

**Acquisition Management System Guidance**

Test and Evaluation Master Plan Template for Investment Programs

Version 6.0, January 2021

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**TEMPLATE GUIDANCE**

This template provides a framework and outline to generate a Test and Evaluation Master Plan (TEMP) to comply with the processes described in the Federal Aviation Administration (FAA) William J. Hughes Technical Center’s Test and Evaluation (T&E) Handbook and T&E Process Guidelines. TEMP development is an iterative process that assembles data about the test program as its details mature.

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| C:\Users\Angela CTR Moore\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\938DE85E.tmp | Informational text explains what content must appear in the section. |
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| Magenta | Magenta text provides you with sample content to update according to your test effort. |

GENERAL GUIDANCE

The Test and Evaluation Master Plan (TEMP) forms the basis for achieving a well-structured and efficient test program. It is the primary test management document for the investment program throughout its lifecycle. The TEMP describes the various planning and preparation activities required for the test program, the testing to be accomplished, organizational responsibilities for the testing, and reporting the test results. The testing described in the TEMP is used to support investment decisions by identifying areas of technical and operational risk.

To obtain references for T&E policy, guidelines, or templates, refer to <https://fast.faa.gov/EMP_Test_Evaluation.cfm>.

The TEMP is developed in accordance with the processes described in the Federal Aviation Administration (FAA) William J. Hughes Technical Center (WJHTC) Test and Evaluation (T&E) Handbook. There are three major submissions of the TEMP:

* The preliminary TEMP (pTEMP) defines the investment program test strategy and scope. It is developed based upon the concepts and functions documented in the initial Program Requirements Document (PRD) prior to initial investment decision and is not expected to contain the complete level of detail required to fully implement the T&E program.
* The initial TEMP (iTEMP) defines the test strategy for the investment program based on the final PRD and establishes the basis for test requirements in the Screening Information Request (SIR) to industry and test cost/schedules in the acquisition program baseline. The iTEMP is required for the Final Investment Decision (FID). While the iTEMP is not expected to contain the complete level of detail required to fully implement the T&E program, it must contain estimates of test scope that are sufficient to address the Implementation Strategy and Planning Document (ISPD) and development of T&E requirements for the SIR.
* The final TEMP (fTEMP) is a revision of the iTEMP that completely defines the test strategy and scope of a test program. It is completed after design reviews such as the Critical Design Review (CDR) and prior to delivery of the Contractor’s Master Test Plan (CMTP).

The pTEMP is not expected to contain the complete level of detail required to implement the T&E program fully. Consequently, some sections of the pTEMP may contain “TBD.” Based on the latest available information, the pTEMP sections notated with the checkmark icon (**✓**) must be fully addressed. The iTEMP, fTEMP, and subsequent revisions must have all sections completed.



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 Cover Page: Contains all the elements required for the cover page: FAA logo; official system, service, or capability nomenclature; document identification (e.g., preliminary/initial/final Test and Evaluation Master Plan for Program Name); document control number; version number; publication date; division name and code, organization name and code.

Indicate throughout the document the TEMP phase the document addresses. [i.e., preliminary (pTEMP), initial (iTEMP) or final (fTEMP)].

(Preliminary, Initial or Final) Test and Evaluation Master Plan for Program Name

| **Document #** | VVSPT-D4-TEM-0xx |
| --- | --- |
| **Version #** | x.x |
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**** Identify the document version number, version date, and change summary for each document version throughout the TEMP history.

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APPROVAL SIGNATURES

**** Obtain signature, org code, name, and date for each approving authority. Other signatories may be added as needed.

 Required approval authorities are the Director of the Test Service Organization (or equivalent), Program Manager, the Division Manager, the T&E First-Line Supervisor, the Developmental Test (DT) Director, and the Operational Test (OT) Director.

| Document Title: | (Preliminary, Initial or Final) Test and Evaluation Master Plan for Program Name |
| --- | --- |

| Director of Test Service Organization (or equivalent) Org code | Date |
| --- | --- |

|  |  |
| --- | --- |
| Program Manager Org code | Date |

| Division Manager Org code | Date |
| --- | --- |

| T&E First-Line Supervisor Org code | Date |
| --- | --- |

| Operational Test Director Org code | Date |
| --- | --- |

| Development Test Director Org code | Date |
| --- | --- |

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Process Overview

## Background ✓

**** Briefly summarize background information for this TEMP (e.g., prior versions, status of source documents, etc.). Specify any Independent Operational Assessment (IOA) designation. Identify the type of investment (e.g., system, service, capability, Commercial Off-the-Shelf (COTS), Non-Developmental Item, software only, etc.).

## Purpose ✓

**** Define the purpose of the TEMP.

This TEMP describes the test program; provides a basis to verify and validate the system, service, or capability under test; ensures the system, service, or capability meets program requirements specified in its Program Requirements Document; and ensures it is operationally suitable and effective.

## Scope ✓

**** Identify all individual tests and phases of the test program such as Prototype Tests, User Demonstrations, Operational Capability Demonstrations, Operational Capability Tests, Development Testing, Operational Testing, etc.

State the test strategies identified in the ISPD but include more detail to provide a thorough definition of the test strategies employed. Identify the primary program requirements that formulate the basis of the test program.

Reference Documents

**** List documents referenced in the TEMP that are used to direct or to support implementation of the test program, including their current dates and version numbers as published.

## FAA Documents ✓

**** Use the following subsections to list the documents specific to this investment program relative to this plan. Include the current dates and version numbers as published. Identify references to the applicable FAA documents including, at a minimum, the PRD, the ISPD, and the Test and Evaluation (T&E) Handbook.

*William J. Hughes Technical Center Test and Evaluation (T&E) Handbook*, version 5.0, xxxxxxxxx

*Program Name Program Requirements Document (PRD)*, xxxxxxx

*Program Name Implementation Strategy and Planning Document (ISPD)*, xxxxxxxxxx

*Critical Operation Issues (COI) Decomposition Guide*, TSPAT-D3-GDE-001, version 1, November 2008

*Verification Requirements Traceability Matrix (VTRM) Content and Format Guidance*, VVSPT-E5-GDE-017, version 3, November 20, 2018

*Test and Evaluation (T&E) Process Guidelines*, Version 1.0, July 10, 2020

## Other Government Documents ✓

**** Use the following subsections to list the documents specific to this investment program relative to this plan. Include the current dates and version numbers as published.

## Non-Government Documents ✓

**** Reference any applicable non-government documents [e.g., Institute of Electrical and Electronics Engineers (IEEE), RTCA, vendor documentation, contractor tests].

System, Service, or Capability Description

## System, service, or capability Overview ✓

**** Provide a general description of the system, service, or capability and an operational view diagram. Summarize the operational environment in which the system, service, or capability under test will be used. Include the operational concept, maintenance concept, and operational training requirements as necessary. Describe how current operations will be affected by the system, service, or capability under test.

## Interfaces Overview ✓

****Provide a functional description of the interfaces to/from the system, service, or capability. Include a system view diagram and a description of the system, service, or capability interfaces.

Test Management

## Management of the TEMP

**** Specify how the TEMP will be maintained. Identify the organization(s) responsible for the TEMP, the parties involved in its development, and future maintenance requirements for the document. Outline the process that will be used to manage the TEMP, including the milestones or events that will drive the need to revise the TEMP.

## Integrated Test Schedule

**** Provide a testing schedule to the detail known at the time of TEMP development. Present the test schedule as a table, spreadsheet or Gantt chart, and include other development/acquisition activities (e.g., test capability development and accreditation, etc.). Show major activities and phases of test. Include milestones on which DT and OT are dependent or providing support (including but not limited to IID, FID, GA, IOC, ISD, etc.). For additional guidance on test schedule development, refer to the Test Schedule Development Guidance Document located in the V&V Repository.

## T&E Funding ✓

**** Identify the source(s) of funding for the planning, conduct, and oversight of DT, OT, and all other T&E activities Identify the associated planning documents that contain funding details [e.g., ISPD, Project Scope Agreement (PjSA), contract, etc.].

## Test Management Organization ✓

**** Briefly identify the Program Office and the Government and contractor test organizations.

### Test Program Roles and Responsibilities

****Identify the roles and responsibilities of the Government and contractor organizations that will conduct and support the test program.

### Integrated Test Team (ITT)

**** Describe the composition and roles of the Integrated Test Team (ITT).

### DT Test Working Group ✓

**** Describe the composition and roles of the DT Test Working Group (TWG).

### OT Test Working Group ✓

**** Describe the composition and roles of the OT TWG.

### Personnel Resource Requirements

**** Describe the personnel needed for each phase of testing. Include operational positions and the skills associated with each position, the role of individual test personnel, the organizations supplying the personnel, and the time-periods for which personnel will be requested. Include personnel resource requirements for test capability development and accreditation. This information may be presented in the following tables.

Table 4.4.5-1. DT Phase Personnel Requirements

|  |
| --- |
| DT PHASE |
| OperationalPosition | Skills & TrainingAssociated | Role | Organization providing the resource | Time Period |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Table 4.4.5-2. OT Phase Personnel Requirements

|  |
| --- |
| OT PHASE |
| OperationalPosition | Skills & TrainingAssociated | Role | Organization providing the resource | Time Period |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

### Other Participating Organizations

****Describe specific roles and responsibilities of organizations that provide support to test activities and test-related events [e.g., Subject Matter Experts (SMEs), field support personnel, and Government Furnished Equipment (GFE)/Government Furnished Information (GFI) providers].

Basis of Test

## Program Requirements Document

****Identify the PRD and the steps taken to ensure its traceability to higher level documentation, such as the National Airspace System (NAS) Requirements Document, Solution Concept of Operations, and Shortfall Analysis.

### Critical Performance Requirements (CPRs) ✓

****List the CPRs.

 CPRs are program requirements deemed essential to meeting the mission need that the investment program is seeking to satisfy. The objective is to ensure visibility to management in support of prudent and timely decision making.

### Critical Operational Issues (COIs) ✓

****List the COIs in sequential order. As modeled in Appendix B, use the number assigned to each COI as the first character to decompose into MOEs, MOSs, and MOPs.

Refer to Appendix B for the decomposition of COIs.

## System Specification Document (SSD)

****Identify the SSD, any contractor-developed specifications, and steps taken to ensure their traceability to the PRD. These specifications describe the physical, functional, or performance requirements of a product or system to be obtained from a contractor and contains verifiable criteria for determining whether or not the requirements are met.

Test Program Description ✓

**** Testing described should include all major test activities associated with Development Testing (DT) and Operational Testing (OT) as defined in the T&E Handbook.

## Previous Results ✓

**** Summarize any previous test results from the Service Analysis and Strategic Planning (SASP), Concept and Requirements Definition (CRD), and Investment Analysis (IA) that are relevant to the planned T&E effort. For SASP and CRD, this section may summarize the conclusions from the shortfall analysis or feasibility studies. For IA, this section may describe previous test results from prototyping and/or demonstrations, which were used to support verification and validation of system, service, or capability performance. Reference any reports containing relevant results.

## Development Testing (DT) ✓

**** Describe DT test activities that need to be conducted by the contractor. Include necessary details to plan and develop contractual test requirements, including the test section(s) of the system, service, or capability specification. Identify program decision points and milestones supported by the conduct of DT activities. Document the T&E methodologies used to evaluate safety-hazard related requirements and security risks.

**** Describe the test hierarchy from the DT activity level down to the individual test cases. An illustration or text may be used. An example of a test hierarchy illustration is provided below.

 Test cases are not required in the TEMP but are required for the Test Plan.

Figure 6.2-1. DT Test Hierarchy

### DT Test Activities ✓

**** Name the DT test activities (for example, FAT, DT System Testing, etc.) in the section heading. See DT section of the T&E Handbook for a list of possible test activities. Specify a sequential number designation for the test activity. Number subsequent sections and associated subsections accordingly (e.g., 6.2.1, 6.2.2, … 6.2.X).

#### DT Test Objectives ✓

**** Describe the objectives of the test activity.

#### DT Test Approach

**** Describe the testing that will be performed to fulfill test objectives. Address any known program or design risks and provide sufficient detail to support the development of the contractual requirements for the test activity.

#### DT Criteria

##### DT Entrance Criteria

**** List the items and conditions (such as planned project milestones) that must be met before testing can begin. See DT section of the T&E Handbook for a list of minimum DT entrance criteria.

##### DT Test Readiness Review

**** Describe all required elements to conduct the DT TRR, including entrance and exit criteria for the contractor to demonstrate preparedness to begin formal testing.

##### DT Exit Criteria

**** Describe the measures/metrics or other conditions that must be met before the test activity is complete and has met its objectives. See DT section of the T&E Handbook for a list of minimum DT exit criteria.

#### DT Location(s)

**** Identify where testing will occur and the rationale for the selected location(s).

#### DT Configuration(s)

**** Describe the configurations, adaptations (if applicable), and test environment planned to be used for the test activity.

#### DT Test and Analysis Tools

**** Describe the test, data reduction, and analysis tools that will be used to support the test activity. These tools may include hardware tools (e.g., instrumentation, prototypes/mockups) and/or software tools (e.g., simulators, software programs).

#### DT Risks and Limitations

**** Describe any risks and limitations in meeting test objectives based on the proposed test approach and their impact on the test activity.

## Operational Testing (OT) ✓

**** Describe the OT tests conducted by the Government. These descriptions, combined with the VRTM (include as Appendix C), should be sufficiently detailed to support of the OT Test Plan development. Identify program decision points and milestones supported by the conduct of OT activities. Document the T&E methodologies used to evaluate safety-hazard related requirements and security risks.

**** Describe the test hierarchy from the OT activity level down to the individual test cases. An illustration or text may be used. An example of a test hierarchy illustration is provided below.

 Test cases are not required in the TEMP but are required for the Test Plan.

Figure 6.3-1. OT Test Hierarchy

### OT Criteria

#### OT Entrance Criteria

**** List the items and conditions (such as planned project milestones) that must be met before testing can begin. See OT section of the T&E Handbook for a list of minimum OT entrance criteria.

#### OT Test Readiness Review

**** Describe all elements required to conduct the OT TRR, including entrance and exit criteria to demonstrate preparedness to begin formal testing.

#### OT Exit Criteria

**** Describe the measures/metrics or other conditions that must be met before the test activity is complete and has met its objectives. See DT section of the T&E Handbook for a list of minimum DT exit criteria.

#### OT Caucus

****Describe all required elements to conduct the OT Caucus. See OT section of the T&E Handbook for guidance.

### OT Test Activities ✓

**** Name the OT test activities (for example, Integration test, Safety, Security, operational effectiveness and suitability, etc.) in the section heading. See OT section of the T&E Handbook for a list of possible test activities. Specify a sequential number designation for the test activity. Number subsequent sections and associated subsections accordingly (e.g., 6.3.1, 6.3.2, … 6.3.X).

#### Test Objectives ✓

**** Describe the objectives of the test activity.

#### Test Approach

**** Describe the testing that will be performed to fulfill test objectives. Address any known program or design risk and provide sufficient detail to support development of the OT Test Plan.

#### OT Location(s)

**** Identify where testing will occur and the rationale for the selected location(s).

#### OT Configuration(s)

**** Describe the configurations, adaptations (if applicable), and test environment planned to be used for the test activity.

#### OT Test and Analysis Tools

**** Describe the test, data reduction, and analysis tools that will be used to support the test activity. These tools may include hardware tools (e.g., instrumentation, prototypes/mockups) and/or software tools (e.g., simulators, software programs).

#### OT Risks and Limitations

**** Describe any risks and limitations in meeting test objectives based on the proposed test approach and their impact on the test activity.

## Field Familiarization Support

**** Specify whether Field Familiarization (FF) will be conducted. If FF is conducted, identify the organizations and define the test organization roles. Specify where FF will be conducted. If no FF is conducted, state that the section is not applicable.

### Field Familiarization Support Objective

****Describe the objectives of the FF activity.

### Field Familiarization Support Approach

****Describe the FF support activities that will be performed. Address any known program or design risks. Provide sufficient detail to support the development of applicable documents (e.g., FF Test Plan, FF Support).

Test Resources and Supporting Activities ✓

## Configuration Control

**** Describe how Configuration Management (CM) planning, identification, control, audits, and status accounting will be managed (or cite the Program CM Plan). If available, identify the Test Program CM Plan, the configurations, environment, and adaptations (if applicable) to be used. Describe the process to maintain CM and test artifacts.

## Test Capability Summary and Accreditation

****Describe the test capabilities required to support verification and validation of the system, service, or capability under test, including brief descriptions of the methods to be used in accrediting these capabilities. Test capabilities are defined as assets used in conjunction with the system, service, or capability under test or a representation of the system, service, or capability under test to generate data to address test measures. Test capabilities include testbeds, simulated environments, instrumentation, test tools, data collection and analysis systems, distributed test capabilities, test drivers, test scripts, and digital modeling capabilities.

## Test Program Risks and Limitations ✓

**** Describe the overarching risks and limitations inherent in the use of the test strategies for DT and OT proposed in the TEMP. Identify potential impacts of these risks, limitations, and proposed risk mitigations.

## Training ✓

**** Describe the range and level of training and familiarization needed to support both DT and OT testing to include the following:

1. Training on the system, service, or capability provided by the contractor as required by the contract, along with participation in the oversight of the system development by the contractor for system familiarization
2. T&E HB and QMS process training to ensure that T&E practitioners fully understand what is expected to successfully perform the test program
3. Hands-on familiarization for the system, service, or capability under test
4. Describe any special knowledge needed by the test team(s) (e.g., familiarization with the test program and the test facility, use of special test tools, etc.).

## Test Documentation ✓

### Contractor T&E Documentation ✓

**** Describe the documentation that will be obtained from the contractor in support of the test process. See T&E Handbook for a minimum list of required test documentation.

### FAA T&E Documentation ✓

**** Describe the documentation to be developed by the Government in support of the test process. This documentation should include plans, procedures and reports. Specify when these documents will be published and to whom they will be distributed.

## Required T&E Technical Interchange Meetings and Reviews ✓

**** Describe the Technical Interchange Meetings (TIMs) and reviews necessary to implement the test program, including design reviews, DT and OT TWG meetings, Test Readiness Reviews (TRRs), OT Caucuses, etc.

## T&E Status Reporting and Tracking Processes ✓

**** Describe the mechanisms that will be used to report status and track progress of the T&E program, including test databases. The use of Interim Assessment Reports (IARs) should be considered to provide management with timely assessments of the state and maturity of the system, service, or capability under test throughout the development and test process.

## Discrepancy Reports (DRs)/Program Trouble Reports (PTRs) ✓

****Describe the process of recording, prioritizing (in accordance with the T&E Handbook), tracking, and correcting problems and/or discrepancies experienced during the test program.

## Test National Change Proposals Requirements

**** Identify whether any test NAS Change Proposals (NCPs) will be required to support the test program.

 Test NCPs authorize temporary configuration changes to existing baselined systems, including installation of prototypes. A test NCP normally is approved for a maximum of 12 months.

Transition of the Test Program to In-Service Management (ISM)

Describe the major activities, requirements, risks and considerations for transitioning the test program from Solution Implementation (SI) to In-Service Management (ISM). Ensure the transition will be as seamless and effective as possible. Describe ISM coordination, risk mitigation plans, and early participation in SI test program activities (e.g., reviewing test plans and reports, witnessing test activities, and participating in working group meetings/caucuses). Include test or other relevant deliverables to ISM. Examples include test program deviations and waivers from the SI phase; open DRs and PTRs from the SI phase; test reports; current copies of test plans and test procedures, including as-run redlined copies; current and accredited test tools, scenarios and models, with associated documentation; and a VRTM with current status.

**APPENDIX A: Acronyms, Terms and Definitions ✓**

**Acronyms**

**** Identify all acronyms used in this TEMP.

|  |  |
| --- | --- |
| Acronym | Definition |
| CM | Configuration Management |
| COI | Critical Operational Issue |
| CMTP | Contractor Master Test Plan |
| COTS | Commercial Off-the-Shelf |
| CPR | Critical Performance Requirements |
| CRD | Concept and Requirements Definition |
| DR | Discrepancy Report |
| DT | Development Testing |
| FF | Field Familiarization |
| FID | Final Investment Decision |
| fTEMP | final TEMP |
| GA | Government Acceptance |
| GFE | Government Furnished Equipment |
| GFI | Government Furnished Information |
| IA | Investment Analysis |
| IAR | Interim Assessment Reports |
| IEEE | Institute of Electrical and Electronics Engineers |
| IID | Initial Investment Decision |
| IOA | Independent Operational Assessment |
| IOC | Initial Operating Capability |
| ISD | In-Service Decision |
| ISM | In-Service Management |
| ISPD | Implementation Strategy and Planning Document |
| iTEMP | initial TEMP |
| ITT | Integrated Test Team |
| MOE | Measure of Effectiveness |
| MOP | Measures of Performance |
| MOS | Measure of Suitability |
| NAS | National Airspace System |
| NCP | NAS Change Proposal |
| OT | Operational Testing |
| PjSA | Project Scope Agreement |
| PRD | Program Requirements Document |
| pTEMP | preliminary TEMP |
| PTR | Program Trouble Report |
| RTCA | Radio Technical Commission for Aeronautics |
| SASP | Service Analysis and Strategic Planning |
| SI | Solution Implementation |
| SIR | Screening Information Request |
| SME | Subject Matter Expert |
| SOW | Statement of Work |
| T&E | Test and Evaluation |
| TEMP | Test and Evaluation Master Plan |
| TRR | Test Readiness Review |
| TWG | Test Working Group |
| VRTM | Verification Requirements Traceability Matrix |
| WJHTC | William J. Hughes Technical Center |

**Test Terms and Definitions**

 List any test terms and definitions specific to this TEMP.

|  |  |
| --- | --- |
| Term | Definition |
|  |  |
|  |  |
|  |  |

**APPENDIX B: COI Decomposition ✓**

**** Decompose COIs into MOEs, MOSs, and MOPs, including associated test activities for each MOP, if known. A sample format is provided below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Critical Operational Issue (COI) | Measures of Effectiveness (MOEs) | Measures of Suitability (MOSs) | Measures of Performance (MOPs) | Test Activity |
| **COI 1.0**: text |  |  |  |  |
|  | **MOE 1.1**: text |  | **MOP 1.1.1**: text | **1.1.1**: text |
|  |  |  | **MOP 1.1.2**: text | **1.1.2**: text |
|  | **MOE 1.2**: text |  | **MOP 1.2.1**: text | **1.2.1**: text |
|  |  |  | **MOP 1.2.2**: text | **1.2.2**: text |
| **COI 2.0**: text |  | **MOS 2.1**: text | **MOP 2.1.1**: text | **2.1.1**: text |
|  |  |  | **MOP 2.1.2**: text | **2.1.2:** text |
|  |  | **MOS 2.2**: text | **MOP 2.2.1**: text | **2.2.1**: text |
|  |  |  | **MOP 2.2.2**: text | **2.2.2:** text |

**APPENDIX C: TEMP VRTM ✓**

**** Insert a table that traces the COIs/MOEs/MOSs/MOPs and program requirements to the respective test phase(s) and test activities in which the MOPs and requirements are to be verified and/or validated. (See T&E Handbook for further guidance.)

| PRD ID | REQ TEXT | CPR (N/A or #) | TEST PHASE | VERIF. METHOD | MOE/MOS # | MOE/MOS TEXT | MOP # |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PRD-0128 | SYSX shall provide the latest Terminal data automatically in accordance with registered parameters. | 3 | DT | D | N/A | N/A | N/A |
| OT | T | MOE 1.3 | SYSTEM automatically provides data received from XYZ to ZZA in accordance with the Messaging ICD. | MOP 1.3.1MOP 1.3.2MOP 1.3.3 |
| OT | D | MOS 1.4 | SYSTEM automatically provides data received from ABC to ZZT in accordance with the Messaging ICD. | N/A |
| PRD-0154 | Data communications training systems must simulate data communications operator position functionality at operator positions. | N/A | OT | D | MOS 9.1 | Training enables Tech Ops personnel to maintain SYSTEM operations. | MOP 9.1.1MOP 9.1.2 |
| PRD-0201 | The system shall have a response time from user input to system output in accordance with the NAS-RD-2013. | 5 | DT | T, A | N/A | N/A | N/A |
| OT | D | MOE 4.1 | SYSTEM allows the sending user to designate the type of response required. | MOP 4.1.1MOP 4.1.2 |
| OT | T | MOS 4.2 | SYSTEM displays user response to an electronic message. | N/A |

Note: If needed, add appendices to provide more information.