DEPARTMENT OF THE AIR FORCE
38TH CYBERSPACE ENGINEERING INSTALLATION GROUP (ACC)
TINKER AIR FORCE BASE OKLAHOMA

February 25, 2026

SUBJECT: Statement of Objective (SOO) Flightline Communication System Upgrade (FCSU) to replace legacy Fiber Optic (FO) transport equipment in support of Aviano AB flying mission.

1. INTRODUCTION.

Aviano AB desires a replacement for the current channel banks supporting the airfield. This SOO defines the requirement for the Contractor to Engineer, Furnish, Install and Test (EFI&T) into service, a replacement for legacy transport equipment for radio, voice, and data requirements at Aviano AB, Italy. This project consists of two distinct systems and shall replace the existing manufacturer discontinued Time Division Multiplexing (TDM) Channel Banks with a new fiber optic transmission system (FOTS). The FOTS shall be for a total of Seven (7) Facilities. See Table 1 for locations and general requirements. The Instrument Landing System (ILS) shelters consist of the Localizer (Loc) and Glideslope (GS). The Tactical Air Navigation (TACAN) is also on the Flight Line. The Ground/Air Transmitter/Receiver (GATR), Ramp Control (RAPCON), Tower and Alternate (Alt) Tower are on Aviano AB. All future references to Government Furnished Equipment shall be reflected as (GFE). All locations are on Aviano AB, IT.

Facility	User	Building	Requirements
Loc	ILS	13047	FXS and E&M (2W, 600Ω)
GS	ILS	13046	FXS and E&M (2W, 600Ω)
TACAN	ILS	1121	FXS and E&M (2W, 600Ω)
RAPCON	ILS	1307	FXO ,E&M (2W, 600Ω)
GATR Site	RADIO	1473	E&M (4W, 600Ω)
Control Tower	RADIO	1302	E&M (4W, 600Ω)
Alt Control Tower	RADIO	1023	E&M (4W, 600Ω)
RAPCON	RADIO	1307	E&M (4W, 600Ω)

Table 1. FOTS Locations and Requirements.

1.1. SCOPE.

1.1.1. Building's Floor Plan are provided in Attachment 3 SOO Table 1 Buildings Floor Plans. Reference to Bldg. 13046 and Bldg. 13047, these are shelters for which no floor plans are currently available. We are actively working to obtain their dimensions (length and width) so that offerors may have a general understanding of the available space. These dimensions will be promptly provided as soon as they become available in the near future. These are provided for the Contractor to properly plan their equipment locations and required cabling lengths. At each location, the Government shall provide space for the Contractor to EFI&T their equipment, cabling, Uninterruptable Power Supplies (UPS), 66

Blocks for analog interfaces, and any other required equipment. Before installing equipment in any cabinet, the Contractor is responsible for coordinating with Government representatives that the cabinet is properly grounded. If it is not, the Government shall take all required actions to ground the cabinet properly.

1.1.2. All Government analog circuits except for circuits ending at TACAN, Glideslope, and Localizer are terminated to 66 Blocks with 24 American Wire Gauge (AWG) copper pairs. The FOTS shall have a Copper interface for the end customer's analog circuit termination and a Fiber interface for connection to the location's OSP Fiber Optic Distribution Panel (FODP). The Contractor shall cable the FOTS Copper interfaces with Contractor EFI&T 66 Blocks mounted to each locations wall board. Contractor EFI&T FOTS equipment shall be interconnected across Aviano AB using existing GFE Single Mode (SM) fiber optic outside plant cabling. The Contractor shall EFI&T all Fiber Optic jumpers connecting their FOTS equipment to the GFE fiber within each of the facilities. All Contractor cables (power and communications) shall be supported every 18 inches by Contractor EFI&T conduit, raceway, and/or J Hooks. Note within the ILS shelters, limit wall penetrations as much as possible. The Government shall provide analog and fiber cross connection cut sheets and participate in all cross connections with the Contractor. The Contractor is responsible for all EFI&T cross connection efforts.

1.1.3. It is the Contractor's responsibility to test all installed equipment to ensure that they meet all standards and requirements. The Contractor shall correct any deficiency and provide the Government Representative (GR) all testing results. The Contractor shall provide an end-to-end test on all circuits to ensure that there is minimal interference and correct functionality.

1.1.4. The Contractor shall EFI&T all materials and perform all work to include making all cross-connection assignments and changes required to complete requirements as specified in this SOO. The Contractor shall provide a List of Materials to include all equipment to be installed as part of their proposal to the Solicitation. The Contractor shall coordinate all installations through 31 OSS and the GR.

1.2. Note, HQ AFFSA directs all flight lines have the same equipment to streamline maintenance and enhance flight line safety. **HQ AFFSA has directed all FOTS equipment utilized, shall be manufactured by TC Communications, Inc. Ergo, the Contractor shall only EFI&T TC Communications FOTS.**

1.3. This project consists of two parts, ILS and Radio:

1.3.1. ILS. Contractor shall EFI&T TC Comm FOTS supporting ILS locations (Glideslope, Localizer) and the Tactical Air Navigation (TACAN) Voice lines, Dial Up Modems, and 2W Modems to the RAPCON. **SOO Paragraph 3.1.**

1.3.2. Radio. Contractor shall EFI&T TC Comm FOTS supporting Control Tower, Alt Control Tower, and RAPCON access to GATR Radios. **SOO Paragraph 3.2.**

2. PROJECT SUPPORT REQUIREMENTS.

2.1. Project Requirement. For the areas identified above, the Contractor shall provide all management, personnel, equipment, tools, transportation, supplies, materials, supervision, and other incidentals necessary to EFI&T the FOTS. All materials provided shall be new and not refurbished.

2.2. Base Support Requirements. The Contractor shall identify any base support requirements (for example, laydown and storage areas) necessary to complete this project.

2.2.1. The Contracting Officer will assign a 31 CS individual to act in their stead during the installation and designate them as the Government Representative (GR). The Contractor shall coordinate all efforts with the GR. The GR shall process all Contractor efforts and requests with the Contracting Officer and appropriate base personnel.

2.2.2. The Government shall provide 100' square feet of secure and dry storage space for Contractor materials at Aviano AB – the GR shall identify the location. The GR is authorized to arrange transport of the shipment from the Transportation Management Office (TMO) B1029 to the SCX Storage Warehouse at B944. For all other transportation, the Contractor shall be responsible for loading, unloading, unpacking and transportation of all Contractor provided materials, test equipment, training documentation, etc. The Contractor shall be responsible for disposal of all packing materials and unused installation materials. If the GR concurs, the Contractor may turn these items over to the Government for use/disposal at no compensation to the Contractor. If the GR does not agree, the Contractor shall properly dispose of these items IAW the local environmental practices.

2.2.3. Shipping Address and the Project POC are:

Shipping Address	Point of Contact
31 LRS/LGRDDC BLDG 1029 UNIT 6108 Aviano AB ITALY APO, AE, 09604	Name: Lane McFaddin Email: lane.mcfaddin@us.af.mil Comm: +39 0434 307526 DSN: 314-632-7526

Table 2. Shipping Address and Point of Contact

The Contractor shall send an email to lane.mcfaddin@us.af.mil 5 days prior to shipment. The Contractor shall include tracking information within the email.

2.2.4. Stated work and associated products shall be performed at the UNCLASSIFIED level. The contractor shall work the Installation Access Request (IAR) with the GR. This process requires a minimum of 45 working days. The 31 OSS and/or GR will provide all escorts for Contractor personnel to accomplish installation and testing. Contractor personnel, while under escort in restricted/controlled areas, shall always obey the direction and orders of their escorts. During any time of an emergency, the Contractor personnel may be directed to vacate the area(s) and return later without additional costs to be incurred by the Government.

2.3. Restoration. The Contractor shall restore all disturbed property to the "as found" condition or better after installation. The Contractor shall comply with Base Grounds Restoration requirements.

2.4. Project Residue. The Contractor shall dispose all residues from this project off base and IAW Federal, Host Nation, and base environmental laws, and regulations. See 2.2.2 above.

2.5. Fire Suppression. Any wall penetration shall use adequate fire blocking to meet or exceed the current standard in place.

2.6. Excavation/Building Penetrations. All wall penetrations, including inside buildings, shall be restored to meet the required base fire ratings.

2.7. Labeling. The Contractor shall label all equipment and cables they install in accordance with ANSI/TIA/EIA-606-A-2002, ANSI/TIA-568-C.3 Optical Fiber Cabling Components Standards, and as directed by the GR.

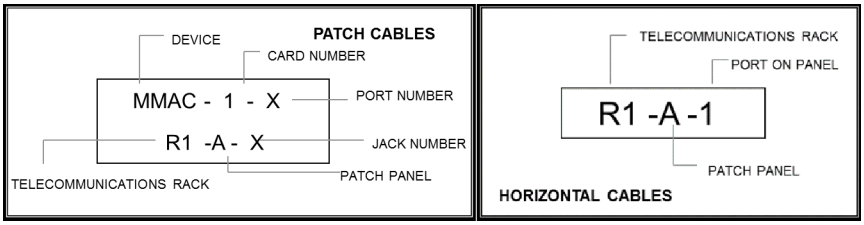

Figure 1: Patch and Horizontal Cable Label Examples

2.8. Redline Drawings. The Government shall provide building floor plans for Buildings 1023, 1302, 1307, and 1473. The Government shall also provide scaled Base Maps. These will be provided after contract award. The Contractor shall provide updated drawings at project completion (CDRL A001).

2.9. Outages. The Contractor shall be responsible for preventing any unscheduled outage (i.e. cutting or disabling any in-service cables or equipment). Contractor-caused, interruptions of communications capabilities shall be immediately identified to the GR. Such outages shall be Contractor worked non-stop until corrected, entirely at the Contractor's expense. The Contractor shall coordinate planned outages with the GR at least 10 calendar days in advance of the outage if the implementation necessitates disruption of service, (e.g., communications, electrical, or other utilities).

2.10. Hours of Operation. The Contractor shall perform the services required under this contract during normal duty hours 0730-1630 of the facility where work is being performed. Any other work schedule outside of normal duty hours requires GR approval. Part or all the facilities may be occupied during this effort. Contractor shall accomplish the installation with minimum disruption of daily office activities. If performance of work outside normal duty hours will be required to meet the scheduled dates stated above, include desired working hours in the Contractor's Proposal.

2.11. Holidays/Down Days. The Contractor shall not perform work under this contract on US Federal and IT/EU holidays or site-unique down-days unless expressly authorized by the GR.

American Holidays

New Year's Day: 1 January
Martin Luther King Jr. Day: 3rd Monday in January
President's Day: 3rd Monday in February
Memorial Day: Last Monday in May
Juneteenth: 19 June
Independence Day: July 4
Labor Day: 1st Monday in September
Columbus Day: 1st Monday in October
Veteran's Day: As stated on current Calendar Year
Thanksgiving Day: 4th Thursday in November
Christmas Day: 25 December

Italian Holidays

Epiphany: 6 January
Easter Monday: As stated on current Calendar Year
Aviano Patron Saint's Day: As stated on current Calendar Year
Liberation Day: 25 April
Italian Labor Day: 1 May
Republic Day: 2 June
Assumption Day: 15 August
Saint Francis Day: 4 October
All Saints Day: 1 November
Immaculate Conception: 8 December
Saint Stephen Day: 26 December

NOTE: American holidays falling on a Saturday are normally observed on the previous Friday. American holidays that fall on a Sunday are observed on the following Monday.

2.12. Final Acceptance. The Contractor shall schedule a final project walk-through with the GR. This should be scheduled at least 5 calendar days prior to acceptance. Final acceptance will be when the Contracting Officer signs off on the AF Form 747, thereby indicating Government Acceptance.

3. REQUIREMENTS.

The Contractor shall EFI&T the FOTS infrastructure as defined herein:

The following information is provided to assist the contractor in preparing responses to this solicitation and is for reference only. The contractor is responsible for verifying information during the pre-proposal conference.

3.1. ILS locations and the TACAN to RAPCON. This shall include all ILS locations consisting of one Localizer, one Glideslope and one TACAN back to the RAPCON. The FOTS shall provide interface for each circuit indicated in **Table 3**. For these locations, as stated above, the Contractor shall EFI&T FOTS equipment, UPS, Cables, etc. The Contractor EFI&T FOTS shall utilize existing GFE SM fiber connecting back to the GATR.

Location	Function	Crkt Type	Port Qty	Interface	Notes
13047	LOC	Dial Line	2	FXS	Site Phone, LOC Modem
		Modem	1	2W E&M	Status to RCSU
13046	GS	Dial Line	4	FXS	Flight Check (Voice, Modem), Site Phone, GS Modem
		Modem	1	2W E&M	Status to RCSU
1121	TACAN	Dial Line	3	FXS	Modem (TACAN 1, TACAN2), Site Phone
		Modem	2	2W E&M	Status to (RCSU, RSI)
1307	RAPCON	Dial Line	9	FXO	(LOC, GS, TACAN)
		Modem	4	2W E&M	(LOC, GS, TACAN)

Table 3. ILS and TACAN Circuit Interfaces.

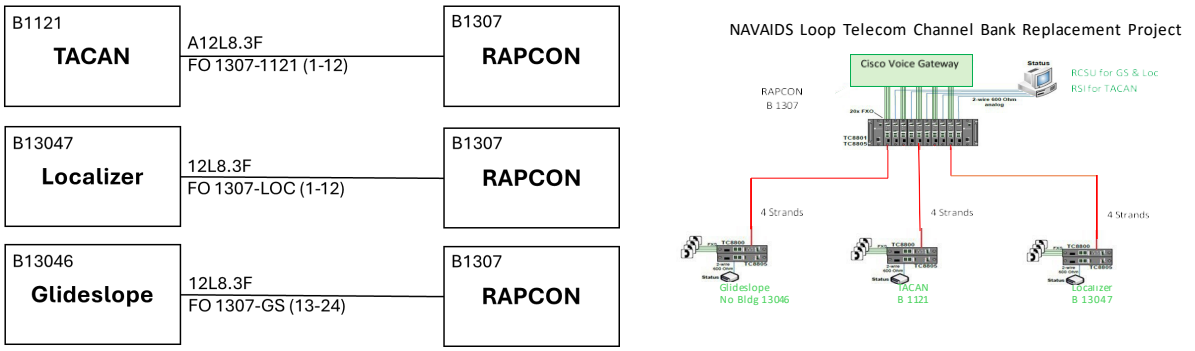

Figure 2. ILS and TACAN fiber connectivity to the RAPCON.

3.1.1. Localizer B13047. The Contractor shall EFI&T their FOTS and associated cabling on GFE Wallboard. All GFE SM fibers are terminated to GFE FODPs with SC connectors. Channel bank and power supplies shown shall be relocated by the Government to the adjacent desk. Shelf (17 ¼" wide x 9 ¾" deep) is available for reuse by the Contractor. The Contractor shall EFI&T a 1 KVA 110 VAC, 50 Hz UPS under/on the wallboard.

Figure 3. Localizer Shelter.

3.1.2. Glideslope B13046. The Contractor shall EFI&T their FOTS and associated cabling on GFE Wallboard. All GFE SM fibers are terminated to GFE FODPs with SC connectors. Note: Glideslope houses the Flight Check Radio. Channel bank and power supplies shown shall be relocated by the Government to the adjacent desk. Shelf (17 ¼" wide x 9 ¾" deep) is available for reuse by the Contractor. The Contractor shall EFI&T a 1 KVA 110 VAC, 50 Hz UPS under/on the wallboard.

Figure 4. Glideslope Shelter

3.1.3. TACAN B1121. The Contractor shall EFI&T their FOTS on a Government provided wall board. The wallboard will be 3ft by 3ft and mounted near the channel bank shown in the following picture. FODP (black box located above the channel bank) shall be relocated by the Government. The Contractor shall EFI&T a 1 KVA 110 VAC, 50 Hz UPS at this location.

Existing channel bank on wall

Cabinet to be removed by GR

Figure 5. TACAN Facility

3.1.4. The ILS and TACAN locations have Phone lines, dial up modems, and 2 Wire duplex modems called "STATUS and CONTROL" lines. The dial up modems and phone lines which shall be interfaced with Foreign Exchange Subscriber (FXS) modules. The STATUS and CONTROL lines are a 2W Duplex Modem Tip and Ring interface that is open communications with no signaling. These may be interfaced with 2 Wire E&M modules. In the RAPCON, the matching FOTS phone line Analog Modules shall be Foreign Exchange Office (FXO) modules. The matching STATUS and CONTROL line modules shall be 2 Wire E&M Modem modules respectively. The Contractor shall EFI&T these modules in their respective FOTS. Dial tone and ringing for the ILS Shelter's dial up modems and phone lines shall be provided by connecting to the Government VoIP gateway at 1307. All analog interfaces shall be terminated with Contractor EFI&T 24 AWG communications cables to match existing GFE cabling. The Contractor shall EFI&T their analog cables from the respective FOTS to each location's Wallboards and terminate to Contractor EFI&T 66 Blocks. All Contractor FOTS equipment shall interface to the GFE FODPs by Contractor EFI&T Fiber Optic patch cords.

3.1.5. RAPCON B1307. RAPCON is the termination point for Glideslope, Localizer, and TACAN. The matching FOTS at the RAPCON, shall be Contractor EFI&T in Rack **A05**. The Contractor shall EFI&T a 2 KVA UPS in the bottom of Rack **A05**. There are GFE 110 VAC 50 Hz outlets available in Rack **A05** for Contractor UPS connectivity. The Contractor shall EFI&T a 10 outlet PDU at 2U above the UPS for FOTS power connections. Note: This PDU supports FOTS for both ILS and Radio. The Contractor shall EFI&T a 66 block on the Wallboard and EFI&T all FOTS analog circuits to it. The cables shall be Contractor EFI&T, on GFE cable rack (under floor), from Rack to the Wallboard. Cable distance to the Wallboard is approximately 25 feet. The GR shall assist with identification of the required Cross Connections, but the Contractor is responsible for EFI&T of all cabling and cross connections. The GFE FODP (LC) for Glideslope, Localizer, and TACAN shall be located in Rack A05. The Contractor shall EFI&T the required Fiber Optic jumpers from their equipment to the FODP.

3.1.5.1. The Contractor shall connect to the GFE Voice Gateway in RAPCON B1307. The Contractor shall EFI&T all FOTS ILS and TACAN voice circuits to Contractor EFI&T Wall Board 66 Blocks.

Note: Rack A05 shall also house equipment as identified in Paragraph 3.2. The UPS and PDU is intended to service all Contractor furnished equipment at this location and is only identified by reference in that section.

3.2. RADIO INTERFACES. Contractor shall provide radio interfaces at the Control Tower B1302, Alt Control Tower B1023, RAPCON B1307, and GATR Site B1473. These four locations shall be configured in a ring architecture and connected via Government fiber. *If all radio interfaces are populated, the contractor shall install one additional 4 port radio interface blade at that location.* All connected radios are located at the GATR site.

Location	Function	TX	RX	Interface	Notes
1023	Alt Tower	10	10	4W E&M	Ground key on separate pair
1302	Tower	13	11	4W E&M	Ground key on separate pair
1307	RAPCON	15	15	4W E&M	Ground key on separate pair
1473	GATR	28	28	4W E&M	Ground key on separate pair

Table 4. Port Count

Signal Flow:
GATR ←→ RAPCON 15 channels*
GATR ←→ Tower 13 channels * **
GATR ←→ Alt Tower 10 channels (duplicates of the Tower feed, not new radios)

* The GATR has Priority Audio Switches (PAS). Five radios are connected this way. The PAS is fed from Tower on the priority port, and RAPCON on the other.
** Two GATR radios are Transmit Only

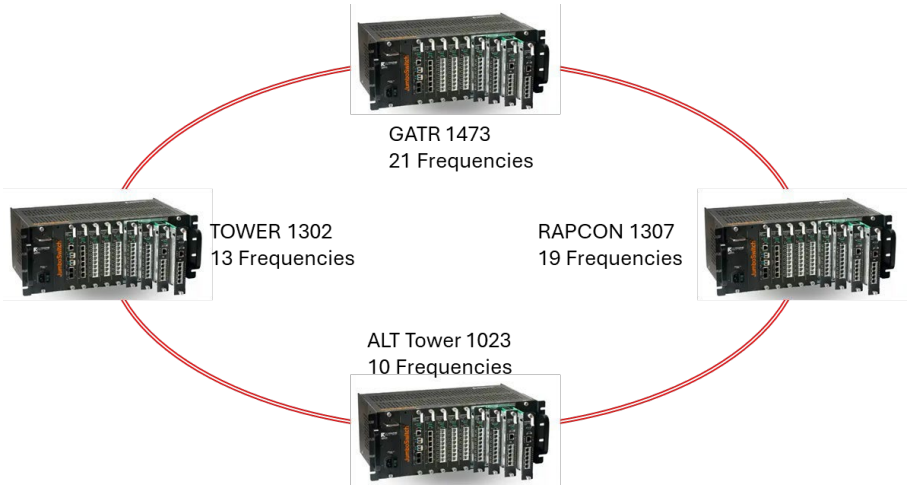

Figure 6. Top Level Radio Overview

3.2.1. GATR B1473.

GATR houses the primary General Dynamics CM 300(v)2 radios. The radios shall be interfaced with three pair (TX, RX, and Ground Key). Note: Six of these radios are connected through an Automatic Lock-Out Device (ALOD) also called a Priority Audio Switch (PAS) made by DCB (http://www.dcbnet.com/). Manual: https://www.dcbnet.com/manuals/pas_manual.pdf
For each radio, the ALOD sits between the existing channel bank ports for Tower and RAPCON and the assigned radio. The TOWER has priority through these devices. These devices switch transmit audio only.

Rack B01 is reserved for the contractor to use for this effort. The Contractor shall EFI&T a 2 KVA, 115VAC, 50 Hz UPS at the bottom of the rack and install a 10 port PDU. Connect all Contractor FOTS equipment via the PDU.

The Contractor shall provide a shelf to house the management computer running the TCView management software for the FOTS system.

The contractor shall provide, load, and configure the Government provided computer with their management software and install it in Rack B01.

The contractor shall install fiber jumpers to the two Government provided FODP.

The Contractor shall utilize the back of Rack B01 for installation of 66 blocks connecting to the Governments 66 Blocks (B series) located on the back of rack 1501. Note: There is a WAVE system also integrated into these punch blocks. Contractor shall preserve these WAVE system connections.

Note: Rack 1501 houses the four ALODs used to provide override/priority on transmit to Tower radios.

Rack 1501, rear

Rack 1501, front

Rack B01, front

Figure 7. GATR Racks

3.2.3. Control Tower B1302 Level 4 Radio Interfaces.
Control Tower uses the Frequentis System to interface with radios. The Frequentis System provides ground on the Keying Pair when it communicates with the radios. The Contractor shall EFI&T an end-to-end FOTS for supporting the Control Tower's access to radios identified below.

The Contractor shall utilize the Government provided rack (FPI 5101) for installation of FOTS equipment.

The Contractor shall EFI&T a 2 KVA, 115VAC, 50 Hz UPS at the bottom of the rack and install a 10 port PDU. Connect all Contractor FOTS equipment via the PDU.

The Contractor shall EFI&T a 66 block on the wallboard and EFI&T all FOTS analog circuits to it. Distance to the Wallboard is approximately 25 feet. The GR shall assist with identification of the required Cross Connections, but the Contractor is responsible for EFI&T of all cabling and cross connections. Overhead cable rack and conduits are available for securing cable.

Control Tower's GFE FODPs for connecting to the Transmitter Site, are on a wallboard adjacent to FPI 5101. Contractor shall EFI&T the required Fiber Optic jumpers from their FOTS to the GFE FODPs. The GFE FODPs terminate the OSP fiber with LC connectors.

3.2.4. RAPCON B1307.
The matching FOTS at the RAPCON, shall be Contractor EFI&T in Rack **A05**. The Contractor shall utilize the same UPS/PDU identified and provided under Paragraph 3.1.5.

The Contractor shall EFI&T a 66 block on the Wallboard and EFI&T all FOTS analog circuits to it. The cables shall be Contractor EFI&T, on GFE cable rack (under floor), from Rack to the Wallboard. Cable distance to the Wallboard is approximately 25 feet. The GR shall assist with identification of the required Cross Connections, but the Contractor is responsible for EFI&T of all cabling and cross connections.

The Contractor shall EFI&T the required Fiber Optic jumpers from their equipment to the FODP.

Note: Rack A05 shall also house equipment as identified in Paragraph 3.1.5. The UPS is intended to service all Contractor furnished equipment at this location and is only identified by reference here.

3.2.5. Alt Control Tower B1023, Room 14.
The Contractor shall EFI&T their FOTS radio interfaces (10 total), 2KVA UPS, cabling, etc. in the provided cabinet. The Contractor shall EFI&T their analog cables, 66 block, and fiber patch cables to the GFE wallboard and FODP within the GFE cabinet. Contractor shall EFI&T their FOTS analog terminations with 24 AWG cable to a Contractor EFI&T 66 Block mounted on the GFE wall board. The Contractor shall connect their FOTS equipment to the Government provided FODP. The GR shall provide circuit cut sheets reflecting where the radio transmitter Voice and Keying pairs are located on their existing 66 Blocks. The GR shall also provide the OSP fiber strands cut sheets.

3.2.5.1 There will be GFE 115VAC, 50 Hz power available for the Contractor in the GFE 42U cabinet. The Contractor shall EFI&T a 2 KVA, 115VAC, 50 Hz UPS with a 10 port PDU at the

bottom of the rack and connect it to the GFE 115VAC, 50 Hz outlet. Connect all Contractor FOTS equipment via the PDU.

3.3. Contractor Furnished (CF) Materials and Network Specific Warranty. The Contractor shall furnish all materials for this project except as identified. The Contractor shall supply Commercial-Off-the-Shelf (COTS) end-item system components required for contract performance wherever possible. The Contractor shall identify all materials or equipment required for the project in their Proposal. The Contractor shall list the manufacturer and part number of the proposed material in the Proposal. Unless otherwise specified, the Contractor shall provide copies of existing COTS technical or equipment manuals and warranty documentation and procedures for Contractor-furnished end-item system equipment maintenance. The Contractor shall identify and conduct system training for Government personnel to ensure proper operation and maintenance of the system(s). See paragraph 5.5.

3.4. Physical Inspection. The physical inspection consists of the Contractor performing a physical inspection of each location where installation is required. At each location, the Contractor shall verify the specified placement of the equipment to ensure the installation shall meet required safety standards. The Contractor shall verify that each location shall have proper rack space, proper mounting of equipment, rack grounding, and proper primary power. An installation test report IAW CDRL A005 shall be provided after physical inspection is completed. Results shall comply before component validation and operational tests are run.

3.5. Component Validation. The Contractor shall perform component validation by testing all the individual Contractor EFI&T FOTS Hardware and Software, UPSes, 66 blocks, grounding, cables, and other related equipment to ensure they are working correctly. The Contractor shall test components prior to assembly and installation before continuing to Operational Test. This shall include the Optional Spare Modules identified in paragraph 3.11. below. An installation test report IAW CDRL A005 shall be provided after component validation is completed.

3.6. Operations Test. The operations test shall consist of testing the newly installed FOTS. The new installation shall provide connectivity for the circuits. This shall be the real-world test to ensure functionality of the new installation and equipment related to this project. An installation test report IAW CDRL A005 shall be provided after operational test is completed.

3.7. Grounding and Bonding. The EFI&T equipment shall be grounded and bonded to the building ground. All grounding and bonding shall follow J-STD-607-A.

3.8. Recommended Spares. As an option, the Contractor shall propose the TC Communication manufacturer recommended spares package and two each spare FOTS. Each hardware item shall be costed individually. This shall be identified as a separate Contract Line-Item Number (CLIN) in the Contractor's proposal. If the Government executes this CLIN, then during the testing phase IAW CDRL A005, the Contractor shall test each spare module to ensure proper functionality. Once testing is complete all modules shall be returned to original individual packaging and turned over to the GR.

4. MANAGEMENT.

4.1. Schedule. The Contractor shall provide a complete milestone schedule that denotes major activities to include time-phased start and completion dates for this project and sub-projects associated with the installation of the components and systems. (CDRL A002).

4.2. In-Brief. The Contractor shall conduct an in-brief with the GR or designated representative and other site personnel before the start of implementation. The in-brief shall familiarize the customer with the purpose of the Contractor's visit and coordinate the project schedule (e.g., arrange for required escorts; QAP schedule; etc.).

4.3. OutBrief. After system cutover, the Contractor shall conduct an out-brief with the applicable 31 OSS and 31 CS site personnel before the finalizing the AF Form 747. The GR shall arrange the meeting place, date, and time. The out-brief shall address all Government concerns and provide clarification/resolution on any outstanding issues.

4.4. Project Manager or Site Point of Contact (POC) on Site. The Contractor shall designate the Contractor's on-site team leader and alternate(s) as the Site POC for this project in their Access Request Letter. They shall oversee all facets of the project. The Site POC or alternate(s) shall be on site during duty hours until project completion. The Site POC shall be the interface for all work site communications with the Government, including quality, safety, and discrepancy matters.

4.5. Quality Assurance (QA). The Contractor shall provide quality assurance support for the entire life of the project. This support shall assist the Government representative in performing random spot checks and in performing the system acceptance tests. Contractor QA shall be responsible for identifying deficiencies and/or discrepancies throughout the life of the project to the GR. A weekly report (soft copy) will be submitted indicating project progress/statuses and listings any deficiencies/discrepancies found and actions to correct them. (CDRL A003).

4.6. Compliance. The Contractor shall remain in compliance with all Federal, State, and base security and safety laws, regulations, policies, and requirements.

4.7. Clean up. At day's end, the installer shall remove all debris and surplus materials from the workplace. Equipment and materials required to complete the work effort may remain on site if they are organized/stored in a manner that does not cause a safety hazard. This does not include existing Loop Channel Bank equipment.

4.8. Service Outages. The Contractor shall coordinate planned outages with the GR at least ten workdays in advance of the outage if the implementation necessitates disruption of service, (e.g., communications, electrical, or other utilities).

4.9. Environmental Management. The Contractor shall comply with the most stringent environmental Federal, EU, and local laws and regulations. and Air Force policies, instructions, and plans. The Federal Government is not exempt from compliance with environmental regulations. The Contractor shall maintain an awareness of changing environmental regulatory

requirements to avoid environmental deficiencies for activities on Aviano AB. The Prime Contractor shall ensure their sub-Contractors (if any) comply with these specifications.

4.10. Walk-Through. The Contractor shall schedule a final project walk-through of all work completed prior to close out, with the GR. This shall be scheduled for at least 72 hours prior to the event.

4.11. Personnel Requirements. All work shall be performed by, and all equipment shall be furnished and installed by a certified Telecommunications Contractor.
All supervisors and installers assigned to the installation of this system or any of its components shall have factory certification from each equipment manufacturer that they are qualified to install and test the provided products.

The Project Manager, Site POC, and respective alternate(s) shall be able to read, write, speak, and understand English. All reporting and documentation shall be in English. The Contractor's technical team shall be Certified to EFI&T TC Comm FOTS. In their proposal, the Contractor shall confirm their personnel have the required certifications.

4.12. Base/Installation Access. The Contractor shall coordinate with the site GR to obtain base access. The Contractor shall process and provide a site Access Request letter, to the GR, within 5 calendar days after contract award. This Access Request letter shall identify the names (as shown on the individual's Passport or driver's license), Passport or driver's license numbers, the state of issue, birth date, and citizenship of the personnel who will be performing work under this SOO. It shall also include the company name, address, phone number, contract number, project start date and end date. If required by the GR, the Contractor shall provide identification badges for their employees. All Contractor personnel shall wear these badges while on duty on the Government site. The badges shall identify the individual, company name, and be clearly and distinctly marked as Contractor and be IAW base regulations.

4.12.1 Duration of Visit
The requirements for visiting Aviano AB vary depending on the length of the visit being less than 90 days or greater than 90 days. Copies of passports, social security numbers, and other personally identifiable information will be required. Lead time for both processes is six weeks.

4.12.2 Less than 90 days
For site visits lasting fewer than 90 days, an Installation Access Request (IAR) is required. The contractor shall complete this government-provided form six weeks prior to travel. This allows for any corrections, 31 CS Commander's signature, plus the 30-day lead time

4.12.3 Greater than 90 days
For site visits lasting more than 90 days, a USAFE IMT Form 79, Request for Base Entry Identification, is required. The contractor shall complete this government-provided form six weeks prior to travel. This allows for any corrections, 31 CS Certifying Officer's signature, plus the 30-day lead time to route to the proper ITAF authorities.

4.13 Contractor Travel

The contractor shall travel to Aviano AB, as needed:

a. During the performance of this contract to attend system testing, acceptance, and training if the contractor does not have a presence within the Aviano, Italy region.

b. To conduct the final full system assessments after completion of the requirement.

4.13.1 Joint Travel Regulation (JTR)
The contractor will be authorized travel expenses consistent with the substantive provisions of the Joint Travel Regulation (JTR) and the limitation of funds specified in this contract. All travel requires government approval/authorization and notification to the GR.

5. DELIVERABLES.

5.1. List of Deliverables. All deliverables are subject to Government acceptance and approval. They shall meet professional standards and the requirements set forth in this SOW. All deliverables shall be produced using recommended software tools/versions as accepted by the Government. The Contractor shall submit the following deliverables:

CDRL	Data Item Title	Data Item Description Number
A001	As Built	DI-MISC-81489
A002	Installation Plan	DI-DRPR-81242
A003	Training Materials	DI-MISC-81459B
A004	Schedule	DI-MGMT-80507C
A005	Test Report	DI-QCIC-81891
A006	Test/Cutover Plan	DI-QCIC-80553A

Table 5. Deliverables

5.2. Cutover Plan. The Contractor shall provide a detailed cutover plan IAW CDRL A006 to delineate how the transition shall be implemented. This plan should outline how the system shall be placed into service and clearly specify how the newly installed systems shall connect to the existing base systems IAW CDRL A006.

5.3. Acceptance Test Plan. The Contractor shall provide a detailed acceptance test plan of the installation covering all aspects of the installation and demonstrate the acceptability of the work on meeting the Government's requirements. The Contractor shall perform all tests and document results of tests with Government's witnesses overseeing the Acceptance testing IAW CDRLs A005 and A006.

5.4. Project Schedule. IAW CDRL A004, Ten days after Contract Award, the Contractor shall provide the GR a detailed schedule reflecting all relevant project dates beginning with Materials shipment and concluding with signing of the AF 747 with 31 CONS. The Milestones shall delineate what Radio and Flightline FOTS tasks are. If any dates cannot be met, the Contractor shall identify these, to include the cause, to the GR within 1 day of revelation. The Contractor shall work with the GR and base personnel to resolve issues and reschedule impacted tasks. Milestones that shall be reflected also include, but not limited to;

5.4.1. Contractor's Installation Personnel's arrival date.
5.4.2. Installation Start Date.
5.4.3. Contractor's In-Brief.
5.4.4. Breakout by building, projected physical installation start and completion dates.
5.4.5. Testing start and completion dates.
5.4.6. Cutover.

5.5. As-Built Drawings. The Contractor shall provide as-built drawings for the installed equipment to include where and how they connect/interface with each other and existing base systems IAW CDRL A001.

5.6. Training. The Contractor shall provide operational hands-on training for 5 Government Personnel. The Contractor shall provide all training materials (slides, Technical Documents, Manuals, etc.) IAW CDRL A003. The training shall cover complete capabilities of the FOTS, and UPSes. The training shall also provide Operations and Maintenance training for the complete FOTS so Government personnel shall be capable of adequately maintaining and providing future additional \voice, data, and radio interfaces. This training shall cover the TC Comm FOTS Hardware/Software, and UPSes. The GR shall arrange a training space for the trainees and Contractor trainer.

5.7. Testing Requirements. The Contractor shall perform testing and inspections of all systems solutions to ensure the technical adequacy and accuracy of all work, including reports and other documents required in support of that work. The Contractor shall conduct on-site testing in accordance with TC Comm's and UPS Manufacturer's installation manuals, practices, and the appropriate vendor's test procedures. The Contractor shall include testing the redundancy and failover functionality of the Contractor EFI&T TC Comm FOTS. The Contractor shall provide a detailed test plan IAW CDRL A006.

5.7.1. When any system, subsystem, component, or requirement test fails to meet the requirements of the test, Government acceptance shall be withheld until such time as the cause of the failure is corrected to the Government's satisfaction.

5.7.2. After appropriate corrective action has been taken, all tests including those previously completed related to the failed test and the corrective action shall be repeated and successfully completed prior to Government acceptance. Pre-cutover audits shall consist of verification of all testing completed by the Contractor such that the system is deemed ready for functional cutover. As part of this audit, any engineered changes, or approved waivers applicable to the installation shall be reviewed and agreed upon between the Contractor and the GR. Post-cutover audits shall verify that all post-cutover acceptance testing has been performed satisfactorily in accordance with the standard practices and identify those tests, if any which have not been successfully completed and shall be re-tested prior to acceptance. The Contractor shall do all testing in accordance with the acceptance test plan mentioned above. The Contractor shall provide a logical test process that minimizes interruptions and avoids sustained downtime and presents a contingency procedure to be implemented in the event of systems failure during testing.

5.7.3. The Contractor shall furnish all test equipment and personnel required to conduct all required testing. The Contractor shall document all test results in an installation test report IAW CDRL A005. During the testing phase, the Government reserves the right to perform any of the Contractor performed inspections and tests to assure solutions conform to prescribed requirements. The Contractor shall provide on-site support during the acceptance testing. The

Test Report(s) shall be provided to the Government no later than 10 days after test(s) have been completed.

5.8. System Acceptance. Acceptance of the FOTS shall be dependent upon successful completion and documentation of tests in the Contractor submitted/Government approved test plan IAW CDRL A006 and test report CDRL A005. Screen shots (if applicable) shall serve to document successful test results.

6. WARRANTY:

The Contractor shall provide a one-year warranty or manufacturer's standard commercial warranty, whichever is longer. The Contractor shall also provide a one- year workmanship warranty. The warranty period shall start from the date of system and or project acceptance (signing of AF Form 747 by the Contracting Officer). The Contractor shall provide hardware replacement, major and minor software upgrades for one year for all TC Comm and UPS equipment. The Contractor shall transfer warranties to the Government.

7. PERFORMANCE:

7.1. Period of Performance. The Contractor shall have 120 days from contract award to complete all facets of the project including final walk thru with the Government representative.

7.2. Place of Performance. The place of performance is Aviano AB, Italy.

7.3. Hours of Work. The Contractor shall routinely work during normal operating hours of the site. Monday through Friday (0730-1630 hrs.), excluding Federal Holidays. Any site work requested by the Contractor to be performed outside of normal duty hours shall be coordinated with the GR at least 10 working days in advance.

8. GOVERNMENT FURNISHED INFORMATION AND STANDARDS.

The Contractor shall comply with all base installation standards. The Contractor shall comply with all commercial codes and standards where applicable in the performance of this contract. It is the Contractor's responsibility to identify and obtain applicable standards and best commercial practice documentation. Should a conflict arise between this SOW and any commercial standard referenced, the Contractor shall make the Government aware of the conflict. The Government shall determine which standard applies.

8.1. Reference Standards.

NUMBER	TITLE	WEBSITE OR LOCATION
FIPS	Federal Information Processing Standards Publications	https://csrc.nist.gov/publications/fips
BICSI	Building Industry Consulting Service International, Inc. (BICSI)	http://www.bicsi.org/
NFPA 70 (2020)	National Fire Protection Association (NFPA), National Electric Code (NEC)	http://www.nfpa.org/
ANSI	American National Standards Institute (ANSI) and Internet Standards Resources	http://www.ansi.org/
TIA	Engineering: TIA Standards See Commodity Specific Appendices and Individual Task Orders	http://www.tiaonline.org/
ANSI/TIA-569-E (2019)	Commercial Building Standards for Telecommunications Pathways and Spaces	http://www.tiaonline.org/
ANSI/TIA-7060 (2008)	Residential Telecommunications Cabling Standard	http://www.tiaonline.org/
EIA/CIA-310-E (2005)	Racks, Panels and Associated Equipment	http:/global.ihs.com/
ANSI/NEMA-FB 1 (2012)	Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing (EMT) and Cable	http://www.nema.org
ANSI/EIA-310-D	Cabinets, Racks, Panels, and Associated Equipment	http://www.server-racks.com/eia-310.html

ANSI/TIA/EIA-606-C – (2017)	Administration Standard for the Telecommunications Infrastructure of Commercial Buildings	www.flexcomm.com/library/606aguide.pdf
ANSI-J-STD-607 – D (2019)	Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications	http://www.ansi.org/
BICSI TDMM Manual - (2006, 11th Edition)	Building Industries Consulting Services International Telecommunications Distribution Methods (TDM) Manual	https://www.bicsi.org/default.aspx
NEMA TC 2-(2013)	Electrical Polyvinyl Chloride (PVC) Tubing and Conduit	http://www.nema.org/Standards/ComplimentaryDocuments/Contents%20and%20Scope%20NEMA%20TC%202-2013.pdf
OSHA CFR 29 Part 1910-268 -	Telecommunications	https://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=1910
TIA 526-14-B (2010)	Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant	http://www.tiaonline.org/
REA TE&CM 643 Form 515C	Rural Electrification Administration (REA)	http://www.rurdev.usda.gov/supportdocuments/utp_bulletins_1753f-152.pdf
ANSI/TIA-568-.1.E (2020)	Commercial Building Telecommunications Cabling Standard	http://www.tiaonline.org/
ANSI/TIA-568-.2.D (2018)	Balanced Twisted-Pair Telecommunication Cabling and Components Standard	http://www.tiaonline.org/
ANSI/TIA-568-.3.D (2016)	Optical Fiber Cabling Components Standard	http://www.tiaonline.org/
ANSI/TIA-7060 (2008)	Residential Telecommunications Cabling Standard	http://www.tiaonline.org/
ANSI/TIA-598-C (2005)	Optical Fiber Cable Color Coding	http://www.tiaonline.org/

9. SAFETY.

The Contractor shall be responsible for complying with all Federal, State, and Base safety guidelines.

9.1. Accident/Incident Reporting and Investigation. The Contractor shall record and report all available facts relating to each instance of accidental damage to Government property or injury to either Contractor or Government personnel to the Base Safety Office and GR. The Contractor shall secure the scene of any accident and wreckage until released by the accident investigative authority through the Contracting Officer. If the Government elects to investigate the incident, the Contractor shall cooperate fully and assist the Government personnel until the investigation is completed.

9.2. Potential Problems. The Contractor shall determine any potential problems with the projected work in areas that may contain asbestos, hazardous materials, and hazardous wastes and local procedures to be followed in the event such problems are encountered.

9.3. Disposal/Reporting. The Contractor shall comply with Federal, EU, State, and Base procedures concerning the use, disposal, or reporting of hazardous materials.

9.4. Hazardous Material Identification. The Contractor shall submit Material Safety Data Sheets (MSDS) for any hazardous materials (paints, solvents, cleaners, encapsulating compound, etc.) to be used in performance of the contract. The Contractor shall file the MSDS(s) with the Base Environmental Management Office prior to using hazardous material. The GR may assist with this effort.

9.5. Identification / Marking. The Contractor shall clearly mark all Contractor Furnished Packaging (CFP) with their company's name, contract number, and project number. The Contractor shall place an easily read, very visible, sign (minimum 8.5" x 11") on large containers, construction equipment, or un-manned rental vehicles while on the Government installation indicating the company name; contract/task order number; project title; and both the Contractor and Site POC's names and local telephone numbers.

9.6. Construction Equipment. The Contractor shall provide construction equipment (e.g., man lifts, etc.) required to support implementation. The Contractor shall be responsible for transportation of project materials and construction equipment to/from the work site, as well as their security.

9.7. Transportation and Storage of Material/Equipment. The Contractor shall transport and store all Contractor Furnished Materials (CFM) and Contractor Furnished Equipment (CFE) required for completion of the contract requirements

9.8. Contractor shall be responsible for obtaining all necessary cards, passes, badges, buttons, decals, or other items required for access to the areas in which the work will be performed. Contractors will be required to apply for vehicle and individual identification media at the Security Forces Squadron, Pass and ID section. Upon completion or termination of the contract or an individual's employment on the contract, the contractor shall retrieve all identification and access media issued and surrender it to the Security Forces Squadron, Pass and ID Section.

9.9 Contractors shall comply with all Aviano AB policies regarding entry into the installation, rules of the road, compliance during contingency operations, and photography. The contractor's employees are authorized for the installation for the purpose of work only and are not authorized in other facilities, areas, or buildings without proper prior authorization

9.10. The contractor shall safeguard public and government personnel, property, and equipment, and avoid interruption of government operations. The contractor will report accidents or losses to the KO as specified in relevant regulations and standards. Whenever the contractor becomes aware of serious or imminent danger to government, civilian or contractor personnel, the contractor shall take immediate corrective action. Prior to starting mobilization or any work activities, all contractor personnel shall receive a safety briefing from Wing Occupational Safety Office (SEG).

9.11. Eagle Eyes Training: The contractor and all associated sub-contractors shall brief all employees on the Eagle Eyes program (training standards provided by the requiring activity Anti-Terrorism Officer (ATO). Eagle Eyes training will be used to inform employees of the types of behavior to watch as well as instruct employees on how to report suspicious activity to the appropriate personnel. Such as people taking pictures, watching them and what buildings have access control, etc. The government will provide an Eagle Eyes training package to the contractor and associated sub-contractor for execution upon acceptance of a contract award. Eagle Eyes training shall be completed within 30 calendar days of contract award and prior to commencing work performance. Training results (number of employees trained) are to be reported to the MP prior to work performance.