

**Statement of Work for Voice Recorders
At
National Aeronautics and Space Administration
Armstrong Flight Research Center**

1. Scope

The Research Facilities & Engineering Support Services (RF&ESS) contractor, InuTeq, LLC, has prepared this Statement of Work (SOW) on behalf of the National Aeronautics and Space Administration (NASA) Armstrong Flight Research Center (AFRC). This effort is to upgrade the existing legacy Stancil voice recorder system to a system that is compatible with current technology while retaining a backwards compatibility with the existing Stancil voice recorder data archives. The objective of this effort is to acquire two (2) systems with the capability to record voice communications at NASA AFRC and that can be sustained for foreseeable future mission operations.

2. Background

The RF&ESS is a support contract for NASA AFRC. One of the areas in which the RF&ESS contract supports is the NASA AFRC Dryden Aeronautical Test Range (DATR) Communications (COMM) Facility. The DATR COMM group supports 24/7 (24 hours a day, 7 days a week) missions. Communications for all NASA AFRC operations are mission critical and are an integral part of all mission activities at NASA AFRC. The voice communications system is the primary medium for coordination among the mission ground control, flight crew, ground crew, mission control room personnel, and any other personnel associated with the mission. All voice communications in support of the mission are recorded by the voice recorder system and can be played back as desired or as needed, such as in the event of an accident investigation. The voice recording system must be robust and reliable to ensure that operations are not impacted by failures of the voice recorder system.

3. Applicable Documents

- EIA-310 for cabinets, racks, panels, and associated equipment
- NASA Policy Directive (NPD) 8730.5B, NASA Quality Assurance Policy

4. Requirements

4.1. Task Requirements

The vendor shall functionally test and deliver working operational hardware components that contain all the features and meets (or exceeds) all of the performance requirements as defined by the requirements in this section.

The vendor shall provide complete system documentation, including theory of operation, system block diagrams, and specifications for the delivered equipment. System descriptions including hardware components, hardware interfaces, software developments, software interfaces, data flow, power systems, and layout of operator console and displays shall be detailed in the provided system documentation. System documentation shall be reviewed and approved by the RF&ESS contractor and the Government. This system documentation may be included in the vendor provided operator's manual. The vendor shall provide a comprehensive operator's manual to guide on how to operate the equipment: the hardware, the software, and any interfaces (hardware interfaces, software interfaces (including graphical user interfaces (GUI)), etc.). The operator's manual shall also include version description information of the firmware and software that is utilized in the equipment.

4.2. Voice Recorder Requirements

The vendor shall deliver two (2) identical voice recorder systems that each meet the following requirements:

- 4.2.1.** The voice recorder system shall be backwards compatible with the existing legacy Stancil voice recorder's data archives, which are stored at the NASA AFRC DATR COMM facility.
 - 4.2.1.1.** The backwards compatibility shall include the voice recorder system's ability to access and search the existing legacy voice recorder data archives via three criteria: channel names, date stamps, and time stamps – any of the three criteria, to include all three criteria items simultaneously for searching.
 - 4.2.1.2.** The legacy voice recorder data archives will be on a separate hard disk drive (HDD). In addition to accessing and searching the legacy voice recorder data archives, the backwards compatibility shall include the voice recorder system's ability to read and play the legacy voice recorder data archives.

- 4.2.2.** The voice recorder system shall support 96 channels.
 - 4.2.2.1.** Each channel shall be individually user-defined named (e.g., User Channel Name 1).
 - 4.2.2.2.** Each channel shall be recorded as a separate file.
 - 4.2.2.3.** Each channel's recorded file shall be date stamped.
 - 4.2.2.4.** Each channel's recorded file shall be time stamped.

- 4.2.3.** The voice recorder's system chassis shall be a maximum of four (4) rack units (R.U.).
 - 4.2.3.1.** The voice recorder's system chassis shall contain two (2) external, removable 2.5 inch HDD bays.
 - 4.2.3.2.** The voice recorder's system chassis shall be a width of exactly 19 inches.
 - 4.2.3.3.** The voice recorder's system chassis shall be a maximum depth of 27 inches.

- 4.2.4.** The voice recorder system shall utilize one of the following operating systems: Red Hat Enterprise Linux 6 or Windows Server 2012 R2, 64-bit, English.

- 4.2.5.** The voice recorder system shall contain 32 gigabytes (GB) (4x8GB) of 2133MHz DDR4 random access memory (RAM).

- 4.2.5.1.** The RAM shall be in the form factor of four (4) sticks of eight (8) GB per stick (4x8GB) of RAM.
- 4.2.6.** The voice recorder system shall contain two (2) HDDs in a SATA configuration, which fit the external, removable 2.5 inch HDD bays as designated in 4.2.3.1.
 - 4.2.6.1.** The voice recorder system HDDs shall utilize the SATA connector type.
 - 4.2.6.2.** Each of the two (2) voice recorder system HDDs shall be four (4) terabytes (TB) in size.
 - 4.2.6.3.** Each of the two (2) voice recorder system HDDs shall be 7200 revolutions per minute (rpm) speeds.
 - 4.2.6.4.** The two (2) voice recorder system HDDs shall be in a RAID-1 configuration.
- 4.2.7.** The voice recorder system shall contain an internal CD ROM/DVD ROM DVD+/-RW/Dual Layer Blu-Ray R/W, SATA drive.
- 4.2.8.** The voice recorder system shall contain six (6) USB ports.
 - 4.2.8.1.** Two (2) of the six (6) USB ports shall be on the front of the system chassis.
 - 4.2.8.2.** The two (2) USB ports on the front of the system chassis shall be USB 2.0 speeds.
 - 4.2.8.3.** Four (4) of the six (6) USB ports shall be on the rear (back) of the system chassis.
 - 4.2.8.4.** The four (4) USB ports on the rear (back) of the system chassis shall be USB 2.0 speeds.
- 4.2.9.** The voice recorder system shall have dual power supplies.
 - 4.2.9.1.** The dual power supplies shall be hot-swappable.
 - 4.2.9.2.** The dual power supplies shall be 110 AC.
- 4.2.10.** The vendor shall provide the AC power cables and connectors required to power and operate the voice recorder system.
- 4.2.11.** The voice recorder system's recording interface shall be T1 (D4/B8ZS). This type of interface is capable of integrating with the existing NASA AFRC DATR COMM equipment.
- 4.2.12.** The voice recorder system's recording software shall utilize a standalone GUI.
 - 4.2.12.1.** The voice recorder system's standalone GUI shall be able to view all 96 channels on one individual GUI display (i.e., all 96 channels are viewed on the same display page; an operator shall not need to scroll through different display screens to view all 96 channels).
 - 4.2.12.2.** All 96 voice recorder channels shall have real-time recording visual indications on the GUI display.
 - 4.2.12.3.** The voice recorder system's standalone GUI shall provide an instant playback method.
- 4.2.13.** Without any user interaction, the voice recorder system shall automatically commence recording any individual channel once there is voice activity on a respective channel.

- 4.2.14.** The voice recorder system's saved data archives shall be searchable.
- 4.2.14.1.** The voice recorder system's standalone GUI shall be utilized for searching through the data archives when playing back voice recordings.
- 4.2.14.2.** The voice recorder system's search methodology for playback shall utilize any of the following three (3) search criteria: channel name, date, and time. The search criteria may include any or any combination of the three (3) search criteria, up to and including all three (3) of the search criteria simultaneously.
- 4.2.15.** The voice recorder system shall save the voice recording files as .WAV or .MP3 files.
- 4.2.16.** The voice recorder system shall produce audible alarms. Examples of such alarms, but not limited to just these examples, may include alarms for system errors, HDD failures, HDD maxed capacity, system not recording a channel, and more.
- 4.2.17.** One (1) operating system CD (or equivalent, like DVD) per voice recorder system shall be included.
- 4.2.18.** One (1) vendor software CD (or equivalent, like DVD) per voice recorder system shall be included.
- 4.2.19.** One (1) soft (electronic on a CD or equivalent, like DVD) and one hard (printed/paper) copy of the operations and maintenance manual(s) per voice recorder system shall be included.
- 4.2.20.** One (1) year warranty on all parts and labor shall be included.
- 4.2.21.** Free lifetime phone support shall be included.

4.3. System Acceptance Testing

The vendor shall develop a factory acceptance test plan that addresses failure modes and effects testing to verify hazards and details of how each voice recorder requirement will be tested. The vendor shall also develop a factory acceptance test procedure that details the specific steps taken to achieve the tests, which are addressed in the factory acceptance test plan. The RF&ESS contractor and the Government shall review and approve the factory acceptance test plan and factory acceptance test procedures prior to the vendor performing the factory acceptance test (FAT).

The vendor shall perform a FAT, utilizing the developed and approved factory acceptance test plan and factory acceptance test procedures. Any failure during the FAT shall include appropriate documentation showing the cause and effect of the failure. The formal FAT shall occur on all purchased equipment. The vendor shall provide the test results of the FAT for acceptance by the RF&ESS contractor and the Government prior to coming to NASA AFRC to support the on-site acceptance testing.

The vendor shall develop an on-site acceptance test plan that addresses failure modes and effects testing to verify hazards and details of how each voice recorder requirement will be tested. The vendor shall also develop an on-site acceptance test procedure that details the specific steps taken to achieve the tests, which are addressed in the on-site acceptance test plan. The RF&ESS contractor and the Government shall review and approve the on-site acceptance test plan and on-site acceptance test procedures prior to the vendor coming on-site to NASA AFRC to perform the on-site acceptance test. The on-site test plan and test procedures may potentially be very similar to those utilized for the FAT.

The vendor shall perform an on-site acceptance test, utilizing the developed and approved on-site acceptance test plan and on-site acceptance test procedures. Any failure during the on-site acceptance testing shall include appropriate documentation showing the cause and effect of the failure. The formal on-site acceptance testing shall occur on all purchased equipment. The vendor shall provide the test results of the on-site acceptance testing for acceptance by the RF&ESS contractor and the Government prior to final NASA AFRC acceptance of the voice recorder systems.

All documentation as required by this SOW shall be delivered to NASA AFRC prior to final NASA AFRC acceptance of the voice recorder systems.

Review milestones and deliverables in Sections 6 and 7 for additional information regarding final NASA AFRC acceptance of the voice recorder systems.

4.4. Training

On-site training shall be provided at NASA AFRC. On-site training shall be one (1) day. On-site training may potentially be accomplished in conjunction with the on-site acceptance testing. Documentation as described in Section 4.1. of the operations, maintenance, and theory of operation shall be provided at this time. The training shall be scheduled in cooperation with the customer and shall be flexible to allow changes due to mission requirements. Training shall accommodate up to seven (7) individuals.

5. Period of Performance

Delivery of the systems to on-site receiving dock must be completed no longer than 60 calendar days after purchase order (PO) award.

Accelerated delivery of the items required herein is acceptable at no additional cost to the RF&ESS contractor. Seller must notify the RF&ESS contractor seven (7) days prior to the accelerated delivery date to obtain approval for delivery.

6. Milestones

The below milestone days are noted in calendar days. The below milestone schedule is notional and is based upon a 60 calendar day delivery schedule. As noted in Section 5, an accelerated delivery schedule may be accomplished.

- Initiate PO: 0 days after receipt of order (ARO)
- FAT test plan and test procedures: 15 days ARO
- RF&ESS and Government acceptance of FAT test plan and test procedures: 20 days ARO
- FAT: 25 days ARO
- FAT test results: 30 days ARO
- RF&ESS and Government review and acceptance (or non-concurrence) of FAT test results: 35 days ARO
- On-site test plan and test procedures: 40 days ARO
- RF&ESS and Government acceptance of on-site test plan and test procedures: 45 days ARO
- On-site acceptance test: 50 days ARO
- On-site acceptance test results: 55 days ARO
- RF&ESS and Government review and acceptance (or non-concurrence) of on-site test results: 60 days ARO
- Training: 60 days ARO
- Final delivery of voice recorder system and all associated documentation: 60 days ARO
- Final RF&ESS and Government acceptance of voice recorder system: 60 days ARO

7. Deliverables

- Two (2) 96 Channel Voice Recorder Systems
- System documentation as described in Section 4
- Factory acceptance test plan
- Factory acceptance test procedures
- Factory acceptance test report, which includes the factory acceptance test results
- On-site acceptance test plan
- On-site acceptance test procedures
- On-site acceptance test report, which includes the on-site test results
- Two (2) operating system CDs (or equivalent, like DVD)
- Two (2) vendor software CD (or equivalent, like DVD)
- Two (2) soft (electronic on a CD or equivalent, like DVD) operations and maintenance manual(s)
- Two (2) hard (printed/paper) operations and maintenance manual(s)
- Operation and maintenance manuals will be included (2)
- Training as described in Section 4.4

8. Evaluation Criteria

Proposal must be submitted in three separate binders - one for each area listed below. Cost MUST not be included in either the technical nor past performance proposals. Failure to comply will result in automatic elimination.

- Technical - 60%
- Cost - 30%
- Past Performance - 10%

On-site evaluation MAY be required. If required, the vendor will have ten (10) days upon notification to ship the equipment to NASA AFRC for evaluation and use to ensure that the equipment meets all requirements and is compatible with NASA AFRC DATR existing equipment. After a fifteen (15) day on-site evaluation, the equipment will be returned to the vendor. The cost of shipping to and from NASA AFRC will be at the expense at the vendor proposing their product.

9. Acceptance Criteria

Notwithstanding inspection and acceptance by NASA AFRC or any provisions of this subcontract/order concerning conclusiveness thereof, the Seller warrants that the items covered by this subcontract/order will conform to the specifications or other descriptions furnished or specified by the RF&ESS contractor, and further warrants, that for a period of one (1) year from the date of final acceptance by the RF&ESS contractor, except for latent defects, such items will be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect. The Seller agrees that within such warranty period, to repair or replace all items or parts of items covered by this subcontract/order, which are within the specified period. The warranties and remedies provided for in this condition and the condition hereof entitled "Inspection" shall not be exclusive and are in addition to any other rights and remedies provided by law, under this subcontract/order.

10. Contractor/Government Furnished Property/Government Furnished Equipment

- GFP/GFE will not be provided

11. Special Considerations

- Due to the final destination of these voice recorder systems, the delivery company must be authorized to enter a Federal Installation (i.e., FedEx, UPS, DHL, Yellow Freight).

12. Security Requirements

- All IT Systems sold in the United States will receive their final assembly and test in the USA. Certified Documentation is required per Consolidated and Further Continuing Appropriations Act, 2013 H.R. 933-76, SEC. 516 and H.R. 933-80 SEC. 535.
- All personnel traveling to NASA Armstrong Flight Research Center located on Edwards Air Force Base for site survey, installation, integration, testing, and training shall be U.S. Citizens badged in accordance with NASA procedures.