phase Shift Keying (used for the P25 Phase 2 outbound channel)
HDU	Header Data Unit, the first block transmitted on the CAI in a voice call
HIDPS	Host based Intrusion Detection and Prevention System (a McAfee product)
IAVA	Information Assurance Vulnerability Alert
ICMP	Internet Control Message Protocol
IFW	Internet Firewall
IG	Interoperability Gateway
I-ISCH	Information Inter-slot Control Channel (Phase 2)
IMBE	Improved Multi Band Excitation, a voice codec developed by Digital Voice Systems Inc (DVSI) and used in P25
IMC	Integrated Multisite and Console controller, this is the EDACS voice switch
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

IOS	Internetwork Operating System (a Cisco product)
IP	Internet Protocol
IPS	Intrusion Prevention System
ISCH	Inter-slot Signaling Channel (Phase 2)
ISP	Inbound Signaling Packet (on the control channel)
ISSI	Inter Sub System Interface. This is the interface between WACNs, in the L3Harris architecture an interface between a VNIC and a foreign P25 system
KEK	Key Encryption Key
KID	16-bit Encryption Key ID
KMF	Key Management Facility
KMM	Key Management Message
LAN	Local Area Network
LC	Link Control word, transmitted in the LDU on the CAI
LCF	Link Control Format, an 8-bit field that specifies the format of the LC word
LCH	Logical Channel (Phase 2)
LDU	Logical Link Data Unit, the blocks that follow the HDU on the CAI
LDU1	Contains the LC word
LDU2	Contains the ES word
LED	Light Emitting Diode
LMR	Land Mobile Radio
LMS	LAN Management Solution
LRA	Location Registration Area. "This defines the region of a Registration Area in which a subscriber unit may roam without the need to indicate a location update to the network. The Registration Area will typically consist of a number of LRAs. The LRA may be a single site or a collection of sites of an RFSS. The octet's exact meaning is a system design issue and explicit numerical assignments are to be made by the system designer." For L3Harris an LRA is a trunked site or a conventional channel (we generally set LRA, RFSS ID and Site ID to be the same value). Motorola has an architecture where more than one RF site can be controlled by one RFSS controller (RFSS basically equals LRA) so you can roam from one RF site to another without re-registering
LSD	Low Speed Data
MASTR V	A L3Harris base station product
MDIS	Mobile Data Intermediate System, a L3Harris data switch used in L3Harris' OpenSky® Architecture
MES	Mobile End System, a subscriber radio
MFID	Manufacturer ID. An 8-bit field identifying the manufacturer of the subscriber device. The default value is zero, indicating conformance with the P25 specification. A non-zero value indicates that the message format deviates from the standard (for example a proprietary feature)
MI	Message Indicator, the 72-bit initialization vector for the voice encryption algorithm
MIM	MASTR III Interface Module, an interface controller card that plugs into the EDACS IMC

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)
MRC	Mobile Routing and Control. In the P25 world, this is the device at the mobile radio which speaks SNDCP (usually it is the mobile radio itself)
MTU	Maximum Transmitted Unit, used in SNDCP
N(S)	A 3-bit sequence number for the packet data unit
NAC	Network Access Code. A 12-bit field in the control channel, used as a colour code to identify co-channel interference from other sites. This code can be unique to a site (RFSS) or can be reused within the region
Nack	Negative acknowledgement, a type of control message
NID	Network Identifier. A 16-bit field in the control channel, consisting of a 12-bit Network Access Code and a 4-bit Data Unit ID. Error correction coding expands the NID to 64 bits
NIDS	Network Intrusion Detection
NOC	Network Operations Center
NPQR	New Product Quotation Request
NSAPI	Network Service Access Point Identifier, used in SNDCP
NSC	Network Switching Center
NSS	Network Switching Server
NWS	Network Sentry
OFB	Output Feedback, a mode of DES encryption
OSP	Outbound Signaling Packet (on the control channel)
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
PCOMP	IP Header Compression, a four-bit field in the P25 SNDCP header which specifies the nature of TCP/IP header compression (presently only RFC1144 compression is supported)
PDU	Packet Data Unit
PEMA	Pennsylvania Emergency Management System
Personality ID Sequence Number	Provided by an advanced P25 subscriber device during registration, to inform the VNIC of its current personality. If necessary, the VNIC will provision the subscriber device with the most recent personality
PKI	Public Key Infrastructure, related to encryption and authentication
PN	Pseudo random Number, usually refers to a sequence of numbers that can be generated using a shift register and exor gates
PPM	Parts Per Million

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
PSAP	Public Safety Access Point, usually an agency dispatch center
PSP	Pennsylvania State Police
PSTN	Public Switched Telephone Network
PTT	Push To Talk
QAM	Quadrature Amplitude Modulation
QoS	Quality of Service
QPSK	Quadrature Phase Shift Keying
RA	Registration Area, home VNIC region
RADIUS	Remote Authentication Dial In User, a networking protocol that provides centralized authentication, authorization, and accounting management
RAM	Random Access Memory
RAR	Regional Access Router
RF	Radio Frequency
RFC 1661	The Point to Point Protocol (PPP) is defined in the Internet Request for Comment documents 1570, 1661 and 1662
RFP	Request for Proposal
RFSS	RF Sub-System. In the L3Harris architecture an RFSS is a single site (in the Motorola world an RFSS is a Motorola Zone Controller, which can support a maximum of 32 channels spanning several sites). In the larger P25 world the term RFSS is ambiguous and should be avoided if possible
RFW	Regional Firewall
RMS	Regional Management Server
RNM	Regional Network Manager
RNM	Regional Network Manager
RS	Reed Solomon, a form of error detection and correction coding
RSM	Regional Site Manager, a server which runs the RSM, Activity Warehouse and Device Manager applications
RSSI	Received Signal Strength Indicator
RTT	Request To Talk. This is a mechanism where a radio user in the field wanting to speak with a dispatcher sends an inbound canned data message to the dispatcher, who later responds with (usually) an Individual Call
RVM	Regional VIDA Manager, a server which runs the UAS and RNM applications
SACCH	Slow Associated Control Channel (Phase 2)

SAID	System Assigned ID. Used in Patch and Simulselect, where the system assigns a new ID for the merged talkgroup and the radios monitor the new SAID instead of the old GIDs
SAN	Storage Area Network
SAP	Service Access Point, where the network provides a service
SEM	Security Event Manager (a LogLogic® product)
SIA	McAfee Security Innovation Alliance
SID	Unit ID, a 24-bit part of SUID. Note that SID is a L3Harris acronym, and the field is referred to internally as either the SID or the Unit ID (SID was chosen as an acronym because UID was already used for Unified ID. SID sounds like LID, which is an EDACS acronym for a similar parameter). The SID is a value which is programmed into the radio for a WACN (customer system) and will always be unique within a WACN
SIEM	Security, Information, and Event Management
S-ISCH	Synchronization Inter-slot Control Channel (Phase 2)
Site Mgmt. Interface	The Site Management Interface is a software entity which exists on the Network Sentry and is responsible for downloading the SID/GID database from the UAS and Regional Site Manager to the Traffic Controller
SitePro	A L3Harris circuit board that plugs into a MASTR III base station chassis and was used to generate the control channel
SMS	Site Management Services
SMS	Short Message Service
SMTP	Simple Mail Transfer Protocol
SNDCP	Subnetwork Dependent Convergence Protocol
SOAP	Simple Object Access Protocol, a protocol based on XML and relying upon lower layers such as SMTP, it provides a basic messaging framework upon which web services can be built
SOR	Signal Operated Relay
Sourcefire® DFC	Defense Center
SS	Status Symbol (a two-bit field in the control channel, used for channel access control signaling)
SSL	Secure Socket Layers
SSH	Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. It provides strong authentication and secure communications over insecure channels. It is a replacement for rlogin, rsh, rcp, and rdist.
SU	Subscriber Unit. In the P25 world, an SU is a mobile or portable radio
SUID	Subscriber Unit ID. A 56-bit unique-in-the-world permanent identifier consisting of WACN, System ID, and SID
SUMS	Security Update Management Service (a L3Harris product)
SUMSplus	Version of SUMS
System ID	The System ID is a 12-bit field of the network address which identifies the VNIC
TAC	Technical Assistance Center, a L3Harris service

TACACS	Terminal Access Controller Access Control System
TDMA	Time Division Multiple Access
TDU	Terminator Data Unit, used to terminate a voice message
TEK	Traffic Encryption Key
Telnet	A terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network.
TGID	Talkgroup ID (16-bit, equivalent to GID). The P25 documents usually use GID but some of the older documents use TGID
TIA	Telecommunications Industry Association
TLA	Three Letter Acronym (to be avoided if possible)
Traffic Controller	Software entity which resides in a base station at the site and generates the P25 control channel
TRC	Tone Remote Control
Trunking Controller	In the larger P25 world, this is the device at the site which generates the control channel (In the L3Harris system it is a piece of software called a "control channel", which resides on a SitePro card which plugs into a base station chassis)
TSBK	Trunking Signaling Block (a 196-bit field in the control channel)
Tx	Transmit
UAC	Unified Audio Card
UAS	Unified Administration Server
UDP	User Datagram Protocol
UID	Unified ID. This is a L3Harris specific acronym referring to an ID composed of the System ID and SID. The UID is a ten-digit number in the form 604-415-4003, standing for region, agency, and individual
UKEK	Unique Key Encryption Key
Unitrends	Enterprise backup for VIDA networks
UPS	Uninterrupted Power Supply
VAS	VIDA Application Server
VCE	VIDA Console Exchange
VCH	Voice Channel (Phase 2)
VDOC	Voice and Data on Control (the control channel can assign itself as a traffic channel)
VIDA	Voice, Interoperability, Data, Access (a L3Harris system product)
VINI	Voice Independent Network Identifier. This is a L3Harris specific acronym referring to a value consisting of ESN, User ID and password, required by the proxy for registration with the VNIC
VLAN	Virtual Local Area Network
VM	Virtual Machine
VME	Versa Module Eurocard (IEEE 1014)

VNIC	Voice Network Interface Controller, the L3Harris voice switch
VOX	Voice Operated Switch
VPN	Virtual Private Network
VSWR	Voltage Standing Wave Ratio
VTCH	Voice Transport Control Channel (Phase 2)
VTI	VIDA Telephone Interconnect
WACN	Wide Area Communication Network (20-bit network ID, part of SUID). This is a customer network which can include many VNICs
WAR	Wide Area Router
WGID	Working Group ID (16 bit, usually the same value as the GID). This is the value which is used on the airlink. When a foreign radio roams in from another System ID (indicating a different VNIC) or WACN, its GID may conflict with GIDs used in this region. In this case the VNIC will provide the radio with a WGID which does not conflict, effectively a temporary GID
WUID	Working Unit ID (24 bit, usually the same value as the SID). This is the value which is used on the airlink. When a foreign radio roams in from another System ID (indicating a different VNIC) or WACN, its SID may conflict with SIDs used in this region. In this case the VNIC will provide the radio with a WUID which does not conflict, effectively a temporary SID
XML	Extensible Markup Language, used for building websites
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)

Pricing
Networking Upgrade

L3Harris is pleased to provide Monterey County, California with the following firm fixed price proposal. Pricing is valid for 60 days from submittal date of April 20, 2020. Upon expiration of the pricing validity, L3Harris reserves the right to provide an updated pricing proposal.

A. Infrastructure Components and Installation	Qty	List Price	Disc. %	Unit Price	Total
Upgraded Router - 7705	1	$ 26,705.50	10%	$ 24,034.95	$ 24,034.95
Engineering	1 Lot	$ 47,610.00	0%	$ 47,610.00	$ 47,610.00
Total					$ 71,644.95

Sales Taxes (if applicable) not Included

ADDENDUM No. 1

TO AGREEMENT BY AND BETWEEN HARRIS CORPORATION, AND THE COUNTY OF MONTEREY FOR NGEN PATH DIVERSITY AT LA MESA COMMUNICATIONS SITE

This Addendum No. 1 amends, modifies, and supplements the County of Monterey Agreement for Services (hereinafter "Agreement") by and between Harris Corporation (hereinafter "CONTRACTOR") and the County of Monterey, on behalf of its Information Technology Department (hereinafter "COUNTY"). This Addendum #1 has the full force and effect as if set forth within the Terms. To the extent that any of the terms or conditions contained in this Addendum #1 may contradict or conflict with any of the terms and conditions of the Agreement, it is expressly understood and agreed that the terms and conditions of this Addendum #1 shall take precedence and supersede the attached Agreement.

NOW, THEREFORE, COUNTY and CONTRACTOR agree that the Agreement terms and conditions shall be amended, modified, and supplemented as follows:

I.   **Agreement paragraph 9.01, "Evidence of Coverage" shall be amended to:**
     Prior to commencement of this Agreement, the Contractor shall provide a "Certificate of Insurance" as evidence that coverage as required herein has been obtained. Individual required endorsements executed by the insurance carrier shall accompany the certificate.

     This verification of coverage shall be sent to the County's Contracts/Purchasing Department, unless otherwise directed. The Contractor shall not receive a "Notice to Proceed" with the work under this Agreement until it has obtained all insurance required and the County has approved such insurance. This approval of insurance shall neither relieve nor decrease the liability of the Contractor.

II. **The first paragraph in Section 9.03, "Insurance Coverage Requirements" shall be amended to:**
     Without limiting Contractor's duty to indemnify, CONTRACTOR shall maintain in effect throughout the term of this Agreement a policy or policies of insurance with the following limits of liability.

     Commercial General Liability Insurance, including but not limited to premises and operations, including coverage for Bodily Injury and Property Damage, Personal Injury, Contractual Liability, Broad form Property Damage, Independent Contractors, Products and Damage of $1,000,000 per occurrence.

(Note: any proposed modifications to these general liability insurance requirements shall be attached as an Exhibit hereto, and the section(s) above that are proposed as not applicable shall be lined out in blue ink. All proposed modifications are subject to County approval.)

III. **The second paragraph in Section 9.04 "Other Requirements" shall be amended to:**
Each policy shall provide coverage for CONTRACTOR and each subcontractor, if any, performing work under this Agreement, or be accompanied by a certificate of insurance from each subcontractor showing each subcontractor has identical insurance coverage to the above requirements.

IV. **The third paragraph in Section 9.04, "Other Requirements" shall be amended to:**
Commercial general liability and automobile liability policies shall ability and automobile liability policies shall **provide an endorsement including the County of Monterey, its officers, and employees as Additional Insureds** with respect to liability caused, in whole or in part, by the Contractor's work, including ongoing and completed operations, and shall further provide that **such insurance is primary** insurance to any insurance or self-insurance maintained by the County and that the insurance of **the Additional Insureds shall not be called upon to contribute** to a loss covered by the Contractor's insurance. The required endorsement form for Commercial General Liability Additional Insured is ISO Form CG 20 10 or CG 20 10 in tandem with CG 20 37. The required endorsement form for Automobile Additional Insured endorsement is ISO Form CA 20 48 or equivalent form.

V. **The fourth paragraph in Section 9.04, "Other Requirements" shall be amended to:**
Prior to the execution of this Agreement by the County, Contractor shall file certificates of insurance with the County's contract administrator and County's Contracts/Purchasing Division, showing that the Contractor has in effect the insurance required within fifteen (15) calendar days after any change is made in any insurance policy, which would alter the information on the certificate then on file. Acceptance or approval of insurance shall in no way modify or change the indemnification clause in this Agreement, which shall continue in full force and effect.

VI. **The fifth paragraph in Section 9.04, "Other Requirements" shall be amended to:**
Contractor shall at all times during the term of this Agreement maintain in force the insurance coverage required under this Agreement and shall send, without demand by County, annual certificates to County's Contract Administrator and County's Contracts/Purchasing Division. If the certificate is not received by the expiration date, County shall notify Contractor and Contractor shall have fifteen (15) calendar days to send in the certificate, evidencing no lapse in coverage during the interim. Failure by Contractor to maintain such insurance is a default of this Agreement, which entitles County, at its sole discretion, to terminate this Agreement immediately.

VII. **Section 15.18 titled "Future Purchases" shall be added to read as follows:**
For the term of this Agreement, the County may purchase additional training and services from CONTRACTOR. County shall specify to CONTRACTOR the nature of the additional trainings required. CONTRACTOR shall thereafter issue a quote to COUNTY. If County concurs in writing, the quote shall be attached to any resultant Purchase Order as the agreed upon scope of work and price.