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**IRA-6546**

STATEMENT OF WORK FOR PWT 16S, 16T, and PES  
FLIGHT INTERCOM SYSTEM

ARNOLD ENGINEERING DEVELOPMENT COMPLEX

ARNOLD AIR FORCE BASE, TN 37389-9998

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## 1 SCOPE

- 1.1 The Contractor shall provide for the delivery, installation, and checkout of an intercom system for the 16S and 16T Test Cells and Plenum Evacuation System (PES) at the Arnold Engineering Development Complex (AEDC) to replace the existing intercom system. The system shall be located within various areas associated with the 16S and 16T Test Cells and PES including the Control Rooms, Computer room, and other equipment spaces.
- 1.2 Background: The existing 16S and 16T Test Cells and PES intercom system is a non-secure system, and is incapable of encrypted voice transmission. The existing system is therefore not suitable for use on all projected test projects, and a red/black capable system is required. **(Note: the initial implementation shall be black only).**
- 1.3 Objective: The Contractor shall provide all hardware and software required for the delivery, installation, commissioning, and checkout of a replacement intercom system for the 16S and 16T Test Cells and PES at the Arnold Engineering Development Complex (AEDC).
- 1.4 Site Visit: A visit to AEDC to inspect the existing 16S and 16T Test Cells and PES intercom system and to verify/validate physical requirements prior to beginning design is highly encouraged.

## 2 APPLICABLE DOCUMENTS (The Contractor is responsible for adhering to the following documents as required)

### 2.1 Government Documents:

#### 2.1.1 Arnold AFB Environmental Policy:

[AAFB ENVIRONMENTAL COMMITMENT STATEMENT.PDF \(defense.gov\)](#)

#### 2.1.2 AEDC Safety, Health, and Environmental (SHE) Standards latest version, available upon request from the Contractor.

- |    |     |                         |
|----|-----|-------------------------|
| A. | A10 | Job Safety Analysis.    |
| B. | B1  | Master Work Permit.     |
| C. | B2  | Lockout Tag Out (LOTO). |

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- D. B3 Control of Hazardous Areas Using Safety Sign, Tags, and Barricades.
- E. B6 Low Voltage Electrical Safety Related Work Practices.
- F. D8 Portable Power Tools.
- G. D10 Scaffolds.
- H. E18 Managing Wastes Containing Chemical or Petroleum Products.
- I. F2 Personal Protection Equipment (PPE).
- J. F5 Hazardous Noise and Hearing Conservation.
- K. F6 Fall Protection.

2.1.3 Security-Related Documents:

- A. Committee on National Security Systems Advisory Memorandum (CNSSAM) TEMPEST/1-13 – *RED/BLACK Installation Guidance*.
- B. Director of Central Intelligence, Directive 6/3 (DCID 6/3) – *Protecting Sensitive Compartmented Information within Information Systems*.
- C. Office of the Director of National Intelligence, Intelligence Community Directive 503 (ICD 503) – *Intelligence Community Information Technology Systems Security Risk Management*.
- D. Federal Information Processing Standards Publication 197 (FIPS PUB 197) – *Advanced Encryption Standard*.

2.1.4 Code of Federal Regulations, latest version:

- A. 7 CFR 2902 Subpart B Guidelines for Designating Biobased Products for Federal Procurement, Designated Items.
- B. 29 CFR 1926.1101 Asbestos.

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- C. 40 CFR 261 Identification and Listing of Hazardous Waste.
- D. 40 CFR 370 EPA Hazardous Chemical Reporting and Community Right to Know Requirement.

2.2 Non-Government Documents:

2.2.1 National Fire Protection Association (NFPA) Standard:

- A. NFPA 70-20 National Electrical Code (NEC).
- B. NFPA 70E-18 Standard for Electrical Safety in the Workplace.

**3 REQUIREMENTS**

3.1 Security:

- 3.1.1 The 16S and 16T Control Rooms are secure areas. Contractor personnel shall require Government escort at all times when performing work inside the 16S and 16T Control Rooms, as well as other work and equipment areas associated with the 16S, 16T, and PES.
- 3.1.2 Supplied systems/hardware shall not contain any wireless components. If equipment contains an internal wireless component, the component shall be removed rather than disabled.
- 3.1.3 Intercom system computer equipment and computer operating systems, if used, must be pre-approved by the Government prior to use in the intercom system.
- 3.1.4 AEDC personnel will configure all operating systems, if used, IAW applicable DoD Security Technical Implementation Guides (STIGs) prior to the installation of any 3<sup>rd</sup> Party software.
- 3.1.5 All Contractor supplied 3<sup>rd</sup> Party software shall be submitted to AEDC for security testing prior to installation.
- 3.1.6 AEDC will perform an Assured Compliance Assessment Solution (ACAS) security vulnerability scan of all IP-based system components. The Contractor will work with AEDC personnel to remediate and/or mitigate any identified security vulnerabilities.

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- 3.1.7 Contractor shall provide proof of software licensing ownership by AEDC for all software components.
- 3.1.8 All software must be capable of operating in a stand-alone network with no Internet access.
- 3.1.9 Contractor personnel shall not be permitted to interface with or operate Government computer equipment/networks.
- 3.1.10 The use of USB removable flash memory is not allowed under Air Force Security Policy. Configuration and operation of supplied hardware and/or software shall preclude the use of USB removable flash memory.
- 3.1.11 All Contractor personnel working at AEDC shall be US citizens. Contractor personnel must also pass a security background check for base entry.
- 3.1.12 AEDC will not provide the Contractor Internet access.
- 3.2 Existing Conditions: The Contractor shall not remove any existing equipment or wiring associated with the existing 16S, 16T, and PES intercom system. Existing equipment and wiring shall be removed by Government personnel.
- 3.3 System Requirements:
  - 3.3.1 General Requirements: Contractor shall provide a red/black intercom system, as defined and specified by security-related documents listed in Section 2.1.3 of this document. The intercom system shall provide both red and black functionality from a singular input module. Intercom user console stations ("user consoles") shall be capable of being configured into individual communications groups. Groups shall be selectable from each individual user console.
  - 3.3.2 Contractor shall directly build their own systems hardware and software or have direct control of any 3<sup>rd</sup> party provided hardware and software.
  - 3.3.3 The consoles shall be individually programable.
  - 3.3.4 Input and Output Requirements: The intercom system shall meet the following design requirements for input and output:
    - A. Each user console shall accommodate two (2) Jack boxes and four (4) user headsets.

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- B. Each user headset shall have listen and push-to-talk (PTT) capability (it is acceptable that all headsets on a single user console have listen/talk capability restricted to the same group).
- C. The intercom system shall be able to utilize the existing AEDC Overhead Paging System as a voice input to the intercom system.
- D. The underlying communications architecture shall use Voice over Internet Protocol (VoIP) for signal transmission between system components. AEDC shall be responsible for providing network infrastructure to support VoIP communications between intercom consoles and the central server, and AEDC shall furnish equipment racks to house required equipment.

3.3.5 Security Requirements and Certifications: The intercom system shall meet the following security certifications and requirements:

- A. The intercom system shall not utilize any permanent storage, and shall have a documented and approved Statement of Volatility.
- B. The intercom system shall meet the requirements specified in the Committee on National Security Systems Advisory Memorandum (CNSSAM) TEMPEST/1-13 *RED/BLACK Installation Guidance*.
- C. The intercom system shall meet Protection Level 4 (PL4) requirements as specified in the Director of Central Intelligence Directive 6/3 (DCID 6/3 – *Protecting Sensitive Compartmented Information within Information Systems*).
- D. The intercom system shall meet the requirements of Office of the Director of National Intelligence Intelligence Community Directive 503 (ICD 503 – *Intelligence Community Information Technology Systems Security Risk Management*).
- E. The intercom system shall utilize 256-bit audio encryption meeting the AES 256 standard (*FIPS PUB 197: Advanced Encryption Standard*).
- F. The intercom system shall be designed to meet Protection Level 4.
- G. The console the headsets plug into shall have the ability to process classified and unclassified channels simultaneously.
- H. The core computer shall prevent a user from activating a classified and an unclassified voice channel at the same time.

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- I. The core computer controlling the system shall be TEMPEST 1-13 Certified by an independent laboratory approved by the NSA for Red and Black audio separation.
  - J. The core computer shall permit multiple levels of voice within the same system, and prevent the user from accidentally (or maliciously) trying to join non-compatible security levels together.
  - K. The core computer shall supports 32 security levels.
  - L. The core computer shall be able to block users from speaking/listening at any other security level other than their own highest designated and approved security level or lower.
- 3.3.6 Equipment Quantities: The Contractor shall provide (25) red/black intercom user consoles and (16) industrial intercom user consoles. The Contractor shall provide (112) user headsets, of which (32) user headsets must be of a noise canceling design suitable for use in high-ambient noise environments.
- 3.4 Installation:
- 3.4.1 The Contractor shall install all intercom system components, including required hardware and software, in the 16S, 16T, and PES equipment spaces as required. Comply with Appendix C, Job Conditions.
- 3.4.2 Safety: The Contractor shall perform all work in accordance with AEDC Safety, Health and Environmental (SHE) standards A10, B1, B2, B3, B6, D8, D10, E18, F2, F5 and F6.
- 3.4.3 The Contractor shall install wiring per NFPA 70.
- 3.4.4 The Contractor shall provide equipment with industry-standard cabling per NFPA 70 which will plug into Government-supplied industry-standard power outlets located up to six feet away from the Contractor equipment.
- 3.5 System Checkout:
- 3.5.1 The Contractor shall provide for all system checkouts required to provide for a fully functioning system and shall also demonstrate successful system operation to the Government.
- 3.5.2 The Contractor shall furnish all tools required to install and checkout the system.



3.5.3 Government Acceptance: The Government will accept the intercom system based on successful demonstration of operation.

3.6 Training: The Contractor shall provide on-site training on the operation and maintenance of the system for AEDC personnel including engineers, technicians, and intercom end users during the installation and training phases.

3.7 Submittals:

3.7.1 The Contractor shall submit the following documentation to the Government Representative. All measurements and data shall use US Customary Units.

A. Review Submittals: The Contractor shall submit final (100% complete) schematic drawings of the intercom installation, equipment documentation with equipment specifications, and equipment voltage and current load requirements to the Government 30 days prior to delivery of equipment. The drawings shall show all materials, dimensions, and fabrication details.

B. Certifications. Contractor shall submit required security certifications 30 days prior to installation.

C. Installation, Operation and Maintenance Manuals. Contractor shall submit equipment manuals prior to delivery of any equipment. Manuals shall include instruction books and drawings for maintenance and operation of all equipment and shall provide complete information for ordering of spare parts. Each instruction/operating book shall be logically divided into sections or chapters separated by numbered or lettered tabs, for all system components and shall have an index listing of all components in the same order as they appear in the book.

D. Software. Contractor shall submit copies of all system software 30 days prior to installation.

E. Training Materials. Ten (10) hard copies of all training materials shall be provided when training is conducted.

F. Warranty. The Contractor shall guarantee system installations to be free of defects in materials and workmanship for a period of 1 year from the date of system commissioning. Defective materials or equipment will, at Contractor's option, be repaired or replaced at no cost to the Government during this warranty period. This

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coverage will include the repair or replacement of all system components as well as a minimum of two (2) preventative maintenance visits during the warranty period.

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## 3.7.2 Submittal Table:

No.	Section Reference	Submittal Description	Due
1	3.7.1.A	Review Submittals	30 days prior to installation
2	3.7.1.B	Certifications	30 days prior to installation
3	3.7.1.C	Installation, operation and maintenance manuals	Prior to Delivery to AEDC
4	3.7.1.D	Software	30 days prior to installation
5	3.7.1.E	Training Materials	When training is conducted
6	3.7.1.F	Warranty	Begins at system commissioning

Table I. Required Submittal List