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ARGUS EDS System Qualification Test Plan

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Test Plan

U.S. Department of Transportation
Federal Aviation Administration

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16. Abstract

This system qualification test plan describes test and evaluation activities required to assure that the ARGUS Explosives Detection System prototypes developed by multiple Grantees under Cooperative Research and Development Agreements, and any prototype tendered by other Offerors to an ARGUS production contract, are ready to be considered for procurement. The goal of these tests is to evaluate ARGUS designs with respect to all system requirements published within the original solicitation, as updated in the Test and Evaluation Master Plan DOT/FAA/AR-01/38 (ARGUS TEMP), with the exception of effectiveness requirements for certification. No system will be considered ready for procurement that does not successfully pass the System Qualification Test (SQT).

The ARGUS SQT Lead, assigned by the ARGUS Project Manager (Development), will be responsible for the conduct of the test. Segment Leads, who are responsible for testing defined segments of the requirements list, will assist the SQT Test Lead. The ARGUS Project Manager will certify whether a particular system is recommended for OUE, based on the results of the SQT. The ARGUS SQT Configuration Control Board (SQTCCB) will assure the integrity of the test results and certify to the Security Equipment Configuration Control Board that the results apply to the documented configuration of the units tested.

The schedule will be expedited wherever possible and driven by the readiness of prototypes for testing. For example, one segment of requirements will be tested during the airport data collection task before certification. However, some requirements cannot be tested until after the system under test has been certified. Those requirements will be tested at an airport after FAA Certification Testing at the FAA William J. Hughes Technical Center.

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TABLE OF CONTENTS

LIST OF FIGURES

Page

LIST OF TABLES

Page

EXECUTIVE SUMMARY

The ARGUS Explosives Detection System (EDS) is intended to be a design that trades throughput capacity for lower unit cost, which will enable a uniform level of security to be maintained throughout the United States civil aviation system in a cost-effective manner. Three Grantees are developing designs to compete for production contracts. There may be additional Offerors to an ARGUS production contract. This document establishes the System Qualification Test (SQT) Plan for the ARGUS development program. The Federal Aviation Administration (FAA) intends to execute the plan for each of the Grantee designs and the design of any additional production contract Offeror.

The goal of these tests is to evaluate ARGUS designs with respect to all system requirements published within the original solicitation, as updated in the ARGUS Test and Evaluation Master Plan DOT/FAA/AR-01/38 (ARGUS TEMP), with the exception of effectiveness requirements for certification. It is understood that no system will be considered ready for procurement that does not successfully pass the SQT in Phase V-A. Systems that successfully pass the SQT will be eligible to begin the procurement testing and evaluation phase of the ARGUS program. This phase includes an Operational Utility Evaluation (OUE) conducted by the SEIPT. The OUE is an evaluation factor for award of a production contract.

An ARGUS SQT Lead, assigned by the ARGUS Project Manager (Development), will be responsible for the conduct of the test. Segment Leads, who are responsible for testing defined segments of the requirements list, will assist the SQT Test Lead. The ARGUS Project Manager will certify whether a particular system is recommended for OUE. The ARGUS SQT Configuration Control Board (SQTCCB) will assure the integrity of the test results and certify to the Security Equipment Configuration Control Board that the results apply to the documented configuration of the units tested.

The schedule will be expedited wherever possible and driven by the readiness of prototypes for testing. Some requirements will be evaluated as soon as the supporting data and analysis become available. Other requirements will be tested or demonstrated during airport data collection, when the prototype system is operating in an airport environment. The remainder of the demonstrations and tests require an FAA Certified EDS and will be conducted after certification.

1. INTRODUCTION

The ARGUS Explosives Detection System (EDS) is intended to be a design that trades throughput capacity for lower unit cost, which will enable a uniform level of security to be maintained throughout the United States civil aviation system in a cost-effective manner.

This document, to be read and understood by each Grantee and competitor for an ARGUS production contract, establishes the System Qualification Test (SQT) Plan for the ARGUS development program. The Federal Aviation Administration (FAA) will execute the plan for each of the prototype designs before it is considered ready for the procurement test and evaluation phase. This test plan assumes ARGUS is an imaging system. If vendors present alternative non-imaging technologies that meet all requirements of the "Final Criteria for the Certification of Explosive Detection Systems" and are operationally viable, those requirements unique to imaging systems will be waived.

The goal of these tests is to evaluate ARGUS designs with respect to all system requirements published with the original solicitation, as updated in the ARGUS Test and Evaluation Master Plan (TEMP) [1], with the exception of effectiveness requirements for certification. It is understood that no system will be considered ready for procurement that does not successfully pass the SQT in Phase V-A. Systems that successfully pass the SQT will be eligible to begin the procurement testing and evaluation phase of the ARGUS program. This phase includes an Operational Utility Evaluation (OUE) conducted by the Security Equipment Integrated Product team (SEIPT). The OUE is an evaluation factor for award of a production contract.

The format and content of this plan are adapted from Appendix C-5 of the FAA Test and Evaluation Guidance Document [2].

1.1 Purpose

The purpose of this test plan is to validate the requirements assigned to this phase of testing in the TEMP [1]. This plan documents the FAA's test and evaluation strategy to verify the requirements of the ARGUS design specification [3].

1.2 Scope

The plan encompasses all testing and evaluation in Phase V-A, System Level Test (Qualification Test), as defined in the TEMP [1]. This includes evaluation with respect to all requirements in the system specification [3], as updated in the TEMP, with the exception of the FAA Certification requirements. Evaluation is planned to involve

- Analyzing and evaluating vendor-provided data and documentation;
- Testing operators trained using the training package; and
- Testing performance and suitability of the prototype.

All testing will be conducted at airports yet to be identified. Simulants will be used in lieu of live explosives. System availability will be evaluated further during the OUE conducted by the SEIPT.

2. REFERENCE DOCUMENTS

1. DOT/FAA/AR-01/38: "ARGUS Test and Evaluation Master Plan"
2. "Acquisition Management System Test and Evaluation Process Guidelines", December 1999.
3. ARGUS Explosive Detection System (EDS), Solicitation No. 99.1, with Rev 8.8 of Appendix A "Revised ARGUS Explosives Detection System Specification"
4. Security Equipment Configuration Management, Asset Tracking, and Inventory Control: Configuration Management Charter, November 16, 2000.
5. DOT/FAA/AR-01/XX: "Test and Evaluation Plan: ARGUS Human Factors System Qualification Testing"
6. DOT/FAA/AR-01/XX: "Airport Security Technology Integration (ASTI) System Qualification Test Plan for ARGUS EDS"
7. FAR 108.31
8. FAR Part 108.17
9. American Society for Testing and Materials Standard F792-82
10. Underwriter's Lab (UL) 60950
11. International Electrotechnical Commission (IEC) 950
12. MIL-STD-973 Configuration Management
13. ANSI/ISO/ASOC 9001
14. 47 CFR 15 FCC: Radio Frequency Devices
15. FAA Year 2000 Repair Process and Standards Handbook
16. 21 CFR 1020.40 FDA: Performance Standards for Ionizing Radiation Emitting Products
17. 29 CFR 1910 OSHA: Ionizing Radiation

3. SYSTEM DESCRIPTION

3.1 Systems Under Test

The FAA plans to test the ARGUS systems from Grantees in the development program and any other Offeror competing for an ARGUS production contract.

3.1.1 Systems Overview

Although each ARGUS EDS design may be unique with respect to details, all systems being developed by Grantees incorporate the major subsystems/components listed below:

- Computed Tomography – use of a rotating assembly of an X-ray source and sensors (with associated data acquisition electronics) to create images for volume representation and visualization using reconstruction software;
- Algorithms implemented in software to process the images and discern suspect objects within baggage;
- Internal conveyors to accept individual pieces of baggage, present the baggage to the X-ray equipment, and discharge the baggage from the system;
- Shielding to protect the operator and others from the X-ray radiation;
- A human-machine interface to enable operation of the system and facilitate operator resolution of alarms;
- Other mechanical and electrical components, subsystems, and features as required to complete each system.

Other vendors may offer systems based on other technology, including non-imaging systems.

3.1.2 Block Diagram

Figure 1 presents a block diagram of a generic ARGUS system, incorporating imaging technology, within its operational and SQT environments. The dashed line indicates the system boundary for the systems delivered as a result of the Grants. The environment includes the following:

- Users[1] – trained screeners in airports or operators testing the system (SQT and operational environment)
- Screener Test Subjects – trained screeners used to test the usability of the system during the SQT (SQT environment)
- Bags – stream-of-commerce luggage to be screened (SQT and Operational environment)

[1] Users are an integral part of the ARGUS EDS system as deployed in airports. ARGUS EDS vendors must provide an effective training package and User Interface so that the system, including user, screens bags effectively at the required throughput rate.

- Test Bags – a set of controlled bags with contents, including simulated threats and known false alarm items, configured for testing the system performance and usability (SQT environment)
- IQTK – special test bag used to check the image quality of the system on a regular basis after deployment, to be provided at deployment (Operational environment)
- Airport Environment – a temperature and humidity controlled space with a load bearing floor, electrical power, and possibly airline passengers (SQT and operational environment)

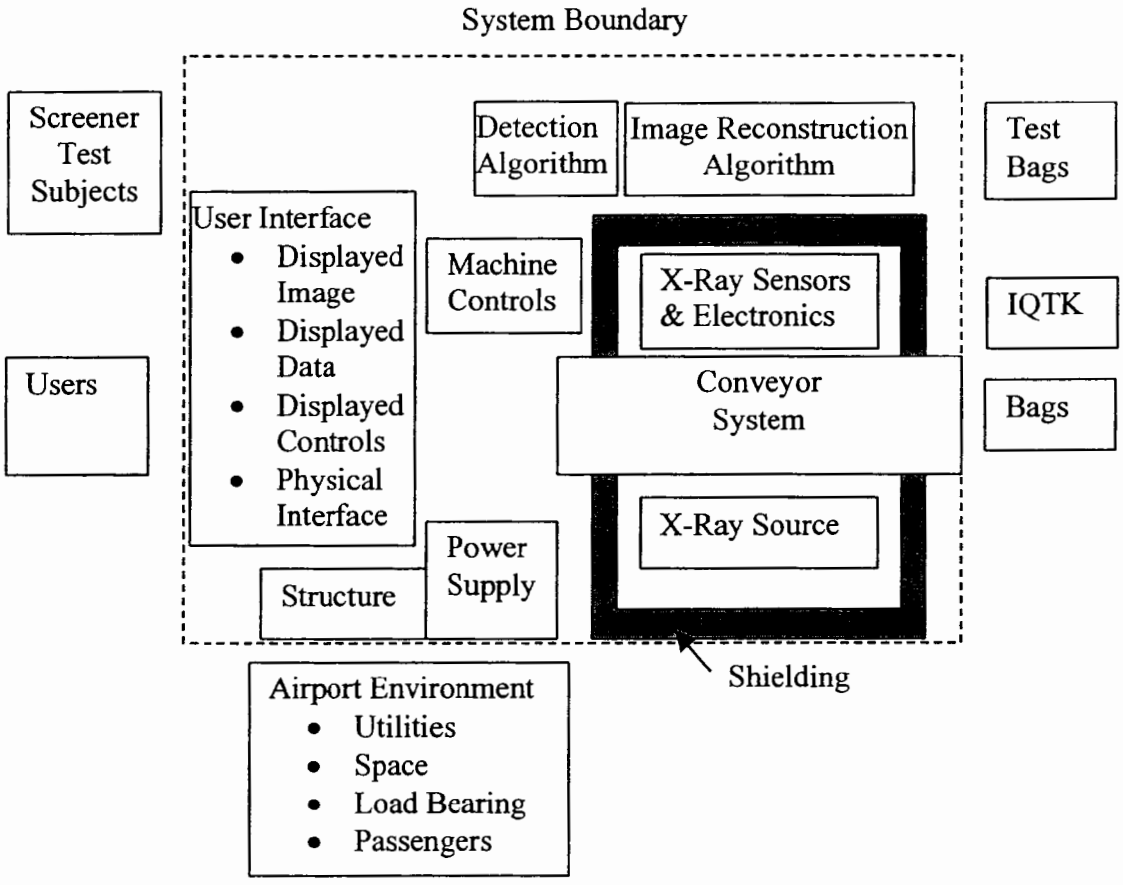

FIGURE 1. GENERIC ARGUS EDS SYSTEM BLOCK DIAGRAM

4. TEST PROGRAM MANAGEMENT

4.1 Organization

Figure 2 depicts the organization structure for the SQT. The figure is not intended to indicate a large dedicated staff. The hierarchy portrayed applies to the coordination of the SQT effort only, and not to any formal reporting relationship. An individual may fill more than one role in the organization or be involved only part time.

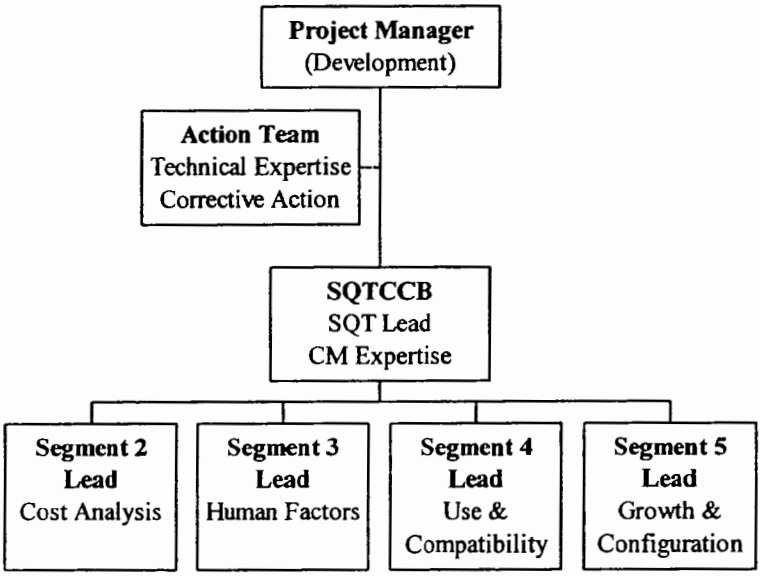

FIGURE 2. TEST MANAGEMENT ORGANIZATION

4.1.1 Project Manager (Development)

The Project Manager, as identified in the ARGUS TEMP [1], is responsible for the technical, schedule, and budget success of the ARGUS development program. The Project Manger will certify whether a particular system is recommended for OUE.

4.1.2 Action Team

The Action Team and its role are described in section 6, Discrepancy Reporting and Corrective Action Plan.

4.1.3 SQTCCB

The SQT Configuration Control Board (SQTCCB) and its test configuration management role are described in section 5, Test Configuration Management. In addition, the SQTCCB will serve as the SQT Lead and is responsible for the conduct of the test and the reporting of the overall results for each system to the Project Manager. The SQTCCB will advise whether a particular system is recommended for OUE.

4.1.4 Segment Lead

The Segment Leads and their corresponding segments are described in the ARGUS TEMP [1] and Appendix A of this document.

4.2 Decision and Reporting

Each Segment Lead will provide to the SQT Lead a test report for each prototype design evaluated, documenting the results of the evaluation including a pass/fail decision and reasons why for each requirement in their respective segments. The SQTCCB must certify whether the test results from each segment have integrity with respect to the configuration of the system tested and the test procedures developed to implement this test plan. The SQT Lead will combine all of the segment reports into a separate summary test report for each prototype design evaluated, documenting the results of the evaluation and providing all of the technical information needed to determine whether the design is qualified for OUE. The Project Manager will review each summary report, determine whether the corresponding system is recommended for OUE, and notify both the system vendor and the SEIPT in writing of the decision.

4.3 Schedule

The SQT schedule is driven by ARGUS program events. Due to the aggressive schedule objective of the ARGUS deployment, the SQT will be conducted in an expeditious manner. That is, portions of the SQT will be conducted as soon as practical. Vendor configuration changes made after any testing may require regression testing, to be determined by the SQTCCB.

Some of the requirements can be evaluated during airport data collection and will be scheduled accordingly. Concurrent tests and demonstrations are expected to take no longer than airport data collection. Each system vendor may collect airport data at a different time.

Other requirements cannot be evaluated until after the prototype design has achieved FAA Certification. Testing and demonstrations must be scheduled accordingly. Human factors testing will take place after certification and is expected to take six weeks per vendor. Each system vendor may complete certification at a different time.

5. SQT TEST CONFIGURATION MANAGEMENT

5.1 Purpose

The purpose of test configuration management is to assure the integrity of the test results by assuring the integrity of both the configuration of the system under test and the testing activity itself.

5.2 Configuration Management of the System Under Test

Documenting the configuration of the system under test at the start of testing, controlling any configuration changes, and tracking any changes as they occur will assure the integrity of the system under test. Changes to the system configuration might be required, for example, if a component fails and must be replaced or test failure indicates that an adjustment or minor change is needed. Care must be taken to ensure that tests already passed prior to a system change can be passed by the system after the change. The results of testing must be unambiguously associated

with the configuration at the time of test and regression testing must be performed when a change in configuration casts any doubt on the results of prior tests. The Certification Test Director must review any configuration change made following FAA Certification. Documentation required[2] of the vendor will be used to support this activity.

5.3 Configuration Management of the Test Activity

Test procedures are needed to implement this SQT Plan, including procedures for the management of test equipment configuration and calibration. Documenting, controlling, and tracking those test procedures and their execution assure the integrity of the test activity. Test equipment includes all needed resources whose specific configuration or condition might affect the results of testing. For example, the illness or absence of a particular operator would constitute a change in 'test equipment' calibration or configuration for some of the human factors tests in Segment 3.

5.4 Organization

The ARGUS SQT Configuration Control Board (SQTCCB) will be responsible for SQT test configuration management. The ARGUS SQTCCB will control the configuration of each unit under test and the test activity for the duration of test, certify that test results apply to the documented configuration, and pass records on to the Security Equipment Configuration Control Board (SECCB).

The ARGUS SQTCCB lead position for the configuration management aspects of its tasks could be assigned as a temporary duty either to an individual on staff at the Aviation Security Laboratory or to a standard member of the SECCB. Standard membership in the SECCB is described in the charter [4] for that organization. Other members of the SQTCCB should include individuals familiar with FAA Certification requirements and specific ARGUS requirements. The Segment Leads may serve as members, but must recuse themselves from decisions directly affecting their respective segments.

6. DISCREPANCY REPORTING AND CORRECTIVE ACTION PROCESS

6.1 Purpose and Task

The purpose of the discrepancy reporting and corrective action process is to assure the proper documentation of all discrepancies and the allocation of staff, budget, time, and other project resources, to address discrepancies as they arise during test activity while maintaining integrity of the test results. The task of the process is to identify, classify, and prioritize those discrepancies and then initiate necessary corrective action. Discrepancies are observations of problems or desired modifications in either prototype hardware or software of the following types:

- Non-compliance – failure to satisfy a requirement,
- Malfunction – any other failure, and
- Opportunity for enhancement – any modification that would increase the value/utility of the system under test not needed to satisfy a requirement.

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[2] See requirement 21 in the ARGUS TEMP, from paragraph 3.8 of the specification.

Malfunctions clearly caused by a failed component or other event are to be diagnosed and repaired as soon as possible because system availability, a function of time-between-failures and time-to-repair, is a design requirement and being measured.

6.2 Process

Discrepancies may be observed by anyone involved with test activity at any time. Because any observed discrepancy might result in a need to modify the prototype design, individuals will report each discrepancy by filling out blocks on a form similar to that shown in figure 3 and submitting it to the SQT Lead via the appropriate Segment Lead. The originator of the report must identify and characterize the problem but need not, at this early stage, have a suggested solution or priority. To assure rapid appropriate action, Segment Leads will review all modification request forms resulting from their test activities and assign a preliminary assessment of priority before submittal to the SQT Lead.

The SQT Lead will provide the completed forms to the Action Team. The Action Team will

- Review forms as soon as possible but within 2 days of submittal
- Classify and prioritize each discrepancy
- Determine necessary action as appropriate, in one of three categories.
    - Corrective Action: Changes necessitated by actual flaws in the system design or manufacture causing non-compliance or damage that must be repaired to enable test completion.
    - Adaptive Action: Any effort required as a result of changes in the environment in which the system must operate but not involving non-compliance
    - Perfective Action: All changes and enhancements made to a system to met the evolving or expanding needs of the end user.

Figures 4 and 5 together depict the flow for processing a Modification Request after receipt by the Action Team. After classification, a Modification Request that is processed further is considered either a Problem Report or an Enhancement Request. Problem Reports address corrective and adaptive actions. Enhancement Requests address perfective actions. As shown in figure 4, processing Enhancement Requests during the SQT will be limited to drafting an engineering change scope. Enhancement Requests may be considered in follow-on activity. The Project Manager, who may serve on the team, will consider and authorize actions determined by the Action Team based on impact and priority. The SQTCCB must account for and address any action resulting from this process that might invalidate prior test results.

6.3 Organization

The Project Manager will select members of the Design Review Board[3] (DRB) to serve on the ARGUS SQT Action Team. The Segment Leads may serve as members of the Action Team, but must recuse themselves from decisions directly affecting their respective segments.

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[3] The DRB is described in the ARGUS TEMP as comprised of "individuals that provide knowledge useful for evaluating design and program progress." Those members who have been most active at ARGUS design reviews are prime candidates for the Action Team.

MODIFICATION REQUEST FORM

<table>
<tr><td>Modification Request</td><td colspan="3">MR Number</td></tr>
<tr><td>Date:</td><td colspan="3">Originator (Name & Phone Number):</td></tr>
<tr><td>Project:
Vendor Name:
System Version/Release:</td><td>Evaluation Event Phase:</td><td>Test Number:</td><td>Priority:
High
Medium
Low</td></tr>
<tr><td colspan="4">Sequence of Steps Leading to Problem:</td></tr>
<tr><td colspan="4">Problem Summary Statement:</td></tr>
<tr><td colspan="4">Description of Solution:</td></tr>
<tr><td colspan="2">Reviewed by (Name):</td><td>Signature:</td><td>Date:</td></tr>
<tr><td>Modification Approved (Yes/No):</td><td>By (Name):</td><td>Signature:</td><td>Date:</td></tr>
</table>

FIGURE 3. SAMPLE MODIFICATION REQUEST FORM

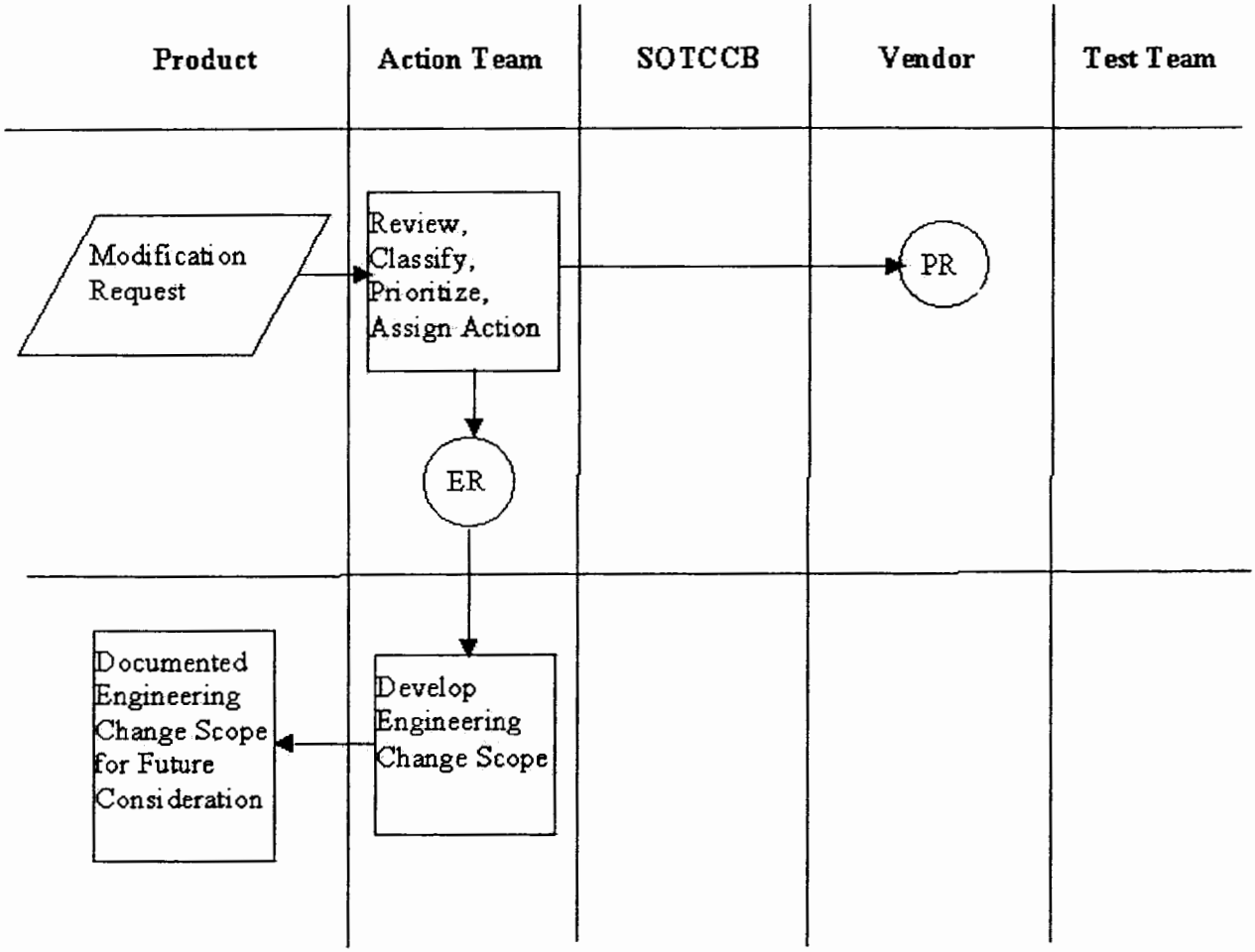

FIGURE 4. MODIFICATION REQUEST PROCESS FLOW 1/2

PR = Problem Report.
ER = Enhancement Request.

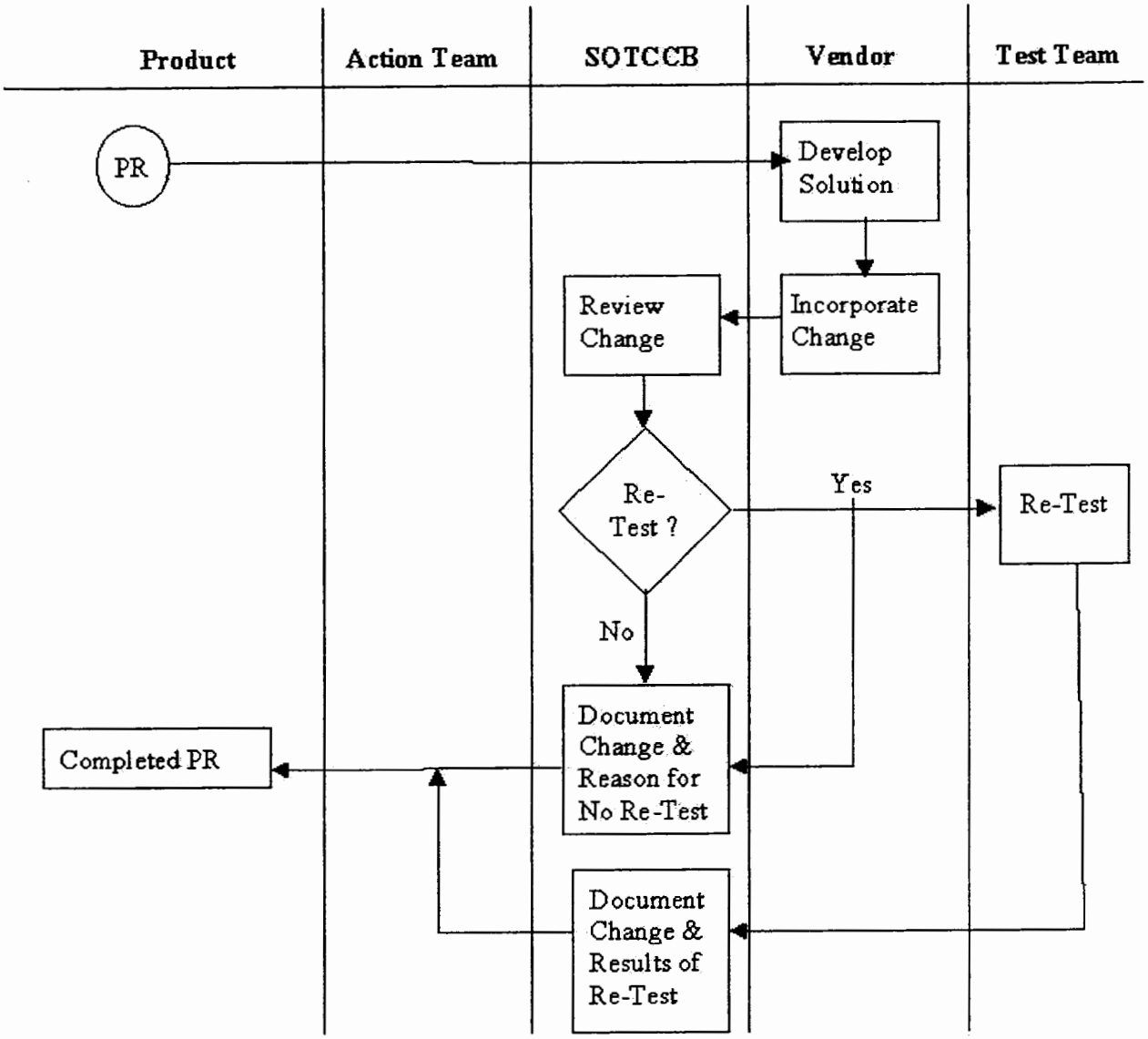

FIGURE 5. MODIFICATION REQUEST PROCESS FLOW 2/2

PR = Problem Report.
ER = Enhancement Request.

7. TEST BED DESCRIPTION

7.1 Test Setup

Figure 6 shows the general test setup for all tests. The flow-through ARGUS configuration is shown, but the single-sided access ARGUS configuration is equally acceptable. The figure depicts the conceptual arrangement of the test setup.

The ARGUS SQT involves tests, demonstrations, analysis, inspections, and certification by independent agencies. The FAA plans to conduct the tests, demonstrations, and inspections at test beds located in airports. However, demonstrations and inspections may be conducted elsewhere as long as test configuration management is maintained. Both analysis and certification by independent agencies may be performed away from the test beds.

Test team members comprise sub-teams based on roles served at any given time. Members of the Red Team prepare test items to challenge the system, including the operator, during operational test activity. Blue Team members collect operator and equipment performance data during operational tests. Not shown on the figure are members of the Silver Team who control the test. Individuals may shift sub-team membership for different tests. More detail on roles and responsibilities is provided in section 7.3 titled Test and Evaluation Personnel.

Table 1 lists test bed facility requirements for testing each Grantee.

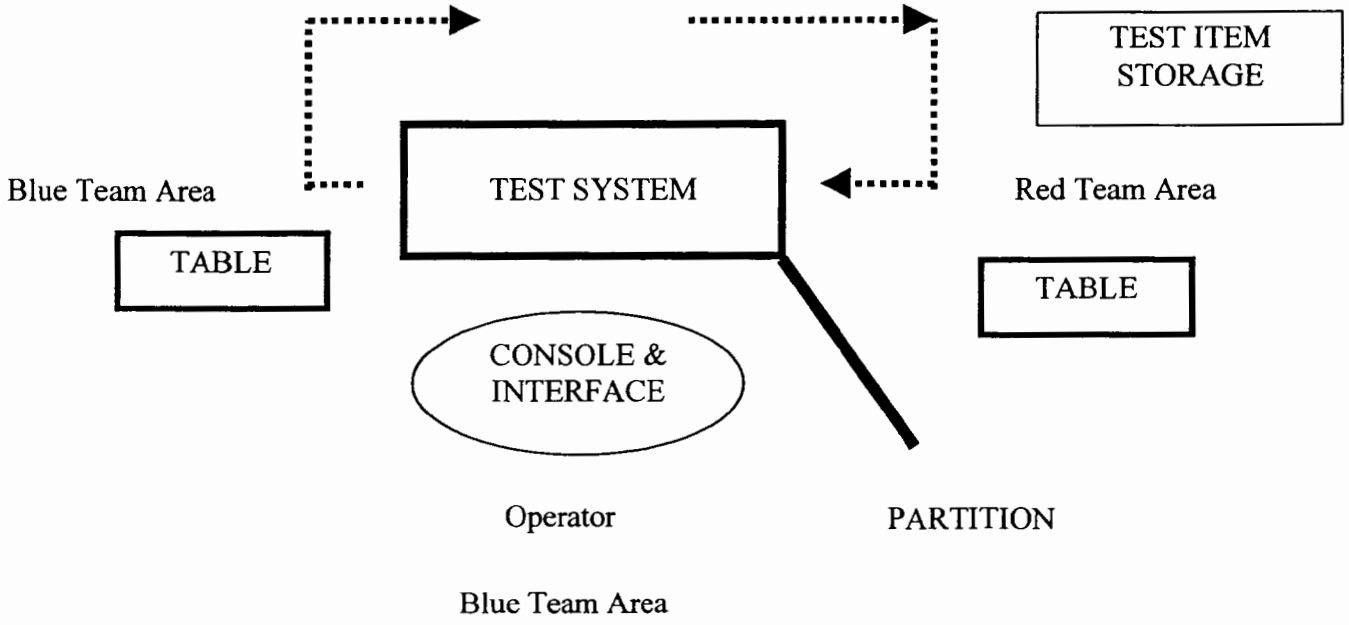

FIGURE 6. GENERAL TEST BED OPERATIONS DIAGRAM

TABLE 1. TEST BED FACILITY REQUIREMENTS

Item #	Items	Facilities Description
1	Storage Area	A secure storage area sufficient to hold the test items, including special bag sets.
2	Access to bags	Operational and physical access to stream-of-commerce checked bags.
3	Access to power	Outlets for laptop computers, ARGUS machine, and conveyors.
4	10 Trainees	Each with previous X-ray experience. (Only one operator, which could be a trainee after certification or another operator, is shown in figure 6.)
5	Training Area	A separate room with sufficient seating, desk space, and presentation equipment will be required for training operators. (Not shown in figure 6.)
6	Operating Area	Operating area sufficient to conduct the test.
7	Room Divider	Temporary partition sufficient to obstruct the operator's view of the test item makeup and ARGUS loading areas.
8	Tables	For monitor & console, baggage handling.
9	Chairs	For operator and test team members.

7.2 Test Bed Equipment

Test teams will require the use of the equipment listed in table 2. Other unique expendables may be required and listed in the separate test plan documents referenced in section 8.

TABLE 2. TEST BED EQUIPMENT REQUIREMENTS

Item #	Item	Equipment Function	QTY
1	Laptop computer	Data entry	1
2	Data Forms	Data collection	1
3	Test Bag Set	Human Factors Testing	1
4	Step Wedge	Human Factors Testing	1
5	Stop Watch	Human Factors Testing	1

7.3 Test and Evaluation Personnel

The team conducting the tests and evaluations may include the FAA and contractor personnel identified in table 3. Additional test team roles and responsibilities for demonstrations and tests involving system operation are defined in table 4.

TABLE 3. TEST PERSONNEL FOR TYPICAL TEST

Test/ Evaluation Segment[4]	Test Position	Responsible Organization	Segment Leads
All	Test Director	FAA/AAR-530	Hacker
Cost Analysis	Subject Matter Expert[5]	FAA/AAR-530	Fabry
Human Factors	Silver, Red, and Blue Teams	FAA/AAR-510	Dixon
Environmental, Task, & Operational Compatibility	Silver, Red, and Blue Teams	FAA/AAR-510	Leone
Growth Potential and Development Configuration	Subject Matter Expert, Blue Team	FAA/AAR-530	TBD-Roder

TABLE 4. SELECTED ROLES AND RESPONSIBILITIES

Position	Responsibilities
Test Director	Prepares summary documentation including all segments Determines Point of Contact with Grantees, test sites, and others for arranging test activities and support Controls information Coordinates with all parties to resolve problems
Segment Lead (Test Controller, Silver Team)	Directs all test operations for the Segment Coordination of test sites and technical support Reports problems to the Test Director Collects data forms from Red and Blue teams Prepares pre- and post-test documentation Leads briefings and debriefings for the Segment Test/Evaluation
Test Observer/Data Collector (Blue Team)	Collects throughput and other data on the screening of test items Observes the operator Collects other data and observations, documents problems/discrepancies
Test Article Prep (Red Team)	Assembles/disassembles test items in accordance with test plan Validates test items/bags on ARGUS machines Ensures the proper test item run order and orientation Loads test items into the prototype and unloads them
System Operator	Serves as a test subject for the training package and human factors requirements Operates the system when necessary for evaluating all other requirements.

[4] Designations refer to groupings of system requirements into specific evaluations and tests identified in Appendix A.

[5] Subject Matter Experts are individuals with specific training and experience in the disciplines appropriate to the subject requirements.

7.4 Test Bed Location

The test beds for the demonstrations and tests will be located at one or more airports. Because many of the tests and demonstrations do not require that the system under test be FAA Certified, those evaluations may be conducted in a timely manner at the airport where Grantee airport data collection is performed. However, other tests require the operation of an FAA Certified system in an airport, and it is possible that another airport may be involved. This is because the tests requiring an FAA Certified system might be conducted just prior to the OUE on a system deployed to an airport for operational use chosen by the acquiring agency. Test configuration management will assure integrity of the testing.

7.5 Test Conduct

The goal of this qualification test is to verify that the system under test satisfies all requirements in the product specification other than the effectiveness requirements addressed during the FAA Certification Test. Performance parameters for threat alarms (including shield alarms), false alarms, and baggage throughput will be recorded during operational tests to monitor system effectiveness, but will not be assessed for meeting specific FAA Certification requirements. The intent of monitoring system effectiveness is to assure that the EDS remains nominally effective during tests of suitability.

7.6 Requirements Under Test

The product specification [3] listed 47 ARGUS system requirements, of which 41 are applicable to the current grants. The ARGUS TEMP [1] enumerated and categorized all requirements according to the verification approach, test and evaluation segments, and the development program phase for verification. Requirements numbered four though 33 and 35 through 41 were identified as being verified during Phase V-A, System Level Test (Qualification Test). Requirement 34 was identified as not verifiable. Requirement 28 was deleted.

Appendix A of this SQT Plan contains the detailed project specification Verification Requirements Traceability Matrix (VRTM) and the text of all requirements to be verified during Phase V-A. The VRTM identifies the test/evaluation number, Critical Operation Issue (COI), Measure of Suitability (MOS), and threshold Measure of Performance (MOP), if applicable, for each requirement.

8. SEGMENT PLANS

Test and evaluation plans for two of the segments are contained in appendices as follows:

- B – Cost Analysis Test and Evaluation Plan
- C – Growth Potential and Development Configuration Test and Evaluation Plan

The test plans for Segments 3 and 4 are in separate documents [5,6].

Each test and evaluation segment plan contains enough information to allow the preparation of the detailed test procedures for the tests described. The following outline describes the information included in each plan, as appropriate:

a. Test or Evaluation Title

b. Test or Evaluation Objectives and Success Criteria.

c. Test or Evaluation Approach

d. Execution Time (including multiple runs of a test procedure, as required)

e. Location

f. Tasks/Activities

g. Personnel (number and type of personnel required)

h. Test Equipment (hardware and software, including analysis tools required)

i. Data Reduction/Analysis

j. Special Conditions (includes any special test conditions, test scenarios, or special operating conditions required)

Each plan describes the data expected, when and how the data will be processed, and how the data supports verification of the allocated requirements.

APPENDIX A
PROJECT SPECIFICATION VERIFICATION
REQUIREMENTS TRACEABILITY MATRIX - DETAIL

PROJECT SPECIFICATION VERIFICATION
REQUIREMENTS TRACEABILITY MATRIX - DETAIL

The product specification [3] listed 47 ARGUS system requirements, of which 40 are applicable to the current grants. The ARGUS TEMP [1] enumerated and categorized all requirements according to the verification approach, test and evaluation segments, and the development program phase for verification. Requirements numbered four though 33 and 35 through 41 were identified as being verified during the SQT phase of development. Requirement 34 was identified as not verifiable. Requirement number 28 was deleted. Only requirements to be verified during the SQT are considered in this appendix.

Table A-1 shows the test and evaluation segments identified in the TEMP, the corresponding segment leaders, and the corresponding test and evaluation plan location. Note that the shaded segment is beyond the scope of the SQT and not addressed further in this document.

TABLE A-1. TEST SEGMENT TEST PLANS

Segment	Seg. No.	Leader	Test Plan
FAA Certification Testing	1	Koo	Separate Document
Cost Analysis	2	Fabry	Appendix B
Human Factors Evaluations and Tests	3	Dixon	Separate Document
Environmental, Task, & Operational Compatibility	4	Leone	Separate Document
Growth Potential and Development Configuration	5	TBD - Roder	Appendix C

Table A-2 comprises the project specification verification requirements traceabilty matrix - detail, which identifies the testing needed to ensure the developed ARGUS system satisfies the functional and performance requirements in the FAA project specification [3]. The table is sorted by segment number. The requirements assigned to each segment are sorted by test/evaluation number and then requirement number. Shown for each requirement are the project specification paragraph number and Critical Operational Issue (COI), Measure of Suitability (MOS), Threshold measure of performance (MOP), general verification method, and remarks.

Requirement text, sorted by requirement number, is presented in table A-3 for reference.

TABLE A-2. PROJECT SPECIFICATION VERIFICATION REQUIREMENTS TRACEABILITY MATRIX - DETAIL

Seg. No.	Test/Eval. No.	Requirement/ Specification/ COI	MOS	Threshold (MOP)	Verify By[6]	Remarks
2	2.1	15 3.4.1 Initial Cost	$	<= $300,000 for production of 100 units over 3 years	A	Audit estimates of parts, labor, aggregate burden, and margin. $300,000 MOP is a goal.
2	2.2	16 3.4.2 Recurring Cost	$	<= 10% of unit cost or Security Industry Custom	A	Audit estimates of recurring costs.
3		4 3.2.1 Operator Skill Level	Auditory & visual acuity, dexterity, English proficiency, educational level	FAR Par 108.31	T	
3		5 3.2.2.1.a System Status Displays	Items displayed		D	
3		6 3.2.2.1.b Start-Up and Power-Down	Yes/No		D	
3		7 3.2.2.1.c Image Quality	Wire gage & step	FAR Part 108.17	D	

[6] Verify by A = Analysis, I = Inspection, D = Demonstration, T = Test, C-I = Certification by Independent agency, C-V = Certification by Vendor

TABLE A-2. PROJECT SPECIFICATION VERIFICATION REQUIREMENTS TRACEABILITY MATRIX – DETAIL (CONTINUED)

Seg. No.	Test/Eval. No.	Requirement/ Specification/ COI	MOS	Threshold (MOP)	Verify By[7]	Remarks
3		8 3.2.2.1.d HMI	Items controlled		D	
3		9 3.2.2.2.a Effective Throughput	P_D, P_{FA}, Throughput Rate	Throughput Rate = 50 bags/hr	T	Monitor and report P_d and P_{fa}. Test is of Effective Throughput Rate achieved in an airport using an FAA test bag set, while operators maintain a specified level of performance (i.e., P_d and P_{fa}). .
3		10 3.2.2.2.b Prompts	Actions prompted		D	
3		11 3.2.3.1 Operator's Manual	Completeness, accuracy		I	
3		12 3.2.3.2 Human Factors Issues Log	Completeness, accuracy		I	
3		14 3.3.2 Suspicious Bag Control	Yes/no		T	
3		17 3.5 Training	Completeness, Trainee competence		T	

[7] Verify by A = Analysis, I = Inspection, D = Demonstration, T = Test, C-I = Certification by Independent agency, C-V = Certification by Vendor

TABLE A-2. PROJECT SPECIFICATION VERIFICATION REQUIREMENTS TRACEABILITY MATRIX – DETAIL (CONTINUED)

Seg. No.	Test/Eval. No.	Requirement/ Specification/ COI	MOS	Threshold (MOP)	Verify By[7]	Remarks
4		13 3.3.1 Bag Jam Clearing	Time to detect and clear	<= 30 seconds	D	
4		18 3.6 Power Tolerance	Yes/no		D	
4		20 3.7 Listings by Safety Related Entities	Listing / Certification		C-I	
4		21 3.8 Configuration Management	Conformance to Standard		I	
4		22 3.9 Operational Availability	Inherent Availability	>= .98	D	MOP is a goal. Measure the ratio of cumulative downtime per unit during duty hours to duty hours. Exclude downtime during hours outside of inspection duty hours.
4		23 3.10 Floor Space	Yes/no		D	
4		29 3.12.1 Bag Size	Bag length, width, height	L/W/H >= 92/75/51 cm	D	
4		30 3.12.2 Floor Loading	Kg./square meter	500 Kg/square meter	A	

TABLE A-2. PROJECT SPECIFICATION VERIFICATION REQUIREMENTS TRACEABILITY MATRIX – DETAIL (CONTINUED)

Seg. No.	Test/Eval. No.	Requirement/ Specification/ COI	MOS	Threshold (MOP)	Verify By[7]	Remarks
4		31 3.12.3 Footprint	Length, width	L/W <= 335/210 cm	I	
4		32 3.12.4 Maximum Height	Height	H <= 215 cm	I	
4		33 3.12.5 Power	Yes/no	<= 20 kW	C-V	
4		35 5.1 Personal Electronic Devices	Yes/no		C-V	
4		36 5.2 Emission Control	Yes/no	47 CFR 15	C-V	
4		37 5.3 Power Transients	Yes/no		D	
4		38 6.0 Unmanned Unit Security	Yes/no		I	
4		39 7.0 Date Change Anomaly	Yes/no	Through January 1, 2028	T	

TABLE A-2. PROJECT SPECIFICATION VERIFICATION REQUIREMENTS TRACEABILITY MATRIX – DETAIL (CONTINUED)

Seg. No.	Test/Eval. No.	Requirement/ Specification/ COI	MOS	Threshold (MOP)	Verify By[7]	Remarks
4		40 8.0 Regulatory Compliance	Yes/no	21 CFR 1020.40, 29 CFR 1910 OSHA	C-V	
4		41 8.0 Lock-Down Mode	Yes/no		D	
5	5.1	24 3.11.1 Reduced Threat Mass	P_D, P_{FA}, Throughput Rate	P_D >= Classified Mass <= 75% P_{FA} <= Classified Throughput Rate >= 50 bags/hr	A	Perform subject matter expert (SME) review of planned product improvement claims.
5	5.1	25 3.11.2 Costs Reduction	$	Unit Cost < $300K Annual Cost < $30K	A	""
5	5.1	26 3.11.3 Effective Throughput Growth	Throughput	Throughput > 50 bags/her	A	""
5	5.1	27 3.11.4 Installability	Length, width, weight, power needs	L/W/H < 335/210/215 cm Floor Loading < 500 Kg/sq m Power <20kW	A	""
5	5.2	34 4.0 Image Archiving	Yes/no	Record and redisplay bag image files for near-real-time play-back.	D	Demonstrate the recording and redisplaying functionality and assess its near-real-time play-back utility for supporting development.

TABLE A-3. REQUIREMENT TEXT[8]

Req. No.	Requirement
4	ARGUS shall be operable by screeners whose personnel requirements are specified in FAR Part 108.31 [7] in terms of auditory and visual acuity, dexterity, English proficiency, and educational level.
5	ARGUS shall provide informative and actionable displays on system status, calibration and automated diagnostic results, bag jam and bad or incomplete scan events.
6	ARGUS shall permit simple start-up and power-down at one workstation.
7	ARGUS shall satisfy FAR Part 108.17 [8] (a)(5) and shall permit a typical operator to distinguish 24-gauge wire under the fifth step using a Test Step Wedge specified in American Society for Testing and Materials (ASTM) Standard F792-82 [9].
8	ARGUS shall permit operation with a graphic user interface emphasizing 'hard' keys or physical, dedicated switches for critical tasks involving state and alarm resolution functions.
9	ARGUS shall be designed to permit an operator to resolve alarms accurately and achieve an average effective throughput of at least 50 bags per hour (irrespective of hand search).
10	ARGUS shall include a provision for alarm resolution prompts to reinforce basic operator alarm resolution steps
11	ARGUS shall contain an operator's manual for all tasks to be performed by the screener including state management, alarm resolution, training and limited diagnostics and maintenance.
12	Throughout its design, development, fabrication and testing, ARGUS shall include a physical log or manual record that identifies and tracks to resolution human factors issues including manpower, personnel, training, human factors engineering, and health & safety.
13	ARGUS shall permit direct personnel access to the main inspection enclosure to manually clear a bag jam in less than 30 seconds from time of discovery to resumption of inspection.
14	ARGUS shall permit the operator and/or bag handler(s) to identify and control 100% of the bags the operator deems suspicious.
15	The ARGUS design, in a stand alone configuration and with features limited to the original Grant requirements, shall be producible at a unit cost of $300,000 or less in production quantities of 100 units over 3 years as a goal.
16	ARGUS shall have an annual maintenance cost, including both preventive/scheduled and repair actions, of 10% of the Unit Cost or less, or security industry custom.
17	ARGUS shall contain a training package, completed by the end of Phase III, to create qualified operators.
18	ARGUS shall accommodate existing, noisy US airport lobby power and transients.

[8] Text in the TEMP [21] takes precedence. This copy is included for reference only.

TABLE A-3. REQUIREMENT TEXT (CONTINUED)

Req. No.	Requirement
20	ARGUS shall comply with appropriate standards (i.e., UL 60950 [10] or IEC 950[11]) listed by safety related organizations prior to the FAA's EDS Certification Readiness Test.
21	The ARGUS configuration should be controlled in accordance with an applicable standard (e.g., MIL-STD-973 Configuration Management [12] or an equivalent ANSI/ISO/ASQC 9001[13]) to assure performance verification repeatability and facilitate functional & physical configuration audits leading to production.
22	Cumulative downtime per unit during inspection duty hours for all maintenance should not exceed 73 hours annually assuming a ten-hour duty day for 365 days each year as a goal.
23	ARGUS shall contain a provision for a configuration which offers single-sided access to minimize total floor space use.
24	ARGUS should contain capacity for growth to achieve certifiable detection of smaller threat masses (below certification criteria) without compromise in false alarm or throughput as a first priority.
25	ARGUS should contain capacity for growth to achieve lower unit or annual maintenance costs as a second priority.
26	ARGUS should contain capacity for growth to achieve increased effective throughput as a third priority.
27	ARGUS should contain capacity for growth to achieve smaller footprint & lower weight and power needs as a fourth priority.
28	Requirement Deleted.
29	ARGUS should be able to accommodate oversized and extra-large checked bags with lengths up to 92 cm, widths up to 75 cm, and heights of 51 cm.
30	ARGUS floor loading should not exceed 500 kg per square meter.
31	ARGUS footprint should not exceed 210cm x 335 cm.
32	ARGUS height should not exceed 215 cm.
33	ARGUS power requirements should not exceed 20 kW.
34	ARGUS shall possess an Image Archiver capability to support development. It shall record and redisplay, bag image files for near-real-time playback to support data collection and testing.
35	ARGUS shall not alter or damage unpowered personal electronic devices in checked baggage.
36	All ARGUS radio frequency emissions shall be constrained to non-restricted bands in accordance with 47 CFR 15 [14].
37	ARGUS shall not introduce transients into the airport power supply generation system.
38	ARGUS shall provide the means (via a mechanical console and panel locks, password protection and encrypted configuration files as well as a means to alert the operator of any unauthorized critical configuration change) to physically and electronically protect its sensitive components and collected data from theft and sabotage while in standby (powered without the operator present) and stored.

TABLE A-3. REQUIREMENT TEXT (CONTINUED)

Req. No.	Requirement
39	ARGUS shall not contain any date change anomalies or fail to operate all functions from the date of the FAA EDS Certification Test through January 1st, 2028. ARGUS shall be Y2K Compliant as defined in the FAA Year 2000 Repair Process and Standards Handbook [15].
40	ARGUS shall comply with applicable safety standards and regulations (21 CFR 1020.40 FDA: Performance Standards for Ionizing Radiation Emitting Products [16]; 29 CFR 1910 OSHA: Ionizing Radiation [17]) during all modes of operation including non-operating states, operating, clearing a bag, jam and performing operator-level maintenance actions.
41	ARGUS shall possess a lock-down mode when an operator is not present so that: a. No portion of the system shall move under power; b. If ionizing radiation is employed, no radiation shall be produced; and c. No body part can be inserted, intentionally or unintentionally, into any portion of the system.

APPENDIX B
COST ANALYSIS TEST AND EVALUATION PLAN

COST ANALYSIS TEST AND EVALUATION PLAN

The following presents segment two, Cost Analysis, of the ARGUS SQT Plan. The segment comprises two evaluations.

1.0 Initial Unit Cost

2.0 Recurring Annual Cost per Unit

The plan for each evaluation is presented in sequence.

1. INTIAL UNIT COST

1.1 Objectives and Success Criteria

The objective of evaluation 2.1 is to assess whether the design satisfies the threshold Measure of Performance shown in table A-2 of Appendix A and summarized in table B-1 for specification requirement 15.

TABLE B- 1. EVALUATION 2.1 OBJECTIVES AND SUCCESS CRITERIA

Requirement/ Specification/ COI	**MOS & Threshold MOP**	**Requirement/Specification Text**
15 3.4.1 Initial Cost	<= $300,000 for production of 100 units over 3 years	The ARGUS design, in a stand alone configuration and with features limited to the original Grant requirements, shall be producible at a unit cost of $300,000 or less in production quantities of 100 units over 3 years as a goal.

1.2 Approach

The Offeror shall submit documentation of the analysis intended to substantiate satisfaction of the applicable requirement. FAA Subject Matter Experts (SME) will review the documented analysis and assess the completeness, reasonableness, and degree to which the analysis supports satisfaction of the requirement.

1.3 Execution Time

Review, analysis, and assessment are expected to require no longer than 10 days for each system design.

1.4 Location

The review will be performed at the FAA William J. Hughes Technical Center, Aviation Security Laboratory in an office environment.

1.5 Tasks/Activities

FAA SMEs will conduct the evaluation in five tasks. This assumes that the proof of compliance offered comprises the following data, applicable for the conditions in requirement 15:

- Complete Parts List (miscellaneous low cost items may be grouped)

- Cost of each part on the list, with substantiation
- Price of Offeror Value Added, with substantiation
- Profit to be added to the total cost, with statement of justification
- Total unit cost

1.5.1 Audit Parts List

Audit the parts list for completeness with respect to the system design presented at the CDR or as revised.

1.5.2 Audit Cost of Parts

Audit the cost of parts for realism with respect to market prices, current agreements with suppliers, or Offeror cost experience, as applicable.

1.5.3 Evaluate Price of Value Added

Evaluate the price of Offeror value added, such as assembly labor, testing costs, and manufacturing and administrative support costs.

1.5.4 Evaluate Profit

Evaluate the reasonableness of the profit, comparing it on a percentage basis to acceptable values on prior government production contracts.

1.5.5 Document the Evaluation

Assess the level of compliance, either acceptable or not acceptable, and document the evaluation.

1.6 Personnel

One FAA SME in the area of manufacturing cost estimation will be needed to perform the audits. Multiple qualified individuals can be applied if more than one system design is to be evaluated at the same time. However, the individuals should work together to assure comparable evaluations.

1.7 Test Equipment

N/A

1.8 Data Reduction/Analysis

Offeror estimated unit cost will be compared to the maximum specified in the requirement. It is expected that data reduction and mathematical analysis will be limited to checking arithmetic. However, analysis using standard cost calculations will be applied as necessary if the substantiation of cost claims is at all questionable.

1.9 Special Conditions (includes any special test conditions, test scenarios, or special operating conditions required)

N/A

2. RECURRING ANNUAL COST PER UNIT

2.1 Objectives and Success Criteria.

The objective of evaluation 2.1 is to assess whether the design satisfies the threshold Measure of Performance shown in table A-2 of Appendix A and summarized in table B-2 for specification requirement 16.

TABLE B- 2. EVALUATION 2.2 OBJECTIVES AND SUCCESS CRITERIA

Requirement/ Specification/ COI	**MOS & Threshold MOP**	**Requirement/Specification Text**
16 3.4.2 Recurring Cost	<= 10% of unit cost or Security Industry Custom	ARGUS shall have an annual maintenance cost, including both preventive/scheduled and repair actions, of 10% of the Unit Cost or less, or security industry custom.

2.2 Approach

The Offeror shall submit documentation of the analysis intended to substantiate satisfaction of the applicable requirement. SMEs will review the documented analysis and assess the completeness, reasonableness, and degree to which the analysis supports satisfaction of the requirement.

2.3 Execution Time

Review, analysis, and assessment are expected to require no longer than 10 days for each system design.

2.4 Location

The review will be performed at the FAA William J. Hughes Technical Center, Aviation Security Laboratory in an office environment.

2.5 Tasks/Activities

FAA SMEs will conduct the evaluation in four tasks. This assumes that the proof of compliance offered comprises the following data:

- Multi-level maintenance strategy and plan showing which organization is responsible for each level (for example, manufacturer or air carrier) and presenting the Offeror's staffing, parts inventory, and travel assumptions indicating response times.
- Complete maintenance activity list for each level (miscellaneous low cost activities may be grouped)
- Cost and frequency of each activity on the list, including material, labor, and all other costs with substantiation
- Total annual recurring cost per unit

2.5.1 Evaluate Maintenance Strategy and Plan

SMEs will evaluate the maintenance strategy and plan for reasonableness and suitability to the needs of the air carriers.

2.5.2 Evaluate Maintenance Activity List

SMEs will evaluate the maintenance activity list for completeness.

2.5.3 Evaluate Cost and Frequency of Activities

SMEs will evaluate the cost and frequency of each activity. Substantiation provided by the Offeror may include historical data on exact or similar parts or systems as well as the results of testing by the Offeror.

2.5.4 Document the Evaluation

SMEs will assess the level of compliance, either acceptable or not acceptable, and document the evaluation.

2.6 Personnel

One FAA SME in the area of maintenance cost estimation will be needed to perform the evaluations. Multiple qualified individuals can be applied if more than one system design is to be evaluated at the same time. However, the individuals should work together to assure comparable evaluations.

2.7 Test Equipment

N/A

2.8 Data Reduction/Analysis

Offeror-estimated annual recurring cost per unit will be compared to the maximum specified in the requirement. The maximum is a percentage of the unit cost estimated in section 1, Initial Unit Cost, of this plan. It is expected that data reduction and mathematical analysis will be limited to checking arithmetic. However, analysis using standard cost calculations will be applied as necessary and if the substantiation of cost claims is at all questionable.

2.9 Special Conditions (includes any special test conditions, test scenarios, or special operating conditions required)

N/A

APPENDIX C
GROWTH POTENTIAL AND DEVELOPMENT CONFIGURATION TEST AND EVALUATION PLAN

GROWTH POTENTIAL AND DEVELOPMENT CONFIGURATION TEST AND EVALUATION PLAN

The following presents segment five, Growth Potential and Development Configuration, of the ARGUS SQT Plan. The segment comprises two evaluations.

3.0 Growth Potential

4.0 Imaging Archiving

The plan for each evaluation is presented in sequence.

1. EVALUATION 5.1, GROWTH POTENTIAL

1.1 Objectives and Success Criteria

The objective of evaluation 5.1 is to assess whether the design satisfies the threshold Measures of Performance shown in table A-2 of Appendix A and summarized in table C-1 for specification requirements 24 through 27. It is expected that the desired growth will be possible in all cases; the issue is degree of growth achievable and the relative ease of achieving that growth.

TABLE C-1. EVALUATION 5.1 OBJECTIVES AND SUCCESS CRITERIA

Requirement/ Specification/ COI	**MOS & Threshold MOP**	**Requirement/Specification Text**
24 3.11.1 Reduced Threat Mass	P_D >= Classified Mass <= 75% P_{FA} <= Classified Throughput Rate >= 50 bags/hr	ARGUS should contain capacity for growth to achieve certifiable detection of smaller threat masses (below certification criteria) without compromise in false alarm or throughput as a first priority.
25 3.11.2 Costs Reduction	Unit Cost < $300K Annual Cost < $30K	ARGUS should contain capacity for growth to achieve lower unit or annual maintenance costs as a second priority.
26 3.11.3 Effective Throughput Growth	Throughput > 50 bags/hr	ARGUS should contain capacity for growth to achieve increased effective throughput as a third priority.
27 3.11.4 Installability	L/W/H < 335/210/215 cm Floor Loading < 500 Kg/sq m Power <20kW	ARGUS should contain capacity for growth to achieve smaller footprint & lower weight and power needs as a fourth priority.

1.2 Approach

The Offeror shall submit documentation of the analysis intended to substantiate satisfaction of the applicable requirements. SMEs will review the documented analysis and assess the relative effort required for growth in each area specified by the numbered requirements.

1.3 Execution Time

Review and assessment are expected to require no longer than ten days for each system design.

1.4 Location

The review will be performed at the FAA William J. Hughes Technical Center, Aviation Security Laboratory in an office environment.

1.5 Tasks/Activities

FAA SMEs will conduct the evaluation in five tasks. This assumes that the proof of compliance offered comprises the strategy and substantiating data and analysis for achieving each of the following:

- Certifiable detection of smaller threat masses without compromise in false alarm or throughput
- Lower unit or annual maintenance costs
- Increased effective throughput
- Smaller footprint & lower weight and power needs

1.5.1 Evaluate Potential for Detecting Smaller Masses

SME will assess the reasonableness of the offered approach for improving the system to detect reduced threat masses. SME will consider both the level of effort required and probability of success.

1.5.2 Evaluate Potential for Lower Costs

SME will assess the reasonableness of the offered approach for improving the system to reduce the initial unit and/or recurring annual costs. SME will consider both the level of effort required and probability of success.

1.5.3 Evaluate Potential for Increased Effective Throughput

SME will assess the reasonableness of the offered approach for improving the system to increase effective throughput. SME will consider both the level of effort required and probability of success.

1.5.4 Evaluate Potential for Smaller Impact

SME will assess the reasonableness of the offered approach(es) for reducing the size, weight, and power requirements of the system. SME will consider both the level of effort required and probability of success.

1.5.5 Document the Evaluation

SME will assess the ease of achieving growth in each area and document the evaluation. SME will consider the effect of system changes to improve one area on performance in the other areas.

1.6 Personnel

One FAA SME in each of the following areas, or a combination of the areas, will be needed:

- Computed Tomography and X-ray imaging
- Mechanical engineering - value engineering for reduce lifecycle cost, machine design
- Human Factors
- Sensor integration

Multiple qualified individuals in each area or combination of areas can be applied if more than one system design is to be evaluated at the same time. However, the individuals should work together to assure comparable evaluations.

1.7 Test Equipment

N/A

1.8 Data Reduction/Analysis

It is expected that data reduction and mathematical analysis will be limited to checking calculations. However, analysis using applicable engineering calculations will be applied as necessary if the substantiation of claims is at all questionable.

1.9 Special Conditions (includes any special test conditions, test scenarios, or special operating conditions required)

N/A

2. IMAGING ARCHIVING

2.1 Objectives and Success Criteria.

The objective of evaluation 5.2 is to assess whether the design satisfies the threshold Measures of Performance shcwn in table A-2 of Appendix A and summarized in table C-1 for specification requirement 34.

TABLE C-2. EVALUATION 5.1 OBJECTIVES AND SUCCESS CRITERIA

Requirement/ Specification/ COI	**MOS & Threshold MOP**	**Requirement/Specification Text**
34 4.0 Image Archiving	Record and redisplay bag image files for near-real-time play-back.	ARGUS shall possess an Image Archiver capability to support development. It shall record and redisplay, bag image files for near-real-time playback to support data collection and testing.

2.2 Approach

A system operator shall demonstrate the Image Archiver capability by first recording a bag image and then redisplaying and manipulating that image.

2.3 Execution Time

Demonstration is expected to require less than one day for each system design.

2.4 Location

The demonstration will be performed during the airport data collection task at the ARGUS test bed located at an airport to be identified.

2.5 Tasks/Activities

A member of the test team will note whether the redisplay occurs in near-real-time and what functionally is available for viewing the image.

2.6 Personnel

One Test Observer, who may be the system operator, will be needed.

2.7 Test Equipment

The only equipment required is the EDS prototype under evaluation and one or more test bags.

2.8 Data Reduction/Analysis

N/A

2.9 Special Conditions (includes any special test conditions, test scenarios, or special operating conditions required)

N/A