

Administrative Changes to DODI 5000.89_DAFI 99-103, *Capabilities-Based Test and Evaluation*

OPR: AF/TEP

Reference to “Level I” in relation to Acquisition T&E certification, is hereby changed to “Foundational”.
13 July 2022.

Reference to “Level II” in relation to Defense Acquisition Workforce Improvement Act T&E acquisition-coded position certifications, is hereby changed to “Practitioner”. 13 July 2022.

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**



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CAPABILITIES-BASED TEST AND EVALUATION

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This Supplement implements Department of Defense (DoD) Instruction (DoDI) 5000.89, *Test and Evaluation*, and provides Department of the Air Force (DAF) guidance for capabilities-based test and evaluation (T&E). The DoDI is printed word-for-word in regular font without editorial review. Department of the Air Force Instruction (DAFI) supplementary material is printed in bold font and indicated by “(Added)(DAF).” This publication also implements DAF Policy Directive (DAFPD) 99-1, *Test and Evaluation*. It describes the planning, conduct, and reporting of cost-effective T&E programs as an efficient continuum of integrated testing throughout the system life cycle. This instruction applies to the United States Space Force (USSF), Regular Air Force, the Air Force Reserve, and the Air National Guard. This instruction applies to all DAF acquisition projects regardless of acquisition category to include programs, projects, experiments and activities that support Integrated Life Cycle Management. This publication may be supplemented at any level, but all supplements must be routed to Directorate of Air Force Test and Evaluation, Policy, Programs, and Resources Division (AF/TEP), AF.TEP.Workflow@us.af.mil, for review prior to publication. Refer

recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate chain of command.

The authorities to waive wing/delta/unit level requirements that are outside of the acquisition execution chain in this publication are identified with a Tier (T-0, T-1, T-2, T-3) number following the compliance statement. See DAFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's commander for non-tiered, non-acquisition execution compliance items. Use a completed AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval* (or equivalent information) for waiver requests and provide completed copy of the waiver to the publication OPR. See additional waiver documentation requirements in DAFI 33-360. Mandates to the acquisition execution chain and defined in this DAFI, including mandates to the Decision Authority (DA), Program Executive Officer (PEO), Program Manager (PM), or other program office members, are not elevated through the organizational chain of authority; and therefore tiering in accordance with DAFI 33-360 is not applied and the waiver authority is as specified or if not specified, through the acquisition execution chain of authority as specified in Air Force Instruction (AFI) 63-101/20-101, *Integrated Life Cycle Management*.

Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the DAF.

(Added) (AFMC) This supplement implements and extends the guidance of Department of Air Force Instruction (DAFI) DoDI5000.89_DAFI 99-103, *Capabilities Based Test and Evaluation*, 09 December 2021. This supplement applies to AFMC units, it does not apply to the Air National Guard or the Air Force Reserve Command except for units under AFMC OPCON. This publication does not apply to- the U.S. Space Force. This supplement may be supplemented at any level, but all supplements must be routed to AFMC/A3F for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The authorities to waive requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See DAFMAN90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority. AFMC/A3/6 is the waiver approval authority for all non-tiered compliance items per DAFMAN90-161. Route AFMC waiver requests via the Program Manager, Center Test Authority, Program Executive Officer, HQ AFMC/A3F, AF/TE and then to the waiver authority.

SUMMARY OF CHANGES

This publication has been completely rewritten and should be read in its entirety. This publication serves as the DAF Supplement to DoDI 5000.89 and supersedes any other written DAF policy on the subject. Major changes include adding support responsibilities for the newly established USSF, the incorporation of USSF Test and Evaluation (USSF/TE), and changing this AFI to a DAFI and supplement.

(Added) (AFMC) *SUMMARY OF CHANGES*

This publication has been extensively rewritten and should be read in its entirety. This rewrite aligns MAJCOM Supplement with the recent revision to DoDI5000.89_DAFI 99-103, captures changes for Lead Developmental Test and Evaluation Organization selection and approval authority, clarifies policy for Center Test Authorities, removes the AFMC Form 42 from AF Publications and Forms, updates the AFMC LDTO Candidate list and places greater emphasis on tailoring test programs to facilitate rapid acquisition.



DoD INSTRUCTION 5000.89

TEST AND EVALUATION

Originating Component: Office of the Under Secretary of Defense for Research and Engineering
Originating Component: Office of the Director, Operational Test and Evaluation

Effective: November 19, 2020

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Incorporates and Cancels: Enclosure 4 and Enclosure 5 of DoD Instruction 5000.02T, "Operation of the Defense Acquisition System," January 7, 2015, as amended

Approved by: Michael J.K. Kratsios, Acting Under Secretary of Defense for Research and Engineering

Approved by: Robert F. Behler, Director, Operational Test and Evaluation

Christopher M. Wilcox, SES, DAF
Acting Director, Test and Evaluation

Purpose: In accordance with the authority in DoD Directive (DoDD) 5137.02 and DoDD 5141.02, this issuance establishes policy, assigns responsibilities, and provides procedures for test and evaluation (T&E) programs across five of the six pathways of the adaptive acquisition framework: urgent capability acquisition, middle tier of acquisition (MTA), major capability acquisition, software acquisition, and defense business systems (DBS). The sixth pathway, defense acquisition of services, does not require T&E policy and procedures.

TABLE OF CONTENTS

SECTION 1: GENERAL ISSUANCE INFORMATION	7
1.1. Applicability	7
1.2. Policy	7
SECTION 2: RESPONSIBILITIES	9
2.1. Director of OT&E (DOT&E).....	9
2.2. USD(R&E).....	10
2.3. (ADDED)(DAF) Headquarters, U.S. Air Force, Director of Test and Evaluation (AF/TE).	10
2.4. (ADDED)(DAF) Headquarters, U.S. Space Force, Director of Test and Evaluation (USSF/TE).	12
2.5. (ADDED)(DAF) Assistant Secretary of the Air Force For Acquisition, Technology and Logistics (SAF/AQ), (SAF/SQ).	13
2.6. (ADDED)(DAF) Headquarters, U.S. Air Force, Deputy Chief of Staff for Intelligence, Surveillance, Reconnaissance and Cyber Effects Operations (AF/A2/6)..	14
2.7. (ADDED)(DAF) Headquarters, U.S. Space Force, Chief Operations Officer (SF/COO).	14
2.8. (ADDED)(DAF) Headquarters, U.S. Air Force, Deputy Chiefs of Staff for Operations, Plans, and Requirements (AF/A3) and for Air Force Futures (AF/A5/7).	14
2.9. (ADDED)(DAF) Secretary Of The Air Force, Chief Information Officer (SAF/CN).. ..	15
2.10. (Added)(Daf) Headquarters, Air Force Materiel Command (AFMC).....	16
2.11. (ADDED)(DAF) Space Systems Command (SSC).....	17
2.12. (ADDED)(DAF) Space Training and Readiness Command (STARCOM).....	18
2.13. (ADDED)(DAF) USAF Operational MAJCOMS, Direct Reporting Units, Field Operating Agencies, and HQ ACC as Specified	20
2.14. (ADDED)(DAF) Air Force Operational Test and Evaluation Center (AFOTEC).	22
2.15. (ADDED)(DAF) United States Air Force Warfare Center (USAFWC).....	23
2.16. (ADDED)(DAF) Operational Test Organizations (OTO).	24
2.17. (ADDED)(DAF) Program Executive Officer (PEO).....	25
2.18. (ADDED)(DAF) Program Manager (PM).....	26
2.19. (ADDED)(DAF) Chief Developmental Tester (CDT), Test Manager	30
2.20. (ADDED)(DAF) Lead Developmental Test and Evaluation Organization (LDTO). ..	32
2.21. (ADDED)(DAF) Participating Test Organizations (PTOs).	33
2.22. (ADDED)(DAF) Integrated Test Team	34
2.23. (ADDED)(AFMC) Other AFMC Centers.....	36
2.24. (ADDED)(AFMC) Center Test Authority.....	37
SECTION 3: T&E PROCEDURES	37
3.1. Overview.	37
3.2. T&E Oversight List.....	46
3.3. T&E Management.....	50
3.4. T&E Program Planning.....	56
3.5. Cybersecurity T&E.	61

3.6. Interoperability T&E	63
3.7. Navigation Warfare (NAVWAR) Compliance T&E	64
3.8. (ADDED)(DAF) Foreign Military Sales T&E.....	64
3.9. (ADDED)(DAF) Experimentation and Demonstration	65
3.10. (ADDED)(DAF) Lead Service Considerations.....	66
3.11. (ADDED)(DAF) Operational Command Test Support.....	66
3.12. (ADDED)(DAF) Independent Technical and Safety Reviews	67
3.13. (ADDED)(DAF) T&E Reporting	67
3.14. (ADDED)(DAF) Disposing of Test Assets	68
SECTION 4: ADAPTIVE ACQUISITION FRAMEWORK	69
4.1. General Procedures	69
4.2. T&E for Urgent Capability Acquisition Pathway	70
4.3. T&E for MTA Pathway.....	71
a. Purpose and Applicability.....	71
b. General Approach for Programs on T&E Oversight.	71
c. Test Strategy.....	72
d. Ops Demo.....	73
e. Reporting.....	74
4.4. T&E for Major Capability Acquisition Pathway	74
4.5. T&E for Software Acquisition Pathway	75
4.6. T&E for the DBS Pathway.....	78
4.7. Companion Guide	79
SECTION 5: DT&E	80
5.1. Overview	80
5.2. DT&E Activities	81
5.3. DT&E Execution, Evaluation, and Reporting.....	83
a. DT&E Execution.....	84
b. DT&E Evaluation.....	84
c. DT&E Reports and Data.....	85
SECTION 6: OT&E and LFT&E.....	86
6.1. Overview	86
6.2. OT&E Activities	86
a. OAs.....	86
b. RFPs.....	87
c. OT&E for Reliability and Maintainability.....	87
d. Operational Test Readiness.....	87
e. Certifications.....	88
f. (Added)(DAF) Initial Operational T&E (IOT&E).....	89
g. (Added)(DAF) Qualification Operational T&E (QOT&E).....	89
h. (Added)(DAF) Follow-on Operational T&E (FOT&E).	89
i. (Added)(DAF) Force Development Evaluation (FDE).	89
j. (Added)(DAF) Multi-Service Operational Test and Evaluation (MOT&E).	89
k. (Added)(DAF) Tactics Development and Evaluation.	90
l. (Added)(DAF) Operational Utility Evaluation.....	90
m.(Added)(DAF) Operational Utility Assessment.....	90
n. (Added)(DAF) Military Utility Assessment.....	90
o. (Added)(DAF) Sufficiency of Test Review.....	90
p. (Added)(DAF) Summary of Operational Testing.....	91

q. (Added)(DAF) Weapons System Evaluation Program.....	92
r. (Added) (DAF) Testing of Training Devices.....	93
s. (Added)(DAF) Specialized Types of T&E.	93
6.3. LFT&E.....	94
6.4. OPERATIONAL AND LIVE FIRE EXECUTION.....	95
a. Planning Test Events.	96
b. Conducting Test Events.....	98
c. Data Management, Evaluation, and Reporting.....	99
GLOSSARY	104
G.1. Acronyms	104
G.2. Definitions.....	107
REFERENCES	126

FIGURES

Figure 1.a. (Added)(DAF) Integrated Test Team	40
Figure 1. Integrated T&E Framework	42
Figure 1.b. (Added)(DAF) DAF Signature/Coordination for TEMP or Test Strategy	44
Figure 1.c. (Added)(DAF) Determining the OTO.....	54
Figure 2. Adaptive Acquisition Framework	70
Figure 3. Operational or Major Live Fire Test Event: Planning, Approval, Execution, and Reporting.....	96

(Added)(DAF) TABLES

Table 1. (Added)(DAF) Information Requirements for T&E Oversight Programs.....	48
Table 2. (Added)(DAF) Summary of Operational Testing Options.....	91
Table 3. (Added)(DAF) Specialized Types of T&E	93

(Added)(AFMC) ATTACHMENTS

(Added)(AFMC) AFMC LDTO Candidate List Criteria

SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY.

This issuance applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this issuance as the “DoD Components”).

(Added)(DAF) When the DAF is not the lead Service for test, DAF testers follow the lead Service’s or joint T&E policies. Joint T&E of nuclear weapons systems and nuclear weapons systems components will be governed by this instruction unless otherwise specified by the joint memorandum of understanding developed by the DAF and Department of Energy. Exceptions to policy will be coordinated with SAF/AAZ, Security and Special Program Oversight; SAF/AQL, Special Programs; SAF/AQI, Information Dominance; USSF/TE or AF/TE; as applicable.

(Added)(DAF) In this instruction, guidance provided specifically for “Major Command (MAJCOM)” and “Field Commands (FLDCOMs)” also applies to Field Operating Agencies and Direct Reporting Units test activities (except the Air Force Operational Test and Evaluation Center (AFOTEC)).

(Added)(DAF) The policies and processes in this DAFI apply to the DAF T&E organizations and all programs, projects, demonstrations, experiments, and activities that support Integrated Life Cycle Management, to include but not limited to Urgent Capability Acquisition, MTA, Major Capability Acquisition, Software Acquisition, and DBS Pathways. This instruction also applies to Special Access Programs.

1.2. POLICY.

a. The DoD Components will:

(1) Conduct developmental T&E (DT&E), operational T&E (OT&E), and live fire T&E (LFT&E) as part of an adequate T&E program.

(2) Integrate test planning and test execution across stakeholders to facilitate an efficient use of data and resources.

b. For non-major defense acquisition programs (MDAPs) and for programs not on T&E oversight, these guiding principles should be used as a best practice for an integrated and effective T&E strategy.

c. (Added)(DAF) The systems, programs, and activities in the sub-paragraphs below are not within purview of this instruction unless the system or capability is left in the field or put on orbit. Activities exempted from this DAFI will follow its intent as much as

possible while balancing the missions of the Space Test Program and science and technology programs.

(1) (Added)(DAF) Activities associated with the space experimentation program described in AFI 10-1202, *Space Test Program (STP) Management*.

(2) (Added) (DAF) Science and technology programs or projects, which are managed in accordance with AFI 61-101, *Management of Science and Technology*. However, when science and technology activities are conducted post Milestone A for a Major Capability Acquisition, or post design phase for all other acquisition pathways, or under the authority of a PEO, the exemption no longer applies unless specifically authorized by AFMC/A3 or USSF/TE, as applicable. Non-program of record technology developments that are left behind as an operational capability must undergo an Operational Utility Assessment (or similar testing) to characterize the operational usefulness of the “leave-behind.”

SECTION 2: RESPONSIBILITIES

2.1. DIRECTOR OF OT&E (DOT&E).

Pursuant to Section 139, Title 10, United States Code (U.S.C.), the DOT&E is the principal adviser to the Secretary of Defense, the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), and the Under Secretary of Defense for Research and Engineering (USD(R&E)) on OT&E in the DoD, and the principal OT&E official within the senior management of the DoD. The DOT&E:

- a. Prescribes policies and procedures for the conduct of OT&E and LFT&E for the DoD across the acquisition pathways.
- b. Monitors and reviews OT&E and LFT&E activities in the DoD.
- c. Oversees MDAPs or other programs designated by the Director.
- d. Determines specific OT&E and LFT&E policy and best practices for each of the acquisition pathways as applicable.
- e. Designates select programs for DOT&E operational and live fire oversight in accordance with Sections 139, 2366, 2399, and 2400 of Title 10, U.S.C., as applicable, and the criteria outlined in Paragraph 3.2 of this issuance.
- f. Publishes and manages the T&E oversight list, which identifies all programs under oversight for DT&E, OT&E, or LFT&E.
- g. Approves the OT&E and LFT&E planned activities in test and evaluation master plans (TEMPs), test strategies, or other overarching program test planning documents for programs on the T&E oversight list.
- h. Approves, in writing, the adequacy of operational test (OT) plans for those programs under DOT&E oversight before OT begins.
- i. Approves LFT&E strategies and waivers before LFT&E activities begin and in accordance with the timeline established in Section 2366 of Title 10 U.S.C.
- j. Determines the quantity of articles to be procured for OT for systems on the T&E oversight list.
- k. Evaluates and approves the use of production-representative articles for purposes of adequate and realistic initial operational test and evaluation (IOT&E) for programs under T&E oversight.
- l. Assesses the adequacy of OT&E and LFT&E performed by the Military Services and operational test agencies (OTAs) for programs under T&E oversight.

- m. Approves, in writing, the use of data collected outside an approved operational test plan (OTP) for use in operational evaluation for programs under T&E oversight.
- n. Submits independent OT&E and LFT&E reports to the OSD, Joint Staff, DoD Components, and congressional defense committees, as applicable.
- o. Submits a report after the conclusion of OT&E, as required by Section 2399 of Title 10, U.S.C., to the OSD, Joint Staff, DoD Components, and congressional defense committees before systems under T&E oversight may proceed to beyond low-rate initial production (LRIP).
- p. Submits an annual report summarizing the operational and live fire test and evaluation activities of the Department of Defense during the preceding fiscal year as required by Section 139(h) of Title 10, U.S.C.

2.2. USD(R&E).

Pursuant to Section 133a of Title 10, U.S.C. and DoDD 5137.02, the USD(R&E):

- a. Establishes policies and strategic guidance and leads defense research; engineering; developmental prototyping and experimentation; technology development, exploitation, transition, and transfer; DT&E; and manufacturing technology activities.
- b. Prepares Milestone B (MS B) and Milestone C (MS C) DT&E sufficiency assessments on those MDAPs where the Defense Acquisition Executive (DAE) is the milestone decision authority (MDA).
- c. Develops DT&E policy and ensures appropriate test facilities, test ranges, tools, and related modeling and simulation capabilities are maintained within the DoD.
- d. Serves as an advisor to the Joint Requirements Oversight Council on matters within USD(R&E) authority and expertise to inform and influence requirements, concepts, capabilities-based assessments, and concepts of operations.
- e. Approves the DT&E plan within TEMP or test strategies and delegates approval authority, as appropriate.
- f. Develops governing policy and advances practices and workforce competencies for DT&E.

2.3. (ADDED)(DAF) HEADQUARTERS, U.S. AIR FORCE, DIRECTOR OF TEST AND EVALUATION (AF/TE).

(Added)(DAF) AF/TE will:

- a. **(Added)(DAF) Function as the chief test and evaluation advisor to the DAF senior leadership in accordance with Headquarters Air Force Mission Directive (HAFMD) 1-52, *Director of Test and Evaluation*. Be responsible to the Chief of Staff of the Air Force (CSAF)**

and Chief of Space Operations (CSO) for establishing AF/TE policy, advocating for T&E resources required to support weapons system development and sustainment, and resolving T&E issues and disputes. (T-1)

b. (Added)(DAF) Act as the final Air Staff and Office of the CSO (commonly referred to as Space Staff) T&E review authority and signatory for TEMP or test strategies (to include Request for Proposal TEMP or test strategy) prior to Service or Component acquisition executive approval and signature. (T-0) AF/TE will approve and sign TEMP for Acquisition Category (ACAT) I or Business Category (BCAT) I program test strategies and any program on T&E oversight. (T-0) Note: The term “Service or Component Acquisition Executive” is equivalent to “Component Acquisition Executive” used in DoD directives and instructions.

c. (Added)(DAF) Collaborate with requirements sponsors and system developers to improve the development, testing, and fielding of USAF and USSF systems or subsystems. (T-1) Participate in Document Writing Teams, Integrated Test Teams, and integrated product teams as necessary to help ensure program success. (T-1)

d. (Added)(DAF) Respond to and mediate DAF T&E issues between Headquarters (HQ) USAF principals, USSF principals, MAJCOMs, FLDCOMs, USAF and USSF testers, the Services, Office of the Secretary of Defense (OSD), and Congress. (T-1)

e. (Added)(DAF) Review and/or prepare T&E information for release to OSD and ensure timely availability of T&E results to decision makers. Arrange for DAF-level review(s) of test report briefings. (T-1)

f. (Added)(DAF) Oversee the DAF T&E infrastructure and ensure adequate facilities are available to support DAF T&E activities and other components’ T&E activities as required. (T-1) Administer various T&E resource processes and chair or serve on various committees, boards, and groups listed in HAFMD 1-52. (T-1)

g. (Added)(DAF) Act as the DAF Foreign Materiel Program lead in accordance with AFI 99-114-S, *Foreign Materiel Program (U)*. (T-1)

h. (Added)(DAF) Serve as the Cross Functional Authority for T&E personnel managed in accordance with DoDI 5000.66, *Defense Acquisition Workforce Education, Training, Experience, and Career Development Program*, and AFI 36-2670, *Total Force Development*. AF/TE, in collaboration with SAF/AQ, SAF/SQ, USSF/TE, and other functional authorities, functional managers and career field managers, will manage the development of a pool of qualified T&E personnel to fill Critical Acquisition Positions, including Key Leadership Positions. (T-1)

i. (Added)(DAF) Provide advice on Integrated Test Team charter development and membership requirements. (T-1) Review Integrated Test Team charters for programs on T&E oversight. (T-1)

j. (Added)(DAF) Manage the DAF Joint T&E Program and represent the DAF at the Joint T&E Executive Steering Group, Senior Advisory Council, and Technical Advisory Board in accordance with AFI 99-106, *Joint Test and Evaluation (JT&E) Program*.

(1) (Added)(DAF) The Air Force Joint Test Program Office (AFJO) is accountable to United States Air Force Warfare Center (USAFWC) Commander to ensure adequate support of the joint operational testing program as described in AFI 99-106. (T-1) AFJO executes the DAF Joint Test and Evaluation program on behalf of AF/TE and USSF/TE per AFI 99-106. (T-1)

(2) (Added)(DAF) AFJO as a Joint T&E OTA can support, administer and execute tests for all Joint T&E Programs, including Joint Tests, Joint Feasibility Studies, Quick Reaction Tests, and Collaborative Joint Tests. (T-1)

k. (Added)(DAF) Conduct Sufficiency of DT&E Assessments as part of the Milestone B and Milestone C brief summary reports for programs under the Major Capability Acquisition pathway where the Service or Component acquisition executive is the MDA and the program is not on T&E oversight in accordance with Section 838 of Public Law 115-91, *National Defense Authorization Act for Fiscal Year 2018*. (T-0) More guidance can be found in Directive-Type Memorandum (DTM) 19-007, *Developmental Test and Evaluation Sufficiency Assessments*.

l. (Added)(DAF) Serve as the functional advocate for the test and evaluation aspects of Modeling & Simulation (M&S) investments, programs, and initiatives in alignment with the DAF M&S Strategy and coordination with the DAF Chief, Modeling and Simulation Officer to maximize use/reuse of M&S capabilities. (T-1)

m. (Added)(DAF) Perform other duties assigned to AF/TE listed in HAFMD 1-52. (T-1)

2.4. (ADDED)(DAF) HEADQUARTERS, U.S. SPACE FORCE, DIRECTOR OF TEST AND EVALUATION (USSF/TE).

(Added)(DAF) USSF/TE will:

a. (Added)(DAF) Support AF/TE in all DAF functions through integrated development of T&E policy and establishing T&E guidance, advocating for test resources to support weapons system development, and resolving developmental and operational test programmatic issues. (T-1)

b. (Added)(DAF) Support AF/TE in all DAF functions by providing guidance, direction, and oversight for all matters pertaining to the formulation, review, and execution of USSF T&E plans, policies, programs, and budget. (T-1)

c. (Added)(DAF) Act as the T&E review authority and signatory for space program and system TEMP or test strategies (to include Request for Proposal TEMP or test strategy) prior to AF/TE and signature. (T-1) USSF/TE will review and sign USSF TEMP or test strategies for ACAT I, BCAT I, and programs on T&E oversight. (T-1)

d. (Added)(DAF) Develop and publish Lead Developmental Test and Evaluation Organization (LDTO) qualifications and LDTO candidate list for USSF acquisition programs. (T-1)

e. (Added)(DAF) Approve the LDTO for all USSF programs. (T-1)

f. (Added)(DAF) Perform other duties assigned to USSF/TE listed in HAFMD 1-52. (T-1)

2.5. (ADDED)(DAF) ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION, TECHNOLOGY AND LOGISTICS (SAF/AQ), (SAF/SQ).

(Added)(DAF) The DAF will have two SAEs. SAF/AQ is the USAF Service or Component acquisition executive (SAE) and SAF/SQ is the USSF SAE, and is responsible for all acquisition functions within the USSF. SAF/AQ or SAF/SQ is responsible for all acquisition functions within their respective DAF Component and will:

a. (Added)(DAF) Ensure systems are certified ready for operational testing according to DAFMAN 63-119, *Mission-Oriented Test Readiness Certification*.

b. (Added)(DAF) Ensure T&E responsibilities are documented as appropriate in TEMPs or test strategies, Acquisition Strategies, System Engineering Plans, Life Cycle Sustainment Plans, Program Protection Plans, and other program documentation.

c. (Added)(DAF) Recommend candidate systems to DOT&E for compliance with LFT&E legislation after coordinating the proposed nominations with AF/TE. (T-0)

d. (Added)(DAF) Approve LFT&E strategies and DAF resources required to accomplish LFT&E plans and forward to DOT&E. Forward Full Up System Level LFT&E waivers (and legislative relief requests, if appropriate) to DOT&E, if required. (T-0)

e. (Added)(DAF) Approve and sign TEMPs or test strategies for all adaptive acquisition framework pathway programs when the SAE is the MDA and for all programs on T&E oversight.

f. (Added)(DAF) Ensure that Defense Acquisition Workforce Improvement Act T&E-coded Chief Developmental Tester (CDT) positions for ACAT I and BCAT I programs are designated as Key Leadership Positions in accordance with AFI 36-1301, *Management of Acquisition Key Leadership Positions*. (T-0)

g. (Added)(DAF) Ensure the occupant of the CDT position is appropriately qualified in accordance with AFI 63-101/20-101 and AFI 36-1301.

h. (Added)(DAF) Develop and implement plans to ensure the DAF has provided appropriate resources for developmental testing organizations with adequate numbers of trained personnel in accordance with the Weapon Systems Acquisition Reform Act of 2009, Public Law 111-23 §102(b)(1). (T-0)

i. (Added)(DAF) Review and coordinate on anti-tamper validation and verification and test plans (SAF/AQLA as the USAF anti-tamper office of primary responsibility).

2.6. (ADDED)(DAF) HEADQUARTERS, U.S. AIR FORCE, DEPUTY CHIEF OF STAFF FOR INTELLIGENCE, SURVEILLANCE, RECONNAISSANCE AND CYBER EFFECTS OPERATIONS (AF/A2/6).

(Added)(DAF) AF/A2/6 will:

- a. (Added)(DAF) Ensure appropriate AF/A2/6 personnel participate early in Integrated Test Teams as soon as they are formed for acquisition and sustainment programs with Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. (T-1)**
- b. (Added)(DAF) Include adequate and recurring T&E of ISR systems in DAF ISR policies. (T-1)**
- c. (Added)(DAF) Review T&E-related documentation to ensure cyber testing fully supports system acquisition, fielding, and sustainment. (T-1)**
- d. (Added)(DAF) Develop and implement Risk Management Framework oversight policy for ISR Action Officers to support cyber test infrastructure requirements. (T-1)**
- e. (Added)(DAF) Ensure interoperability test, evaluation and certification of national security systems before connection to an intelligence community network. (T-1)**

2.7. (ADDED)(DAF) HEADQUARTERS, U.S. SPACE FORCE, CHIEF OPERATIONS OFFICER (SF/COO).

(Added)(DAF) SF/COO will:

- a. (Added)(DAF) Ensure appropriate USSF/S2 personnel participate early in Integrated Test Teams as soon as they are formed for acquisition and sustainment programs with ISR capabilities. (T-1)**
- b. (Added)(DAF) Include adequate and recurring T&E of ISR systems in USSF ISR policies. (T-1)**
- c. (Added)(DAF) Ensure appropriate USSF/S3 personnel support the Integrated Test Teams and participate in development of strategies for T&E. (T-1)**
- d. (Added)(DAF) Ensure interoperability test, evaluation and certification of ISR national security systems before connection to an intelligence community network. (T-1)**

2.8. (ADDED)(DAF) HEADQUARTERS, U.S. AIR FORCE, DEPUTY CHIEFS OF STAFF FOR OPERATIONS, PLANS, AND REQUIREMENTS (AF/A3) AND FOR AIR FORCE FUTURES (AF/A5/7).

(Added)(DAF) AF/A3 and AF/A5/7 will ensure appropriate AF/A3 and AF/A5/7 personnel support the Integrated Test Teams and participate in development of strategies for T&E. (T-1)

2.9. (ADDED)(DAF) SECRETARY OF THE AIR FORCE, CHIEF INFORMATION OFFICER (SAF/CN).

(Added)(DAF) SAF/CN will:

a. (Added)(DAF) Ensure appropriate personnel participate early in Integrated Test Teams as soon as they are formed for acquisition and sustainment programs with information technology and national security system capabilities. (T-1)

b. (Added)(DAF) Develop and implement security and cybersecurity policies that include adequate and recurring T&E of information technology and national security systems in accordance with DoDI 5200.39, *Critical Program Information (CPI) Identification and Protection Within Research, Development, Test and Evaluation (RDT&E)*; DoDI 5200.44, *Protection of Mission Critical Functions to Achieve Trusted Systems and Networks (TSN)*; Committee on National Security Systems Instruction (CNSSI) 1254, *(U) Risk Management Framework Documentation, Data Element Standards*; and AFI 63-101/20-101. (T-1)

c. (Added)(DAF) Partner with the requirements, acquisition, and T&E communities to ensure planned capabilities are tested to satisfy net-centric, security, cybersecurity, and cyber resiliency requirements. (T-1)

(1) (Added)(DAF) Working with AF/TE, advocate for funding for identified T&E infrastructure and interoperability certification test. (T-1)

(2) (Added)(DAF) Identify qualified and/or certified organizations for planning and conducting cyber test. (T-1)

d. (Added)(DAF) Review and coordinate T&E-related documentation to ensure interoperability certification testing, security testing, and cyber testing fully support system acquisition, fielding, and sustainment. (T-1)

e. (Added)(DAF) Implement measures to ensure net-ready performance attributes, including the associated key interface profiles, are clearly defined in the system architecture, and are interoperable, resourced, tested, and evaluated according to the DAF Enterprise Architecture, AFI 17-140, *Architecting*; Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 5123.01I, *Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*; and OSD, Joint Chiefs of Staff, and Joint Interoperability Test Command (JITC) policies. (T-0)

f. (Added)(DAF) Have the DAF representative to the DoD Chief Information Officer Interoperability Steering Group track and place any information technology or national security system with significant interoperability deficiencies, or that is not making significant progress toward achieving Joint Interoperability Test Certification, on the Operating at Risk List. (T-1)

2.10.(ADDED)(DAF) HEADQUARTERS, AIR FORCE MATERIEL COMMAND (AFMC).

(Added)(DAF) HQ AFMC will:

- a. (Added)(DAF) Develop DT&E guidance, procedures, and support agreements for programs in assigned mission areas to supplement this instruction. (T-1) Forward draft copies to AF/TEP workflow (AF.TEP.Workflow@us.af.mil) and SAF/AQXS workflow (SAF.AQ.SAF-AQXS.Policy.Workflow@us.af.mil) for review prior to publication. (T-1) Reference DoDI 4000.19, *Support Agreements*, as implemented by DAFPD 25-2, *Support Agreements*.**
- b. (Added)(DAF) Ensure nuclear weapon system T&E policies and issues are managed in accordance with AFI 63-125, *Nuclear Certification Program*. (T-0). Assist with development and approval of nuclear weapon subsystem test plans. (T-1)**
- c. (Added)(DAF) Establish and provide for DT&E training, organization, and T&E infrastructure resources. (T-1)**
- d. (Added)(DAF) Assist the PM and Integrated Test Team in identifying key government DT&E organizations, to include selection of LDTO candidates, CDTs, and Test Managers as soon as possible after program's concept initiation. (T-1) Participate in Integrated Test Teams and Test Integrated Product Teams as necessary. (T-1)**
- e. (Added)(DAF) Establish policy for T&E focal points (e.g., on-site test authority or equivalent office) that provide T&E support and advice with respect to test programs and projects to acquisition and T&E practitioners at centers and complexes. (T-1)**
- f. (Added)(DAF) Conduct long-range planning to ensure T&E infrastructure and processes are in place to support required testing. (T-1)**
- g. (Added)(DAF) Ensure centers and complexes participate in T&E resource investment planning processes. (T-1)**
- h. (Added)(DAF) Review and coordinate on DT&E test plans, test reports, and test-related correspondence required by AF/TE and OSD for programs on T&E oversight. (T-1)**
- (1) (Added)(AFMC) Information copies of these documents shall be sent to AFMC/A3F workflow (AFMC.A3F.Workflow@us.af.mil) and the appropriate AFNWC or AFLCMC Center Test Authority workflow (AFNWC.CTA.Workflow@us.af.mil or AFLCMC.AZT.CTALDTOWorkflow@us.af.mil).**
- i. (Added)(DAF) Develop and maintain a qualified DT&E workforce for test execution at test organizations and acquisition test management within program offices. (T-1)**
- j. (Added)(DAF) Oversee and inspect AFMC compliance with this instruction. (T-1)**
- k. (Added)(DAF) Develop and publish LDTO qualifications and LDTO candidate list for AFMC acquisition programs. (T-1)**

(1) (Added)(DAF) Air Force Test Center (AFTC) is the primary lead on LDTO capability responsibility for aircraft, air armament, avionics, cybersecurity, and electronic warfare testing. (T-1)

(a) (Added)(AFMC) As primary LDTO, the Air Force Test Center will be involved in test activities throughout a program's life cycle. AFTC shall be the primary option for LDTO on all programs meeting the thresholds for ACAT/BCAT I/II (or equivalent), JUON/UONs, and on the OSD Oversight List.

(2) (Added)(DAF) AFMC/A3 will maintain the LDTO candidate list for their programs of record and weapon systems. Request current lists by contacting the following AFMC office: AFMC/A3F LDTO Workflow (afmc.a3f.ldtworkflow@us.af.mil).

(3) (Added)(DAF) Blanket LDTO designations for ACAT III programs are delegated to the AFMC/A3/6, where "blanket" means a single LDTO provides T&E oversight for multiple programs having similar mission profiles, test requirements, and risk.

(a) (Added)(AFMC) Blanket LDTO designations apply to all acquisition pathways meeting the equivalent ACAT III program thresholds.

l. (Added)(DAF) Approve the LDTO for all USAF programs.

m.(Added)(DAF) Ensure Research, Development, T&E representation at pre-program concept initiation activities to assist in early development of operational requirements and enabling or operating concepts, early development of the strategy for T&E, cyber strategy, and early acquisition planning in accordance with AF/A5D Requirements Development Guidebooks, AFI 63-101/20-101, and this instruction. Identify organizations responsible for these activities.

n. (Added)(DAF) Support PMs, working with the CDT and/or Test Manager with the process to certify systems ready for Mission-Oriented Test Readiness Certification in accordance with DAFMAN 63-119. (T-1)

o. (Added)(DAF) Ensure AFTC develops and provides enterprise requirements for open-air, live, virtual, and constructive operational test and training requirements.

p. (Added)(DAF) Provide support for the Joint T&E Program and joint test projects in accordance with AFI 99-106. (T-1)

q. (Added)(AFMC) Assign AFMC A3/6 to serve as AFMC Senior Functional for T&E.

r. (Added)(AFMC) Maintain control and accountability for aerospace vehicles, missiles, munitions, and aerial targets involved in test and test support.

s. (Added)(AFMC) Establish policy to provide direction and guidance on test safety.

2.11.(ADDED)(DAF) SPACE SYSTEMS COMMAND (SSC).

(Added)(DAF) SSC will:

a. (Added)(DAF) Act as a specific space program or system LDTO, after USSF/TE's

approval. (T-1)

b. (Added)(DAF) Develop T&E guidance, procedures, and Memorandums of Agreement for programs in assigned mission areas to supplement this instruction. (T-1) Forward draft copies to USSF/TE Workflow (HQS.F.USSE.TEWorkflow@us.af.mil). (T-1)

c. (Added)(DAF) Establish and provide for training, organization, and T&E infrastructure resources. (T-1)

d. (Added)(DAF) Develop and maintain a qualified T&E workforce. (T-1)

e. (Added)(DAF) Participate in Integrated Test Teams and Test Integrated Product Teams as necessary. (T-1)

f. (Added)(DAF) Conduct long-range planning to ensure T&E infrastructure and processes are in place to support required testing. (T-1)

g. (Added)(DAF) Participate in T&E resource investment planning processes. (T-1)

h. (Added)(DAF) Review and coordinate on test plans, test reports, and test-related correspondence for programs. (T-1)

i. (Added)(DAF) Ensure T&E representation at pre-program concept initiation activities to assist in early development of operational requirements and enabling or operating concepts, early development of the strategy for T&E, cyber strategy, and early acquisition planning in accordance with Requirements Development Guidebooks, AFI 63-101/20-101, and this instruction. Identify organizations responsible for these activities. (T-1)

j. (Added)(DAF) Implement the T&E policies in DoDI S-3100.15, *Space Control (U)*, for space control systems and lead test activities associated with the implementation of DoDI 8100.04, *DoD Unified Capabilities (UC)*, for the USSF. (T-0)

k. (Added)(DAF) Oversee the T&E policies and activities of assigned T&E organizations to ensure compliance with DAF and OSD T&E policies. (T-1)

l. (Added)(DAF) Provide support for the Joint T&E Program and joint test projects in accordance with AFI 99-106. (T-1)

m.(Added)(DAF) Support AFOTEC-conducted OT&E as agreed by the Integrated Test Team, Test Integrated Product Teams, and documented in TEMP's or test strategies. (T-1)

n. (Added)(DAF) Support PMs, working with the CDT and/or Test Manager with the process to certify systems ready for operational testing in accordance with DAFMAN 63-119. (T-1)

o. (Added)(DAF) Identify and report deficiencies in accordance with Technical Order (TO) 00-35D-54, *USAF Deficiency Reporting, Investigation, and Resolution (DRI&R)*. Monitor open Deficiency Reports from earlier testing. (T-1)

p. (Added)(DAF) Ensure nuclear weapon system T&E policies and issues are managed in accordance with AFI 63-125. (T-1) Assist with development and approval of nuclear weapon subsystem test plans. (T-1)

q. (Added)(DAF) Assist the PM and Integrated Test Team in identifying key government DT&E organizations, to include selection of LDTO candidates, CDTs, and Test Managers as soon as possible after program's concept initiation. (T-1)

r. (Added)(DAF) Provide oversight of the Developmental T&E Sufficiency Assessment and certification of readiness for Operational Test. (T-0)

2.12.(ADDED)(DAF) SPACE TRAINING AND READINESS COMMAND (STARCOM).

(Added)(DAF) STARCOM will:

a. (Added)(DAF) Act as USSF's Operational Test Organization (OTO), conducting OT&E for space programs/systems. (T-1)

b. (Added)(DAF) Act as LDTO conducting DT&E for space programs/systems when LDTO exception-to-policy does not apply. (T-1)

c. (Added)(DAF) As necessary, designate an Executing Test Organization (ETO) to conduct DT&E with LDTO oversight. (T-1)

d. (Added)(DAF) Develop T&E guidance, procedures, and Memorandums of Agreement for programs in assigned mission areas to supplement this instruction. (T-1)
Forward draft copies to USSF/TE Workflow (HQSF.USSF.TEWorkflow@us.af.mil). (T-1)

e. (Added)(DAF) Establish and provide for training, organization, and T&E infrastructure resources. (T-1)

f. (Added)(DAF) Develop and maintain a qualified T&E workforce. (T-1)

g. (Added)(DAF) Participate in Integrated Test Teams and Test Integrated Product Teams as necessary. (T-1)

h. (Added)(DAF) Conduct long-range planning to ensure T&E infrastructure and processes are in place to support required testing. (T-1)

i. (Added)(DAF) Participate in T&E resource investment planning processes. (T-1)

j. (Added)(DAF) Review and coordinate on test plans, test reports, and test-related correspondence for programs supported. (T-1)

k. (Added)(DAF) Ensure T&E representation at pre-program concept initiation and/or Research and Development activities to assist in early development of operational requirements and enabling or operating concepts, early development of the strategy for T&E, cyber strategy, and early acquisition planning in accordance with Requirements Development Guidebooks, AFI 63-101/20-101, and this instruction. Identify organizations responsible for these activities. (T-1)

l. (Added)(DAF) Implement the T&E policies in DoDI S-3100.15, *Space Control (U)*, for space control systems and lead test activities associated with the implementation of DoDI 8100.04 for the USSF. (T-0)

m.(Added)(DAF) Oversee the T&E policies and activities of assigned T&E

organizations to ensure compliance with DAF and OSD T&E policies. (T-1)

n. (Added)(DAF) Provide support for the Joint T&E Program and joint test projects in accordance with AFI 99-106. (T-1)

o. (Added)(DAF) Ensure OT (e.g., Operational Assessments, Operational Utility Evaluations, and Force Development Evaluations) is planned, conducted, and results reported for assigned systems and programs when AFOTEC is not involved. (T-1)

p. (Added)(DAF) Support AFOTEC-conducted OT&E as agreed by the Integrated Test Team and Test Integrated Product Teams, and documented in Test Resource Plans and TEMPs or test strategies. (T-1)

q. (Added)(DAF) Continue OT of acquisition programs according to Paragraph 3.3.c.(2) and Paragraph 6.2.i through Paragraph 6.2.p. When applicable, provide information to DOT&E according to Paragraph 2.1.f, Paragraph 3.1.o.(5), Paragraph 3.2, Paragraph 6.4.c, and Table 1. (T-0)

r. (Added)(DAF) Coordinate fielding recommendations and fielding decisions with the system PM to support full rate production decisions. (T-1)

s. (Added)(DAF) Support PMs, working with the CDT and/or Test Manager with the process to certify systems ready for operational testing in accordance with DAFMAN 63-119. (T-1)

t. (Added)(DAF) Identify and report deficiencies in accordance with TO 00-35D-54. (T-1) Monitor open Deficiency Reports from earlier testing. (T-1)

u. (Added)(DAF) Conduct Tactics Development and Evaluation and Weapons System Evaluation Program to characterize and/or enhance operational capabilities. (T-1)

v. (Added)(DAF) Request AFOTEC assistance and/or involvement as needed. (T-1)

w. (Added)(DAF) Co-chair Test Readiness Review board with OTA/OTO for integrated testing. (T-1)

2.13.(ADDED)(DAF) USAF OPERATIONAL MAJCOMS, DIRECT REPORTING UNITS, FIELD OPERATING AGENCIES, AND HQ ACC AS SPECIFIED.

(Added)(DAF) MAJCOMs, Direct Reporting Units, and Field Operating Agencies will:

a. (Added)(DAF) Develop T&E guidance, procedures, and Memorandums of Agreement to supplement this instruction. (T-1) Forward draft copies to AF/TEP and SAF/AQXA Workflow addresses for review prior to publication. (T-1)

b. (Added)(DAF) Request OTA or designate OTO assignment in the Integrated Test Team at program inception or earlier. (T-1) The assigned lead OTO will co-chair the Integrated Test Team. (T-1)

c. (Added)(DAF) Assist OTOs in determining the resources and schedule for OT. (T-1)

d. (Added)(DAF) Ensure systems engineering considerations, as identified by the

program office, (including, but not limited to: environment, safety and occupational health, human systems integration, maintenance/sustaining engineering, product and system integrity, and software engineering) are addressed in all Initial Capability Documents, Capability Development Documents, and Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy Change Recommendations, as appropriate. (T-1)

e. (Added)(DAF) Inform the Integrated Test Team how the system under test will be employed. (T-1) This is typically done through a Concept of Operations.

f. (Added)(DAF) The lead command will advocate for and carry out T&E responsibilities for assigned weapon systems during their life cycle in accordance with DAFPD 10-9, *Lead Command/Lead Agent Designation and Responsibilities for United States Air Force Weapon Systems, Non-Weapon Systems, and Activities*. (T-1)

g. (Added)(DAF) Perform the responsibilities in Paragraph 2.16.c. through Paragraph 2.16.q. when designated the OTO according to Figure 1.c. (T-1)

h. (Added)(DAF) Collaborate with requirements sponsors and system developers to execute the development, testing, and fielding of DAF systems and subsystems. (T-1)

i. (Added)(DAF) Develop clear and testable operational requirements and approved enabling and operating concepts prior to the development phase for the different adaptive acquisition framework pathways. (T-1) Keep these documents current to support the most current phases of T&E. (T-1) Participate in Document Writing Teams, Integrated Test Teams, and Test Integrated Product Teams as necessary to help ensure program success. (T-1)

j. (Added)(DAF) When AFOTEC is the lead OTA, MAJCOM or FLDCOM OTOs should plan for transition of these responsibilities and document in the TEMP or test strategy.

k. (Added)(DAF) Review and coordinate on T&E-related documentation impacting MAJCOM systems under test. (T-1)

l. (Added)(DAF) Oversee the T&E policies and activities of assigned T&E organizations to ensure compliance with DAF, OSD, and MAJCOM T&E policies. (T-0).

m.(Added)(DAF) Advocate for test resources. (T-1)

n. (Added)(DAF) Ensure appropriate and adequate T&E training is provided for personnel involved in T&E activities. (T-1)

o. (Added)(DAF) Provide support for the Joint T&E Program and joint test projects in accordance with AFI 99-106. (T-1)

p. (Added)(DAF) Ensure OT (e.g., Operational Assessments, Operational Utility Evaluations, and Force Development Evaluations) is planned, conducted, and results reported for assigned systems and programs when AFOTEC is not involved. (T-1)

q. (Added)(DAF) Support AFOTEC-conducted OT&E as agreed by the Integrated Test Team, Test Integrated Product Teams, and documented in Test Resource Plans and

TEMPs or test strategies. (T-1)

r. (Added)(DAF) Coordinate fielding recommendations and fielding decisions with the system PM and OTO to support full rate production decisions. (T-1)

s. (Added)(DAF) Support PMs, working with the CDT and/or Test Manager with the process to certify systems ready for operational testing in accordance with DAFMAN 63-119. (T-1)

t. (Added)(DAF) Identify and report deficiencies in accordance with TO 00-35D-54. (T-0)

u. (Added)(DAF) Conduct Tactics Development and Evaluation and Weapons System Evaluation Program to characterize and/or enhance operational capabilities. (T-1)

v. (Added)(DAF) Request AFOTEC assistance and/or involvement as needed. (T-1)

w. (Added)(DAF) Co-chair Test Readiness Review board with LDTO for integrated testing. (T-1)

x. (Added)(DAF) HQ ACC will also:

(1) (Added)(DAF) Develop guidance, procedures, and memorandums of agreement for cyberspace programs to supplement this instruction. (T-1) Forward draft copies to AF/TEP Workflow (AF.TEP.Workflow@us.af.mil) and SAF/AQXS workflow (SAF.AQ.SAF-AQXS.Policy.Workflow@us.af.mil) for review prior to publication. (T-1)

(2) (Added)(DAF) Establish and provide for cyber-related OT training, organization, and T&E infrastructure resources. (T-1)

(3) (Added)(DAF) Establish and maintain capability to conduct operational test of cyber warfare capabilities, cyber operations capabilities, and evaluated level of assurance testing; see DoDI O-3600.03, *Technical Assurance Standard (TAS) for Computer Network Attack (CNA) Capabilities*. (T-0).

(4) (Added)(DAF) Perform TEMPEST Assessments. (T-1)

(5) (Added)(DAF) Perform Unified Capabilities Certification. (T-1)

2.14.(ADDED)(DAF) AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER (AFOTEC).

(Added)(DAF) AFOTEC will:

a. (Added)(DAF) Develop AFOTEC guidance, procedures, and memorandums of agreement for OT to supplement this instruction. (T-1) Forward draft copies to AF/TEP Workflow and SAF/AQXS Workflow prior to publication. (T-1)

b. (Added)(DAF) Carry out the responsibilities of the Air Force independent OTA described in Air Force Mission Directive (AFMD) 14, *Air Force Operational Test and Evaluation Center (AFOTEC)*, and DAFPD 99-1. (T-1)

c. (Added)(DAF) Act as the OTA for space systems until the USSF establishes its own

OTA. (T-1)

d. (Added)(DAF) As the DAF OTA for programs as determined in Paragraph 3.3.c.(2), monitor DAF acquisition programs for operational test applicability and provide formal notice of OTA involvement to program stakeholders when warranted. (T-1)

e. (Added)(DAF) Provide timely responses and inputs to support program schedules. (T-1)

f. (Added)(DAF) Function as the lead OTA for multi-Service programs, when designated, and coordinate with other Services' OTAs. (T-1)

g. (Added)(DAF) Program for AFOTEC-conducted T&E activities and list costs, schedules, and resources in test resource plans. (T-1)

h. (Added)(DAF) Coordinate DAF portion of Multi-Service OT&E (MOT&E) resources where the DAF is not the lead OTA. (T-1)

i. (Added)(DAF) Collaborate with AFOTEC SAPMO and SAF/AAZ, (as DAF SAPCO) to gain required Special Access Program (SAP) authorities as required. (T-1)

j. (Added)(DAF) Coordinate Test Resource Plans with supporting organizations in sufficient time for funds and personnel to be budgeted during the Program Objective Memorandum cycle. (T-1)

k. (Added)(DAF) Generate, as needed, one-time, periodic, significant event, observational, and/or other timely informational documentation to provide continuous written feedback to the PM and other stakeholders to inform all aspects of program development. (T-1)

l. (Added)(DAF) Coordinate within the test enterprise to develop and streamline digital knowledge exchange between acquisition, test, requirements, other partners, and warfighting communities. (T-1)

m.(Added)(DAF) Lead DAF test integration and modernization efforts within the test enterprise to maximize efficiency, align efforts, and minimize acquisition timelines while conducting realistic, operationally relevant assessments and evaluations. (T-1)

n. (Added)(DAF) Develop and provide enterprise requirements for open-air, live, virtual, and constructive operational test and training environments. (T-1)

o. (Added)(DAF) Develop and refine integrated test strategies for transitioning assigned experimentation activities as they advance to programs of record. (T-1)

p. (Added)(DAF) Co-chair Test Readiness Review board with LDTO for integrated testing. (T-1)

2.15.(ADDED)(DAF) UNITED STATES AIR FORCE WARFARE CENTER (USAFWC).

(Added)(DAF) USAFWC will exercise "coordinating authority" for operational testing as defined in the USAFWC Charter as follows:

a. (Added)(DAF) Initiate dialogue and close collaboration with AF MAJCOM/USSF

FLDCOMs to ensure priorities for operational testing are synchronized and candidates for collaborative testing are identified. (T-1)

b. (Added)(DAF) Coordinate with and support AFOTEC-conducted operational testing for weapon systems' initial acquisition and fielding decisions as requested. (T-1)

c. (Added)(DAF) Identify and help eliminate redundant test activities. (T-1)

d. (Added)(DAF) Sponsor, oversee, and execute comprehensive integrated warfighting and cross-domain T&E activities to enhance operational capabilities. (T-1)

2.16.(ADDED)(DAF) OPERATIONAL TEST ORGANIZATIONS (OTO).

(Added)(DAF) AFOTEC as the OTA and other OTOs as determined in Paragraph 3.3.c.(2) will:

a. (Added)(DAF) Help form and co-chair (with the CDT or Test Manager, as appropriate) Integrated Test Teams for programs as determined in Paragraph 3.3.c.(2). (T-1)

b. (Added)(DAF) Participate in Document Writing Teams as necessary to ensure testability of capability requirements attributes (i.e., Key Performance Parameters, Key System Attributes, and Additional Performance Attributes). Assist in development of capability requirements documents and enabling and operating concepts, Courses of Action, and Analyses of Alternatives. (T-1)

c. (Added)(DAF) Participate in preparation of strategies for T&E and test plans that are integrated. Prepare the OT&E portions of the TEMP or test strategy and coordinate OT strategy inputs with OSD/DOT&E for Acquisition Category ID and T&E Oversight programs. (T-1)

d. (Added)(DAF) Collaborate with requirements sponsors and system developers to execute the development, testing, and fielding of DAF systems and subsystems. (T-1)

e. (Added)(DAF) Collaborate with other OTOs and AF/TEP to ensure OT is conducted by the appropriate test organization(s) according to Paragraph 3.3.c.(2). (T-1)

f. (Added)(DAF) Provide independent OT expertise and level of support to Force Development Evaluations as negotiated. (T-1)

g. (Added)(DAF) Plan and conduct OT in support of DAF-sponsored rapid acquisition programs, Quick Reaction Capabilities, and Urgent Operational Needs. (T-1)

h. (Added)(DAF) Use approved Concept of Operations, Operating Concepts, Mission Profiles, etc. along with validated capability requirements attributes (Key Performance Parameter, Key System Attributes, and Additional Performance Attributes) as the primary source of evaluation criteria. (T-1)

i. (Added)(DAF) Determine the quantity of test articles required for OT&E to ensure test sufficiency with the MAJCOM or STARCOM and the PM in accordance with 10 U.S.C. §2399. (T-0)

- j. (Added)(DAF) Participate in the certification of readiness for OT in accordance with DAFMAN 63-119. (T-1)
- k. (Added)(DAF) Identify, validate, submit, track, and prioritize system deficiencies and enhancements in accordance with TO 00-35D-54. (T-1)
- l. (Added)(DAF) Ensure T&E training is provided for personnel involved in OT activities. (T-1)
- m. (Added)(DAF) Generate, as needed, one-time, periodic, significant event, observational, and/or other timely informational documentation to provide continuous written feedback to the PM and other stakeholders to inform all aspects of program development (e.g., PM, CDT, Test Manager, LDTO, Participating Test Organizations, operational MAJCOM, FLDCOM, Program Element Monitor (PEM), PEO, Center Test Functional leaders, AF/TE, and/or DOT&E). (T-1)
- n. (Added)(DAF) Route Operational Test Plans (e.g., Early Operational Assessment, Operational Assessment, and Initial OT&E) requiring OSD approval through AF/TE before submission to OSD. Send documentation to AF/TEP or USSF/TE for AF/TE's coordination. (T-1)
- o. (Added)(DAF) Evaluate LFT&E plans for adequacy that require OSD approval. Send to AF/TE before submission to OSD. Send documentation to AF/TEP or USSF/TE for AF/TE's coordination. (T-1)
- p. (Added)(DAF) Assist the CDT and/or Test Manager and the requirements, acquisition, and cyber test communities in developing Analyses of Alternatives, studies, analyses, Operational Assessments, and program documentation in accordance with AF/A5D Requirements Development Guidebooks, AFI 63-101/20-101, and AFI 17-101, *Risk Management Framework (RMF) for Air Force Information Technology (IT)*. (T-1)
- q. (Added)(DAF) Determine and tailor the level/type of OT required for all acquisition fielding, deployment, and release activities. (T-1) When appropriate, conduct sufficiency analysis to determine the appropriate level of test. Sufficiency analysis can be used to determine level of test regardless of acquisition pathway. (T-1)

2.17.(ADDED)(DAF) PROGRAM EXECUTIVE OFFICER (PEO).

(Added)(DAF) The PEO will:

- a. (Added)(DAF) Assist the PM and Integrated Test Team in identifying key government DT&E organizations and personnel, to include LDTO candidates, CDTs, and Test Managers as soon as possible after the Materiel Development Decision for a Major Capability Acquisition, or in the design phase for all other acquisition pathways. (T-1)
- b. (Added)(DAF) Concur on each program's Integrated Test Team's nominated LDTO selection prior to AFMC/A3 or USSF/TE approval, as applicable. (T-1) May be delegated to the MDA of the program that was delegated below the PEO (e.g., ACAT III program).
- c. (Added)(DAF) Act as final field-level approval authority prior to forwarding TEMPs or test strategies to SAF/AQ or SAF/SQ and AF/TE for final DAF coordination and

approval. (T-1)

d. (Added)(DAF) Approve TEMP's or test strategies when assigned as MDA and program is not on T&E oversight or OSD has waived their formal coordination authority. (T-1)

e. (Added)(DAF) Act as the Mission-Oriented Test Certification Official for delegated programs according to DAFMAN 63-119. (T-1)

f. (Added)(DAF) Continually review their portfolio for any programs "covered" under AFI 63-101/20-101 for LFT&E requirements. (T-1)

2.18.(ADDED)(DAF) PROGRAM MANAGER (PM).

(Added)(DAF) PM will:

a. (Added)(DAF) Appoint a qualified CDT to ACAT I, BCAT I, or programs on oversight (including MTA) in accordance with AFI 36-1301 to manage all DT&E for the program office as a Key Leadership Position. (T-1)

b. (Added)(DAF) Appoint a qualified Test Manager with a minimum of Level II Defense Acquisition Workforce Improvement Act T&E acquisition-coded (T-code) position certification to ACAT II, BCAT II, and below to include non-oversight programs. (T-1)

(1) (Added)(AFMC) Test Manager certification at the Practitioner level meets the 2.18(b) requirement.

c. (Added)(DAF) Maintain awareness whether the assigned program is on T&E oversight. (T-1)

d. (Added)(DAF) Ensure that CDT and/or Test Manager forms an Integrated Test Team with the selected lead OTA/OTO immediately after the Materiel Development Decision for a Major Capability Acquisition, or in the design phase for all other acquisition pathways. (T-1)

(1) (Added)(AFMC) For programs where a Materiel Development Decision is not accomplished, the Integrated Test Team will be formed and chartered as soon as possible during the requirements development phase of the program.

e. (Added)(DAF) Ensure CDT or Test Manager leads development of the Integrated Test Team charter and coordinate with stakeholder organizations. (T-1)

f. (Added)(DAF) Ensure an LDTO is selected and designated as early as possible (i.e., at or before Milestone A for a Major Capability Acquisition, or in the design phase for all other acquisition pathways). Determine the scope of DT&E needed throughout the project or program life cycle. (T-1)

(1) (Added)(AFMC) The PM shall coordinate the LDTO selection with stakeholder organizations using the AFMC LDTO Designation Worksheet, and request approval via AFMC/A3F LDTO Workflow (AFMC.A3F.LDTOworkflow@us.af.mil). AFMC LDTO Designation Worksheet is located at [A3FA \(T&E Infrastructure Branch\)](#)

(2) (Added)(AFMC) The approved LDTO shall be a member of the ITT.

(3) (Added)(AFMC) Programs seeking the Alternate LDTO or PMO Alternate LDTO designation will include responses to the attached AFMC LDTO Candidate List Criteria as part of the AFMC LDTO Designation Worksheet submittal.

g. (Added)(DAF) Ensure timely government access to contractor and other T&E data, deficiency reporting processes, and all program T&E results through a common T&E database (described in Paragraph 3.1.c.(4)) available to program stakeholders with a need to know as determined by the Integrated Test Team. (T-1) Official government Deficiency Reports, however, must be input into the Joint Deficiency Reporting System in accordance with TO 00-35D-54. (T-1) If deficiencies are classified, they shall be input into SIPR version of the Joint Deficiency Reporting System. Directions for technical data deficiencies are in TO 00-5-1, *Air Force Technical Order System*. (T-1) If deficiencies are classified at higher than collateral, PM will establish an alternative tracking mechanism at the appropriate classification level. Include in the Deficiency Reporting System, any cyber vulnerabilities that could result in significant or catastrophic mission degradation or mission failure if exploited. Deficiency Levels should be based upon the potential mission impact if the cyber vulnerability is exploited. (T-1)

h. (Added)(DAF) Direct the development of a strategy for T&E, TEMP, and developmental/integrated test plans in support of the program requirements, acquisition, cyber test strategies and the Program Protection Plans. (T-1) The strategy for the test plan should include cybersecurity considerations including use of the Risk Management Framework, Mission-Based Cyber Risk Assessment, Cybersecurity Service Provider, Supply Chain Risks, Software Assurance testing and other factors listed in the DoD Cybersecurity T&E Guidebook.

i. (Added)(DAF) Ensure the TEMP or test strategy is aligned with the acquisition strategy and coordinate sufficiently early to address stakeholder issues to meet milestone decision review. (T-1)

(1) (Added)(AFMC) Ensure TEMPs and/or Test strategies are reviewed and coordinated by the T&E organizational senior functional (OSF) prior to Milestone Decision Authority signature or request a review from the CTA in the absence of an OSF.

j. (Added)(DAF) Regarding LFT&E, the PM or designated representative will:

(1) (Added)(DAF) Ensure systems are screened and correctly designated as “covered systems,” “major munitions programs,” or “covered product improvement programs” if required. (T-0) See AFI 63-101/20-101 for further guidance. Coordinate the proposed nominations with AF/TEP and the PEO before obtaining SAE approval. (T-1) Forward approved nominations to DOT&E. (T-0)

(2) (Added)(DAF) Plan, program, and budget for LFT&E resources if the system is a “covered system” or “major munitions program” to include test articles, facilities, manpower, instrumented threats, and realistic targets. (T-0)

(3) (Added)(DAF) Coordinate the LFT&E strategy with DOT&E to determine the

appropriate method. (T-0)

(4) (Added)(DAF) Ensure DOT&E approves LFT&E strategy before commencing tests. (T-0)

(5) (Added)(DAF) Prepare LFT&E waiver requests and legislative relief requests, if required, to include an alternative plan for evaluating system vulnerability or lethality. Waivers must be approved prior to the development phase. (T-0)

k. (Added)(DAF) Coordinate with JITC under Defense Information Systems Agency to review the net-ready performance attribute. (T-0)

l. (Added)(DAF) As early as practical, direct the development of a cyber T&E strategy from pre-Milestone A for a major capability acquisition or early in the design phase for all other acquisition pathways in accordance with AFI 63-101/20-101. The cyber T&E strategy will support requirements for authorization in accordance with AFI 17-101, and AFI 63-101/20-101. (T-1)

m. (Added)(DAF) Ensure a Mission-Based Cyber Risk Assessment (MBCRA) methodology (e.g., the Mission-based Risk Assessment Process for Cyber (MRAP-C)) is identified in the TEMP or test strategy and executed to fulfill DoD's MBCRA requirements. (T-0) The MBCRA should be executed as part of an integrated and iterative Systems Security Engineering effort, but can be executed independently if desired. The MBCRA should be executed iteratively to support, as a minimum: cyber requirements identification, design reviews, milestone decisions, authority to operate approval, and cyber test events.

n. (Added)(DAF) Ensure the TEMP or test strategy, Acquisition Strategy, System Engineering Plan, Cybersecurity Strategy, Information Support Plan, Program Protection Plan, Cybersecurity Service Provider Support Agreement, and Life Cycle Sustainment Plan are aligned and mutually supporting. (T-1)

o. (Added)(DAF) Ensure all DT&E (both contractor and government) roles and responsibilities are clearly delineated. (T-0)

p. (Added)(DAF) Document requirements for contractor test reports in the Contract Data Requirements List. (T-1)

q. (Added)(DAF) Assist assigned test organizations in determining and obtaining developmental test resources and schedule for testing. (T-1)

r. (Added)(DAF) Ensure OT&E (tailored as determined by the OTA/OTO) is conducted for all acquisition or sustainment programs to inform milestone or other program review events. (T-0)

s. (Added)(DAF) Plan for T&E of Integrated Product Support Elements throughout the system life cycle in accordance with AFI 63-101/20-101. (T-1)

t. (Added)(DAF) Ensure all stores are certified in accordance with AFI 63-101/20-101. (T-1) If assistance is needed, contact the Air Force SEEK EAGLE Office (46sk.org@us.af.mil). Hazards of Electromagnetic Radiation to Ordnance criteria must be considered in accordance with Defense Explosives Safety Regulation (DESR)

6055.09_AFMAN 91-201, *Explosives Safety Standards*. (T-0).

u. (Added)(DAF) Resource and support development of the test strategy in accordance with DAFMAN 65-605V1, *Budget Guidance and Technical Procedures*. (T-1)

v. (Added)(DAF) Track, evaluate, and take appropriate actions on Deficiency Reports in accordance with TO 00-35D-54, and AFI 63-101/20-101. (T-1)

(1) (Added)(DAF) Establish and administer a Deficiency Report process and tailored procedures for reporting, screening, validating, evaluating, tracking, prioritizing, and resolving Deficiency Reports originating from all sources. (T-1)

(2) (Added)(DAF) In accordance with TO 00-35D-54, if the Joint Deficiency Reporting System is not used, a waiver must be obtained as outlined in TO 00-5-1. (T-1)

(3) (Added)(DAF) If a contractor-based Deficiency Report system is planned as the system of record, the Request for Proposal and Statement of Work must require the contractor's Deficiency Report system to satisfy the purpose and intent of the TO, provide visibility to MAJCOM, cross-Service components, and HQ AFMC or SSC, and describe how the process will remain under Government cognizance. (T-1)

(4) (Added)(DAF) Support Deficiency Report evaluation and resolution during operational testing and system sustainment. (T-1)

w. (Added)(DAF) Implement an effective system certification process for OT as early as practicable. (T-0)

x. (Added)(DAF) Provide a system test readiness assessment to the Mission-Oriented Test Certification Official according to DAFMAN 63-119. (T-1)

y. (Added)(DAF) Secure specialized T&E capabilities, resources, and instrumentation, based on Integrated Test Team recommendations, to support T&E throughout the system life cycle. See *Incorporating Test and Evaluation into Department of Defense Acquisition Contracts*, on how to secure contractor support in requests for proposals, statements of objectives, and statements of work. (T-1)

z. (Added)(DAF) Prioritize early tester involvement for Pre-Milestone A for a Major Capability Acquisition or early in the design phase for all other acquisition pathways. (T-1)

aa. (Added)(DAF) Provide a Safety Release to the LDTO and/or OTA/OTO prior to any testing involving DAF personnel. (T-1)

bb. (Added)(DAF) Obtain Technical Airworthiness Authority-issued airworthiness approvals prior to flight in accordance with AFI 62-601, *USAF Airworthiness*. Provide airworthiness hazards, risks, and operating limitations to the LDTO and/or OTA/OTO prior to any testing. (T-0).

cc. (Added)(DAF) Respond promptly to requests for DT&E plans, test concept briefings, or other T&E documentation from AF/TE and OSD action officers. (T-0)

dd. (Added)(DAF) Establish a Joint Reliability and Maintainability Evaluation Team (or similar Test Integrated Product Teams) and charter to assist in the reliability growth

process and reliability growth planning and the collection, analysis, verification, and categorization of reliability, availability, and maintainability data. (T-0)

ee. (Added)(DAF) Engage early with test and certification stakeholders to determine strategy and planning for employing model-based T&E activities. (T-1)

ff. (Added)(DAF) Recommend what test data or materials may be disclosed to foreign nationals in accordance with DAFPD 16-2, *Disclosure of Military Information to Foreign Governments and International Organizations*. (T-1)

gg. (Added)(DAF) Route DT&E plans and test concepts requiring OSD approval through AF/TE and/or USSF/TE before submission to OSD. (T-1)

(1) (Added)(AFMC) Send an information copy to AFMC/A3F Workflow (AFMC.A3F.Workflow@us.af.mil) on DT&E plans and test concepts requiring OSD approval.

hh. (Added)(DAF) Coordinate with their supporting intelligence offices for threat and intelligence support. (T-1)

ii. (Added)(DAF) Execute additional PM responsibilities cited in Paragraph 3.1.e.

2.19.(ADDED)(DAF) CHIEF DEVELOPMENTAL TESTER (CDT), TEST MANAGER.

(Added)(DAF) CDT, Test Manager will:

a. (Added)(DAF) Report to the PM. (T-1)

b. (Added)(DAF) Maintain Defense Acquisition Workforce Improvement Act T&E acquisition-coded (T-code) position certification requirements including KLP qualification standards if required. (T-1)

c. (Added)(DAF) Coordinate with the LDTO to determine when contractors require LDTO oversight. (T-1)

d. (Added)(DAF) Advise the PM on test issues and responsibilities listed in Paragraph 2.18 and help the PM make technically informed, objective judgments about government and contractor DT&E results. (T-1)

e. (Added)(DAF) Provide program guidance to the LDTO and the Integrated Test Team. (T-1)

f. (Added)(DAF) Participate with LDTO in the Preliminary Design Review, Critical Design Review, Mission-Oriented Test Readiness Certification and contractor Test Readiness Reviews. (T-1)

g. (Added)(DAF) Chair the government's DT&E Test Readiness Review. (T-1)

h. (Added)(DAF) Chair the Integrated Test Team with the OTA/OTO. (T-1)

i. (Added)(DAF) Coordinate the development of the strategy for T&E, TEMP, cyber

test strategy, and other T&E documentation in accordance with the DoD 5000-series, AFI 63-101/20-101, and this instruction. (T-1)

j. (Added)(DAF) Update the TEMP or test strategy whenever significant revisions impact the program or T&E execution as defined by the PM, DOT&E, Deputy Director, Developmental Test, Evaluation, and Assessments (DD(DTE&A)), or AF/TE. (T-1) Note: Updates are any revisions that alter the substantive basis of the MDA certification or otherwise cause the program to deviate significantly from the material previously presented, or if the conditions that formed the basis for the original agreement have changed.

k. (Added)(DAF) Develop Critical Technical Parameters in collaboration with the Chief Engineer and the Integrated Test Team for inclusion in the TEMP or test strategy. (T-1) Critical Technical Parameters will be correlated to Critical Operational Issues and Operational T&E test objectives (i.e., measures of effectiveness and measures of suitability) in the TEMP or test strategy. (T-1)

l. (Added)(DAF) Work with developmental testers to review the testability of requirements that can be put on contract. (T-1) For guidance, use *Incorporating Test and Evaluation into Department of Defense Acquisition Contracts*.

m. (Added)(DAF) Ensure the TEMP or test strategy incorporates cyber test requirements as derived from the Cybersecurity Strategy throughout all phases of program development and the test requirements for system cybersecurity and cyber resiliency are complete and testable. (T-1)

n. (Added)(DAF) Review and approve Contractor Developmental Test Plans with the assistance of the LDTO and Integrated Test Team. (T-1)

o. (Added)(DAF) Coordinate with the appropriate LFT&E organization for assistance with LFT&E planning, test asset provisioning, test execution, data analysis, and reporting including strategies, waivers, alternative plans, test/analysis plans, and reports. (T-1)

p. (Added)(DAF) Identify critical LFT&E issues. Prepare required LFT&E documentation to include the TEMP or test strategy and LFT&E strategy, plans, and reports with Integrated Test Team, AF/TEP, and DOT&E early in the process. (T-0)

q. (Added)(DAF) Ensure the DT&E, OT&E, and LFT&E strategies are structured so design deficiencies uncovered during Engineering and Manufacturing Development can be corrected before proceeding beyond LRIP. (T-1)

r. (Added)(DAF) Assist the Chief Engineer when assessing the technological maturity and integration risk of critical technologies. (T-1)

s. (Added)(DAF) Coordinate with the program Chief Engineer and test organizations to identify required technical and safety reviews and optimize reviews to prevent redundancy. (T-1)

t. (Added)(DAF) Assist the PM in routing DT&E, LFT&E, Operational Test Plans (e.g., Early OA, OA, and IOT&E), strategies, and test concepts requiring OSD approval through AF/TE before submission to OSD. Send documentation to AF/TEP or USSF/TE for AF/TE's coordination. (T-1).

(1) (Added)(AFMC) Copy AFMC/A3F Workflow (AFMC.A3F.Workflow@us.af.mil) on required documentation.

u. (Added)(DAF) Plan for and conduct T&E of Commercially available Off-The-Shelf items (COTS), Non-Developmental Items (NDI), and Government-Furnished Equipment (GFE) even when these items come from pre-established sources. (T-1) The operational effectiveness and suitability of these items and any military-unique applications must be tested and evaluated before a Full-Rate Production or Full Deployment decision. (T-1)

v. (Added)(DAF) Ensure that developmental, certification, and operational organizational stakeholders are involved in the collaborative work that produces the Analysis of Alternatives Study Plan, Operational Assessments, Analysis of Alternatives Final Report, Program Protection Plan, Cybersecurity Service Provider, Acquisition Strategy, Technology Development Strategy, TEMP or test strategy, Systems Engineering Plan, Life Cycle Sustainment Plan, cyber T&E strategy, and the definition of entrance and exit criteria for developmental and operational testing. (T-1)

w. (Added)(DAF) Document and track all T&E related risks throughout the life cycle of the system and inform the PM. (T-1)

x. (Added)(DAF) Ensure test plan adequacy to verify the system meets performance requirements, TEMPs or test strategies, test criteria, and associated DT&E and OT&E plans for interoperability. (T-0)

y. (Added)(DAF) Ensure all DT&E (both contractor and government) used to support government evaluation is conducted according to government-approved test plans and other program documentation. (T-1)

z. (Added)(DAF) Ensure formation of Test Integrated Product Teams, such as the Material Improvement Project Review Board and the Joint Reliability and Maintainability Evaluation Team, to track and resolve deficiencies. (T-1)

aa. (Added)(DAF) Coordinate with the program Product Support Manager and Integrated Test Team to ensure program test planning/strategy development integrates with system sustainment requirements as developed and documented in the program Life-Cycle Management Plan. (T-1)

bb. (Added)(DAF) Execute additional CDT/Test Manager responsibilities cited in Paragraph 3.3.a. (T-1)

2.20.(ADDED)(DAF) LEAD DEVELOPMENTAL TEST AND EVALUATION ORGANIZATION (LDTO).

(Added)(AFMC) All references to the LDTO apply to the Alternate LDTO Option.

(Added)(DAF) LDTO will:

a. (Added)(DAF) Function as the lead integrator for a program's DT&E activities. (T-1)

b. (Added)(DAF) Maintain separation from the program office, but support the PM and Integrated Test Team through the CDT and/or Test Manager in a provider-customer

relationship with regard to the scope, type, and conduct of required DT&E. (T-1)

Exception: Due to limited qualified space LDTOs, a different LDTO construct is authorized for space systems. The PEO may use an internal LDTO, provided it does not report to the PM of Record, with the approval of USSF/TE. (T-1)

(1) (Added)(AFMC) Program Management Offices acting as Alternate LDTO must establish procedures for test plan technical reviews demonstrating independence from the program office. Independence can be accomplished by utilizing a qualified Participating Test Organization, T&E Organizational Senior Functional, or Center Test Authority as technical review chair.

c. (Added)(DAF) The LDTO may designate a sub-organization, such as an ETO or Participating Test Organization (PTO), to conduct the test with LDTO oversight in alignment with the DAF M&S Strategy and M&S policy and instructions. (T-1)

(2) (Added)(AFMC) The ETO will complete a detailed test report describing, at a minimum, test objectives, technical approach to meet objective uncertainty requirements, test procedures and evaluation of results.

d. (Added)(DAF) Assist the CDT and/or Test Manager and the requirements, acquisition, and cyber test communities in developing Analyses of Alternatives, studies, analyses, Operational Assessments, and program documentation in accordance with AF/A5D Requirements Development Guidebooks, AFI 63-101/20-101, and AFI 17-101. (T-1)

e. (Added)(DAF) Participate in Integrated Test Teams as they are being formed and assist Test Integrated Product Teams as required. (T-1)

f. (Added)(DAF) Plan, manage, and/or conduct government DT&E (to include LFT&E, and integrated testing) according to the strategy for T&E, the TEMP or test strategy, and DT&E and LFT&E strategies and plans. (T-1)

g. (Added)(DAF) Collaborate with the CDT and/or Test Manager to establish, coordinate, and oversee a confederation of government DT&E organizations that plan and conduct DTE&E according to the TEMP or test strategy. (T-1)

h. (Added)(DAF) Conduct or oversee cyber tests in support of the cyber T&E strategy as directed by the CDT and/or Test Manager. (T-1)

i. (Added)(DAF) Accomplish independent Technical and Safety Reviews. All test organizations must establish procedures for when and how these reviews are accomplished. (T-1)

j. (Added)(DAF) Participate in the Mission-Oriented Test Readiness Certification in accordance with DAFMAN 63-119. (T-1)

k. (Added)(DAF) Conduct or oversee DT&E in support of nuclear certification in accordance with AFI 63-125. (T-1)

l. (Added)(DAF) Report, validate, and initially prioritize Deficiency Reports in accordance with TO 00-35D-54 for all contractor and developmental testing activities. (T-1)

m. (Added)(DAF) Generate, as needed, one-time, periodic, significant event, observational, and/or other timely informational documentation to provide continuous written feedback to the PM and other stakeholders to inform all aspects of program development. (T-1) Provide results and reports to the program's common T&E database. (T-1)

n. (Added)(DAF) Collaborate with AF/TE and/or USSF/TE to develop DT&E Sufficiency Assessments for Major Capability Acquisition programs for which the Service or Component acquisition executive is the MDA. (T-1)

o. (Added)(DAF) Participate, if tasked, on Independent Technical Risk Assessment teams. (T-1) DAF Independent Technical Risk Assessment teams will assess technology and manufacturing processes for all Major Defense Acquisition Plans before approval of Milestone A, Milestone B, and any decision to enter into low-rate initial production or full-rate production (see AFI 63-101/20-101 for more info). (T-0)

p. (Added)(DAF) Coordinate with the PM for requests for DT&E plans, test concept briefings, or other T&E documentation from AF/TE, USSF/TE, and OSD action officers. (T-1)

q. (Added)(DAF) Respond promptly to requests for DT&E plans, test concept briefings, or other T&E documentation from AF/TE, USSF/TE, and OSD action officers. (T-1)

r. (Added)(DAF) Execute additional LDTO responsibilities cited in Paragraph 3.3.b. (T-1)

2.21.(ADDED)(DAF) PARTICIPATING TEST ORGANIZATIONS (PTOs).

(Added)(DAF) PTOs will:

a. (Added)(DAF) Participate in Integrated Test Teams and Test Integrated Product Teams as requested by the CDT and/or Test Manager, LDTO, Executing Test Organization, OTA/OTO, and other Integrated Test Team members. (T-1)

b. (Added)(DAF) Assist other test organizations as described in TEMPs or test strategies, test plans, and other program documentation. (T-1)

2.22.(ADDED)(DAF) INTEGRATED TEST TEAM

(Added)(DAF) Integrated Test Team will:

a. (Added)(DAF) Develop and manage the strategy for T&E and test plans that are integrated to effectively support the requirements, acquisition, cyber, and sustainment strategies. (T-1)

b. (Added)(DAF) Continually coordinate with AF/TEP and the assigned DD(DTE&A) and DOT&E action officers as required for programs on T&E oversight. (T-1)

c. (Added)(DAF) Invite AF/TEP and OSD action officers to Integrated Test Team meetings and decision reviews, and coordinate draft TEMPs or test strategies, test plans, and other program-related documentation as the program unfolds. (T-1)

- d. (Added)(DAF) Develop and implement an Integrated Test Team charter. Recommended member organizations are shown in Figure 1.a. Coordinate updates to the charter as program changes warrant. Note: During Materiel Solution Analysis or early Technology Maturation and Risk Reduction phase, provisional or temporary Integrated Test Team representatives may be required to initiate the processes. (T-1)
- e. (Added)(DAF) Recommend an LDTO to the PM. (T-1)
- f. (Added)(DAF) Assist in establishing test teams to conduct integrated testing, to include certification of mission-oriented test readiness, integrated warfighting and cross-domain T&E. (T-1)
- g. (Added)(DAF) Review the Contract Data Requirements List to ensure it describes the content, format, delivery instructions, and approval and acceptance criteria for all deliverable T&E data. (T-1)
- h. (Added)(DAF) For programs under the DBS pathway, accomplish risk analysis in accordance with AFMAN 63-144, *Business Capability Requirements, Compliance, and System Acquisition*. (T-0)
- i. (Added)(DAF) Ensures DAFMAN 63-119 Mission-Oriented Test Readiness certification process is tailored and conducted for all test activities during the acquisition process. (T-1)
- j. (Added)(DAF) Identify and help eliminate redundant test activities. (T-1)
- k. (Added)(DAF) Ensure the LFT&E strategy and plans in the TEMP or test strategy are in accordance with this instruction and other applicable instructions. (T-0)
- l. (Added)(DAF) Assist the requirements community in developing applicable requirements documents, enabling and operating concepts, and architectures as described in CJCSI 5123.01I, the AF/A5D Requirements Development Guidebooks, and AFI 17-140. For defense business systems programs, also reference AFMAN 63-144. (T-1)
- m.(Added)(DAF) Develop cyber T&E strategy in accordance with AFI 63-101/20-101, AFI 17-101, and this instruction. For information systems containing Special Access Program information, refer to *DoD Joint Special Access Program Implementation Guide*. (T-1)
- n. (Added)(DAF) Ensure interoperability testing is planned in accordance with DoDI 8330.01, *Interoperability of Information Technology (IT), Including National Security Systems (NSS)* and CJCSI 5123.01I. (T-0)
- o. (Added)(DAF) Coordinate with JITC under Defense Information Systems Agency to review the net-ready performance attribute and ensure test plan adequacy to verify the system meets these performance requirements, TEMP or test strategies, test criteria, and associated DT&E and OT&E plans for interoperability. (T-0)
- p. (Added)(DAF) Review program's Information Support Plan via the formal Information Support Plan staffing process, to ensure T&E data is consistent with the TEMP or test strategy and other applicable T&E documentation in accordance with DoDI 8330.01. (T-0).

- q. (Added)(DAF) Plan for a common T&E database for the program. (T-1)
- r. (Added)(DAF) Assist the acquisition community in developing studies, analyses, documentation, strategies, contractual documents, and plans. (T-1)
- s. (Added)(DAF) Review and provide inputs to contractual documents to ensure they address government testing needs. Additional information can be found in *Incorporating Test and Evaluation into Department of Defense Acquisition Contracts*. (T-1)
- t. (Added)(DAF) Ensure that, when feasible, any request for proposal or statement of work supports inclusion of contractor T&E data as part of the common database for the program, as well as all T&E data from previous increments and real-world operations. (T-1)
- u. (Added)(DAF) Monitor contractor DT&E and the activities of all T&E team members. (T-1)
- v. (Added)(DAF) Identify and confirm sufficient funding for all T&E resource requirements, including acquisition of test items, necessary facility upgrades, and personnel. (T-1)
- w. (Added)(DAF) Ensure that all T&E activities comply with DAFFD 16-6, *International Arms Control and Nonproliferation Agreements and the DoD Foreign Clearance Program*. If required, coordinate with SAF/GCI, AF/JAO, and AF/A3S. (T-1)
- x. (Added)(DAF) Outline which T&E-related records will be retained and/or forwarded to the DTIC and other repositories. (T-0)
- y. (Added)(DAF) Develop a distribution list for all DT&E reports which includes operational testers, PTOs, the PEO, applicable MAJCOM, FLDCOM, Center Test Functional Leaders, AF/TE, USSF/TE, certification organizations, and the Defense Technical Information Center. (T-1)
- z. (Added)(DAF) Maximize the use of pre-existing T&E data to reduce the scope and cost of government testing. (T-1)
- aa. (Added)(DAF) Use as much contractor T&E data as possible if its accuracy can be verified. (T-1) Contractor T&E data should be visible and shall be clearly identifiable in the common T&E database. (T-1)
- bb. (Added)(DAF) Consider evaluating system in large force exercises and large force test events (e.g., Orange Flag, Emerald Flag, and Black Flag) to verify and validate technical performance and mission requirements in an operationally realistic environment and assess interoperability with other systems early to reduce mission risk to the warfighter. (T-1)
- cc. (Added)(DAF) Develop a strategy for collecting and archiving key T&E information and data that have significant record value for permanent retention. (T-1). When developing the strategy consider the program integrated digital environment and digital acquisition strategy.
- dd. (Added)(DAF) Request operator support for testing. (T-1)

ee. (Added)(DAF) Execute additional Integrated Test Team responsibilities cited in Paragraph 3.1.f. (T-1)

2.23.(ADDED)(AFMC) AFMC Centers

(Added)(AFMC) To manage test activities, Center commanders will:

a. (Added)(AFMC) Establish a Center Test Authority or establish an agreement with another Center's Test Authority to execute the roles and responsibilities of paragraph 2.24. Note: AFTC meets this requirement through Mission Directive 4-404 (T-2).

b. (Added)(AFMC) Appoint a Center Test Functional Leader or Center Senior Cross-Functional Leader for Test and Evaluation in accordance with AFMCI 36-2645. The incumbent must meet T&E Key Leadership Position qualification standards. (T-2).

c. (Added)(AFMC) AFTC will provide advice and expertise on developmental testing to the other Centers. The level and type of support for AFTC representation at non-AFTC sites will be established through inter-Center support agreements.

2.24.(ADDED)(AFMC) Center Test Authority

(Added)(AFMC) The Center Test Authority (CTA) is responsible for overseeing/managing Test and Evaluation functional processes at their respective Center and maintaining test rigor across their portfolio of T&E programs. The CTA will:

a. (Added)(AFMC) Develop and document a cross-functional process to manage the Center's Test & Evaluation personnel, activities and interests for Center leadership.

b. (Added)(AFMC) Assist unit manpower personnel flights to ensure Chief Developmental Tester/Test Manager and T&E personnel positions are correctly coded and resourced with qualified persons who possess the requisite experience and Acquisition Professional Development Program certifications.

c. (Added)(AFMC) Support Chief Developmental Testers/Test Managers in establishing Integrated Test Teams, developing Integrated Test Team charters, and reviewing program Test and Evaluation Master Plans, Life Cycle Sustainment Plans, Systems Engineering Plans, and other T&E planning documentation.

d. (Added)(AFMC) Assist Center leadership and program offices in developing and implementing guidance and processes for sufficient and independent technical and safety reviews.

e. (Added)(AFMC) Manage Center's LDTO processes and coordinate on all LDTO recommendations.

f. (Added)(AFMC) Inform the program office and AFMC/A3/6 if an existing Alternate-LDTO or Program Management Office Alternate LDTO option is no longer suitable to meet program test requirements.

g. (Added)(AFMC) Perform as LDTO for low risk, low cost, short duration developmental T&E (DT&E), qualification T&E (QT&E), and sustainment testing tests of the type and scope normally not conducted by the Air Force Test Center.

h. (Added)(AFMC) Review each Foreign Military Sales Letter of Request for Pricing and Availability for test equities. When applicable, assist in development of the T&E strategy with associated funding lines in the Letter of Agreement. Support the test manager in developing initial test strategy and associated cost with AFTC's assistance (as required).

i. (Added)(AFMC) Provide Center-level oversight of T&E resource management procedures (use, re-use, and disposal), test capability development activities, and T&E support agreements.

j. (Added)(AFMC) Provide T&E management expertise, advice, reach-back, and informal T&E training to programs for Acquisition Strategy Panels, program reviews, request for proposal development and contract implementations, etc.

k. (Added)(AFMC) Provide independent test plan technical reviews and test safety planning assistance for programs utilizing the Alternate LDTO option.

SECTION 3: T&E PROCEDURES

3.1. OVERVIEW.

a. The fundamental purpose of T&E is to enable the DoD to acquire systems that support the warfighter in accomplishing their mission. To that end, T&E provides engineers and decision-makers with knowledge to assist in managing risks; to measure technical progress; and to characterize operational effectiveness, operational suitability, interoperability, survivability (including cybersecurity), and lethality. This is done by planning and executing a robust and rigorous T&E program.

b. Integrated testing and independent evaluation are part of a larger continuum of T&E that includes DT&E (both contractor and government), OT&E, and LFT&E. Integrated testing requires the collaborative planning and execution of test phases and events to provide shared data in support of independent analysis, evaluation, and reporting by all stakeholders. Whenever feasible, the programs will conduct testing in an integrated fashion to permit all stakeholders to use data in support of their respective functions.

c. Programs will incorporate integrated testing at the earliest opportunity when developing program strategies, plans with program protection, documentation, and T&E strategies or the TEMPs. Developing and adopting integrated testing early in the process increases the effectiveness and efficiency of the overall T&E program.

(1) If done correctly, integrated testing provides greater opportunity for early identification of concerns to improve the system design, and guides the system development during the engineering and manufacturing development phase. Conducting critical test activities earlier will enable the discovery of problems that the program can fix while the system is still in development and avoid costly redesigns late in the acquisition life cycle.

(2) Integrated testing and independent evaluation also encourage the sharing of all developmental test (DT), OT, and live fire test resources to accomplish the test program. For programs informing decisions that are not addressed in Title 10, U.S.C., such as fielding, deployment, and low-rate production decisions, well planned and executed integrated testing may provide necessary data for an OTA to determine the system's operational effectiveness, suitability, and overall mission capability.

(3) Integrated testing does not replace or eliminate the requirement for IOT&E, as a condition to proceed beyond LRIP for programs with beyond low-rate (i.e., full-rate) production decisions as required by Section 2399 of Title 10, U.S.C.

(4) (Added)(DAF) Integrated testing must provide appropriate data collection instrumentation and shared data in support of independent analyses for all stakeholders. For each program, a common T&E database is required to include descriptions of test environments and conditions to ensure commonality and usability by test, certification, and other applicable stakeholder organizations. The common T&E database should interface with and support the program integrated digital environment.

(a) (Added)(DAF) A statement about data validity and a point of contact must be attached to each data batch. All program stakeholders will have access to T&E data on a need-to-know basis. To the maximum extent possible, all testers must allow open data sharing and non-interference observation by other testers, the system developer, contractor, users, DOT&E, DD(DTE&A), and the PM.

(b) (Added)(DAF) All test teams establish rigorous data collection, control, accountability, and security procedures for T&E data. To ensure data traceability, test teams must only use authorized databases for storing data, verify the origin and integrity of any data used in final reports, i.e., whether the data came from contractors, DT&E, integrated testing, other Service OTAs, deployed assets used in real world operations, or DAF operational tests.

(c) (Added)(DAF) Joint Reliability and Maintainability Evaluation Team may also include Prognostics and Health Management data. Categorizing is defined as assignment of criticality, relevancy, and chargeability of the data. Scoring is defined as officially accepting Joint Reliability and Maintainability Evaluation Team data as useable for reliability and maintainability calculations. A clear, unequivocal definition of “failure” and “critical failure” must be established for the equipment or system in relation to its performance parameters.

(d) (Added)(DAF) The Joint Reliability and Maintainability Evaluation Team also reviews applicable Deficiency Reports and recommends whether or not they should be closed. The PM or designated representative chairs the Joint Reliability and Maintainability Evaluation Team during Developmental T&E; an operational test representative chairs during dedicated operational testing. Note: A Failure Reporting Analysis and Corrective Action report or a Deficiency Review Board can be used for re-categorization of hardware and software deficiencies identified by the Joint Reliability and Maintainability Evaluation Team. See TO 00-35D-54.

(e) (Added)(DAF) The PM and testers describe in the TEMP or test strategy how they will jointly review T&E data during the system development and sustainment phases. These should be periodic government-only reviews. For programs where AFOTEC is the lead operational tester, a Test Data Scoring Board may also be used.

(f) (Added)(DAF) All test teams will release validated test data and factual information as soon as practical to other testers and stakeholders. Preliminary data may also be released, but must be clearly identified as such.

(g) (Added)(DAF) When developing a strategy for collecting and archiving key T&E information and data consider the system’s importance and potential for future inquiries into baseline performance, performance variance, test design, conduct, and how results were determined. Data collection and retention policies and decisions should support the program integrated digital environment and digital acquisition strategy.

(h) (Added)(DAF) Identify data retention requirements to address retaining baseline performance data, pertinent statistical information, test plans, TEMPs or test strategies, analyses, annexes, and related studies, in addition to final reports, to maintain a complete historical picture in accordance with AFI 33-322.

(5) (Added)(DAF) Integrated testing requires a highly trained and qualified T&E workforce to apply the T&E principles to acquisition programs. Government personnel performing tests should be at least Acquisition Level I T&E certified.

(6) (Added)(DAF) While planning for integrated testing, beyond contractual compliance and functionality testing, ensure operational suitability and operational effectiveness are given commensurate consideration. See DAFPAM 63-128, *Integrated Life Cycle Management*, and *DoD Guide for Achieving Reliability, Availability, and Maintainability*.

(7) (Added)(DAF) Any test limitations or deferrals resulting from integrating test events must be explained in test plans and the TEMP or test strategy.

d. To ensure T&E focuses on informing the program's decision-making process throughout the acquisition life cycle, the TEMP will include the program's key decision points and the T&E information needed to support them. These decisions may be made by leaders ranging from the program manager (PM) to the MDA, and should represent major turning or decision points in the acquisition life cycle that need T&E information in order to make an informed decision. Examples include milestone decisions, key integration points, and technical readiness decisions.

This information is captured in a table known as the Integrated Decision Support Key (IDSK). This table is developed by the PM by analyzing what is already known about the capability, what still needs to be known about the capability, and when it needs to be known.

e. The PM:

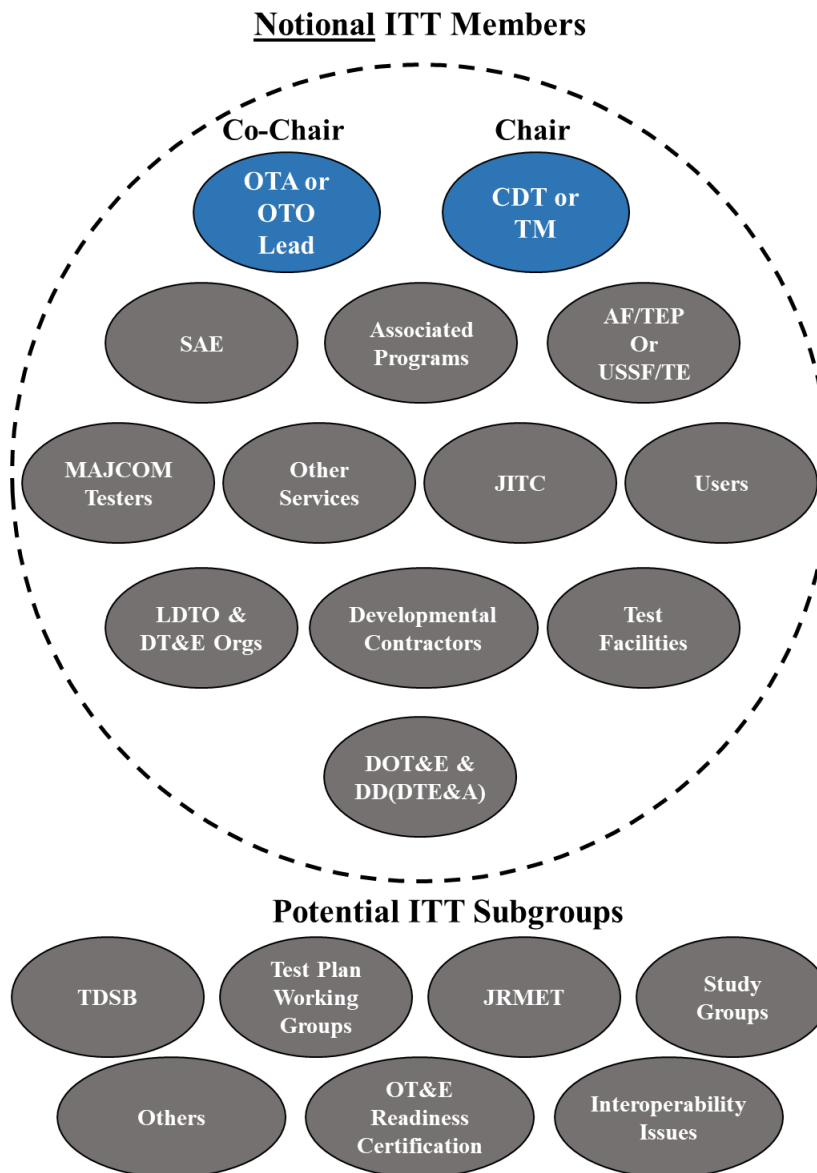
(1) Resources and executes the system's integrated test and independent evaluation program.

(2) Identifies DT, OT, and LF data requirements necessary to support decisions, in consultation with the chief developmental tester (CDT), the chief engineer, and the OTA representative, and combines them into an IDSK.

(3) Charters an integrated test planning group (i.e., the T&E Working-level Integrated Product Team (WIPT), also known as an integrated test team) early in the program. It will consist of empowered representatives of test data producers and consumers (including all applicable stakeholders) to ensure collaboration and to develop a strategy for robust, efficient testing to support systems engineering, evaluations, and certifications throughout the acquisition life cycle.

(a) (Added)(DAF) See the Air Force Test and Evaluation Guide for details on integrated test team structure, responsibilities, charters, and functions. A notional integrated test team structure is shown in Figure 1.a. In addition to the agencies depicted, applicable certification stakeholders should also be included. This guidebook is available on the Directorate of AF/TE SharePoint® <https://usaf.dps.mil/sites/haf-te/SitePages/Home.aspx>.

Figure 1.a. (Added)(DAF) Integrated Test Team



(b) (Added)(DAF) Integrated Test Teams may function at two levels: an Executive Level consisting of O-6s, GS-15s, and NH-04s from key organizations and a Working Group Level consisting of organizations needed to fulfill specific Integrated Test Team tasks. Organizational representatives no higher than O-6 or GS-15 coordinate on and sign the Integrated Test Team charter. See the recommended Integrated Test Team charter outline and guidance in the *Air Force Test and Evaluation Guide*.

(c) (Added)(DAF) Integrated Test Team charters are reviewed and updated after each major decision review to ensure testing is integrated as much as possible within statutory and regulatory guidelines.

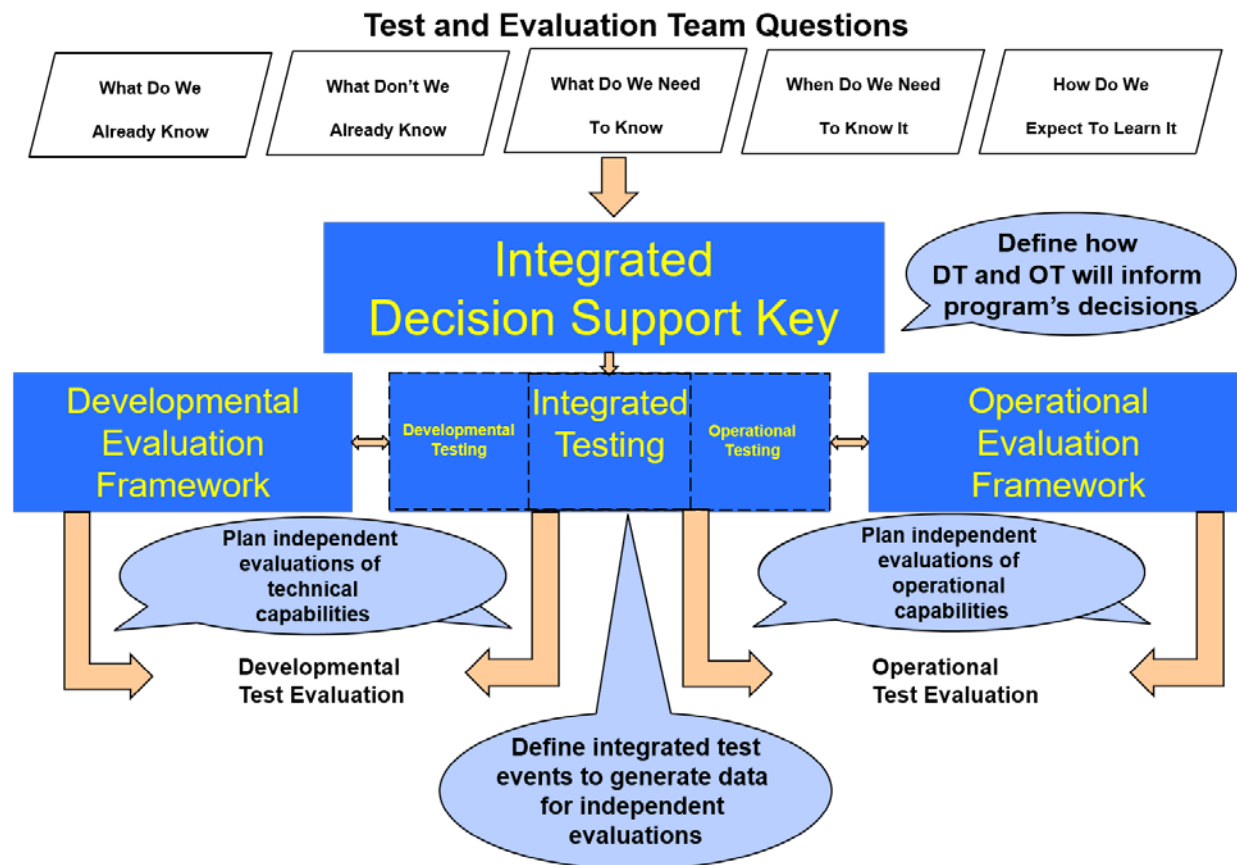
f. The T&E WIPT, chaired by the CDT:

- (1) Provides a forum for involvement by all key organizations in the T&E effort.
- (2) Develops the TEMP for the PM. Requires all key stakeholders to be afforded an opportunity to contribute to TEMP development.
- (3) Includes representatives of test data stakeholders such as systems engineering, DT&E, OT&E, LFT&E, the user, product support, the intelligence community, and applicable certification authorities.
- (4) Supports the development and tracking of an integrated test program for DT, OT, LFT&E, and modeling and simulation to support evaluations.
- (5) Supports the development and maintenance of the integrated test schedule.
- (6) Identifies and provides a recommended corrective action or risk assessment.
- (7) Explores and facilitates opportunities to conduct integrated testing to meet DT, OT, and LFT&E objectives.
- (8) (Added)(DAF) The DAF Integrated Test Team is equivalent to a DoD WIPT. A separate WIPT is not required.**

g. The T&E WIPT requires test objectives to be understood, the testing to be conducted in an operational context to the maximum extent possible, and the resultant data to be relevant for use in independent evaluations and the rationale behind the requirements. While using the T&E framework, as shown in Figure 1, it is critical that all stakeholders:

- (1) Understand the scope of the evaluations required.
- (2) Define, up front, the end state for evaluations.
- (3) Develop an integrated testing approach that generates the data required to conduct independent evaluations.

Figure 1. Integrated T&E Framework



h. The T&E WIPT will identify DT, OT, and LFT&E data requirements needed to inform critical acquisition and engineering decisions. Once the T&E WIPT identifies the data requirements, the developmental and operational testers together will determine which data requirements can be satisfied through integrated testing and develop an integrated test matrix.

(1) All stakeholders will use the IDSK to independently develop evaluation frameworks or strategies that will show the correlation and mapping between evaluation focus areas, critical decision points, and specific data requirements.

(2) The CDT will develop the developmental evaluation framework (DEF) that focuses on the correlation between technical requirements, decision points, and data requirements.

(3) The OTA representative will develop the operational evaluation framework (OEF) that focuses on the correlation between operational issues, decision points, and data requirements. The linkage between the OEF and the DEF shows that technical requirements support operational capabilities.

i. As part of the digital engineering strategy, models and data will be used to digitally represent the system in a mission context to conduct integrated T&E activities. To the largest extent possible, programs will use an accessible digital ecosystem (e.g., high bandwidth network, computational architectures, multi-classification environment, enterprise resources, tools, and advanced technologies). This environment must provide authoritative sources of models, data,

and test artifacts (e.g., test cases, plans, deficiencies, and results) and provide digital technologies to automate, reuse, and auto-generate test artifacts to gain greater accuracy, precision, and efficiencies across integrated test resources.

(1) (Added)(DAF) The SAF/AQ Memo, *Digital Building Code and Scorecard*, provides guidance for programs to employ digital engineering. It is located at https://usaf.dps.mil/sites/21596/Library/Digital_Acquisition/USAF%20Digital%20Guidance/Digital%20Building%20Code%20and%20Scorecard%20Memo%20v15.pdf. See also the Air Force Digital Guide at <https://usaf.dps.mil/teams/afmcde>.

j. The T&E WIPT documents the configuration of the test asset and the actual test conditions under which each element of test data was obtained. It indicates whether the test configuration represented operationally realistic or representative conditions.

k. Before the start of testing for any acquisition path, the T&E WIPT will develop and document a TEMP or similar strategic document to capture DT, OT, and LFT&E requirements; the rationale for those requirements (e.g., Joint Capabilities Integration and Development System and concept of operations (CONOPS)); and resources, to be approved by the DOT&E and USD(R&E), or their designee, as appropriate. The TEMP, or similar strategic document for programs not under T&E oversight, is approved at the Service level. At a minimum, the document details:

- (1) The resources and test support requirements needed for all test phases.
- (2) Developmental, operational, and live fire test objectives and test metrics.
- (3) Program schedule with T&E events and reporting requirements that incorporate report generation timelines.
- (4) Test phase objectives, including entrance and exit criteria and cybersecurity test objectives.
- (5) Program decisions and data requirements to support those decisions.
- (6) Data collection requirements.
- (7) Funding sources for all test resources.

(a) (Added)(DAF) The funding sources for T&E depend on the nature and purpose of the work and the type of testing. Funding is not based on the organization conducting the test or the name of the test. Detailed guidance is in AFI 63-101/20-101, and DAFMAN 65-605V1.

(b) (Added)(DAF) Funding requirements for Joint Interoperability Certification Tests must be coordinated directly with JITC in accordance with the JITC Interoperability Process Guide v2.0 and AFI 63-101/20-201.

(c) (Added)(DAF) Test resource advisors must ensure compliance with all requirements before requesting and committing funds. Direct assistance is available from SAF/FMBI, SAF/AQXR, AF/TEP, and USSF/TE.

1. The PM will use the TEMP, test strategy, or other pathway-appropriate test strategy documentation as the planning and management tool for the integrated T&E program. The test strategy documentation requires DoD Component approval. Documentation for programs under USD(R&E) or DOT&E oversight will require USD(R&E), or their designee, and DOT&E approval respectively. Documentation for programs not under T&E oversight is approved at the Service level.

m. (Added)(DAF) Figure 1.b is the required DAF signature/coordination for the TEMP or test strategy based on adaptive acquisition framework pathway, ACAT or BCAT level, and whether the program is on T&E oversight. (T-1)

Figure 1.b. (Added)(DAF) DAF Signature/Coordination for TEMP or Test Strategy

	TEMP	Test Strategy	PM	PEO	LDT0	AFOTEC or OTO ¹	AF/TE ²	SAF/AQ	DD(DT&E)	DOT&E
Urgent Capability Acquisition ³	R		R	R	R	R				
Middle Tier of Acquisition		R	R	R	R	R	R ⁴	R ⁴	(+) ⁵	(+) ⁵
Major Capability Acquisition ACAT I	R		R	R	R	R	R	R	(+) ⁵	(+) ⁵
Major Capability Acquisition ACAT II & Below	R		R	R	R	R	(+) ⁵	(+) ⁵	(+) ⁵	(+) ⁵
Software Acquisition		R	R	R	R	R	R ⁴	R ⁴	(+) ⁵	(+) ⁵
Defense Business Systems BCAT I		R	R	R	R	R	R	R	R	R
Defense Business Systems BCAT II & Below		R	R	R	R	R	(+) ⁵	(+) ⁵	(+) ⁵	(+) ⁵

(Added)(DAF) Legend: R – Required

(Added)(DAF) Notes:

1. (Added)(DAF) Only OTO when AFOTEC is not the lead OTA.
2. (Added)(DAF) For USSF programs include USSF/TE signature block before AF/TE.
3. (Added)(DAF) Urgent Capability Acquisition must follow Major Capability Acquisition ACAT II/III information requirements unless waived per DoDI 5000.81, *Urgent Capability Acquisition*. (T-0)
4. (Added)(DAF) SAF/AQ and AF/TE signatures are not required if the decision authority is delegated below SAF/AQ.
5. (Added)(DAF) If the program is on T&E oversight then (+) means the signature is required.

n. (Added)(DAF) All DAF acquisition or sustainment programs requiring DT&E and/or OT&E require a TEMP or test strategy regardless of where the program enters the acquisition life cycle. (T-1)

o. (Added)(DAF) The TEMP or test strategy should be coordinated through stakeholders in the Integrated Test Team, but only submitted to the positions/organizations

listed in Figure 1.b based on adaptive acquisition framework pathway, ACAT or BCAT level, and whether the program is on T&E oversight for signature approval.

(1) (Added)(DAF) TEMP or test strategies requiring OSD approval should be submitted to the PEO for review and signature 120 calendar days prior to the decision review. The PEO signs and submits the TEMP or test strategy via SAF/AQ or SAF/SQ Workflow not later than 90 calendar days prior to the decision review for DAF (i.e., Service-level) coordination. DAF coordination and signature includes USSF/TE (for USSF programs only), AF/TE and SAF/AQ or SAF/SQ. Not later than 45 calendar days prior to the decision review, the SAE sends the TEMP or test strategy to OSD for review and approval. (T-0) The SAE submits the final Service-approved TEMP or test strategy 10 calendar days prior to the decision review for final OSD approval. (T-0) The PM must get the MDA's approval to adjust the timelines for rapid acquisition and agile software development programs. (T-0)

(2) (Added)(DAF) The Integrated Test Team forwards a TEMP or test strategy draft "in parallel" to all stakeholder organizations represented on the Integrated Test Team for pre-coordination review.

(3) (Added)(DAF) Integrated Test Team representatives are expected to verify concurrence or identify outstanding issues within 30 calendar days during TEMP or test strategy coordination. Dissenting organizations must provide a position statement, to include alternatives, or formal non-concurrence on the draft TEMP or test strategy within this timeframe.

(4) (Added)(DAF) The PM and PEO sign the TEMP or test strategy, send it to the appropriate Center Test Authority for coordination, and then staff it in parallel to the AFTC or LDTO and AFOTEC or OTO. After "concurrence signatures" are obtained, the TEMP or test strategy will be forwarded to the Air or Space Staff, through the MDA, for DAF and OSD coordination and approval.

(5) (Added)(DAF) For all T&E oversight programs, the PEO will sign the TEMP or test strategy after the PM signs and send back to the PM for DAF staffing. The PM will send the TEMP or test strategy to the PEM who will coordinate through the required DAF Staff offices. For USSF programs, the TEMP or Test Strategy will be coordinated through USSF/TE and signed by USSF/TE and AF/TE prior to coordination with SAE. After SAE signature, the PEM will submit the TEMP or test strategy to DD(DTE&A) and DOT&E.

(6) (Added)(DAF) For all other programs not requiring OSD approval, the PEM will ensure the SAE (or designated representative) signs as the final Service approval authority. USSF/TE will sign prior to AF/TE (for USSF programs only). AF/TE will sign prior to the SAE as the "DoD Component Test and Evaluation Director." If the SAE is not a signatory, no signature is required from the USSF/TE (for USSF programs only) and AF/TE.

(7) (Added)(DAF) For multi-Service TEMP or test strategies, the lead Service is responsible for coordinating multi-Service TEMP or test strategies. Signatures from the "concurrence signature" organizations in the other participating Services must be obtained before TEMP or test strategy submission to the PEO, and then the PM submits to the

Service T&E executives, the SAEs (or MDA if appropriate), and OSD for signature. PMs should consider additional time required for other Service coordination.

(8) (Added)(DAF) The PM shall make administrative changes for small corrections or modifications to the TEMP or test strategy. (T-1) Administrative changes do not impact T&E execution and do not require full coordination. The PM shall provide an errata page listing these changes. (T-1)

(9) (Added)(DAF) A TEMP or test strategy is no longer required once a program's sustainment is complete and final disposition has been determined.

(10) (Added)(DAF) AFI 63-101/20-101, DAFMAN 63-119, and DAFPAM 63-128 encourage the PM to tailor, combine, and streamline program documentation to meet program needs as long as specified document content, formats, and templates are followed. The DAF tailoring concept permits consolidation of multiple documents (e.g., the Acquisition Strategy and acquisition plan, TEMP or test strategy, and System Engineering Plan) into fewer documents, perhaps a single document if justifiable. The MDA retains the authority to tailor and make the final determination of what information is covered.

3.2. T&E OVERSIGHT LIST.

a. The DOT&E will manage the T&E oversight list used jointly by the USD(R&E) and DOT&E. Programs on OT and LFT&E oversight include those programs that meet the statutory definition of MDAPs in Section 2430, Title 10, U.S.C., and those that are designated by the DOT&E for oversight pursuant to Paragraph (a)(2)(B) of Section 139, Title 10, U.S.C. The DOT&E treats the latter programs as MDAPs for the purpose of OT and LFT&E oversight requirements, but not for any other purpose.

b. The DOT&E may place any program or system on the T&E oversight list at any time by using the following criteria:

(1) Program exceeds or has the potential to exceed the dollar value threshold for a major program, to include MDAPs, designated major subprograms, as well as highly classified programs and pre-MDAPs.

(2) Program has a high level of congressional or DoD interest.

(3) Weapons, equipment, or munitions that provide or enable a critical mission warfighting capability, or are a militarily significant change to a weapon system.

c. The DOT&E will provide formal notification to a Military Service when a program is being added to the T&E oversight list.

d. The DOT&E will monitor acquisition programs and consider the following to determine when programs should be removed from the T&E oversight list:

(1) T&E (initial and follow-on OT&E or LFT&E) is complete and associated reporting to inform fielding and full-rate production (FRP) decisions is complete.

(2) Program development has stabilized, and there are no significant upgrade activities.

e. The DOT&E is the approval authority for the respective OT&E and LFT&E planned activities in TEMPs, test strategies, or other overarching program test planning documents for programs on the T&E oversight list.

f. The USD(R&E) is the approval authority for the DT&E plan in the TEMP, test strategy, or other overarching program test planning documents for all acquisition category (ACAT) ID programs. The USD(R&E) reviews and advises the MDA on the DT&E plan in the TEMP, test strategy, or other overarching program test planning documents for ACAT IB and IC programs.

g. If an Under Secretary or Service Secretary has a significant objection to a fundamental aspect of the DT&E plan, he or she may raise this objection to the Deputy Secretary of Defense in the form of a briefing. The briefing serves to notify the Deputy of a dissenting view, not to preemptively halt the relevant decision or the program office's activities. If warranted, the Deputy will intercede. Briefing requests should be made well in advance of the approval of the TEMP.

h. The T&E oversight list is unclassified. The DOT&E maintains the T&E oversight list continuously at <https://osd.deps.mil/org/dote-extranet/SitePages/Home.aspx> (requires login with a common access card). Classified and sensitive programs placed on T&E oversight will be identified directly to their MDAs.

i. Force protection equipment (including non-lethal weapons) will be subject to oversight, as determined by the DOT&E.

j. (Added)(DAF) Continuous coordination with AF/TEP or USSF/TE and the assigned DD(DTE&A) and DOT&E action officers is required for programs on T&E oversight.

k. (Added)(DAF) Table 1 provides details about the information exchanges and interfaces between the DAF and OSD. The requirements in this table may be modified by direction of, or by specific agreement with, the program action officer(s) in AF/TEP or USSF/TE, DD(DTE&A), and DOT&E.

Table 1. (Added)(DAF) Information Requirements for T&E Oversight Programs

Item of Information	DAF OPRs	Due to OSD ²	Comments
TEMPs or test strategies¹ a. Draft TEMP or test strategy³ b. Service-approved TEMP or test strategy c. Newly-designated TEMP or test strategy	OPR: PEM⁶ Office of Collateral Responsibility (OCR): AF/TEP or USSF/TE	a. 90 calendar days prior to milestone b. 45 calendar days prior to milestone, and again at 10 calendar days prior if OSD sends back for changes c. 120 calendar days after program designation for T&E oversight	OSD (i.e., DD(DTE&A) and DOT&E) approval required prior to milestones and major decision reviews. “Updates” required for significant changes. “Administrative changes” required for minor updates.
Live Fire Test and Evaluation Waivers and Alternate Live Fire Test and Evaluation Strategies and Plans (if required)	OPR: PEM OCR: AF/TEP or USSF/TE	Prior to Milestone B	DOT&E sends notification to Congress prior to Milestone B.
Test Concept Briefings for Initial Operational Test and Evaluation, Qualification Operational Test and Evaluation, Follow-on Operational Test and Evaluation, Operational Utility Evaluation, Force Development Evaluation to include all types of Operational Assessments. See Note 7 for Force Development Evaluations.	AF/TEP or USSF/TE	180 calendar days prior to test start unless waived by DOT&E.⁸	Due to DOT&E.
Test Plans for Initial Operational Test and Evaluation, Qualification Operational Test and Evaluation, Follow-on Operational Test and Evaluation, Operational Utility Evaluation, to include all types of Operational Assessments (Service-approved)	AF/TEP or USSF/TE	Required 60 calendar days prior to test start. Note: DOT&E may request an additional briefing on test plans prior to starting these tests.	DOT&E written approval required before Initial Operational Test and Evaluation, Qualification Operational Test and Evaluation, Follow-on Operational Test and Evaluation, Operational Utility Evaluation, or Operational Assessment may start. Report major revisions to DOT&E. Note: A briefing may be required on these plans at DOT&E’s discretion.
Force Development Evaluation Plans⁷	AF/TEP or USSF/TE	60 calendar days prior to start of designated Force Development Evaluations.^{4, 7} Note: DOT&E may request an additional briefing on test	DOT&E will direct which subparts of Operational Test and Evaluation Oversight programs require approval.

		plans prior to starting these tests.	
Significant Test Event Reports	a. PEM for Developmental Test and Evaluation b. AF/TEP or USSF/TE for Operational Test and Evaluation OPR: OTO	24 hours after event	Events and addressees as listed in TEMP or test strategy and test plans.
Final Reports and Briefings: a. For Operational Assessment, Initial Operational Test and Evaluation, Qualification Operational Test and Evaluation, Follow-on Operational Test and Evaluation, Operational Utility Evaluation b. For Force Development Evaluation⁷	AF/TEP or USSF/TE OPR: Integrated Test Team	a. and b. Reports due not later than 45 calendar days prior to the decision review. For multi-Service tests, reports are due 45 calendar days prior to the decision review.	A single report is required for multi-Service programs. Final results briefings will be provided to DOT&E as requested.
Live Fire Test and Evaluation Reports	OPR: PEM OCR: AF/TEP or USSF/TE	45 calendar days after each LFT&E event or immediately upon identification of a critical failure or test results implying non-conformance with defined objectives or requirements.	Due to DOT&E.
Synopsis Reports of ACAT I Level Integrated or Stand-Alone Electronic Warfare Programs	AF/TEP or USSF/TE	Due annually by 15 Nov to DD(DTE&P)	Congressionally required. ⁵

(Added)(DAF) Notes:

1. (Added)(DAF) All references to TEMP or test strategy in this table are meant to include the tailored implementing documentation described in Paragraph 3.1.o.(10)., whichever is applicable. Only the T&E portions of tailored implementing documents require OTA/OTO, LDTO, and AF/TE coordination, and DD(DTE&A) and DOT&E approval.

2. (Added)(DAF) Time periods and dates are “Not Later Than” due dates to OSD. Due dates are subject to change by OSD to address agile acquisition efforts.

3. (Added)(DAF) “Draft TEMP or test strategy” means that all signatures below HQ USAF level or below the final signature for non-T&E oversight programs are complete.

4. (Added)(DAF) Only for programs on T&E oversight.

5. (Added)(DAF) Required by Public Law 103-160 § 220(a), *National Defense Authorization Act for Fiscal Year 1994*, as amended. (T-0)

6. (Added)(DAF) The PEM is the person from the Secretariat or Air Staff who has overall responsibility for a program element.

7. (Added)(DAF) Selected Force Development Evaluations require T&E oversight and will follow the same planning, briefing, and reporting guidance.

8. (Added)(DAF) Reference DOT&E memo, *Timeliness for OT&E Plans*.

3.3. T&E MANAGEMENT.

a. As soon as practicable after the program office is established, the PM will designate a CDT. The CDT will be responsible for coordinating the planning, management, and oversight of all DT&E (contractor and government) activities; overseeing the T&E activities of other participating government activities; and helping the PM make technically informed, objective judgments about contractor and government T&E planning and results.

b. PMs will designate, as soon as practicable after the program office is established, a government test agency to serve as the lead DT&E organization. For non-T&E oversight programs, a lead DT&E organization should be used, when feasible, and identified in the TEMP. The lead DT&E organization will be responsible for:

- (1) Providing technical expertise on T&E concerns to the CDT.
- (2) Conducting DT&E activities to support independent evaluations.
- (3) Conducting DT&E activities as directed by the CDT or his or her designee.
- (4) Supporting certification and accreditation activities when feasible.
- (5) Assisting the CDT in providing oversight of contractors.
- (6) Assisting the CDT in reaching technically informed, objective judgments about contractor and government T&E planning and results.

(7) (Added)(DAF) Assisting the CDT in providing oversight of PTOs.

c. For each program, a lead OTA, lead DT organization, and lead test organization (LTO) will be designated to plan and conduct OTs, DTs, and LFT&E; report results; and provide an independent and objective evaluation of operational effectiveness, operational suitability, survivability (including cybersecurity), or lethality. They also conduct additional testing and evaluation, as required.

(1) (Added)(DAF) DAF programs ensure objective DT&E by designating an LDTO that is separate from the program office, with case-by-case exceptions for low risk ACAT III or BCAT III programs that are not on the T&E oversight list and have proper program test representation.

(a) (Added)(DAF) The Integrated Test Team initiates selection of an LDTO

when building the strategy for T&E during requirements development phase, if possible.

(b) (Added)(DAF) LDTO selection must be based on a thorough review of required DT&E skill sets and human and capital resources that are best suited and available for each program.

(c) (Added)(DAF) The CDT or Test Manager submits their selection of the LDTO to the PM along with a capabilities and resource analysis.

(d) (Added)(DAF) LDTO nominations will be coordinated with the PEO before submission to AFMC/A3 and/or USSF/TE for approval. After approval of the selection, AFMC/A3 and/or USSF/TE (as appropriate) notifies the PM and the Program Element Monitor within 30 calendar days. Note: the Program Element Monitor is the person from the Secretariat or DAF Staff who has overall responsibility for the program element.

(e) (Added)(DAF) Alternate LDTO Option. Referred to as an “alternate-LDTO,” this designated option is by exception and only authorized for low risk (as defined by the MAJCOM or SSC) ACAT III or BCAT III programs that are not on the T&E oversight list and have proper Program test representation. An alternate organization may be designated in lieu of a LDTO from AFMC/A3 or USSF/TE approved list to oversee the functions described in Paragraph 2.20. Alternate LDTO nominations will be coordinated with the PEO, or delegated official, before submission to AFMC/A3 or USSF/TE for approval. After the approval of the selection, AFMC/A3 or USSF/TE (as appropriate) notifies the PM, AF/TE, and the Program Element Monitor within 30 calendar days. (T-2)

1. (Added)(DAF) Program Management Office alternate LDTO. The Program Management Office Alternate LDTO is a subset of the Alternate LDTO option. The Program Management Office alternate LDTO option allows the program office to perform the LDTO oversight function. (T-2)

2. (Added)(DAF) Each Program Management Office Alternate LDTO request and accompanying rationale must be considered on a case-by-case basis. The appropriate AFMC Center Test Authority or SSC will review each Program Management Office Alternate LDTO request and coordinate with PEO prior to submitting to AFMC/A3 or USSF/TE for approval. (T-2)

(2) (Added)(DAF) Assign an independent OTA/OTO to ensure objective OT&E for all programs.

(a) (Added)(DAF) The OTO for all programs and projects will be determined using the three-column flowchart in Figure 1.c. The flowchart identifies the responsible (default) OTO for DAF acquisition programs based on adaptive acquisition framework pathway and ACAT or BCAT level, T&E oversight status, and multi-Service applicability. The flowchart also identifies a process to transfer operational test responsibilities from OTO to OTA when requested by the OTO and accepted by OTA. Any such change must be coordinated with the PM. The flowchart will be used according to the following paragraphs (references cited in Figure 1.c.). (T-1)

(b) (Added)(DAF) As the DAF OTA, AFOTEC conducts operational testing for ACAT I, II, DOT&E Oversight, and multi-Service acquisition programs as shown in

Column 1 of Figure 1.c. The OTA also conducts Follow-on OT&E for programs shown in Column 2. The OTA involvement will end at the completion of Follow-on OT&E (or Initial/Qualification/MOT&E if no Follow-on OT&E is required) unless the OTA and the OTO otherwise mutually agree and document in the TEMP or test strategy or other program documentation. (T-1)

(c) (Added)(DAF) If a program has completed Initial/Qualification/MOT&E with deficiencies or shortfalls having severe or substantial mission impacts, as identified in the final report, the OTA normally conducts Follow-on OT&E for those deficiencies as shown at the top of Column 2. The OTA may abstain from future testing by generating a letter of non-involvement after mutually agreeing with the OTO to allow the OTO to conduct further testing for mission impacts rated substantial. When these post-Initial/Qualification/MOT&E programs have no deficiencies with severe or substantial mission impacts, the OTO is responsible for continued OT.

(d) (Added)(DAF) If a program has modifications, upgrades, etc., that are large enough to be considered new acquisition programs, required OT will be conducted for the new program by the OTA in accordance with Figure 1.c. In these instances, systems normally re-enter the acquisition process at a milestone commensurate with the Acquisition Strategy. An additional indicator that a program may warrant OTA involvement is the presence of new or revised operational Capability Requirements Document validated by the Joint Requirements Oversight Council. MOT&E may be assigned to a MAJCOM or STARCOM by mutual agreement with AFOTEC. Modifications may be temporary or permanent. The modifications outlined below require an AF Form 1067, *Modification Proposal*. See AFI 63-101/20-101 for more detail on modification types. (T-1)

1. (Added)(DAF) Type-1 temporary modifications change the configuration to enable short-term operational mission accomplishment. Type-1 modifications typically use commercially available off-the-shelf items or non-developmental items. The PM for the system has configuration control of the system and is responsible for evaluating, integrating, and installing these modifications. The OTO conducts testing of the installed modification to ensure operational safety, suitability, and effectiveness is not compromised.

2. (Added)(DAF) Type-2 temporary modifications may involve installation of T&E support equipment to obtain data for DT&E and OT&E. Test organizations and the PM must ensure operational safety, suitability, and effectiveness of Type-2 modified assets.

3. (Added)(DAF) Permanent modifications that change the configuration of an asset/software for operational effectiveness, suitability, survivability, safety, service life extension, and/or reduce ownership costs of a fielded weapon system, subsystem, or item must follow the AF/A5D Requirements Development Guidebook and may require an additional amount of DT&E and OT&E prior to fielding.

(e) (Added)(DAF) As shown in Figure 1.c., Column 3, OTOs conduct required operational testing for ACAT III or BCAT III programs. The OTOs continue conducting OT&E for all routine post-Initial/Qualification/Follow-on/MOT&E fielded system upgrades, deficiency corrections, and sustainment programs as required. The OTOs may request the OTA to assume responsibility for OT&E and/or may request support. (T-1)

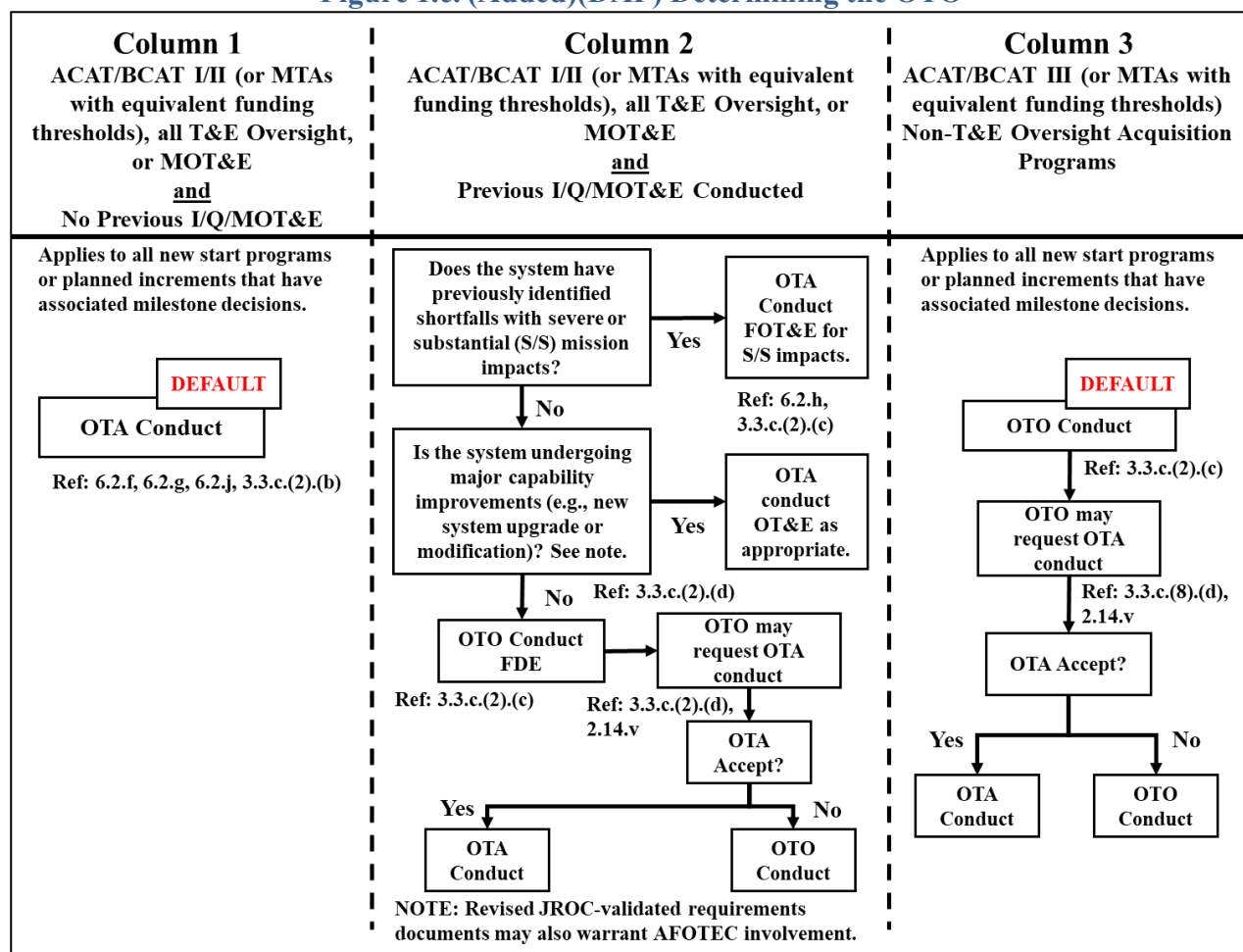
(f) (Added)(DAF) Post-Initial/Qualification/MOT&E and post-Follow-on OT&E, MAJCOM or STARCOM may request that OTA remain involved (or become re-involved) in programs that are normally OTO responsibility (see right side of Figure 1.c., Column 2).

1. (Added)(DAF) These requests must include required documentation (i.e., Joint Capabilities Integration and Development System documents, enabling and operating concepts, and Acquisition Strategy) needed for OTA to make an informed involvement decision.

2. (Added)(DAF) The OTA uses a repeatable, documented process with clearly defined criteria to determine post-Initial/Qualification/MOT&E or post-Follow-on OT&E. The OTA documents their decision and provides timely notification to the OTO and AF/TEP or USSF/TE.

3. (Added) (DAF) If the response time exceeds 30 calendar days, the OTA informs the OTO on the reason for delay. Acceptance of test responsibility also means providing funds for test execution according to OT funding guidance in DAFMAN 65-605V1.

Figure 1.c. (Added)(DAF) Determining the OTO



(Added)(DAF) Note:

1. (Added)(DAF) For the purpose of Figure 1.c. the OTO refers to operational testing units not designated as an OTA.

(g) (Added)(DAF) Some acquisition program schedules may require OTO testing of follow-on modifications, preplanned product improvements, and upgrades simultaneously with planned OTA Follow-on OT&E. In these instances, the OTA and the OTO testers coordinate through the Integrated Test Team on the most efficient strategy for completing the required testing.

(h) (Added)(DAF) The OTA requests to transfer any OT responsibilities should be coordinated and resolved not later than 18 months prior to the first scheduled or required OT event. Transfer of OT responsibility requests less than 18 months prior to test start may only be done by mutual agreement of all parties and AF/TE or USSF/TE concurrence. (T-1)

(i) (Added)(DAF) In some cases, OT for an OTA-supported program in Figure 1.c., Column 1, may be more appropriately executed by an OTO. If the OTA and the OTO mutually agree, the OTA requests an exception to policy from AF/TEP. Conversely, the OTA may also request an OTO-supported program in Figure 1.c., Column 3, be executed by

the OTA. If the OTA and the OTO mutually agree, the OTA requests an exception to policy. The request must include whether the program is on T&E oversight, the ACAT or BCAT level, phase of program development, rationale for the change, any special conditions, and written OTO concurrence. (T-1)

(j) (Added)(DAF) Despite having a designated lead command per DAFFD 10-9, some ACAT III or BCAT III, non-T&E Oversight programs support multiple users with differing requirements across an entire DAF-wide enterprise area. The lead OTO and the OTA will negotiate an OT&E involvement role per Column 3 of Figure 1.c., or coordinate with appropriate OTO office of primary responsibility for a multi-OTO/OTA test approach. (T-1)

(k) (Added)(DAF) Some programs may not be clearly “owned” by a using command or sponsor with an organic operational test function. In these cases, the program’s sponsor coordinates with the OTA to identify an appropriate OTO, with respective OTO concurrence, to complete any required operational testing. If an appropriate OTO cannot be identified, the sponsor contacts AF/TE or USSF/TE for guidance. (T-1)

(l) (Added)(DAF) As informed by the OTO, if the program office and requirements owner/user MAJCOM or FLDCOM agree that no OT is necessary, the LDTO will provide relevant data for OTO review. (T-1) The OTO will assess the risk of accepting the scope of testing accomplished and document its findings in a Sufficiency of Test Review. The Sufficiency of Test Review will either acknowledge test sufficiency or recommend additional testing (DT and/or OT) be accomplished. (T-1)

(m) (Added)(DAF) If multiple OTOs within the DAF are tasked to conduct testing concurrently, the Integrated Test Team must be notified before planning begins and a lead OTO is designated. (T-1) All Operational Test Plans must be reviewed by, and reports coordinated with, the lead OTO to ensure continuity of effort. (T-1) This information must be updated in the TEMP or test strategy, test plans, and other documentation when appropriate. (T-0) For T&E oversight programs, the lead OTO complies with all Oversight requirements according to Table 1.

c. A program may use several different acquisition pathways, such as the major capability acquisition pathway that has a component or subprogram being developed through the MTA pathway and a software capability developed using the software acquisition pathway. As required in the particular pathway guidance, individual program planning documents will include a transition or integration plan that describes the T&E scope and resources following the transition.

d. T&E program documentation that already exists in other acquisition documents may be referenced as appropriate in the DOT&E- or USD(R&E)-approved T&E document. Once referenced, there is no requirement to repeat the language in the T&E program document.

e. The PM and test agencies for T&E oversight programs will provide the Defense Technical Information Center (DTIC) with all reports, and the supporting data and metadata for the test events in those reports. If there are limitations in the data or metadata that can be provided to DTIC, those limitations will be documented in the TEMP starting at MS B.

f. Test agencies will provide the DoD Modeling and Simulation Coordination Office with a descriptive summary and metadata for all accredited unclassified models or simulations that can potentially be reused by other programs.

(1) (Added)(DAF) The DoD Modeling and Simulation Coordination Office is now known as DoD Modeling and Simulation Enterprise. The DoD Modeling and Simulation Enterprise website is <https://www.msco.mil>.

(2) (Added)(DAF) DAF test agencies will provide the DAF Chief Modeling and Simulation Office with same information provided to DoD Modeling and Simulation Coordination Office in Paragraph 3.3.g above. (T-0) The DAF Chief Modeling and Simulation Office website is www.modsim.af.mil.

g. The Secretaries of the Military Departments, in coordination with the DAE, the DOT&E, and the Under Secretary of Defense for Personnel and Readiness, will establish a common set of data for each major weapon system type to be collected on damage incurred during combat operations. These data will be stored in a single dedicated and accessible repository at the DTIC. The lessons learned from analyzing these data will be included, as appropriate, in both the capability requirements process and the acquisition process for new acquisitions, modifications, and upgrades.

3.4. T&E PROGRAM PLANNING.

a. The following are key considerations in developing the TEMP or other test planning documentation:

(1) The PM and the T&E WIPT will use the TEMP or other planning documentation starting at Milestone A or the decision point to enter the applicable acquisition pathway. The PM and the T&E WIPT will prepare and update the planning documentation as needed to support acquisition milestones or decision points. For FRP decision review, full deployment decision review, and thereafter, the MDA, the senior DoD Component leadership, or DOT&E (for programs on T&E oversight), may require planning documentation updates or addendums to address changes to planned or additional testing.

(2) Draft TEMPs will be available to program stakeholders as early and as frequently as possible. For oversight programs, TEMPs approved by the DoD Components will be submitted to the OSD for approval not later than 45 calendar days before the supported decision point. The PMs will ensure programs containing Information Technology (IT) are properly deconflicted with those programs' post implementation review described in DoD Instruction (DoDI) 5000.82. To support agile acquisition, the timeline for TEMP delivery may be tailored with mutual consent between the DOT&E, OTA, and program office.

(3) A TEMP may be waived or other tailored test strategy documentation be specified for certain acquisition pathways. In cases where a TEMP is not needed, early briefings to Service stakeholders (as well as the USD(R&E) and DOT&E for oversight programs) are required to facilitate cross-organizational alignment and subsequent approval of test planning documentation.

b. The TEMP or other test strategy documentation will:

(1) Contain an integrated test program summary and master schedule of all major test events or test phases to evaluate. The schedule should include the key programmatic decision points supported by the planned testing.

(a) Describe DT test events designed to evaluate performance interoperability, reliability, and cybersecurity.

(b) Describe OT test events designed to evaluate operational effectiveness, operational suitability, survivability, and cybersecurity.

(2) Include an event-driven testing schedule that will allow adequate time to support pre-test predictions; testing; post-test analysis, evaluation, and reporting; reconciliation of predictive models; and adequate time to support execution of corrective actions in response to discovered deficiencies. The schedule should allow sufficient time between DT&E and IOT&E for rework, reports, and analysis, and developmental testing of critical design changes.

(3) Be a source document for the request for proposal (RFP).

(4) Guide how contractor proposals will address program T&E needs, (e.g., test articles; T&E data rights; government access to the failure reporting; built-in test and embedded instrumentation data; government use of contractor-conducted T&E; government review and approval of contractor T&E plans; and government review of contractor evaluations).

(5) Include a DEF, live fire strategy, and an OT concept or OEF. The DEF, live fire strategy, and the OT concept identify the key data that will contribute to assessing whether the DoD is acquiring a system that supports the warfighter in accomplishing the mission.

(a) Examples of DT measures of program progress include key performance parameters (KPPs), critical technical parameters, intelligence data requirements, key system attributes, interoperability requirements, cybersecurity requirements, reliability growth, maintainability attributes, and DT objectives. In addition, the DEF will show the correlation and mapping between test events, key resources, and the decision supported.

(b) The PM and T&E WIPT should use an IDSK to ensure that the critical operational issues are not evaluating the technical specifications of the system, but are unit focused and tied to unit mission accomplishment.

(6) Identify how scientific test and analysis tools will be used to design an effective and efficient test program that will produce the required data to characterize system behavior and combat mission capability across an appropriately selected set of factors and conditions.

(a) (Added)(DAF) Scientific test and analysis techniques will be used for designing and executing tests (DT and OT) and for analyzing the subsequent test data. The top-level approach must be described in the System Engineering Plan early in the design phase and in more detail in subsequent test plans as appropriate. The conceptual test designs themselves need not be part of the TEMP or test strategy, but shall be available for review during coordination of those documents. The Integrated Test Team should consult a scientific test and analysis techniques practitioner (systems engineer experienced in

applying scientific test and analysis techniques methodologies to optimize test) whenever test designs are considered.

(b) (Added)(DAF) When developed in the applicable test plans, the selected approach must address the following areas at a minimum:

(1) (Added)(DAF) Define the objective(s) of the test (or series of tests, when appropriate).

(2) (Added)(DAF) Identify the information required from the test to meet the test objective(s).

(3) (Added)(DAF) Identify the important variables that must be measured to obtain the data required for analysis. Identify how those variables will be measured and controlled. Identify the analysis technique(s) to be used.

(4) (Added)(DAF) Identify the test points required and justify their placement in the test space to maximize the information obtained from the test.

(5) (Added)(DAF) If using a traditional hypothesis test for data analysis, calculate statistical measures of merit (power and confidence level) for the relevant response variables for the selected number of test events. If using another statistical analysis technique, indicate what statistical measures of merit will be used. If a statistical analysis technique is not being used, discuss the analysis technique that is being used and provide rationale.

(6) (Added)(DAF) State whether sampling error is expected, and identify the plan to deal with sampling error in the measurements' uncertainty and its inclusion in the overall uncertainty of derived parameters.

(7) (Added)(DAF) The selected test design(s) should help ensure smoother, more efficient integration of all types of testing up to and including Follow-on OT&E. The PM and the OTA/OTO are responsible for the adequacy of the planned series of tests and reports on the expected decision risk remaining after test completion.

(7) Require all test infrastructure and tools (e.g., models, simulations, automated tools, synthetic environments) supporting acquisition decisions to be verified, validated, and accredited (VV&A) by the intended user or appropriate agency. Test infrastructure, tools, and the VV&A strategy and schedule, including the VV&A authority for each tool or test infrastructure asset, will be documented in the TEMP, or other test strategy documentation. PMs will plan for the application and accreditation of any modeling and simulation tools supporting T&E.

(a) (Added)(DAF) Include a modeling and simulation strategy in accordance with the DAF Chief Modeling and Simulation Office guidance and identify employment of a linked digital artifact (e.g., digital twin) and its interfaces.

(b) (Added)(DAF) Use of models or simulations in support of an operational evaluation must be accredited by the OTA or OTO. Contact the DAF Chief Modeling and Simulation Office for guidance, if necessary.

(c) (Added)(DAF) Accreditation of a modeling and simulation application for one program does not mean accreditation is valid for use on another program. Modeling and simulation tools must also undergo cyber testing to identify cyber vulnerabilities and to prevent or mitigate cyber threats prior to use in tests of other systems.

(d) (Added)(DAF) For additional policies on using modeling and simulation, refer to AFI 63-101/20-101, AFI 16-1001, *Verification, Validation and Accreditation (VV&A)*, and AFI 16-1005, *Modeling & Simulation Management*. The DoD Modeling and Simulation Enterprise, <https://www.msco.mil/>, provides a code repository and tools for modeling and simulation discovery metadata search to identify existing verified, validated, accredited, and reusable modeling and simulation tools and Digital System Models prior to initiating development of modeling and simulation assets.

(e) (Added)(DAF) Consult the DAF Chief Modeling and Simulation Office on any specific requirements not clearly addressed in policy. The DAF Chief Modeling and Simulation Office will work with the DoD M&S Enterprise to facilitate repository and tools awareness, discovery, and accessibility.

(8) Require complete resource estimates for T&E to include: test articles, test sites and instrumentation, test support equipment, threat representations and simulations, intelligence mission data, test targets and expendables, support for friendly and threat operational forces used in test, models and simulations, testbeds, joint mission environment, distributed test networks, funding, manpower and personnel, training, federal/State/local requirements, range requirements, and any special requirements (e.g., explosive ordnance disposal requirements or corrosion prevention and control). Resources will be mapped against the IDSK and schedule to ensure adequacy and availability.

(9) For MDAPs, pursuant to Section 839(b) of Public Law 115-91, the PM will develop a resource table listing the initial estimates for government T&E costs in three specific categories: DT&E, OT&E, and LFT&E. This requirement also applies at each TEMP, or other test strategy documentation, update.

(10) (Added)(DAF) Identify and list test limitations in the TEMP or test strategy.

(11) (Added)(DAF) Update the TEMP or test strategy and Operational Test Plans prior to each milestone with the latest validated threat assessment. Any elevated classification resulting from inclusion of threat information will require addition of classified annex to TEMP or test strategy and/or classified requirements document.

(12) (Added)(DAF) Include a process or strategy for collecting and sharing valuable information gleaned from T&E data sets (e.g., big data), which are characterized by high volume, high velocity, and high variety.

c. Pursuant to Section 139, Title 10, U.S.C., the DOT&E will have prompt access to all data regarding modeling and simulation activity proposed to be used by Military Departments and Defense Agencies in support of operational or LFT&E of military capabilities. This access will include data associated with VV&A activities. The PM will allow prompt access, after a test event, to the USD(R&E) and DOT&E, all records and data (including classified and propriety information, and periodic and preliminary reports of test events). Timelines for delivery for

records, reports, and data will be coordinated among the stakeholders and documented in appropriate test documentation.

d. (Added)(DAF) Test reports must be timely, factual, concise, and tailored to the needs of decision makers. All T&E plans describe which kinds of reports are required, their contents, and when and to whom they are submitted. All test reports contain evaluations of test results and conclusions. All reports must be properly archived and retrievable for future use. Reporting requirements for programs on T&E oversight are summarized in Table 1. All days are “calendar days” unless otherwise stated.

e. (Added)(DAF) The reports should interface with and support the program integrated digital environment. All archive and retention policies should support the program digital acquisition strategy.

f. (Added)(DAF) Anti-tamper is required on systems with critical program information in accordance with DoDD 5200.47E, *Anti-Tamper (AT)*, and testing of this capability should be coordinated with SAF/AQLA as the Air Force OPR. SAF/AQLA provides an independent anti-tamper evaluation report directly to the MDA following anti-tamper validation and verification testing. (T-0)

g. (Added)(DAF) Developmental, certification, and operational stakeholders should begin drafting clear, realistic, and testable measures to support the strategy for T&E, the design decision, the full deployment or full-rate production decision, and future test plans as early as possible and preferably at program initiation.

(1) (Added)(DAF) The application of Scientific Test and Analysis Techniques should be considered early to ensure testability and understand decision risk and uncertainty.

(2) (Added)(DAF) Developmental testers assist systems engineers in developing critical system characteristics (i.e., Critical Technical Parameters) that when achieved, allow the attainment of operational performance requirements.

(3) (Added)(DAF) Operational testers draft Critical Operational Issues, measures of effectiveness, and measures of suitability for OT purposes.

(4) (Added)(DAF) Reliability growth planning starts with testers participating in Document Writing Teams to help ensure operational reliability requirements are correctly written, reflect realistic conditions, and are testable. See AFI 63-101/20-101, *Military Handbook (MIL-HDBK)-189C, Department of Defense Handbook Reliability Growth Management*, and the *DoD Guide for Achieving Reliability, Availability, and Maintainability*.

(5) (Added)(DAF) Test planners must contact potential test sites early to obtain estimates of costs, availability, and test priority. Test planners should ascertain how each range or site establishes priorities among programs on that range and what to submit to gain access.

(a) (Added)(DAF) AFMC/A3, STARCOM/S3, SSC/S3, or ACC/A3 and the range or facility points of contact will provide information and assistance on using the Major Range and Test Facility Base and other government test facilities.

(b) (Added)(DAF) See AFMAN 13-212V1, *Range Planning and Operations*, for information on the use of test and training ranges.

(c) (Added)(DAF) The Test Resource Management Center (TRMC) Test Capabilities Directory can be found at: <https://tcd.dtic.mil/tcd/>.

(6) (Added)(DAF) Test organizations, in consultation with PMs, will plan for aerial target requirements in accordance with AFMAN 99-108, *Programming and Reporting Aerial Target and Missile Expenditures in Test and Evaluation*.

(7) (Added)(DAF) Test organizations and PMs must forecast their requirements for munitions flight termination and telemetry kits in accordance with AFI 99-120, *Forecasting and Programming Munitions Telemetry and Flight Termination Systems*.

(8) (Added)(DAF) Integrated Test Teams should consult with requirements, acquisition, and intelligence organizations to determine the need for foreign materiel resources.

3.5. CYBERSECURITY T&E.

a. Cybersecurity planning and execution occurs throughout the entire life cycle. All DoD acquisition programs and systems (e.g., DBS, national security systems, weapon systems, non-developmental items), regardless of acquisition pathway, will execute the cybersecurity DT and OT iterative T&E process detailed in the DoD Cybersecurity T&E Guidebook throughout the program's life cycle, including new increments of capability. The DoD Cybersecurity T&E Guidebook provides the latest in data-driven, mission-impact-based analysis and assessment methods for cybersecurity T&E and supports assessment of cybersecurity, survivability, and resilience within a mission context and encourages planning for tighter integration with traditional system T&E.

b. The PMs will:

(1) Develop a cybersecurity strategy as part of the program protection plan based on the Joint Capabilities Integration and Development System or other system cybersecurity, survivability, and resilience requirements; known and postulated threats; derived system requirements; draft system performance specifications; and the intended operational use and environment. The cybersecurity strategy will also incorporate the appropriate aspects of the risk management framework (RMF) process (governed by DoDI 8500.01 and DoDI 8510.01) that supports obtaining an authority to operate and other items as addressed in DoD cybersecurity policies. The cybersecurity strategy should describe how the authority to operate decision will be informed by the cybersecurity testing specified in the DoD Cybersecurity T&E Guidebook. The cybersecurity strategy should leverage integrated contractor and government testing to evaluate the security of contractor and government development capabilities of the program's sub-components, components, and integrated components; and describe the dedicated government system vulnerability and threat-based cybersecurity testing to be conducted before program product acceptance.

(2) Use the cybersecurity strategy as a source document to develop the TEMP, or other test strategy documentation. The TEMP DEF and OEF will identify specific cybersecurity data

required to address the various cybersecurity stakeholder needs (PM, engineers, RMF, DT testers, OTA), crosswalk the data to develop an integrated cybersecurity T&E strategy that efficiently obtains these data, and describe how key program decisions, including the authority to operate decision, will be informed by cybersecurity testing.

(3) Determine the avenues and means by which the system and supporting infrastructure may be exploited for cyber-attack and use this information to design T&E activities and scenarios. Conduct a mission-based cyber risk assessment (such as a Mission-based Risk Assessment Process for Cyber (MRAP-C) or cyber table-top) to identify those elements and interfaces of the system that, based on criticality and vulnerability analysis, need specific attention in T&E events.

(a) (Added)(DAF) Evaluate digital models of systems, digital twins, and digital threads as components of the supporting infrastructure.

(4) Plan to conduct contractor and government integrated tailored cooperative vulnerability identification (T&E activities to identify vulnerabilities and plan the means to mitigate or resolve them, including system scans, analysis, and architectural reviews). These activities begin with prototypes.

(5) Plan to conduct integrated tailored cybersecurity DT&E events using realistic threat exploitation techniques in representative operating environments and scenarios to exercise critical missions within a cyber-contested environment to identify any vulnerabilities and assess system cyber resilience. Whenever possible, plan threat-based testing as part of integrated contractor and government T&E.

c. The April 3, 2018 DOT&E Memorandum directs OTAs to perform a cybersecurity cooperative vulnerability and penetration assessment (CVPA) and an adversarial assessment (AA) of all acquisition programs. The January 21, 2015 DOT&E Memorandum directs OTAs to modify their cybersecurity T&E processes as appropriate for DoD systems whose functions include financial or fiscal/business activities or the management of funds. The January 21, 2015 DOT&E Memorandum also directs the OTAs to add cyber economic threat analysis, cyber economic scenario testing, and financial transaction analysis to their cybersecurity test planning for DBS.

d. The DOT&E requires testing of cybersecurity during OT&E to include the representative users and an operationally representative environment. This may include hardware; software (including embedded software and firmware); operators; maintainers; operational cyber and network defense; end users; network and system administrators; help desk; training; support documentation; tactics, techniques, and procedures; cyber threats; and other systems that input or exchange information with the system under test, as applicable.

(1) The OTAs will evaluate cybersecurity in OT&E via two assessments: a cybersecurity CVPA and an AA. The CVPA and AA should be designed to identify cyber vulnerabilities, examine attack paths, evaluate operational cyber defense capabilities, and establish the operational mission effects (e.g., loss of critical operational capability) in a cyber threat environment while conducting operational missions.

(2) The OTA, with DOT&E review and approval, should integrate developmental and

operational testing where possible to ensure sufficient data are obtained to meet OT&E objectives and measures. The OTAs should review and consider data from DT events (such as the cooperative vulnerability identification and adversarial cybersecurity DT&E) and any integrated tests previously conducted. CVPA and AA results used in conjunction with the other OT&E and LFT&E results will inform the overall evaluation of operational effectiveness, suitability, and survivability.

e. All programs should plan for periodic integrated government cybersecurity test events before beginning operational testing or initial production, with the goal of increasing efficiency and effectiveness of cybersecurity T&E.

(1) Understanding that the objectives and knowledge requirements of DT&E and OT&E must be met, it is critical that the conditions of the test event and the maturity of the system under test are acceptable to both stakeholders.

(2) The system under test must be mature enough to represent the production version. The test conditions should be realistic enough to adequately represent the operational environment, while still being flexible enough to allow a wide range of penetration and adversarial activities. The goal is to maximize assessment of vulnerabilities, evaluate adversarial exploitability of those vulnerabilities, as well as evaluate recovery and restoral processes.

(3) Testing must include evaluating appropriate defensive cyberspace operations in accordance with DoDI 8530.01. The result of cybersecurity testing should be an understanding of mission critical cybersecurity vulnerabilities, each of which should then be eliminated before fielding the system.

(4) (DAF)(Added) All programs should plan for periodic MBCRAs to update the system's attack surface characterization and mapping to missions, system functions, and potential cyber vulnerabilities. All programs should use this reassessment and perform integrated government cybersecurity test events before beginning operational testing or initial production, with the goal of increasing the system design's cyber survivability and the efficiency and effectiveness of cybersecurity T&E.

3.6. INTEROPERABILITY T&E.

a. Interoperability testing is governed by DoDI 8330.01. All programs or acquisition paths that exchange data with an organization or site external to their Service require an interoperability certification from the Joint Interoperability Test Command, and will need to incorporate interoperability into the DT and OT.

b. IT interoperability should be evaluated early and with sufficient frequency throughout a system's life cycle to capture and assess changes affecting interoperability in a platform, joint, multinational, and interagency environment. Interoperability T&E can be tailored for the characteristics of the capability being acquired in accordance with applicable acquisition pathway policy. Interoperability certification must be granted before fielding of a new IT capability or upgrade to existing IT.

c. Working with the DoD business, warfighting, intelligence, and enterprise information environment mission area owners (Chief Management Officer of the Department of Defense, Chairman of the Joint Chiefs of Staff, Under Secretary of Defense for Intelligence and Security,

and DoD Chief Information Officer) and the other DoD Component heads, the T&E WIPTs should require that capability-focused, architecture-based measures of performance and associated metrics are developed to support evaluations of IT interoperability throughout a system's life cycle and to ensure logistics assets are planned for within the T&E management plan.

d. (Added)(DAF) Defense Information Systems Agency maintains the Operating at Risk List listing all information technology systems denied an Interim Certificate to Operate and have not received a waiver.

3.7. NAVIGATION WARFARE (NAVWAR) COMPLIANCE T&E.

a. In accordance with the national defense strategy and DoDD 4650.05, resilient positioning, navigation, and timing (PNT) information is essential to the execution and command and control of military missions and to the efficient operation of information networks necessary for continuous situational awareness by Combatant Commanders. The DoD will employ NAVWAR capabilities to ensure a PNT advantage in support of military operations, and programs producing or using PNT information must be NAVWAR compliant. NAVWAR compliance testing is governed by DoDI 4650.08.

b. Each program or system producing or using PNT information must incorporate the system survivability KPP as defined in Paragraph 3.2.a. of DoDI 4650.08.

c. For each program or system producing or using PNT information, the PM must conduct system T&E (e.g., real-world test; modeling and simulation; empirical analysis) sufficient to validate that all systems or platforms producing or using PNT information meet the system survivability KPP referred to in Paragraph 3.7.b.

d. Pursuant to Section 1610 of Public Law 115-232, also known as "the National Defense Authorization Act for Fiscal Year 2019," the PM will systematically collect PNT T&E data, lessons learned, and design solutions. In accordance with DoDD 4650.05, the USD(R&E) and the DOT&E will share insights gained from such information with the DoD PNT Enterprise Oversight Council, as appropriate.

3.8. (ADDED)(DAF) FOREIGN MILITARY SALES T&E

a. (Added)(DAF) In accordance with Defense Security Cooperation Agency 5105.38-M, *Security Assistance Management Manual*, and AFI 63-101/20-101, testing associated with Foreign Military Sales acquisition shall meet the intent of DoD regulations and other applicable United States Government procedures for conducting T&E activities, affording the foreign purchaser the same benefits and protection that apply to all DoD procurement efforts. (T-0)

b. (Added)(DAF) Per AFI 63-101/20-101, the government-to-government agreement should specify any tailored Foreign Military Sales implementation.

c. (Added)(DAF) Upon receipt of a Letter of Request from a Foreign Partner, Air Force Life Cycle Management Center (AFLCMC) or SSC Test Functional Leaders will

develop and/or oversee, in consultation with the LDTO and relevant sub-organizations, the early case T&E planning for DoD and non-DoD systems, system configurations, or system integrations in support of Foreign Military Sales programs.

d. (Added)(DAF) This strategy should, at a minimum, consider any necessary developmental test (flight test, modeling and simulation), test range(s), infrastructure, test manpower, resources, and certifications needed for appropriate testing of the system to be delivered.

e. (Added)(DAF) This preliminary test strategy should have sufficient technical fidelity to produce a rough order of magnitude estimated cost and period of performance to support a dedicated “Test” line on the Letter of Offer and Acceptance, if warranted. The Letter of Offer and Acceptance is the government-to-government agreement that identifies the defense articles and services the United States Government proposes to sell to the Foreign Partner.

f. (Added)(DAF) The purpose of AFLCMC's or SSC's Test Functional leaders' oversight of the early T&E plan is to help ensure system performance meets customer expectations of military utility per written agreement. A detailed test plan will be required once the case is established to refine the actual test requirement and cost. The “Test” line on the Letter of Offer and Acceptance would be managed by the Test Manager located in the System Program Office.

g. (Added)(DAF) Additional T&E should be planned and conducted on a system or a subsystem with Defense Exportability Feature to ensure anti-tamper protection measures and other critical program information or technology protection measures work as expected per DoDD 5200.47E, and DoDI 5200.39.

3.9. (ADDED)(DAF) EXPERIMENTATION AND DEMONSTRATION

a. (Added)(DAF) The execution of an experiment or demonstration adheres to the same standards of technical and safety adequacy as traditional T&E.

(1) (Added)(DAF) An experiment tests a hypothesis, under measured conditions, to explore unknown effects in manipulating proposed warfighting concepts, technologies, or conditions. Additionally, an operational experimentation effort rigorously and systematically tests potential warfighting concepts, technologies, and/or conditions to understand the operational utility and competitive advantages that drive data-informed technology acquisition and rapid transition decisions. Such operational experiments shall be prioritized and assisted by both developmental and operational test organizations to ensure adequate safety and technical planning is conducted.

(2) (Added)(DAF) Demonstrations are primarily intended to show a system's use and value in specific military environments. Demonstrations present and confirm what is known by giving proof or evidence. These defined demonstrations are not the same as “ops demo” defined in Paragraph 4.3.d for MTAs in this instruction.

b. (Added)(DAF) While test scope may be reduced, test organizations involved with experimentation or demonstration efforts will apply the same principles, standards, and

rigor employed in the conduct of traditional T&E activities and assign clear operational control, administrative control, and risk management responsibilities. The program management personnel and test team members should:

- (1) (Added)(DAF) Set clear objectives and success criteria.
- (2) (Added)(DAF) Develop test plan using a scientific methodology.
- (3) (Added)(DAF) Accomplish sufficient technical and safety risk mitigation.
- (4) (Added)(DAF) Hold all experiment/demonstration participants to the same established test discipline standards (technical and safety).
- (5) (Added)(DAF) Collect data to meet objectives.
- (6) (Added)(DAF) Analyze, report, and archive results.

3.10.(ADDED)(DAF) LEAD SERVICE CONSIDERATIONS

a. (Added)(DAF) When the USAF or USSF is designated the lead Service for multi-Service T&E, the Integrated Test Team will document the other Services' T&E responsibilities, resources, and methods to eliminate conflicts and duplication. (T-0)

b. (Added)(DAF) When the USAF or USSF is not the lead Service, USAF or USAF testers follow the lead Service's T&E policies. (T-0) See the Defense Acquisition Guidebook and the memorandum of agreement on MOT&E and joint T&E, https://www.dote.osd.mil/Portals/97/pub/policies/2000/200008_MOAonMOTeandJTE.pdf?ver=2019-08-21-153322-740, for more information.

3.11.(ADDED)(DAF) OPERATIONAL COMMAND TEST SUPPORT

a. (Added)(DAF) DAF program offices and/or developmental test organizations may request operational support (i.e., non-test coded unit) for DT&E activities only after obtaining approval from that organization's headquarters office. Such test support will be restricted to low-risk military utility evaluations under the direct supervision of an LDTO. These activities will be called "DT&E Assists" to indicate they are not operational testing.

b. (Added)(DAF) DAF program offices and developmental test organizations may request OTO support for DT&E activities (including acquisition/sustainment programs or proof-of-concept activities where no formal DT&E is planned) only after obtaining concurrence from the OTO headquarters. Such test support should normally be restricted to low-risk (technical and safety) DT&E activities. OTOs must accomplish independent risk management reviews. Any previously accomplished risk management reviews and approval documentation will be provided to the OTO for their independent analysis. Document the accomplishment of OTO independent risk management reviews as an attachment to the requesting agency's risk management review.

c. (Added)(DAF) Requests for OTO support from non-DAF organizations (e.g., Defense Advanced Research Projects Agency) must first be forwarded to the OTO headquarters for

feasibility review and approval.

d. (Added)(DAF) Requests for test support rejected by an operational organization may be submitted to an implementing command headquarters (AFMC/A3 or USSF/TE as appropriate) for potential sponsorship, program initiation and subsequent assignment of an LDTO. If a program office or LDTO is associated with the non-DAF agency request, forward all applicable technical and safety data to the OTO for their independent reviews.

3.12.(ADDED)(DAF) INDEPENDENT TECHNICAL AND SAFETY REVIEWS

a. (Added)(DAF) Independent government technical and safety personnel must examine the technical and safety aspects of T&E plans that involve government resources (personnel, equipment, or facilities) prior to commencement of test activities. All test organizations must establish procedures for when and how these reviews are accomplished.

b. (Added)(DAF) Technical reviews assess the soundness of system designs and test plans. Technically qualified personnel with test management experience, but who are independent of the test program, will perform these reviews. At a minimum, technical reviews will assess test requirements, techniques, approaches, and objectives.

(1) (Added)(AFMC) Program management offices acting as Alternate LDTO must establish procedures for test plan technical reviews demonstrating independence from the test team. This can be accomplished by utilizing a qualified technical review chair that does not report to the immediate program manager, such as a participating test organization, T&E Organizational Senior Functional, or Center Test Authority.

c. (Added)(DAF) Safety reviews assess whether the T&E project's safety plan has identified and mitigated all health and safety hazards to include airworthiness risks. Safety review members must be technically qualified and independent of the test program. At a minimum, a trained and qualified Safety Manager will be part of the Safety Review Team. Test organizations will identify risks. All test organizations and test teams will set up procedures for controlling and supervising tests consistent with the risk involved and according to local range safety criteria. These requirements apply to tests, demonstrations, and experiments.

d. (Added)(DAF) Nonnuclear Munitions Safety Board reviews and assesses all newly developed live, uncertified munitions, fuses, and initiating devices prior to airborne testing or release in accordance with AFI 91-205, *Nonnuclear Munitions Safety Board*.

e. (Added)(DAF) Directed Energy Safety Board reviews and certifies all directed energy weapons prior to operational assessment, test and training use in accordance with AFI 91-401, *Directed Energy System Safety*.

3.13.(ADDED)(DAF) T&E REPORTING

a. (Added)(DAF) Test organization commanders determine release authority for data, reports, and information under their control. Distribution outside of the approved Integrated Test Team listing requires Integrated Test Team approval and program notification. DoDI 5230.24, *Distribution Statements on Technical Documents*, provides guidance on proper distribution statements for Scientific and Technical Information

documents and DAFI 61-201, *Management of Scientific and Technical Information (STINFO)*, provides guidance and procedures on creating, protecting, disseminating, archiving or destroying DAF scientific and technical information test documentation. Also see DoDI 5200.48, *Controlled Unclassified Information (CUI)*, for additional marking guidance.

b. (Added)(DAF) Anti-tamper security classification guidance requires all anti-tamper testing and reporting be conducted within US-only channels. Classified test information cannot be released except as specified in DoDI 5200.01, *DoD Information Security Program and Protection of Sensitive Compartmented Information (SCI)*, and associated documents. (T-0)

c. (Added)(DAF) Test directors do not have release authority for test information and communications outside DoD channels. (T-0) Freedom of Information Act requests shall be processed in accordance with DoDM 5400.07_AFMAN 33-302, *Freedom of Information Act Program*. (T-0)

d. (Added)(DAF) Test information released to Congress, the General Accountability Office, the DoD Inspector General, or similar agencies must follow guidance in AFI 90-401, *Relations with Congress*. Provide an informational copy to AF/TE on any test information released to outside agencies.

(1) (Added)(AFMC) Provide an informational copy to AFMC/A3F Workflow (afmc.a3f.workflow@us.af.mil) on any test information released to outside agencies.

e. (Added)(DAF) SAF/IAPD, the Weapons, Disclosure and Technology Transfer Division, is the designated DAF disclosure authority for release of classified and controlled unclassified weapons systems, technologies and information to foreign governments and international organizations in support of USAF, USSF, DoD and commercial international programs.

3.14.(ADDED)(DAF) DISPOSING OF TEST ASSETS

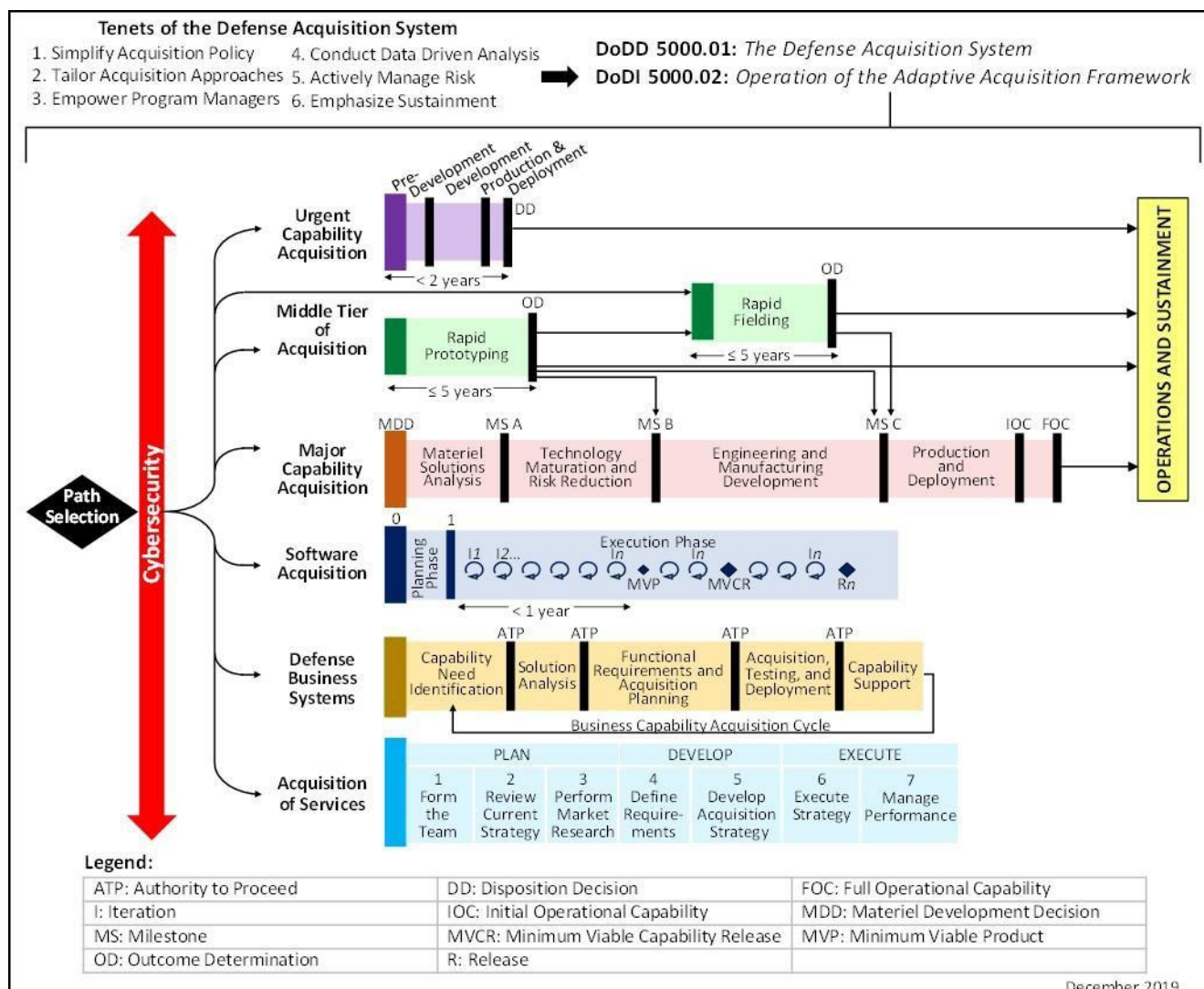
a. (Added)(DAF) Test assets (e.g., instrumentation and test articles) from canceled or completed tests are catalogued and returned to government T&E organizations, acquisition, sustainment programs, or refurbished and reassigned to owning MAJCOM or FLDCOM. When able, consider transferring test assets to other non-affiliated test agencies (e.g., cyber test agencies) to support research and development and functional test for other programs using similar components. Surplus or unusable items are sent to the applicable Defense Reutilization Management Office.

SECTION 4: ADAPTIVE ACQUISITION FRAMEWORK

4.1. GENERAL PROCEDURES.

- a. Pursuant to DoDD 5000.01 and DoDI 5000.02T, the PM will develop an acquisition strategy for MDA approval that matches the acquisition pathway (see Figure 2) processes, reviews, documents, and metrics to the character and risk of the capability being acquired.
- b. Follow the overarching guidance in Paragraph 3.1 plus the pathway specific guidance in this section.
- c. As applicable within each pathway, and upon coordination with the DOT&E, the DOT&E approves, in writing, the adequacy of OT&E plans for all programs on the T&E oversight list, including, but not limited to, early operational assessments (EOAs), OAs, IOT&E, and follow-on OT&E. In accordance with Section 139 of Title 10, U.S.C., OTAs provide DOT&E plans to assess adequacy of data collection and analysis planning to support the DOT&E's independent assessment of a system's operational effectiveness, operational suitability, survivability (including cybersecurity), or lethality.

Figure 2. Adaptive Acquisition Framework



4.2. T&E FOR URGENT CAPABILITY ACQUISITION PATHWAY.

a. The DOT&E will monitor all programs using the urgent capability pathway to determine placement under T&E oversight. A TEMP is not normally required. Designated programs for DOT&E operational and live fire oversight will adhere to the policies established by the DOT&E for oversight programs. These include:

(1) Approval by the DOT&E of OTPs and live fire test plans (LFTPs) at the production and development milestone. The Military Services are required to deliver test plans to the DOT&E 60 days before the start of testing.

(2) Approval by the DOT&E of post-deployment assessment plans at the production and deployment milestone.

b. Programs not under T&E oversight are approved at the Service level; the program may require a rapid and focused operational assessment (OA) and live fire testing (if applicable)

before deploying an urgent need solution. The acquisition approach will identify any requirements to evaluate health, safety, or operational effectiveness, suitability, survivability, and lethality.

c. As applicable, the DOT&E will submit independent OT and live fire reports to the Secretary of Defense, the USD(A&S), congressional defense committees, and Military Services. The Secretary of Defense may authorize certain programs to defer some testing until after fielding if he or she determines the testing would unnecessarily impede the deployment of the needed capability. Testing should normally include user feedback to support design and operational use improvements and the PM's plans to correct identified deficiencies.

d. (Added)(DAF) For early deployment of prototypes use the applicable certification templates in DAFMAN 63-119 to review the system's capabilities, limitations, and readiness prior to early operational deployment of prototypes, Urgent Operational Needs, Joint Emergent Operational Needs, Quick Reaction Capabilities, and Joint Capability Technology Demonstrations.

e. (Added)(DAF) See Paragraph 6.4.c.(19) for more information on capabilities and limitations reports applicable to the urgent capability pathway.

4.3. T&E FOR MTA PATHWAY.

a. Purpose and Applicability.

MTA programs include rapid prototyping and rapid fielding programs intended to complete in 2 to 5 years. MTA programs may be placed on the T&E oversight list and remain subject to: the LFT&E requirements in Section 2366 of Title 10, U.S.C.; IOT&E requirements in Section 2399 of Title 10, U.S.C.; LRIP quantities described in Section 2400 of Title 10, U.S.C.; and cybersecurity test requirements described in the April 3, 2018 DOT&E Memorandum. The DOT&E will determine whether to oversee an MTA program according to standards set in Paragraph 3.2.b. Memorandum.

b. General Approach for Programs on T&E Oversight.

(1) The DOT&E supports both the intent of the MTA pathway and the statutory mandate that MTA programs demonstrate and evaluate operational performance.

(2) DoDI 5000.80 requires both rapid prototyping and rapid fielding programs using the MTA pathway to develop a test strategy. Programs under T&E oversight will submit this test strategy, to include plans for operational testing and operational demonstrations (ops demos), to the DOT&E for approval. MTA ops demos offer a unique opportunity to "fly before you buy" by involving the operational user early in the acquisition process, before the initial production decision is made. The lead OTA will incorporate operational user inputs and participation in program test strategies. The DOT&E encourages tailoring MTA ops demos, and other T&E, to enable rapid fielding while maintaining acceptable risk to the warfighter.

(3) The program's decision authority will designate a DoD Component OTA to serve as the lead OTA. The PM will collaborate with the OTA and other stakeholders to develop a fully

integrated test strategy. The OTA will submit plans for ops demos to the DOT&E for approval before starting the test. For programs conducting multiple ops demos, the DOT&E will tailor this approval process to ensure appropriate oversight of ops demos leading to fielding or transition to another pathway in order to minimize disrupting early testing. The DOT&E, in collaboration with the PM or OTA, will set the timeline for submitting the test strategy and OTPs for approval. The data from all ops demos should be made available to the OTAs, the DOT&E, and other stakeholders for use to scope and inform subsequent test events and decisions.

(4) Early and continuous coordination and collaboration among the DOT&E, the PM, and the OTA will support faster reviews by the DOT&E. The PM will ensure that the OTA and DOT&E has access to ops demos and other operational, live fire, and cybersecurity test events and data. For rapid prototyping programs that will not field a significant residual operational capability to the deployed warfighter, the DOT&E will tailor the test plan approval process, which may include delegating approval authority, depending on the level of risk to the warfighter.

(5) (Added)(DAF) MTA programs will include, at a minimum, the following items, documentation, agencies, and personnel:

- (a) (Added)(DAF) Concept of Operations.**
- (b) (Added)(DAF) Integrated Test Team.**
- (c) (Added)(DAF) CDT or Test Manager.**
- (d) (Added)(DAF) LDTO.**
- (e) (Added)(DAF) OTO as determined by Figure 1.b.**
- (f) (Added)(DAF) Test Strategy (Objectives, Schedule, Resources, and Evaluation Frameworks).**
- (g) (Added)(DAF) Developmental Test Plan.**
- (h) (Added)(DAF) Operational Test Plan.**
- (i) (Added)(DAF) LFT&E Plan when required.**
- (j) (Added)(DAF) Test limitations.**
- (k) (Added)(DAF) Test Review that considers technical and safety review.**
- (l) (Added)(DAF) Test Report, or Test Memorandum.**

c. Test Strategy.

(1) To develop the test strategy, the PM may follow the streamlined TEMP guide, if that facilitates their planning, or other planning guides pre-coordinated with the OTA and DOT&E, to tailor their particular strategy to the acquisition pathway and the expected operational environment. The test strategy should present, within the context of the intended acquisition strategy, the acquisition decision that the testing will inform, program objectives and schedule

including major test events and milestones, the evaluation framework, required test resources (facilities, ranges, tools, test articles, personnel, and funding), and technical or test limitations.

(2) Rapid prototyping test strategies will set evaluation criteria and milestones for technology maturity and prototype performance, culminating in an ops demo of the fieldable prototype in an operational environment. The test strategy will describe the testing that will produce the data necessary to measure technology maturity and prototype performance as well as a description of how the program will achieve a residual operational capability. Evaluation criteria should include performance, safety, interoperability, reliability, and cybersecurity. Progressive operational and live-fire assessments of capabilities and limitations, based on data from incremental integrated test events during the prototype development program, should be included in the test strategy.

(3) Rapid fielding test strategies will set evaluation criteria and milestones to demonstrate performance of the proposed products or technologies for current operational purposes. Rapid fielding decisions should be based on integrated developmental and operational testing that demonstrates how the capability contributes to fulfilling the warfighter's mission or the CONOPS. As rapid fielding programs will begin production within 6 months of program start, they typically will rely heavily on previous testing to support this accelerated timeline. The test strategy will identify all prior testing used, and will specify the additional testing necessary to address differences between the tested prototype and the planned production configuration.

d. Ops Demo.

(1) The ops demo will inform the decision whether to transition from a rapid prototyping effort, to a rapid fielding effort, to a follow-on program; or, in a rapid fielding program, to start initial production.

(2) The lead OTA will work with the CDT to develop plans for testing. In rapid prototyping, the OTA provides input to the DT plan for execution of the ops demo. For rapid fielding, a test plan is developed. The lead OTA will plan and conduct the ops demo as an OA, with representative units, missions, and environments. Ops demos may consist of a series of incremental test events or separate "capstone" demonstration events based on program requirements. All events should be conducted in an integrated fashion, supported by collaborative developer, program office, DT, and OT planning.

(3) Ops demos should consider all aspects of system performance, including survivability and lethality if deemed critical to mission effectiveness or force protection. During the demo, operational personnel will operate the system, with the minimum necessary level of contractor support. Mission demonstrations should be designed as end-to-end missions to the maximum extent possible, to include planning, mission task execution, and post-mission activities, based on user-provided employment concepts and tactics.

(4) The OTA must submit the ops demo plan leading to a fielding decision or transition to another pathway to the DOT&E for approval before testing begins. The plan will adequately detail: system configuration; capabilities to be demonstrated; the operational units, users, mission, and environment; and the primary T&E data that will demonstrate the required capabilities.

e. Reporting.

(1) The OTA is responsible for producing an independent ops demo report that identifies the system's operational capabilities and limitations.

(2) The ops demo report will be delivered to the decision authority to support the initial production decision: before a rapid prototyping program transitions to a follow-on program and before a rapid fielding program begins initial production.

(3) The DOT&E will provide independent OT&E and LFT&E reports to the Office of the Secretary of Defense, Joint Staff, Military Services, and congressional defense committees as required.

(4) (Added)(DAF) See Paragraph 6.4.c.(19) for more information on capabilities and limitations reports applicable to the MTA pathway.

4.4. T&E FOR MAJOR CAPABILITY ACQUISITION PATHWAY.

a. These acquisitions typically follow a structured analysis, design, develop, integrate, test, evaluate, produce, and support approach. This process supports MDAPs, major systems, and other complex acquisitions.

b. The USD(R&E) will prepare MS B and MS C DT&E sufficiency assessments on those MDAPs where the DAE is the MDA, in accordance with Section 838 of Public Law 115-91. For programs where the Service or the Component acquisition executive is the MDA, see Paragraph 5.3.b.(2) for additional details.

c. For programs under T&E oversight, the DOT&E will provide the MDA with milestone assessments. The DOT&E will submit a report to the Secretary of Defense and the congressional defense committees before programs under T&E oversight may proceed beyond LRIP, in accordance with Sections 2366 and 2399 of Title 10, U.S.C. Programs on T&E oversight may not conduct operational testing until the DOT&E approves the adequacy of the plans in writing, in accordance with Section 2399(b)(1) of Title 10, U.S.C.

d. Service OTAs will conduct OT on all programs to support development, fielding decisions, and warfighter understanding of capabilities and limitations. Following initial fielding, any capability upgrades, alterations that materially change system performance, and alterations that pose substantial risk of degrading fielded military capabilities if they fail will be tested by the OTA.

e. Unless specifically waived, the test-related documentation that is required for MDAP programs will be required for all programs on DOT&E oversight, including, but not limited to, submission of Defense Intelligence Agency or DoD Component validated on-line life-cycle threat reports, test strategies, TEMPs, OTPs, LFTPs, and reporting of test results.

f. (Added)(DAF) Pre-Milestone A project or program documentation must address

which test organizations will conduct DT&E and OT&E.

4.5. T&E FOR SOFTWARE ACQUISITION PATHWAY.

a. The software pathway focuses on modern iterative software development techniques such as agile, lean, and development security operations, which promise faster delivery of working code to the user. The goal of this software acquisition pathway is to achieve continuous integration and continuous delivery to the maximum extent possible. Integrated testing, to include contractor testing, is a critical component needed to reach this goal. Identifying integrated T&E and interoperability requirements early in test strategy development will enable streamlined integration, developmental and operational T&E, interoperability certification, and faster delivery to the field. The program acquisition strategy must clearly identify T&E requirements that have been fully coordinated with the test community.

b. The software pathway policy includes a requirement to create a test strategy. The program CDT or T&E lead, in collaboration with the other T&E stakeholders, should develop the test strategy and discuss the approach to developing measurable criteria derived from requirements (e.g., user features, user stories, use cases). The software pathway policy additionally requires the identification of test platforms and infrastructure be included in the acquisition strategy; the estimated T&E costs be included in the cost estimate; and the periodic delivery of the technical baseline to include scripts, tools, libraries, and other software executables necessary to test the software. Taken as whole, the test strategy for software intensive systems should include:

(1) Characterization of proposed test platforms and infrastructure, including automated testing tools and plans to accredit their use.

(2) Estimated T&E costs (DT&E, OT&E, and LFT&E).

(3) Description of the necessary contractor-developed artifacts (e.g., source code, test scripts), along with any relevant scheduling information, to support the efficient reuse in streamlining T&E.

(4) System-level performance requirements, non-functional performance requirements, and the metrics to be used to verify that the system will meet both functional and non-functional performance requirements.

(5) Key independent organizations, roles and responsibilities, and established agreements on how they will be integrated early into the developmental activities and throughout the system life cycle.

(6) How automated testing, test tools, and system telemetry will support the product throughout its life cycle.

(7) (Added)(DAF) A distinct, tested, deployable software element of a militarily-useful capability to the government will be referred to as a “release.” For consistency, “release” will be the only accepted term used to describe the smallest fieldable/deployable software element in all future DAF TEMPs or test strategies, test plans, and test reports as

well as updates to previous documents.

c. The software acquisition pathway may also be applied to embedded systems. In the case of embedded software systems, the T&E strategy requires the same six features described in Paragraph 4.5.b., plus additional features, including:

(1) Approach, including resources, for testing the software in the context of the hardware with which it will eventually be integrated. This should include information on resources such as model-based environments, digital twins, and simulations, as well as plans for tests on a production-representative system.

(2) Identification of any safety critical risks, along with an approach to manage them.

d. PMs are encouraged to automate and integrate DT and OT testing to the maximum extent possible in order to accelerate acquisition timelines when feasible. This includes planning for and collecting test data from the contractor testing that can be used for evaluation. Just as the software product is being developed incrementally and iteratively in this modern software development paradigm, so too should be the T&E activities and products, particularly the test report. To maximize the benefit of early and automated data collection opportunities, the PM must collaborate with the T&E interfaces and work through the T&E processes defined for DT&E (see Section 5) and OT&E (see Section 6) to tailor a plan that will enable the effective and efficient execution of analysis and evaluation, as well as the determination of test adequacy.

(1) Automated testing should be used at the unit level, for application programming interface and integration tests, and to the maximum extent possible for user acceptance and to evaluate mission effectiveness.

(2) Automated testing tools and automated security tools should be accredited by an OTA as “fit for purpose.”

(3) Cybersecurity developmental and operational T&E assessments should consider, and reference, the DoD Cybersecurity T&E Guidebook to assist in the planning and execution of cybersecurity T&E activities needed beyond just the authority to operate (which is a necessary but not sufficient mechanism to assess cybersecurity). Automation, organic to the software acquisition pathway, provides data collection opportunities to develop cybersecurity T&E assessments in an incremental and iterative fashion.

(4) Information gleaned from automated tests, such as those detailed above, as well as other forms of tests, should be provided to the sponsor and user community for use in their periodic value assessments of the software product.

(5) The requirement for a PM to implement continuous runtime monitoring of operational software in this software acquisition pathway provides new opportunities to support operational test data requirements throughout the system life cycle.

e. (Added)(DAF) Each software release must undergo test prior to deployment. The type and rigor of test should be tailored according to release capability or the extent to which the release significantly changes legacy system capability. Testing before deployment into production should be fully automated. Any manual or exploratory testing that is

needed should be done in production when there is a continuous authority to operate and sound continuous integration/continuous delivery practices are being used.

(1) (Added)(DAF) A risk analysis will be a continuous process conducted by the developmental or operational test organization documenting the degree of risk and potential impact on mission accomplishment for each capability.

(2) (Added)(DAF) Since all residual risk ultimately impacts test and may be passed to the end-user, risk analysis must be done early enough to impact the overall initial test strategy or at contract issuance and must be updated periodically throughout design, build, and test phases of the acquisition.

(3) (Added)(DAF) The results of this analysis are expected to be part of the program's test plans and will be used to determine the appropriate level of OT&E required to assess operational effectiveness, suitability, cybersecurity and cyber resiliency.

(4) (Added)(DAF) Documentation and coordination requirements can be minimized by identifying, in advance, multiple activities or build phases to be approved at any given milestone or decision point.

f. (Added)(DAF) Test obligation does not change for agile or Development, Security, and Operations (DevSecOps) software development programs, but interaction does. Testers should be integral to cross-functional teams charged with producing working software iterations. This provides T&E information throughout the software's development and allows flexibility to shifting stakeholder priorities.

g. (Added)(DAF) Agile or DevSecOps software development does not reduce the critical need for operational-context/end-to-end testing. Especially for tightly-coupled, systems-of-systems networks, communication, coordination, and empirical demonstration and verification are essential to avoid the inadvertent introduction of mission-impeding discrepancies.

h. (Added)(DAF) Agile or DevSecOps software development test responsibility hinges on an appropriate level of independence, effective test execution, and adequacy of reporting. Working closely with the Program Management Office, the test team must at a minimum determine the following:

- (1) (Added)(DAF) Traceability of requirements.
- (2) (Added)(DAF) Critical areas to test.
- (3) (Added)(DAF) Adequacy and Coverage of Planned Testing.
- (4) (Added)(DAF) DT, certification, and OT weight of effort.
- (5) (Added)(DAF) DT, certification, and OT integration.
- (6) (Added)(DAF) Level of contractor testing.
- (7) (Added)(DAF) Test frequency.

(8) (Added)(DAF) Test reporting methods/adequacy.

(9) (Added)(DAF) Establishment of a software release annex covering the time, place and resources of a planned release. (This step is not needed for software pathways utilizing continuous integration/continuous delivery.)

(10) (Added)(DAF) Acceptance criteria.

i. (Added)(DAF) Reporting should be tailored to provide an accurate and relevant program assessment while avoiding undue delays to the agile or DevSecOps software development process. Reporting methods should be established at, or even before, development commences to posture the Program Management Office for timely testing and feedback. An abbreviated test report or “quick-look” type report will accompany each integrated test during software iteration release cycles.

4.6. T&E FOR THE DBS PATHWAY.

a. DBS are governed by DoDI 5000.75 and supplemented by this issuance relative to T&E.

b. DBS PMs will develop a TEMP or other test strategy documentation. The PM will describe the test strategy and essential elements of the TEMP in the DBS implementation plan. Specific T&E management content requirements in the implementation plan include:

(1) Test events to collect data must be defined, scheduled, and resourced in the implementation plan, including a DEF matrix for DT events.

(2) Cybersecurity operational T&E must also include a cyber economic vulnerability analysis as outlined in the September 14, 2010 and January 21, 2015 DOT&E Memoranda. The MDA will not tailor cybersecurity T&E solely to meet authority to operate requirements.

(3) T&E planning will include mission-oriented developmental T&E with actual operators performing end-to-end scenarios in a controlled environment to collect human-system interface data and reduce risk during operational testing.

c. Business operations testing ensures the system is working properly before the go-live decision to support OT on the live environment. Business operations testing employs actual users on the test environment performing end-to-end business transactions.

d. The CDT should plan for interoperability DT early to ensure availability of other interfacing business system test environments.

e. For programs on the T&E oversight list, the level of test and use of test data as well as dedicated OT events should be approved by the DOT&E using guidance provided in the September 14, 2010 DOT&E Memorandum. DT&E will include interoperability testing with realistic simulations or test environments of interfacing systems with operationally representative data exchanges in a controlled environment.

4.7. COMPANION GUIDE.

Additional information will be available to expand upon the T&E policy established in this issuance at the Adaptive Acquisition Framework page on the Defense Acquisition University Website at: <https://www.dau.edu/aaf/>

SECTION 5: DT&E

5.1. OVERVIEW.

DT&E activities support data generation for independent evaluations. They also provide program engineers and decision-makers with information to measure progress, identify problems, characterize system capabilities and limitations, and manage technical and programmatic risks. PMs use DT&E activities to manage and reduce risks during development, verify that products are compliant with contractual and technical requirements, prepare for OT, and inform decision-makers throughout the program life cycle. DT&E results verify exit criteria to ensure adequate progress before investment commitments or initiation of phases of the program, and as the basis for contract incentives.

a. DT&E starts with capability requirements and continues through product development, delivery, and acceptance; transition to OT&E; production; and operations and support. Consideration of DT&E in the requirements and systems engineering processes ensures that capability requirements are measurable, testable, and achievable. Identifying and correcting deficiencies early is less costly than discovering system deficiencies late in the acquisition process.

(1) (Added)(DAF) All testers must plan for identifying deficiencies, enhancements, and submitting Deficiency Reports. All Government testers will use Joint Deficiency Reporting System for weapon systems deficiency reporting as described in TO 00-35D-54 unless a waiver is approved in accordance with TO 00-5-1.

(2) (Added)(DAF) Deficiency Reports should be promptly reported once formal reporting begins; however, a Watch Item tracking system may be used to ensure sufficient data are collected for accurate reporting. Potential cyber vulnerabilities identified during a cyber risk assessment but not yet validated by real world events or cyber testing should also be tracked in a Watch List. This Watch List may be integrated into the functional deficiency Watch List or maintained separately if desired. Deficiency reporting on agile or DevSecOps software development programs should focus on major or critical system functional deficiencies and not minor software bugs from incremental development and testing.

(3) (Added)(DAF) The contractor-based Deficiency Report system may suffice for the early stages of development, but the government-based Deficiency Report system (Joint Deficiency Reporting System) must become the primary method of reporting and tracking Deficiency Reports during government-conducted T&E. Cyber vulnerabilities validated through cyber testing or real world events, which can result in a significant or catastrophic mission effect if exploited will be categorized as a deficiency and tracked in the Deficiency Reporting system until such time as the vulnerability is eliminated or sufficiently mitigated. (T-1)

(4) (Added)(DAF) DT&E and OT&E test directors periodically convene a local Deficiency Review Board to review the prioritization, resolution, and tracking of all open Deficiency Reports and Watch Items. The DT&E test director chairs the Deficiency Review

Board during DT&E phases, and the OT&E test director chairs the Deficiency Review Board during OT&E phases.

(5) (Added)(DAF) Both test directors, plus representatives from the Participating Test Organizations and using MAJCOM or STARCOM are members of the PM's Materiel Improvement Project Review Board which provides final resolution of all Deficiency Reports. The Integrated Test Team periodically convenes a Joint Reliability and Maintainability Evaluation Team to review Deficiency Reports focused on reliability, maintainability, and availability.

b. The PM will take full advantage of DoD ranges, labs, and other resources. Programs will use government T&E capabilities unless an exception can be justified as cost-effective to the government. PMs will conduct a cost-benefit analysis for exceptions to this policy and obtain approval through the TEMP approval process before acquiring or using non-government, program-unique test facilities or resources.

(1) (Added)(AFMC) Use of Government Test Facilities and Ranges Order of Precedence. Test teams shall plan to use Air Force test capabilities first, followed by other Major Range and Test Facility Base facilities, followed by other military Service and non-DoD government facilities (including Federally Funded Research and Development Corporation test resources), and finally contractor facilities. The Integrated Test Team should consider contractor test facilities only when government facilities are not available, unable to meet technical objectives, or are significantly more cost effective than government options.

c. Systems have become more complex, and resource constraints often force tradeoffs in the type and scope of testing that can be performed. The DT&E budget and schedule must allow testing that adequately verifies performance to contractual requirements in a controlled environment and to operational requirements.

5.2. DT&E ACTIVITIES.

a. DT&E activities will start when requirements are being developed to ensure key technical requirements are measurable, testable, and achievable; as well as provide feedback that the system engineering process is performing adequately.

(1) (Added)(DAF) Use the systems engineering approach in the System Engineering Plans to break down, identify, and integrate the critical technical parameters, test objectives, resources, and schedules.

(2) (Added)(DAF) When appropriate, scientific test and analysis techniques and methodologies will also be used. Safety review processes will not be compromised.

(3) (Added)(DAF) When appropriate, digital engineering tools should be used to integrate DT&E and applicable certification, T&E into the system integrated digital environment in support of the program digital acquisition strategy.

(4) (Added)(DAF) Ensure all new developments, modifications, upgrades, sustainment equipment, support equipment, commodity replacement studies and demonstrations address operational safety, security, cybersecurity, cyber resiliency,

environment, occupational health integration, and human systems integration in accordance with AFI 63-101/20-101 and AFI 20-106_IP, *Management of Aviation Critical Safety Items*.

(5) (Added)(DAF) Support the systems engineering feedback process by integrating DT&E and applicable certification T&E activities into the program digital engineering ecosystem.

b. A robust DT&E program will provide the data and assessments for independent evaluations and decision-making. The DT&E program will:

(1) Verify achievement of critical technical parameters and the ability to achieve KPPs. OT will use relevant DT data to assess progress toward achievement of critical operational issues.

(2) Assess the system's ability to achieve the thresholds prescribed in the capabilities documents.

(3) Assess system specification compliance.

(4) Provide data to the PM to enable root cause determination of failures arising from tests and to identify corrective actions.

(5) Validate system functionality in a mission context to assess readiness for OT.

(6) Provide information for cost, performance, and schedule tradeoffs.

(7) Report on the program's progress to plan for reliability growth and assess reliability and maintainability performance for use during milestone decisions.

(8) Identify system capabilities, limitations, and deficiencies.

(9) Assess system safety IAW safety program compliance documents.

(10) Assess compatibility with legacy systems.

(11) Stress the system within the intended operationally relevant mission environment.

(12) Support all appropriate certification processes.

(13) Document achievement of contractual technical performance, and verify incremental improvements and system corrective actions.

(14) Assess entry criteria for IOT&E and follow-on OT&E.

(15) Provide DT&E data to validate parameters in models and simulations.

(16) Assess the maturity of the chosen integrated technologies.

(17) Include T&E activities to detect cyber vulnerabilities within custom and commodity hardware and software.

(18) Support cybersecurity assessments and authorization, including RMF security

controls.

(19) (Added)(DAF) Assess the technological capabilities of systems or concepts in support of requirements activities described in the AF/A5D Requirements Development Guidebooks (e.g., courses of action).

(20) (Added)(DAF) The Integrated Test Team reviews the draft RFP and included contractual documents to ensure provisions are made for the following:

(a) (Added)(DAF) Government review and approval of contractor test plans and procedures before tests commence.

(b) (Added)(DAF) Support Agreement drafted, if necessary, to delineate specific developmental test responsibilities assigned to the contractor and the government (i.e., LDTO).

(c) (Added)(DAF) Government insight into contractor testing to ensure systems are maturing as planned, to include government observation of contractor testing.

(d) (Added)(DAF) Proper interface of the contractor's Deficiency Report system with the government's Deficiency Report system, including TO 00-35D-54 compliant processes and methodologies and portability of data into government information management systems.

(e) (Added)(DAF) Contractor T&E support such as failure analyses, data collection, data sharing, data management, operation of unique test equipment, provision of product support, and test reports.

(f) (Added)(DAF) Contractor participation in government test planning forums such as the Integrated Test Team.

(g) (Added)(DAF) Contractor provision of training to testers and provision of long-lead items, as well as contractor support of instrumentation necessary to collect data needed by other stakeholders.

(h) (Added)(DAF) Proper interface of contractor testing with government digital engineering tools, to include portability of data into the government integrated digital environment.

(i) (Added)(DAF) For nuclear weapons systems, AFNWC test and DoE stakeholder participation in government test planning forums such as the Integrated Test Team.

(j) (Added)(DAF) Contractor participation in iterative government MBCRAs throughout the system acquisition life cycle.

(k) (Added)(DAF) Provisions for development of adequate and production representative system, subsystem, and end-item test assets to support I/Q/MOT&E (e.g., cyber testing).

(l) (Added)(DAF) Provisions for cooperative use of contractor development facilities to support early Contractor-Government integrated developmental functional and

cyber test activities.

5.3. DT&E EXECUTION, EVALUATION, AND REPORTING.

a. DT&E Execution.

The PM and test team will develop detailed test plans for each DT event identified in the TEMP. The PM, in concert with the user and T&E community, will provide relevant safety documentation (e.g., occupational health risk acceptance) and required documentation (e.g., the National Environmental Policy Act and Executive Order 12114 documentation for the DT event, safety, and occupational health risk assessment) to testers before any test that may affect safety of personnel. The PM will conduct test readiness reviews for those events identified in the TEMP, or other test strategy documentation.

(1) (Added)(DAF) The following general DT&E types exist for many acquisition programs:

(a) (Added)(DAF) Qualification T&E (QT&E) is a tailored type of DT&E primarily for commercially available off-the-shelf items, non-developmental items, and government furnished equipment.

1. (Added)(DAF) For Defense Business Systems and information technology systems, QT&E validates that the product integrates into the intended environment and meets documented functional, non-functional, cybersecurity requirements, cyber resiliency requirements, and performance standards.

2. (Added)(DAF) QT&E includes the following test segments: System Integration Test, Data Management Evaluation, System Operability Evaluation, Performance Evaluation Test, Cyber T&E, Regression Test, and User Acceptance Test.

(b) (Added)(DAF) Production Related Testing. The PM, through the CDT, ensures T&E is conducted on production items to demonstrate that specifications and performance-based requirements of the procuring contracts have been fulfilled. Defense Contract Management Agency personnel normally oversee this testing at the contractor's facility. Typical tests (defined in G.2. Definitions) include: first article tests; lot acceptance tests; pre-production qualification tests; production qualification tests; and production acceptance T&E.

b. DT&E Evaluation.

(1) DT&E Program Assessments.

For ACAT 1B/1C programs on the T&E oversight list for which USD(R&E) did not conduct a DT&E sufficiency assessment, the USD(R&E) will provide the MDA with a program assessment at the development RFP release decision point and MS B and C. This will be updated to support the operational test readiness review or as requested by the MDA or PM. The program assessment will be based on the completed DT&E and any operational T&E activities completed to date, and will address the adequacy of the program planning, the implications of testing results to date, and the risks to successfully meeting the goals of the remaining T&E events in the program.

(2) DT&E Sufficiency Assessments.

In accordance with Sections 2366b(c)(1) and 2366c(a)(4) of Title 10, U.S.C., when the USD(A&S) is the MDA, the USD(R&E) will conduct DT&E sufficiency assessments for MDAPs to be included in MS B and MS C brief summary reports provided to the congressional defense committees. When the Service or the Component acquisition executive is the MDA, the senior official within the Military Department, Defense Agency, or DoD Field Activity with responsibility for DT will conduct DT&E sufficiency assessments for MDAPs to be included in MS B and MS C brief summary reports provided to the congressional defense committees.

(a) (Added)(DAF) AF/TE approves the sufficiency assessments for programs for which the SAE is the MDA and the program is not T&E oversight. (T-0) AF/TEP will work with the CDT or Test Manager and LDTO to obtain the required information. (T-1)

c. DT&E Reports and Data.

(1) The USD(R&E) and the acquisition chain of command and their designated representatives will have full and prompt access to all ongoing developmental testing and integrated testing, and all DT and integrated test records and reports, including but not limited to: data from all tests, recurring test site status and execution reports, system logs, execution logs, test director notes, certifications, user and operator assessments, and surveys. This applies to all government-accessible data including classified, unclassified, and competition sensitive or proprietary data. Data may be preliminary and identified as such, when applicable.

(2) The PM and test agencies for all T&E oversight programs will provide DTIC with all reports and the supporting data for the test events in those reports.

(3) The DoD Components will collect and retain data from DT&E, integrated testing, and OT&E on the reliability and maintainability of ACAT I and II programs.

(4) (Added)(DAF) The types and frequency of DT&E reports and memorandums are tailored to meet decision makers' requirements as documented in the TEMP, test strategy, or test plan. DT&E data and analytic support must be provided to the program decision review process to support mission-oriented test readiness certification in accordance with DAFMAN 63-119.

(5) (Added)(DAF) DT&E reports are not releasable to non-government agencies without prior approval and coordination of the PM. Release of contractor test reports may be subject to restrictions in the contract.

SECTION 6: OT&E AND LFT&E

6.1. OVERVIEW.

a. The policies described in Paragraph 4.4 of this issuance applies as overarching guidance.

b. For programs under T&E oversight, the DOT&E will provide the MDA with milestone assessments. The DOT&E will submit a report to the Secretary of Defense and the congressional defense committees before programs under T&E oversight may proceed beyond LRIP, in accordance with Sections 2366 and 2399 of Title 10, U.S.C. The report will state the opinion of the Director, as to:

(1) Whether the test and evaluation performed were adequate.

(2) Whether the results of such test and evaluation confirm that the items or components actually tested are effective and suitable for combat.

c. (Added)(DAF) “Evaluations” collect, analyze, and report data against stated criteria with a high degree of analytical rigor. “Assessments” usually collect and analyze data with less analytical rigor, need not report against stated criteria, and cannot be the sole source of T&E data for Full Rate Production and Full Deployment decisions. Full Rate Production decisions may only be supported by Evaluations, whereas Full Deployment (i.e. Fielding) decisions may be supported by either Evaluations or Assessments, as appropriate for the complexity of the system under development.

6.2. OT&E ACTIVITIES.

a. OAs.

(1) The lead OTA will prepare and report results of one or more EOAs as appropriate in support of one or more of the design phase life-cycle events (namely, the capability development document validation, the development RFP release decision point, or MS B). An EOA is typically an assessment, conducted in accordance with an approved test plan, of the program’s progress in identifying operational design constraints, developing system capabilities, and reducing program risks. For programs that enter development at MS B, the lead OTA will (as appropriate) prepare and report EOA results after program initiation and before the critical design review.

(2) The lead OTA conducts an OA in accordance with a test plan approved by the DOT&E for programs that are under T&E oversight. OAs can include dedicated early operational testing, as well as developmental test results, provided they are conducted with operational realism. As a general criterion for proceeding through MS C, the lead OTA will conduct and report results of at least one OA. For an acquisition program using an incrementally deployed software program model, a risk-appropriate OA is usually required in support of every limited deployment. An OT, usually an OA, is required before deployment of accelerated or urgent acquisition programs that are under T&E or LFT&E oversight. The OTA may combine an

OA with training events. An OA may not be required for programs that enter the acquisition system at MS C.

(3) (Added)(DAF) OT&E for software acquisitions will be guided by the assessment of operational risks of mission failure.

(4) (Added)(DAF) AFOTEC conducts Operational Utility Assessments in support of the Joint Concept Technology Demonstration Program and experimentation programs.

(5) (Added)(DAF) A Military Utility Assessment is used as a MAJCOM or STARCOM assessment of a new capability to determine how well it addresses a stated military need when a formal OA or OT&E is not warranted (non-oversight, not a program of record, etc.). The assessment should characterize the military utility, considering all operational factors including maintainability.

b. RFPs.

The Military Services will provide to the DOT&E and USD(R&E) an approved final draft TEMP or other test strategy documentation before release of RFPs for MS B and MS C. To the maximum extent feasible, RFPs should be consistent with the OT program documented in the TEMP, or other test strategy documentation.

(1) (Added)(DAF) By Milestone A for Major Capability Acquisition or in the design phase for all other acquisition pathways, the TEMP or test strategy must be updated prior to release of the RFP, also known as RFP TEMP or test strategy. The RFP TEMP or test strategy should also include a user-provided Concept of Operations.

c. OT&E for Reliability and Maintainability.

The TEMP, or other test strategy documentation, will include a plan to allocate top-level reliability and maintainability requirements and rationale for the requirements that may be allocated down to the components and sub-components. Reliability allocations may include hardware and software, and may include commercial and non-developmental items.

d. Operational Test Readiness.

The DoD Components will each establish an operational test readiness review process to be executed before any OT. Before IOT&E, the process will include a review of DT&E results; an assessment of the system's progress against the KPPs, key system attributes, and critical technical parameters in the TEMP, or other test strategy documentation; an analysis of identified technical risks to verify that those risks have been retired or reduced to the extent possible during DT&E or OT&E; a review of system certifications; and a review of the IOT&E entrance criteria specified in the TEMP, or other test strategy documentation.

(1) (Added)(DAF) See DAFMAN 63-119 to address operational test readiness, which is also known as Mission-Oriented Test Readiness Certification in the DAF.

(2) (Added)(DAF) Final mission-oriented certification review and briefing of system readiness must be completed 45 calendar days prior to the planned start of remaining OT to allow time for last minute program adjustments or deficiency corrections. This time may

be shorter if the PM and operational testers mutually agree. Certification requires a formal briefing (or less, if justified by program scope, OSD interest, etc.) to the Mission-Oriented Test Certification Official.

1. (Added)(DAF) The briefing shall address all DT and OT test results, conclusions, recommendations, identified deficiencies and workarounds, and an assessment of the system's capability to meet operational requirements. Workarounds will be vetted by the OTA/OTO or requirements sponsor. DAFMAN 63-119 will be used as a guide to structure the briefing and demonstrate readiness. Both operational testers and developmental testers are represented at the briefing.

2. (Added)(DAF) The briefing shall inform the Mission-Oriented Test Certification Official of any outstanding disagreements between the OTA/OTO, user, and the PM. The Mission-Oriented Test Certification Official forwards a certification of readiness memo to the OTA/OTO commander at least 15 calendar days prior to the start of remaining operational testing, or as agreed.

3. (Added)(DAF) If necessary, the Mission-Oriented Test Certification Official and OTA/OTO equivalent counterpart shall negotiate and plan the OT&E way forward before formalizing the certification of readiness memo. If agreement cannot be reached at this point, outstanding issues may be elevated to SAE and AF/TE for final resolution. (T1).

(3) (Added)(DAF) Use the systems engineering approach in the System Engineering Plans to break down, identify, and integrate the critical operational issues, critical technical parameters, test objectives, measures of effectiveness, measures of suitability, measures of performance, resources, and schedules.

(4) (Added)(DAF) Determine fielded system performance against changing operational requirements and threats.

e. Certifications.

Testing in support of certifications should be planned in conjunction with all other testing.

(1) The PM is responsible for determining what certifications are required, involving the representatives of applicable certifying authorities in the T&E WIPT, and satisfying the certification requirements.

(2) The PM will provide the MDA, DOT&E, and the lead OTA with all data on certifications as requested.

(3) In accordance with DoDI 8330.01, all program TEMPs must reflect interoperability and supportability requirements, and serve as the basis for interoperability assessments and certifications. The preceding policies are summarized together with associated DOT&E guidance and TEMP outlines at: <http://www.dote.osd.mil/temp-guidebook/index.html>.

(4) (Added)(DAF) See DAFMAN 63-119 for details on the continuous evaluation process for certification.

f. (Added)(DAF) Initial Operational T&E (IOT&E).

(Added)(DAF) IOT&E is the primary OT&E of a system before Full Rate Production and Full Deployment and is conducted only by AFOTEC. IOT&E determines if operational requirements and critical operational issues have been satisfied and assesses system impacts to peacetime and combat operations.

g. (Added)(DAF) Qualification Operational T&E (QOT&E).

(Added)(DAF) Tailored type of OT&E performed on systems for which there is little to no Research, Development, T&E-funded development effort. Conducted only by AFOTEC, QOT&E is used to evaluate military-unique portions and applications of commercially available off-the-shelf items, non-developmental items, and government-furnished equipment for military use in an operational environment.

h. (Added)(DAF) Follow-on Operational T&E (FOT&E).

(Added)(DAF) FOT&E is the continuation of OT&E after IOT&E, Qualification Operational T&E or MOT&E, and is conducted only by AFOTEC. It answers specific questions about unresolved Critical Operational Issues and test issues; verifies the resolution of deficiencies or shortfalls determined to have substantial or severe impact(s) on mission operations; or completes T&E of those areas not finished during previous OT&E. AFOTEC reports document known requirements for Follow-on Operational T&E.

i. (Added)(DAF) Force Development Evaluation (FDE).

(Added)(DAF) FDE is a type of OT&E performed by OTOs in support of acquisition program hardware and software fielding decisions and milestones, to include sustainment or upgrade fielding activities. An FDE may be used in-lieu-of an IOT&E or FOT&E to support production decisions in those instances where AFOTEC non-involves in the operational testing of an acquisition program on T&E oversight. FDE may be applied to other operational test purposes including verifying resolution of previously identified system deficiencies (pre-or post-production/fielding); evaluating the system's performance of potential foreign acquisitions; evaluating "blue systems" capabilities against new or modified threats; or evaluating the military application of commercially available COTS items, NDI, and GFE.

j. (Added)(DAF) Multi-Service Operational Test and Evaluation (MOT&E).

(Added)(DAF) MOT&E is Operational T&E (IOT&E, Qualification Operational T&E, Follow-on Operational T&E, or FDE) conducted by two or more Service OTOs for systems acquired by more than one Service. MOT&E is conducted in accordance with the T&E directives of the lead OTO and as agreed in a Multi-Service Operational Test memorandum of agreement. Refer to the memorandum of agreement on MOT&E coordinated and maintained by AFOTEC. A copy of the MOT&E memorandum of agreement is available by email if a request is sent to: "AFOTEC.A5A8.Workflow@us.af.mil." If MAJCOMs or FLDCOMs are involved in Multi-Service testing without AFOTEC, they should use this memorandum of agreement as a guide.

k. (Added)(DAF) Tactics Development and Evaluation.

(Added)(DAF) Tactics Development and Evaluation is a type of operational testing conducted by OTO to refine doctrine, system capabilities, and Tactics, Techniques, and Procedures (TTP) throughout a system's life cycle in accordance with AFMAN 11-260, *Tactics Development Program*. Tactics Development and Evaluations normally identify non-materiel solutions to problems or evaluate better ways to use new or existing systems.

l. (Added)(DAF) Operational Utility Evaluation.

(Added)(DAF) Operational Utility Evaluation is an operational test which may be conducted by OTA or OTO whenever a focused OT&E event is required, but the full scope of formal IOT&E, Qualification Operational T&E, Follow-on Operational T&E, or FDE is not appropriate or required in accordance with this instruction.

(1) (Added)(DAF) Operational Utility Evaluations may be used to support operational decisions (e.g., fielding a system with less than full capability, to include but not limited to integrated testing of releases and increments of information technology capabilities) or acquisition-related decisions (e.g., LRIP) when appropriate throughout the system life cycle.

(2) (Added)(DAF) An Operational Utility Evaluation cannot support Full Rate Production or Full Deployment decisions for Acquisition Category I, II, or T&E oversight programs.

(3) (Added)(DAF) OTOs may establish their supplemental internal guidance on when and how to use Operational Utility Evaluations.

(4) (Added)(DAF) Use of Operational Utility Evaluation or FDE to support MAJCOM or SSC-managed fielding or production decisions is at the discretion of the appropriate OTO.

m.(Added)(DAF) Operational Utility Assessment.

(Added)(DAF) AFOTEC conducts Operational Utility Assessments to assess the military utility of a system in support of the Joint Concept Technology Demonstration Program and experimentation programs.

n. (Added)(DAF) Military Utility Assessment.

(Added)(DAF) Military Utility Assessment is used as an OTO assessment of a new capability to determine how well it addresses a stated military need when a formal OA or OT&E is not warranted (non-T&E oversight, not a program of record, etc.). The assessment should characterize the military utility, considering all operational factors including maintainability.

o. (Added)(DAF) Sufficiency of Test Review.

(Added)(DAF) For some programs of limited scope and complexity, system DT or integrated developmental and operational test events may provide adequate test data to

support fielding decisions. In these situations, the lowest appropriate level of required OT may consist of a review of existing data rather than a separate, dedicated operational test event.

(1) (Added)(DAF) The Integrated Test Team should recommend a Sufficiency of Test Review when collected test data can address all test measures and result in effectiveness and suitability ratings. A Sufficiency of Test Review is not intended to be a cost or schedule-driven solution.

(2) (Added)(DAF) The decision to accomplish a Sufficiency of Test Review (rather than dedicated OT) must be approved by the OTA/OTO. The Sufficiency of Test Review may be used as the source of test information for supporting fielding, acquisition milestone, or production decisions. The Sufficiency of Test Review may not be used for milestone decisions associated with T&E oversight programs unless approved by the DOT&E.

p. (Added)(DAF) Summary of Operational Testing.

(Added)(DAF) OTA/OTOs can provide written reports at any point in development to ensure feedback throughout the life of a program, to include early acquisition stages. OTA/OTOs may continuously deliver timely, relevant written information/findings to stakeholders (e.g., developers and program offices) as soon as available. Reports are tailored to the program and titles will vary (e.g., status reports, significant event reports, periodic reports, observation reports, and quick look briefs). The key distinctions between types of OT and the decisions they support are shown in Table 2. Note: Table 2 is intended as a summary and may not cover all possible T&E situations; refer to the descriptions in Paragraph 6.2.f. through 6.2.o. or consult with AF/TEP for final guidance of any issues.

Table 2. (Added)(DAF) Summary of Operational Testing Options

Types of Operational Tests	Decisions Supported	Who Conducts	Types of Programs
Assessments			
Early Operational Assessment	Milestone B Capability Development Document Validation Development Request for Proposal Release Decision Point	OTA or OTO	All (ACAT I-III, BCAT I-II, T&E oversight, Non-Oversight) <i>Note 1</i>
Operational Assessment	Milestone C Low-Rate Initial Production Limited Deployment		
Operational Utility Assessment	Support assessments conducted on innovation programs	OTA	Joint Concept Technology Demonstration and Experimentation Programs

			<i>Note 1</i>
Military Utility Assessment	New Science and Technology application	OTO	Non-Oversight, non-program of record
Evaluations			
Initial Operational T&E			
Qualification Operational T&E	Full Rate Production	OTA	ACAT I-II, BCAT I-II, T&E oversight
Follow-on Operational T&E	Full Deployment		
Multi-Service Operational T&E	Full Rate Production	OTA or OTO	All
	Full Deployment		
Force Development Evaluation	Full Rate Production	OTO	All <i>Note 2</i>
	Full Deployment		
Operational Utility Evaluation	Low Rate Initial Production	OTA	All
	Limited Deployment	or OTO	<i>Notes 2, 3</i>
Sufficiency of Test Review	Full Rate Production	OTO	Non-Oversight <i>Notes 3, 4</i>
	Full Deployment		
Tactics Development and Evaluation	TTP Documentation	OTO	All

(Added)(DAF) Notes:

1. (Added) (DAF) Cannot be substituted for IOT&E, QOT&E, FOT&E, FDE, or Operational Utility Evaluation. Activity falls outside the traditional acquisition process; however, DAF testers are required to support the activity by providing T&E expertise in assessing the operational or military utility of new technologies.

2. (Added) (DAF) Do not use when IOT&E, QOT&E, or FOT&E are more appropriate.

3. (Added) (DAF) Do not use when IOT&E, QOTest Evaluation, or FDE are more appropriate.

4. (Added) (DAF) A Sufficiency of Test Review can be used on a T&E oversight program if approved by DOT&E.

q. (Added)(DAF) Weapons System Evaluation Program

(Added)(DAF) The Weapons System Evaluation Program is a USAF MAJCOM or STARCOM-conducted test program that provides a tailored end-to-end operational evaluation of fielded weapons systems and their support systems using realistic combat scenarios. Units conducting Weapons System Evaluation Program will follow either Combat Air Force Plan 53 (for USAF units) or USSF Weapon System Evaluation Program Guidance Memorandum (for USSF units).

(1) (Added)(DAF) The evaluation should characterize system performance and TTP against changing operational requirements and threats to support the requirements development process.

(2) (Added)(DAF) The Weapons System Evaluation Program also conducts investigative firings to revalidate capabilities or better understand munitions malfunctions.

r. (Added) (DAF) Testing of Training Devices

(Added)(DAF) Training devices should be considered part of the system under test and must also undergo DT and OT. To ensure crew training devices provide accurate and credible training throughout their life cycles, AFI 16-1007, *Management of Air Force Operational Training Systems*, gives direction and guidance for using the simulator certification and simulator validation processes.

s. (Added)(DAF) Specialized Types of T&E.

(Added)(DAF) Certain types of T&E require test organizations to use specialized processes, techniques, requirements, and formats in addition to those prescribed in this instruction. These specialized types of T&E must be integrated with other T&E activities as early as possible. These tests should be conducted in operationally relevant environments which include end-to-end scenarios. Table 3 identifies guidance for the PM to use in planning, conducting, and reporting these specialized types of T&E.

Table 3. (Added)(DAF) Specialized Types of T&E

Type of Testing	Description	References
Advanced Technology Demonstration (See Note)	Air Force Research Laboratory-funded, MAJCOM or SSC-sponsored development efforts that demonstrate the maturity and potential of advanced technologies for enhancing military operational capabilities.	AFI 61-101
Evaluated Level of Assurance	Evaluates offensive cyberspace operations capabilities against technical assurance standards. ACC appoints the Air Force test organization responsible for testing technologies meeting the definition.	DoDI O-3600.03
Electronic Warfare Integrated Reprogramming	Process intended to produce and deliver software/hardware changes to electronic equipment used to provide awareness and response capability within the electromagnetic spectrum. May require changes in TTPs, equipment employment guidance, aircrew training and training devices (threat simulators and emitters). Provides guidance for test / fielding of mission data changes, Operation Flight Program changes, or minor hardware changes that comply with the guidance in AFI 63-101/20-101 concerning modifications.	DAFMAN 10-703, <i>Electronic Warfare (EW) Integrated Reprogramming</i>
TEMPEST Assessment	Assesses against the requirement to control the compromise of classified electronic emissions.	Air Force Systems Security Information Management (AFSSI) 7700, <i>Emission Security</i> , AFSSI 7702, <i>Emission Security Countermeasures Reviews</i>
Foreign Comparative Testing (FCT) (See Note)	FCT is an OSD-sponsored program for T&E of foreign nations' systems, equipment, and technologies to determine their potential to satisfy validated United States operational requirements.	Title 10 U.S.C. Section 2350a(g) OSD Comparative Technology Office website: https://cto.acqcenter.com/
Joint Capability Technology Demonstrations (See Note)	Exploits maturing technologies to solve important military problems and to concurrently develop the associated Concept of Operations to permit the technologies to be fully exploited. Emphasis is on tech assessment and integration rather than	AFI 63-101/20-101 AFI 61-101

	development.	
Joint Interoperability Test and Certification	Required certification for net-readiness prior to a system being placed into operation. Must be preceded by Air Force System Interoperability Testing, formal Service-level testing to determine the degree to which AF systems which employ tactical data links conform to appropriate DoD MIL-STDs.	CJCSI 5123.011 DoDI 8330.01
Joint Test & Evaluation (See Note)	This program develops, tests and validates non-material solutions of fielded and soon to be fielded systems. Joint T&E provides feedback to the acquisition community; however, it does not directly support system acquisition. AFJO is designated the Operational Test Agency to administer and execute tests within the AF Joint T&E Program, including Joint Tests, Joint Feasibility Studies, Quick Reaction Tests, and Collaborative Joint Tests.	DoDI 5010.41 AFI 99-106
Testing of Urgent Needs (See Note)	Quick reaction capability for satisfying near-term urgent warfighter needs.	DoDI 5000.81
Unified Capabilities Certification	Certifies interoperability and information assurance for Unified Capabilities (defined as integration of voice, video, and/or data services delivered ubiquitously across a secure and highly available network infrastructure, independent of technology). ACC appoints the Air Force Unified Capabilities test organization responsible for testing technologies meeting the definition.	DoDI 8100.04

(Added)(DAF) Note: Activity falls outside the traditional acquisition process; however, DAF testers may be required to support the activity by providing T&E expertise in assessing the military utility of new technologies.

6.3. LFT&E.

The following policy applies to all acquisition pathways as described in DoDI 5000.02T. Section 2366 of Title 10, U.S.C. mandates the LFT&E and formal LFT&E reporting for all covered systems, munition programs, missile programs, or covered product improvement programs as determined by the DOT&E. The primary emphasis is on testing vulnerability with respect to potential user casualties and taking into equal consideration the susceptibility to attack and combat performance of the system. The DOT&E will approve LFT&E strategies and LFT&E test plans (including survivability and lethality test plans) for covered systems as defined in Section 2366 of Title 10, U.S.C. LFT&E strategies and test plans may be tailored in accordance with program objectives and selected acquisition strategies. The DOT&E will approve the quantity of test articles procured for all LFT&E test events for any system under LFT&E oversight.

(1) (Added)(DAF) LFT&E is a type of testing that provides timely, rigorous, and credible vulnerability or lethality T&E of “covered” systems as they progress through system development or a major system modification that affects survivability.

(2) (Added) (DAF) Survivability information from LFT&E consists of susceptibility, vulnerability, and recoverability information derived from the firing of actual weapons (or surrogates if actual threat weapons are not available) at components, sub-systems, sub-assemblies, and/or full up, system-level targets.

(3) (Added)(DAF) The focus and funding for LFT&E should be on the system components immediately related to the development or modification program, but the resultant evaluation must be at the system level. The appropriate LFT&E organizations are: (1) munitions (lethality) covered systems - 96th Test Wing, 96th Operating Group, 780th Test Squadron; and (2) aircraft survivability covered systems - Arnold Engineering

Development Complex, 704th Test Group, Aerospace Survivability and Safety Office (704th Test Group/OL-AC).

(4) (Added)(DAF) Technology projects meeting the statutory criteria are also required to undergo LFT&E.

(5) (Added)(DAF) LFT&E must be fully integrated into the continuum of testing.

(6) (Added)(DAF) Modeling, simulation, and analysis must be an integral part of the LFT&E process.

(7) (Added)(DAF) LFT&E waiver requests for Full-up System Level testing must go through The Secretary of Defense for approval. (T-0) The Secretary of Defense may waive the application of the survivability and lethality tests of this section to a covered system, munitions program, missile program, or covered product improvement program if the Secretary determines that live-fire testing of such system or program would be “unreasonably expensive and impractical” and submits a certification of that determination to Congress either (a) before Milestone B approval for the system or program; or (b) in the case of a system or program initiated at (i) Milestone B, as soon as is practicable after the Milestone B approval; or (ii) Milestone C, as soon as is practicable after the Milestone C approval. To support this determination, the PM will submit the LFT&E waiver request and alternative strategy to AF/TE and SAE prior to Service-level approval. (T-0) After SAE approval, the LFT&E waiver request and alternative strategy are forwarded to DOT&E for alternative strategy approval, and then together to USD(R&E) for waiver approval. Upon final OSD approval, DOT&E issues a report and formal certification to Congress. Document the LFT&E waiver and alternative LFT&E strategy in an annex to the TEMP or test strategy.

(8) (Added)(DAF) The alternative strategy does not alleviate the statutory requirement for survivability or lethality testing. The alternative strategy must include LFT&E of components, subassemblies, and/or subsystems which, when combined with accredited modeling and simulation and combat data analysis, will result in confidence in the survivability (or lethality) of the system.

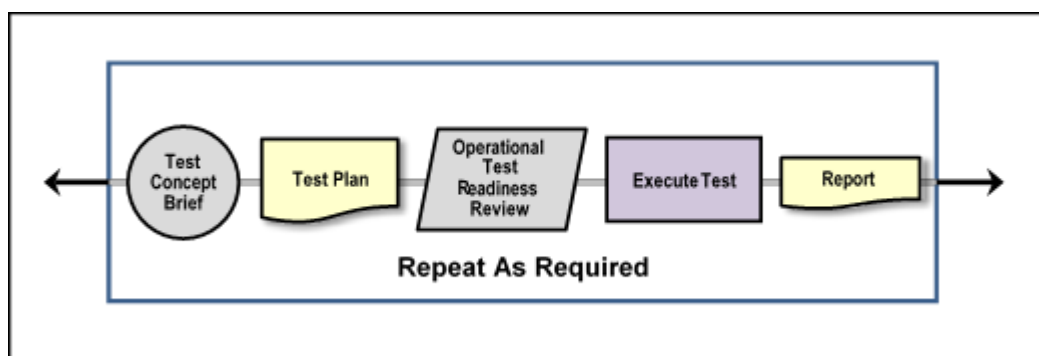
(9) (Added)(DAF) In the case of major modifications or new production variants, the alternative LFT&E strategy and detailed plans must focus on configuration changes that could significantly affect survivability or lethality. Potential interactions between portions of the configuration that are changed and those that are not changed must be assessed. The assessment results must include a whole system analysis of the survivability and vulnerability impacts on the total system. Alternative LFT&E are not required on components or subsystems unrelated to the modification program.

(10) (Added)(DAF) An assessment of force protection equipment and personnel survivability must be conducted.

6.4. OPERATIONAL AND LIVE FIRE EXECUTION.

The general process for planning, executing, and reporting on operational and live fire test events is shown in Figure 3.

Figure 3. Operational or Major Live Fire Test Event: Planning, Approval, Execution, and Reporting



a. Planning Test Events.

(1) For all programs under T&E oversight, including accelerated acquisitions, the DOT&E will approve OTPs and LFTPs before the corresponding operational or major live fire test events in accordance with Section 2399, Title 10, U.S.C. and DoDD 5141.02. The DOT&E will approve any LFTP for a major test event, such as full-up system-level test, total ship survivability trial, or full ship shock trials. The major live fire test events will be identified in the TEMP (or LFT&E strategy or equivalent document). An LTO develops test plans for both OT&E and LFT&E.

(2) For programs under T&E oversight, the appropriate LTO will brief the DOT&E on T&E concepts for the OTP or the major LFT&E as early as possible and no less than 180 calendar days before the start of any such testing. The DOT&E and DoD Component heads will be kept apprised of changes in test concept and progress on the OTP. The lead OTA will deliver the DoD Component-approved OTP for DOT&E review no later than 60 calendar days before test start. The LTO for major live fire events will deliver the DoD Component-approved LFTP for DOT&E review no later than 90 days before test start. OTPs and major LFTPs will include the plans for data collection and management. To support agile acquisition, the timetables for the test concept and OTP delivery may be tailored with mutual consent between the DOT&E, OTA, and program office; and should be negotiated via the program T&E WIPT.

(3) In OT&E, typical users or units will operate and maintain the system or item under conditions simulating combat stress in accordance with Section 139, Title 10, U.S.C., and peacetime conditions, when applicable. The lead OTA, in consultation with the user and the PM, will identify realistic operational scenarios based on the CONOPS and mission threads derived from the joint mission essential task list or DoD Component-specific mission essential task list.

(a) (Added)(DAF) OTA or OTO in conjunction with the Integrated Test Teams must ensure test plans are updated to include new validated threats, enemy TTPs, environments as well as added capability requirements to support deployment decisions.

(b) (Added)(DAF) Systems with Information Technology content and DBS should use a "virtual" environment whenever possible that emulates real-world networks and threats.

(c) (Added)(DAF) MAJCOMs, STARCOM, test centers, complexes, and other DT&E organizations may be requested to support AFOTEC-conducted operational testing. This support is documented in TEMP's or test strategies, Test Resource Plans, Integrated Test Team charters, test plans, memorandums of agreement, and directed in MAJCOM or STARCOM test project orders. AFOTEC prepares and distributes Test Resource Plans in time to budget during the Program Objective Memorandum cycle.

(d) (Added)(DAF) A human research determination must be completed prior to any test event. (T-0) Personnel are defined as test subjects when their performance/capability is evaluated as a target of the test. When personnel are determined to be used as human subjects, the level of risk to the person must be documented and a review by an Institutional Review Board for Protection of Human Subjects in Testing must be completed prior to the test event as written in DoDI 3216.02_AFI 40-402, *Protection of Human Subjects and Adherence to Ethical Standards in Air Force Supported Research*. (T-0)

(4) Pursuant to Section 2399 of Title 10, U.S.C., persons employed by the contractor for the system being developed may only participate in OT&E of systems under T&E oversight to the extent they are planned to be involved in the operation, maintenance, and other support of the system when deployed in combat.

(5) A contractor that has participated (or is participating) in the development, production, or testing of a system for a DoD Component (or for another contractor of the DoD) may not be involved in any way in establishing criteria for data collection, performance assessment, or evaluation activities for OT&E. These limitations do not apply to a contractor that has participated in such development, production, or testing, solely in test or test support on behalf of the DoD.

(a) (Added)(DAF) DAF policy applies these contractor limitations to all Operational T&E programs, projects, and activities regardless of acquisition pathway. This does not prohibit contractor observation of OT&E events if the program office provides justification to the OTO or OTA for approval and it does not influence the event.

(b) (Added)(DAF) System contractors may be beneficial in providing logistic support and training, test failure analyses, test data, and unique software and instrumentation support that could increase the value of operational test data. Explanations of how this contractor support will be used and the mitigation of possible adverse effects must be described within the TEMP or test strategy, as well as in developmental and Operational Test Plans.

(6) IOT&E for all programs will use production or production-representative test articles that, at a minimum, will incorporate the same parts and software items to be used in LRIP articles. Production-representative systems must meet the following criteria:

(a) The hardware must be as defined by the system-level critical design review, functional configuration audit, and system verification review, including correction of appropriate major deficiencies identified during prior testing. Software will be defined based on the implementation to date and the associated product roadmap.

(b) For hardware acquisitions, production-representative articles should be assembled using the parts, tools, and manufacturing processes intended for use in FRP; utilize the intended production versions of software; and the operational logistics systems including mature drafts of maintenance manuals intended for use on the fielded system should be in place. The manufacturing processes to be used in FRP should be adhered to as closely as possible, and PMs for programs under T&E oversight will provide the DOT&E a detailed description of any major manufacturing process changes.

(c) For software acquisitions, a production-representative system consists of typical users performing operational tasks with the hardware and software intended for deployment, in an operationally realistic computing environment, with representative DoD information network operations and supporting cybersecurity capabilities. All manuals, training, helpdesk, continuity of operations, system upgrades, and other life-cycle system support should be in place.

(7) IOT&E will require more than an evaluation that is based exclusively on computer modeling, simulation, or an analysis of system requirements, engineering proposals, design specifications, or any other information contained in program documents in accordance with Sections 2399 and 2366 of Title 10, U.S.C. IOT&E will feature end-to-end testing of system capabilities including all interrelated systems needed to employ and support those capabilities.

(8) PMs for all programs (and particularly accelerated acquisitions) may, in coordination with the lead OTA, elect to perform integrated testing in conjunction with training, joint and operational exercises, or synchronized test events. Such testing is efficient, but inherently increases the risk that a significant problem will not be discovered. If no subsequent operational or live fire testing is conducted before initial fielding, then additional testing will typically be required after initial fielding. When additional testing is required, the plan for the T&E and reporting of results will be included in the applicable TEMP or other test strategy documentation.

b. Conducting Test Events.

(1) Test plans must consider the potential effects on personnel and the environment, in accordance with Sections 4321-4347 of Title 42, U.S.C., and Executive Order 12114. The T&E community, working with the PM and the user community, will provide relevant safety documentation (to include formal environment, safety, and occupational health risk acceptance for the test event) to the developmental and operational testers before any test that may affect safety of personnel.

(2) Barring significant unforeseen circumstances, all elements of an approved OTP or LFTP must be fully satisfied by the end of an operational or live fire test. If an approved plan cannot be fully executed, DOT&E concurrence with any changes must be obtained before revised test events are executed.

(a) Once testing has begun, deviations from approved elements of the test plan cannot be made without consultation with the OTA commander (for OTP), or appropriate LTO (for LFTP), and the concurrence of the DOT&E.

(b) DOT&E concurrence is not required when a need to change the execution of an element of the test plan arises in real time as its execution is underway. If DOT&E on-site

representatives are not present and the test director concludes changes to the plan are warranted that would revise events yet to be conducted, the test director must contact the relevant DOT&E personnel to obtain concurrence with the proposed changes. If it is not possible to contact DOT&E personnel in a timely manner, the test director can proceed with execution of the revised test event but must inform the DOT&E of the deviations from the test plan as soon as possible.

(3) Additions to the approved test plan once the test is in execution will not occur without the concurrence of the OTA commander (for OTP), or appropriate LTO (for LFTP) and the DOT&E representative. Revisions are to be documented and signed by the test director.

(4) When the order of execution is identified in the TEMP, or other test strategy documentation, as affecting the analysis of the data, test plans should include details on the order of test event execution and test point data collection.

(5) Operating instructions (e.g., tactics, techniques, and procedures; standard operating procedures; technical manuals; technical orders) should be considered for their effect on the test outcomes and included in OTPs when relevant.

(6) Test plans must include the criteria to be used to make routine changes (e.g., delays for weather, test halts).

(7) If required data for the test completion criteria are lost, corrupted, or not gathered, then the test is not complete unless the DOT&E waives the requirement.

(8) (Added)(DAF) A test deferral is the movement of testing and/or evaluation of a specific Critical Technical Parameters, operational requirement, or Critical Operational Issue to a follow-on increment or test activity (e.g., FOT&E).

(9) (Added)(DAF) A test limitation is any condition that hampers but does not preclude adequate test and/or evaluation of Critical Technical Parameters, operational requirement, or Critical Operational Issue during a T&E program.

(10) (Added)(DAF) The Integrated Test Team documents test deferrals and test limitations in the TEMP and test plans.

(11) (Added)(DAF) Test limitations and test deferrals do not require waivers, but must be described in the TEMP and test plans, to include, in the case of a deferral, a revised timeline for decisions and reports.

(12) (Added)(DAF) These test limitations and deferrals are considered approved when the TEMP or test plan is approved.

(13) (Added)(DAF) Waivers are the deletion of specific mandatory items; waivers for not conducting OT&E will not be approved when OT&E is mandated by statute or this DAFI.

c. Data Management, Evaluation, and Reporting.

(1) The DOT&E, the PM, and their designated representatives who have been properly authorized access, will have full and prompt access to all records, reports, and data, including but not limited to data from tests, system logs, execution logs, test director notes, and user and

operator assessments and surveys. Data include, but are not limited to, classified, unclassified, and (when available) competition sensitive or proprietary data. Data may be preliminary and will be identified as such.

(a) (Added)(DAF) PMs and testers must safeguard classified information resulting from system development or test such as vulnerabilities identified through cyber test. (T-0) This includes safeguarding physical and digital data as well as communications and datalinks even when shared or provided to other organizations.

(3) OTAs and other T&E agencies will record every OT&E and LFT&E event in writing. Full reports will often contain multiple test events and will be accomplished in the timeliest manner practicable. Interim summaries or catalogues of individual events will be prepared as results become available.

(4) Significant problems will be reported promptly by the acquisition decision authority to senior DoD leadership when those problems are identified. OTAs will publish interim test event summaries as interim reports when the test events provide information of immediate importance to the program decision-makers. This will occur particularly in support of accelerated acquisitions and time critical operational needs. Such reports should provide the most complete assessment possible based on the available data and should not be delayed. Such reports will be followed by the planned comprehensive reporting.

(5) For T&E and LFT&E oversight programs, the Military Services will keep the DOT&E informed of available program assets, assessments, test results, and anticipated timelines for reporting throughout report preparation.

(6) (Added)(DAF) Operational testers submit these reports to the appropriate agencies (e.g., PM, CDT or Test Manager, LDTO, PTOs, operational commands, Program Element Monitor, PEO, Center Test Functional leaders, AF/TE, and/or DOT&E and DD(DTE&A), depending upon level of interest in the program) within 24 hours of any significant test event as described in the test plan.

(7) (Added)(DAF) LFT&E reports must be submitted 45 calendar days to DOT&E and other stakeholders after each LFT&E event or immediately upon identification of a critical failure or test results implying non-conformance with defined objectives or requirements.

(8) (Added)(DAF) Reports must address each of the Critical Operational Issues as well as the system's operational effectiveness and suitability. These reports must strike the proper balance between system capabilities and limitations while taking into account how well the system performed mission essential tasks.

(9) (Added)(DAF) All Category I Deficiency Reports and the most important Category II Deficiency Reports will be listed to include a Risk Assessment of the overall state of the Deficiency Report issues. Detailed technical information should be published in separate data documents.

(10) (Added)(DAF) Prior to the Full Rate Production and Full Deployment decision review, operational testers and users complete a final prioritization of all open

Deficiency Reports for resolution and funding. MAJCOM or STARCOM priorities must be used for rank-ordering these Deficiency Reports. The final priorities are forwarded to the PM to help direct corrective actions and will be listed in the final report.

(11) (Added)(DAF) Not all open Deficiency Reports may receive funding or be corrected after a system is accepted for operational use. The database of open Deficiency Reports may provide the only documentation of unsatisfactory conditions or worthwhile system enhancements.

(12) (Added)(DAF) At no time will the program office unilaterally close or downgrade Deficiency Reports without formal consultation with the originating test organization.

(13) (Added)(DAF) The program office must continue to track open Deficiency Reports until they are corrected, or closed by the test organization. Do not close out Deficiency Reports due to lack of resources.

(14) (Added)(DAF) Final report briefings are provided to DAF staff and OSD, as requested. If the final report cannot be ready in time to support a key decision, the decision authority may instead accept a written summary report or a formal briefing.

(15) (Added)(DAF) For T&E oversight programs, AF/TE will help establish a new final report due date.

(16) (Added)(DAF) If a briefing is used, a separate written interim summary report is not required. Any additional data collected is added to the final report when available.

(17) (Added)(DAF) For MOT&E Final Reports, the lead OTO prepares a single MOT&E final report aggregating all OT&E information from the participating Services' inputs.

(a) (Added)(DAF) Each participating Service has the option of preparing its own supplemental report as an attachment to the single MOT&E report.

(b) (Added)(DAF) All significant differences between Service test results should be explained. This guidance also applies to testing with other DoD or Federal agencies. See *Supplement to the Memorandum of Agreement on Multi-Service Operational Test and Evaluation (MOT&E) and Operational Suitability Terminology and Definitions*.

(c) (Added)(DAF) A single integrated multi-Service report will be submitted no later than 90 calendar days after the official end of test is declared by the Lead OTA but no later than 45 calendar days prior to a milestone decision or the date announced for the final decision to proceed beyond LRIP.

(d) (Added)(DAF) Briefings will be provided to HQ USAF staff and OSD as requested.

(18) (Added)(DAF) For reporting Sufficiency of Test Review results, each MAJCOM or STARCOM may develop its own Sufficiency of Test Review report format

as needed. All conclusions and related recommendations based on the Sufficiency of Test Review will be formally documented. (T-1) All data and data sources used to conduct the Sufficiency of Test Review should be identified.

(19) (Added)(DAF) While not mandatory, the Capabilities and Limitations report is appropriate when a system or prototype is provided to units for training in preparation for fielding, or when the system is deployed directly to an operational unit.

(a) (Added)(DAF) A Capabilities and Limitations report may also be appropriate to support urgent operational need, Joint Urgent Operational Need requests, Joint Emergent Operational Need requests, or combat capability documents.

(b) (Added)(DAF) To ensure maximum flexibility, Capabilities and Limitations reports have no prescribed format. The level of detail provided varies depending on the amount of pre-existing information available, the warfighter's need for technical information, and the amount of time and resources available to conduct additional testing before the fielding decision.

(c) (Added)(DAF) The Capabilities and Limitations report should not make specific recommendations concerning the system fielding decision or release for training purposes. This report may be provided to DOT&E to support their requirement in 10 U.S.C. § 2399 for an early report to Congress.

(d) (Added)(DAF) Capabilities and Limitations reports are based on existing, verifiable T&E data (contractor, developmental, and operational) derived from all available system development, ground, and flight test activities. The goal is to help warfighters gain early knowledge of potential operational effectiveness and suitability of systems that have not yet completed OT.

(e) (Added)(DAF) Release of a Capabilities and Limitations report does not obviate the requirement for dedicated OT&E. Six months after publication of the Capabilities and Limitations report, the OTO should review program status to determine whether an updated Capabilities and Limitations report is necessary.

(f) (Added)(DAF) Capabilities and Limitations reports will not drive new testing requirements for a system.

(g) (Added)(DAF) All relevant data sources used to develop the Capabilities and Limitations report should be identified. Include a program description and a summary of the current phase of formal system testing.

(h) (Added)(DAF) The report should identify observed system capabilities and limitations and describe any areas of untested or unknown capabilities.

(i) (Added)(DAF) Suitability observations, interoperability considerations, and cyber issues should also be included.

(j) (Added)(DAF) The type and scope of planned, but not yet accomplished, testing should also be described.

(k) (Added)(DAF) If an OT event is in progress or recently completed, a status report or interim summary report may be more appropriate.

(20) (Added)(DAF) Operational testers send reports to the program stakeholders and Defense Technical Information Center as determined by the Integrated Test Team. For OT&E oversight programs, AF/TE will forward copies to DOT&E and DD(DTE&A).

(21) (Added)(DAF) For multi-Service programs, the other participating Services will be invited to any outbriefs.

(ADDED)(AFMC) ATTACHMENTS**(Added)(AFMC) AFMC LDTO Candidate Criteria.**

- a. **(Added)(AFMC) Does the proposed test organization possess a documented process for the test planning function to include test plan development, technical review, safety review, test hazard analysis, and test readiness reviews of the projects prior to test execution?**
- b. **(Added)(AFMC) Does the proposed test organization possess a documented process for accomplishing test execution?**
- c. **(Added)(AFMC) Does the proposed test organization possess a documented process for providing timely test results and deficiency reporting?**
- d. **(Added)(AFMC) Does the proposed test organization have documented evidence of possessing (or having access to) the appropriate manpower and resources necessary to accomplish test planning, test execution, and test reporting functions?**
- e. **(Added)(AFMC) Does the proposed test organization possess a qualified workforce with the requisite mission experience, T&E Acquisition Professional Development Program or DoD 8570.01-M, *Information Assurance Workforce Improvement Program*, credentials, and management expertise required to accomplish the proposed tests?**
- f. **(Added)(AFMC) Does the proposed test organization have the capability and capacity to accomplish the responsibilities described in Section 2.20? Has the proposed LDTO agreed to accept the test effort?**
- g. **(Added)(AFMC) Is the proposed test organization an inspectable unit, subject to compliance inspections by AFMC/IG or other Air Force or DoD inspection processes? If such LDTO is outside the Air Force, is there a similar self-inspection ability to monitor continued fitness for use with the Air Force test activity?**
- h. **(Added)(AFMC) Is the proposed test organization an independent and unbiased organization removed from any conflict-of-interest with the program office requesting the test support? Does the LDTO report to a management chain outside the Program Executive Officer for the SUT? If not, describe the degree of independence that exists.**
- i. **(Added)(AFMC) For Participating Test Organizations and contractor testing, does the proposed test organization have the ability to adequately manage and oversee their test planning, execution, and reporting?**

GLOSSARY

G.1. ACRONYMS.

ACRONYM	MEANING
AA	adversarial assessment
ACAT	acquisition category
(Added)(DAF) ACC	Air Combat Command
(Added)(DAF) AF	Air Force
(Added)(DAF) AFLCMC	Air Force Life Cycle Management Center
(Added)(DAF) AFJO	Air Force Joint Test Program Office
(Added)(DAF) AFI	Air Force Instruction
(Added)(DAF) AFMAN	Air Force Manual
(Added)(DAF) AFMC	Air Force Materiel Command
(Added)(DAF) AFMD	Air Force Mission Directive
(Added)(DAF) AFOTEC	Air Force Operational Test and Evaluation Center
(Added)(DAF) AFSSI	Air Force Systems Security Instruction
(Added)(DAF) AFTC	Air Force Test Center
(Added)(DAF) ATEC	Army Test and Evaluation Command
(Added)(DAF) BCAT	Business Category
CDT	chief developmental tester
(Added)(DAF) CJCSI	Chairman of the Joint Chiefs of Staff Instruction
(Added)(DAF) CNSSI	Committee on National Security Systems Instruction
CONOPS	concept of operations
(Added)(DAF) COTS	Commercial Off-The-Shelf
(Added)(DAF) CSO	Chief of Space Operations
CVPA	cooperative vulnerability and penetration assessment
DAE	Defense Acquisition Executive
(Added)(DAF) DAFPAM	Department of the Air Force Pamphlet
DBS	defense business system
(Added)(DAF) DD(DTE&A)	Deputy Director, Developmental Test, Evaluation, and Assessment
DEF	developmental evaluation framework
(Added)(DAF) DevSecOps	Development, Security and Operations
(Added)(DAF) DoD	Department of Defense
DoDD	DoD directive
DoDI	DoD instruction
DOT&E	Director of Operational Test and Evaluation
DT	developmental test
DT&E	developmental test and evaluation
DTIC	Defense Technical Information Center

(Added)(DAF) DTM	Directive-Type Memorandum
EOA	early operational assessment
(Added)(DAF) FDE	Force Development Evaluation
(Added)(DAF) FLDCOM	Field Command
(Added)(DAF) FOT&E	Follow-on Operational Test and Evaluation
FRP	full-rate production
(Added)(DAF) GFE	Government-Furnished Equipment
(Added)(DAF) HAFMD	Headquarters Air Force Mission Directive
(Added)(DAF) HQ	Headquarters
IDSK	integrated decision support key
IOT&E	initial operational test and evaluation
(Added)(DAF) IS	Information Systems
(Added)(DAF) ISR	Intelligence, Surveillance, and Reconnaissance
IT	information technology
(Added)(DAF) JITC	Joint Interoperability Test Command
KPP	key performance parameter
(Added)(DAF) LDTO	Lead Developmental Test and Evaluation Organization
LFT&E	live fire test and evaluation
LFTP	live fire test plan
LRIP	low-rate initial production
LTO	lead test organization
(AddedD)(DAF) M&S	Modeling and Simulation
(Added)(DAF) MAJCOM	Major Command
(Added)(DAF) MBCRA	Mission-Based Cyber Risk Assessment
(Added)(DAF) MCOTEA	Marine Corps Operational Test and Evaluation Agency
MDA	milestone decision authority
MDAP	Major Defense Acquisition Program
(Added)(DAF) MIL-HDBK	Military Handbook
(Added)(DAF) MOT&E	Multiservice Operational Test and Evaluation
(Added)(DAF) MRAP-C	Mission-based Risk Assessment Process for Cyber
MS B	Milestone B
MS C	Milestone C
MTA	middle tier of acquisition
NAVWAR	navigation warfare
(Added)(DAF) NDI	Non-Developmental Items
(Added)(DAF) NSS	National Security System
OA	operational assessment

(Added)(DAF) OCR	Office of Collateral Responsibility
OEf	operational evaluation framework
(Added)(DAF) OPR	Office of Primary Responsibility
ops demo	operational demonstration
(Added)(DAF) OPTEVFOR	Operational Test and Evaluation Force
(Added)(DAF) OSD	Office of the Secretary of Defense
OT	operational test
OT&E	operational test and evaluation
OTA	operational test agency
(Added)(DAF) OTO	Operational Test Organization
OTP	operational test plan
(Added)(DAF) PEO	Program Executive Officer
(Added)(DAF) PEM	Program Element Monitor
(Added)(DAF) PIT	Platform Information Technology
PM	program manager
PNT	positioning, navigation, and timing
(Added)(DAF) PTO	Participating Test Organization
(Added)(DAF) PQDR	Product Quality Deficiency Report
(Added)(DAF) QOT&E	Qualification Operational Test and Evaluation
RFP	request for proposal
RMF	Risk Management Framework
(Added)(DAF) SAF	Secretary of the Air Force
(Added)(DAF) SF	Standard Form
(Added)(DAF) SSC	Space Systems Command
(Added)(DAF) STARCOM	Space Training and Readiness Command
(Added)(DAF) STINFO	Scientific and Technical Information
(Added)(DAF) STP	Space Test Program
T&E	test and evaluation
(Added)(AFMC) TEA	Test Execution Authority
TEMP	test and evaluation master plan
(Added)(DAF) TO	Technical Order
(Added)(DAF) TTP	Tactics, Techniques, and Procedures
(Added)(DAF) USAF	United States Air Force
(Added)(DAF) USAFWC	United States Air Force Warfare Center
(Added)(DAF) USSF	United States Space Force
U.S.C.	United States Code
USD(A&S)	Under Secretary of Defense for Acquisition and
Sustainment	
USD(R&E)	Under Secretary of Defense for Research and
Engineering	
VV&A	verified, validated, and accredited

WIPT

Working-level Integrated Product Team

G.2. DEFINITIONS.

These terms and their definitions are for the purpose of this issuance.

TERM	DEFINITION
DEF	Identifies key data that will contribute to assessing system performance, interoperability, cybersecurity, reliability, and maintainability; the DEF shows the correlation and mapping between technical requirements, decision points, and data requirements.
IDSK	A table that identifies DT, OT, and LF data requirements needed to inform critical acquisition and engineering decisions (e.g., milestone decisions, key integration points, and technical readiness decisions). OT&E and DT&E will use the IDSK to independently develop evaluation frameworks or strategies that will show the correlation and mapping between evaluation focus areas, critical decision points, and specific data requirements.
integrated testing	A concept that capitalizes on the idea that test events can be planned and executed to provide data for developmental, operational, and live fire evaluations.
modern software development practices	Practices (e.g., Lean, Agile, DevSecOps) that focus on rapid, iterative development and delivery of software with active user engagements. Small cross-functional software development teams integrate planning, design, development, testing, security, delivery, and operations with continuous improvement to maximize automation and user value.
OA	A test event that is conducted before initial production units are available and incorporates substantial operational realism.
OEF	Summarizes the mission-focused evaluation methodology and supporting test strategy, including the essential mission and system capabilities that contribute to operational effectiveness, operational suitability, and survivability (including cybersecurity) or lethality. It also aids integrated testing by identifying opportunities for using DT data for OT evaluation and using OT data in IT interoperability evaluation.
ops demo	An event that supports the production decisions by the decision authority.
pedigree of data	Accurately documenting the configuration of the test asset and the actual test conditions under which each element of test data were

obtained. It indicates whether the test configuration represented operationally realistic or representative conditions.

TEMP

A signed agreement among the USD(R&E) or their designee, DOT&E, senior DoD Component leadership, the lead DT&E organization, the lead OTA, the MDA, and the PM.

T&E oversight list

A list of programs under DT, OT, or LFT&E oversight.

(Added)(DAF) For additional terms and definitions not listed below, see *DoD Dictionary of Military and Associated Terms*, and Air Force Doctrine Annex, *Air Force Glossary*, which contain standardized terms and definitions for DoD and DAF use.

(Added)(DAF) These terms and definitions are DAFI 99-103 adds.

Accreditation

The official determination that a model or simulation is acceptable for use for a specific purpose.

Acquisition Category

Acquisition categories determine the level of review, decision authority, and applicable T&E policies and procedures. They facilitate decentralized decision making and execution, and compliance with statutorily imposed requirements. See DoDI 5000.85, *Major Capability Acquisition*, for the defined threshold levels.

Agile Software Development

A group of software development methodologies based on iterative and incremental development where requirements and solutions evolve through highly collaborative, self-organizing, cross-functional teams. Also, an iterative development approach that focuses on mature technologies, continuous testing, test-driven development, continuous user involvement, and requirements definition.

Availability

A measure of the degree to which an item is in the operable and committable state at the start of a mission when the mission is called for at an unknown (random) time.

Build

A testable, integrated subset of the overall capability, which together with clearly defined decision criteria, ensures adequate progress is being made before fully committing to subsequent builds. Several software builds are typically necessary to achieve a deployable capability such as a release. Each build has allocated requirements, resources, and scheduled testing to align dependencies with subsequent builds and to produce testable functionality to ensure that progress is being achieved. A build is a developmental increment (version) of the system or software.

Business Category

Business categories determine the level of review, decision

	authority, and applicable T&E policies and procedures. They facilitate decentralized decision making and execution, and compliance with statutorily imposed requirements. See DoDI 5000.75 for the defined threshold levels.
Capabilities and Limitations Report	An optional, quick-look report of limited scope that operational testers provide to operational commands and operational units to support rapid and/or early fielding of developing capabilities before dedicated operational testing is complete and formal production begins. It provides the most current operational test perspectives on system capabilities and limitations based on testing done to date, and describes any untested or unknown areas.
Capabilities-Based Testing	A mission-focused strategy for T&E for verifying that a capabilities solution will enable operations at an acceptable level of risk. Capabilities oriented evaluations are the primary Test and Evaluation methodology throughout system testing, but traditional evaluations of system performance measured against specification-like requirements are also used. Capabilities-based testing requires understanding operational concepts and involves developing strategies for T&E and plans to determine whether a capability solution option merits fielding.
Category I Deficiency	Those deficiencies which may cause death, severe injury, or severe occupational illness; may cause loss or major damage to a weapon system; critically restrict the combat readiness capabilities of the using organization; or which would result in a production line stoppage, and for which there is no viable work-around.
Category II Deficiency	Those deficiencies that impede or constrain successful mission accomplishment (system does not meet minimum operational requirements but does not meet the safety or mission impact criteria of a Category I deficiency). It may also be a condition that complements, but is not absolutely required for, successful mission accomplishment. The recommended enhancement, if incorporated, will improve a system's operational effectiveness or suitability.
Center Test Functional Leader	The senior individual responsible for overseeing/managing T&E functional processes and policy across the Center. Also responsible for managing the functional workforce, to include planning, advocating for Center resources, identifying workforce competencies/gaps and providing highly skilled T&E personnel to their supported organizations.
Charter	Formal document that helps set the stage for the rest of the

acquisition process. Establishing the Charter helps to focus the acquisition team on the objectives of the effort. The purpose of a charter is to develop a structure to assign accountability and responsibilities for team members and to empower the team through senior stakeholder(s) approval and commitment. A charter could address the following: team purpose, description, and objectives; team deliverables; team membership, roles, and responsibilities; overall team responsibility; team's authority; operating agreements; rules of internal team communication; critical success factors; sign-off and approvals.

Chief Developmental Tester	A designated government T&E professional in a ACAT I or BCAT I program office reporting to the PM to coordinate, plan, and manage all DT&E activities, to include contractor testing, and who makes technically informed, objective judgments about DT&E results. For ACAT II/III, BCAT II/III, MTA, or software acquisition programs, this person is known as the Test Manager.
Common T&E Database	A repository of all available T&E data for a single acquisition program or system under test that is accessible to all program stakeholders with a need to know.
Covered System	DoD term that is intended to include all categories of systems or programs requiring Live Fire Test and Evaluation. A covered system means a system that the Director, Operational Test and Evaluation, acting for the Secretary of Defense, has designated for LFT&E oversight.
Covered Product Improvement Program	See Covered System.
Critical Operational Issue	Operational effectiveness and operational suitability issues (not parameters, objectives, or thresholds) that must be examined during operational testing to determine the system's capability to perform its mission. A key question to be answered by operational testers when evaluating a system's overall operational effectiveness, suitability, and operational capabilities.
Critical Technical Parameter	Measurable critical system characteristics that, when achieved, allow the attainment of operational performance requirements. They are technical measures derived from user requirements. Failure to achieve a critical technical parameter should be considered a reliable indicator that the system is behind in the planned development schedule or will likely not achieve an operational requirement.

Critical Component	A component which is or contains Information and Communications Technology, including hardware, software, and firmware, whether custom, commercial, or otherwise developed, and which delivers or protects mission critical functionality of a system or which, because of the system's design, may introduce vulnerability to the mission critical functions of an applicable system.
Critical Program Information	Refers to the United States capability elements that contribute to the warfighters' technical advantage, which if compromised, undermine United States military preeminence.
Cyber-Attack	Actions taken in cyberspace that create noticeable denial effects (i.e., degradation, disruption, or destruction) in cyberspace or manipulation that leads to denial that appears in a physical domain, and is considered a form of fires.
Cyber-Contested Environment	An operational environment where U.S. adversaries are known to have the capability and intent to attack the hardware, software, firmware, and communications of U.S. information systems (IS) and platform information technology (PIT).
Cyber Testing	The testing of systems and sub-systems that operate in the cyberspace domain, and the access pathways to such systems that are part of DoD weapon systems. Cyber testing includes cybersecurity testing (with associated Risk Management Framework processes) and cyber resiliency testing.
Cybersecurity	Prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and nonrepudiation.
Cybersecurity Testing	The testing of the systems' and sub-systems' ability to protect or defend against a cyber-attack. Cybersecurity testing focuses on identifying and eliminating or mitigating system cyber vulnerabilities. It is scoped through assessing a system's cyber boundary and risk to mission assurance. Risk analysis, at a minimum, should consider the threat and threat severity, the likelihood of attack, system vulnerabilities, and potential mission impacts. Cybersecurity is evaluated based on the Security Assessment Plan, Program Protection Plan, Information Support Plan, and Risk Management Framework artifacts.
Cyber Resiliency Testing	The testing of the systems' and sub-systems' ability to protect, mitigate and recover from a cyber-attack if cybersecurity

	defensive protections are defeated. Cyber resiliency testing evaluates a system's ability to meet operational requirements while under cyber-attack. Cyber resiliency testing focuses on detection and response to a successful cyber-attack and the continuity, recovery and restoration of data and system functionality. Cyber resiliency testing also evaluates the operators' ability to continue mission execution if system restoration/recovery is impossible or impractical.
Cyberspace	The interdependent network of information technology infrastructures, and includes the Internet, telecommunications networks, computer systems, and embedded processors and controllers in critical industries. Cyberspace is a contested domain and provides the opportunity for asymmetric actions that generate effects across the physical domains.
Deficiency Report	The generic term used within the USAF to record, submit, and transmit deficiency data which may include, but is not limited to, a Deficiency Report involving quality, materiel, software, warranty, or informational deficiency data submitted using Standard Form 368, <i>Product Quality Deficiency Report (PQDR)</i> , or equivalent format.
Deployment	The relocation of forces and materiel (to include software deployment) to desired operational areas.
Developmental Test And Evaluation	T&E conducted to evaluate design approaches, validate analytical models, quantify contract technical performance and manufacturing quality, measure progress in system engineering design and development, minimize design risks, predict integrated system operational performance (effectiveness and suitability) in the intended environment, and identify system problems (or deficiencies) to allow for early and timely resolution. DT&E includes contractor testing and is conducted over the life of the system to support acquisition and sustainment efforts.
Developmental Test And Evaluation Sufficiency Assessment	Assessment of the sufficiency of Developmental Test and Evaluation in the Milestone B and Milestone C brief summary reports provided to the congressional defense committees and, in the case of intelligence or intelligence related activities, the congressional intelligence committees. The Milestone B sufficiency assessment will address the sufficiency of: the DT&E plans, schedule, resources, mitigation of known risks, and test criteria for entering production phase. The Milestone C sufficiency assessment will address the sufficiency of: DT&E completed, plans and resources available for remaining DT&E, mitigation of risks identified, and readiness of the system to

	perform scheduled IOT&E.
DevSecOps	DevSecOps is a software engineering culture and practice that aims at unifying software development (Dev), security (Sec) and operations (Ops). The main characteristic of DevSecOps is to automate, monitor, and apply security at all phases of software development: plan, develop, build, test, release, deliver, deploy, operate, and monitor.
Early Operational Assessment	An operational assessment conducted before Milestone B. An EOA assesses the design approach sufficiently early in the acquisition process to assure it has the potential to fulfill user requirements.
Enhancement	A condition that improves or complements successful mission accomplishment but is not absolutely required. The recommendation, if incorporated, will enhance a system's operational safety, suitability and/or effectiveness. An enhancement report should not be designated as such solely due to an "out-of-scope" effort with respect to contractual requirements.
Evaluation Criteria	Standards by which the accomplishment of required technical and operational effectiveness and/or suitability characteristics, or resolution of operational issues, may be addressed.
Executing Test Organization	Test organization, usually at the squadron level, accomplishing Developmental Test under supervision of the LDTO.
Fielding Decision	The decision to acquire and/or release a system to users in the field.
First Article Test	Production testing that is planned, conducted, and monitored by the materiel developer. First article test includes pre-production and initial production testing conducted to ensure that the contractor can furnish a product that meets the established technical criteria.
Foreign Comparative Test	A DoD T&E program that is prescribed in 10 U.S.C. § 2350a(g), and is centrally managed by the Directorate of Defense Research and Engineering for Advanced Capabilities, Office of the Under Secretary of Defense (Research and Engineering) (USD(R&E)). It provides funding for U.S. T&E of selected equipment items and technologies developed by allied countries when such items and technologies are identified as having good potential to satisfy valid DoD requirements.
Force Development	A type of OT&E performed by OTOs in support of MAJCOM

Evaluation	or STARCOM-managed system acquisition-related decisions prior to initial fielding, or for MAJCOM or STARCOM sustainment or upgrade activities.
Full-Up, System-Level Testing	Testing that fully satisfies the statutory requirement for “realistic survivability testing” or “realistic lethality testing” as defined in 10 U.S.C. § 2366.
Implementing Command	AFMC and STARCOM. The command providing the majority of resources in direct support of the PM responsible for development, production, and sustainment activities. Such resources include technical assistance, infrastructure, test capabilities, laboratory support, professional education, training and development, management tools, and all other aspects of support, including support for product development and DT&E.
Increment	A formal acquisition effort approved by the milestone decision authority. Each increment may have one or more releases constituting a change to the fielded hardware and software baseline or a militarily useful and supportable operational capability that can be effectively developed, produced or acquired, deployed, and sustained. Each increment of capability will have its own set of threshold and objective values set by the user.
Information Support Plan	The identification and documentation of information needs, infrastructure support, information technology and national security systems interface requirements and dependencies focusing on net-centric, interoperability, supportability and sufficiency concerns.
Integrated Product Support Elements	A composite of all support considerations necessary to ensure the effective and economical support of a system for its life cycle. It is an integral part of all other aspects of system acquisition and operation. Note: The twelve product support elements are: product support management; design interface; sustaining engineering; maintenance planning and management; packaging, handling, storage and transportation; technical data; support equipment; training and training support; manpower and personnel; facilities and infrastructure; and information technology systems continuous support.
Integrated Testing	The collaborative planning and collaborative execution of test phases and events to provide shared data in support of independent analysis, evaluation and reporting by all stakeholders, particularly the developmental (both contractor and government) and OT&E communities.

Integrated Test Team	A cross-functional team of empowered representatives from multiple disciplines and organizations and co-chaired by operational testers and the PM. The Integrated Test Team is responsible for developing the strategy for T&E, TEMP or test strategy, assisting the acquisition community with T&E matters, and guiding the development of test plans that are integrated. Note: The Integrated Test Team is the DAF equivalent to the T&E WIPT.
Joint Capability Technology Demonstration	Joint Capability Technology Demonstrations fill the gap between science and technology and acquisition for the combatant commands. Joint Capability Technology Demonstrations focus on resolving the joint, combined, coalition, and interagency warfighting and operational problems of the combatant commands within a 1- to 3- year timeline. Joint Capability Technology Demonstrations resolve problems primarily by conducting technology and operational demonstrations and operational utility assessments of mature technology/solutions (Technology Readiness Level 5-7) and transitioning them to the acquisition community for post-Joint Capability Technology Demonstration development, production, fielding, and operation and maintenance.
Joint Test and Evaluation	An OSD-sponsored T&E program conducted among more than one military Service to provide T&E information on combat operations issues and concepts. Joint Test and Evaluation does not support system acquisition.
Lead Command	The command designated to advocate for a weapon system and respond to issues addressing its status and use. Advocacy includes capabilities-based planning, programming, and budgeting for designated system-wide unique equipment, upgrades/modifications, initial spares and other weapon system-unique logistics issues, and FOT&E. Inherent in lead command responsibility is also the responsibility for support systems and equipment directly associated with a particular weapon system.
Lead Developmental Test and Evaluation Organization	The LDTO functions as the lead integrator for a program's DT&E activities. It is separate from the program office, but supports the PM and Integrated Test Team in a provider-customer relationship with regard to scope, type and conduct of required DT&E. The LDTO assists the CDT with oversight of contractor DT&E results and managing studies, analyses and program documentation from the requirements, acquisition and cyber test communities. The LDTO is selected from the list of qualified candidates published by AFMC and USSF/TE.
Lethality	The capability of a munition or directed energy weapon to cause

	damage that will cause the loss or a degradation in the ability of a target system to complete its designated mission(s).
Life Cycle Sustainment Plan	The Life Cycle Sustainment Plan describes the plan for the integration of sustainment activities into the acquisition strategy and operational execution of the product support strategy.
Lot Acceptance Test	A test based on a sampling procedure to ensure that the product retains its quality. No acceptance or installation should be permitted until this test for the lot has been successfully completed.
Low-Rate Initial Production	Production of the system in the minimum quantity necessary to provide production-configured or representative articles for operational tests pursuant to 10 U.S.C. § 2399, to establish an initial production base for the system, and to permit an orderly increase in the production rate for the system sufficient to lead to full-rate production upon the successful completion of operational testing. Note: The Low-Rate Initial Production quantity should not exceed 10 percent of the total number of articles to be produced as determined at the Milestone B decision.
Maintainability	The capability of an item to be retained in or restored to a specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and routines, at each prescribed level of maintenance and repair.
Major Munitions Program	See covered system.
Measurable	Having qualitative or quantitative attributes (e.g., dimensions, velocity, capabilities) that can be ascertained and compared to known standards. See Testable.
Military Utility	The military worth of a system performing its mission in a competitive environment including versatility (or potential) of the system. It is measured against the operational concept, operational effectiveness, safety, security, and cost/worth. Military utility estimates form a rational basis for making management decisions.
Military Utility Assessment	A determination of how well a capability or system in question responds to a stated military need, to include a determination of its potential effectiveness and suitability in performing the mission. It is a "characterization" of the capability or system as determined by measures of effectiveness, measures of suitability,

	measures of performance, and other operational considerations as indicators of military utility, as appropriate, and answers the questions, "What can it do?" and "Can it be operated and maintained by the user?"
Mission-Based Cyber Risk Assessment (MBCRA)	Process for identifying, assessing, estimating, and prioritizing risks based on impacts to DoD operational missions resulting from cyber effects on the system(s) employed.
Mission-based Risk Assessment Process for Cyber (MRAP-C)	An integrated and tailorable MBCRA process which aligns with Systems Security Engineering processes and fulfills the DoD Cybersecurity test and Evaluation Phase 1 and Phase 2 objectives. MRAP-C defines an integrated and iterative methodology to identify potential cyber risks. The MRAP-C is iteratively executed by an integrated team comprised of members from the Program Management Office, developmental, operational, and cybersecurity test agencies, and intelligence, risk management, and operational communities throughout the acquisition lifecycle to inform key decision points as the system matures. Detailed MRAP-C information is posted on the AF Portal at: https://www.my.af.mil/gcss-af/USAF/site/MRAP-C .
Mission-Oriented	The action of aligning to the operational purposes. Mission-oriented test readiness is the process or product that confirms the system under test will work in its intended operational environment.
Modification	For the purposes of this instruction, a modification is defined as an alteration to the form, fit, function, or interface (F3I) of an in-service DAF hardware or software Configuration Item.
Multi-Service	Involving two or more military Services or DoD components
Objective	An operationally significant increment above the threshold. An objective value may be the same as the threshold when an operationally significant increment above the threshold is not significant or useful.
Operating Concept	A description in broad terms of the application of military art and science within a defined set of parameters. In simplest terms, operating concepts articulate how a commander will plan, prepare, deploy, employ or sustain a joint force against potential adversaries within a specified set of conditions. Operating concepts encompass the full scope of military actions required to achieve a specific set of objectives.
Operational	Air Combat Command, Air Mobility Command, AF Special

Command	Operations Command, Air Education and Training Command, Air Force Global Strike Command, and Space Operations Command. Those commands that will ultimately operate, or are operating, a system, subsystem, or item of equipment.
Operational Effectiveness	Measure of the overall ability of a system to accomplish a mission when used by representative personnel in the environment planned or expected for operational employment of the system, considering organization, doctrine, tactics, supportability, survivability, vulnerability, and threat.
Operational Environment	A composite of the operational conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander.
Operational Suitability	The degree to which a system can be placed and sustained satisfactorily in field use with consideration being given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, safety, human factors, habitability, manpower, logistics supportability, natural environmental effects and impacts, documentation, and training requirements.
Operational Test Agency	An independent agency reporting directly to the Service Chief that plans and conducts operational tests, reports results, and provides evaluations of overall operational capability of systems as determined by effectiveness, suitability, and other operational considerations. Each Service has one designated Operational Test Agency which are as follows. The DAF has the Air Force Operational Test and Evaluation Center (AFOTEC). The Navy has the Operational Test and Evaluation Force (OPTEVFOR). The Army has the Army Test and Evaluation Command (ATEC). The Marine Corps has the Marine Corps Operational Test and Evaluation Agency (MCOTEA).
Operational Test Organization	A generic term for any organization that conducts operational testing as stated in its mission directive.
Operational Utility Assessment	Operational Utility Assessments assess the military utility of a system in support of Joint Concept Technology Demonstration and experimentation programs when exposed to representative threats while being operated and maintained in a realistic operational environment by typical operators and maintainers. Operational utility assessments require operational experience to apply judgment and place system performance in the context of intended operations.
Operational Utility	Evaluations of military capabilities conducted to demonstrate or

Evaluation	validate new operational concepts or capabilities, upgrade components, or expand the mission or capabilities of existing or modified systems. AFOTEC, MAJCOMs, or STARCOM may conduct Operational Utility Evaluations whenever a dedicated OT&E event is required, but the full scope and rigor of a formal IOT&E Qualification Operational Test and Evaluation, FOT&E, or FDE is not appropriate or required. Operational Utility Evaluations may be used to support operational decisions (e.g., fielding a system with less than full capability) or acquisition-related decisions (e.g., low-rate production) when appropriate throughout the system. Operational Utility Evaluations will not be used when IOT&E, Qualification Operational Test and Evaluation, FOT&E, or FDE are more appropriate per existing guidance and definitions.
Operator	See “User.” Refers to the operating command which is the primary command operating a system, subsystem, or item of equipment. Generally, applies to those operational commands or organizations designated by DAF Headquarters to conduct or participate in operations or operational testing, interchangeable with the term "using command" or “user.” In other forums the term “warfighter” or “customer” is often used. “User” is the preferred term in this DAFI.
Oversight	Senior executive-level monitoring and review of programs to ensure compliance with policy and attainment of broad program goals.
Participating Test Organization	Any test organization required to act in a supporting role to the Executing Test Organization, OTO, or LDTO by providing specific T&E data or resources for a T&E program or activity.
Pre-production qualification test	The formal contractual tests that ensure design integrity over the specified operational and environmental range. These tests usually use prototype or preproduction hardware fabricated to the proposed production design specifications and drawings. Such tests include contractual reliability and maintainability demonstration tests required prior to production release.
Product Support	A continuous and collaborative set of activities that establishes and maintains readiness and the operational capability of a system, subsystem, or end-item throughout its life cycle to meet its availability and wartime usage requirements. Planned product support includes the following: test, measurement, and diagnostic equipment; spare and repair parts; technical data; support facilities; transportation requirements; training; manpower; and software.

Production Acceptance T&E	T&E of production items to demonstrate that items procured fulfill requirements and specifications of the procuring contract or agreements.
Production Qualification Test	A technical test conducted prior to the full rate production decision to ensure the effectiveness of the manufacturing processes, equipment, and procedures. These tests are conducted on a number of samples taken at random from the first production lot, and are repeated if the manufacturing process or design is changed significantly, or when a second source is brought on line.
Program Element Monitor	The individual from the Secretariat or DAF Staff who has overall responsibility for the program element and who harmonizes program documentation.
Program Manager	The designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. The PM shall be accountable for credible cost, schedule, and performance reporting to the MDA. Applies collectively to system program directors, product group managers, single managers, acquisition PMs, and weapon system managers. Operating as the single manager, the PM has total life cycle system management authority. Note: This DAFI uses the term "PM" for any designated person in charge of acquisition activities, to include those prior to Milestone A (i.e., before a technology project is officially designated an acquisition program) or in the design phase for other adaptive acquisition pathways.
Prototype	A model suitable for evaluation of design, performance, and production potential. Note: The DAF uses prototypes during development of a technology project or acquisition program for verification or demonstration of technical feasibility. Prototypes are not usually representative of the final production item.
Recoverability	Following combat damage, the ability to take emergency action to prevent loss of the system, to reduce personnel casualties, or to regain weapon system combat mission capabilities.
Release	A distinct, tested, deployable software element of a militarily useful capability to the government. A release is an increment (version) of the system/software that is transferred from one organization to another.
Relevant Environment	The specific subset of the operational environment that is required to demonstrate critical "at risk" aspects of the final

	product performance in an operational environment. It is an environment that focuses specifically on stressing the technology in question. Not all systems, subsystems, and/or components need to be operated in the operational environment in order to satisfactorily address performance margin requirements. Note: A relevant environment is required for Technology Readiness Levels 5 and 6.
Reliability	The capability of a system and its parts to perform its mission without failure, degradation, or demand on the support system.
Research, Development, Test, and Evaluation	The type of funding appropriation (3600) intended for research, development, test, and evaluation efforts. Note: The term “research and development” broadly covers the work performed by a government agency or the private sector. “Research” is the systematic study directed toward gaining scientific knowledge or understanding of a subject area. “Development” is the systematic use of the knowledge and understanding gained from research for the production of useful materials, devices, systems, or methods. Research, Developmental, Test, and Evaluation includes all supporting test and evaluation activities.
Risk	A measure of the inability to achieve program objectives within defined cost and schedule constraints. Risk is associated with all aspects of the program, e.g., threat, technology, design processes, or Work Breakdown Structure elements. It has two components: the probability of failing to achieve a particular outcome, and the consequences of failing to achieve that outcome.
Simulator Certification	The process of ensuring through validation of hardware and software baselines that a training system and its components provide accurate and credible training. The process also makes sure the device continues to perform to the delivered specifications, performance criteria, and configuration levels. It will also set up an audit trail regarding specification and baseline data for compliance and subsequent contract solicitation or device modification.
Simulator Validation	The process for comparing a training device’s operating parameters and performance to the current intelligence assessment of a weapon system, threat, and interaction between the weapon system and threat, and documenting the differences and impacts. This process includes generation and deployment of an intelligence data baseline of the system, comparison of simulator characteristics and performance, support for the modification and upgrade of the simulator, a comparison of

	simulator and threat operating procedures, and correction of any significant deficiencies. Uncorrected deficiencies are identified and published in validation reports. The process continues throughout the life cycle of the simulator.
Specification	A document intended primarily for use in procurement which clearly and accurately describes the essential technical requirements for items, materials, or services, including the procedures by which it will be determined that the requirements have been met. Specifications may be prepared to cover a group of products, services, or materials, or a single product, service, or material, and are general or detail specifications.
Strategy for T&E	A high-level conceptual outline of all T&E required to support development and sustainment of an acquisition program.
Sufficiency of Test Review	An examination by OTOs of all available test data to: (1) determine if adequate testing has been accomplished for programs of limited scope and complexity; and (2) to assess the risk of fielding or production without a dedicated Operational Test and Evaluation. An examination of existing test data, not an operational test per se.
Survivability	The capability of a system and crew to avoid or withstand a man-made hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission. Survivability consists of susceptibility, vulnerability, and recoverability.
Susceptibility	The degree to which a weapon system is open to effective attack due to one or more inherent weaknesses. (Susceptibility is a function of operational tactics, countermeasures, probability of enemy fielding a threat, etc.) Susceptibility is considered a subset of survivability.
Sustainment	Activities that sustain systems during the operations and support phases of the system life cycle. Such activities include any investigative T&E that extends the useful military life of systems, expands the current performance envelope or capabilities of fielded systems or modifies/acquires support equipment for the system. Sustainment activities also include T&E for modifications and upgrade programs, and may disclose system or product deficiencies and enhancements that make further acquisitions necessary.
Testable	The attribute of being measurable and repeatable with available test instrumentation and resources. Note: Testability is a broader concept indicating whether T&E infrastructure

	capabilities are available and capable of measuring the parameter. The difference between testable and measurable may indicate a test limitation. Some requirements may be measurable but not testable due to T&E infrastructure shortfalls, insufficient funding, safety, or statutory or regulatory prohibitions.
Test and Evaluation	The act of generating empirical data during the research, development or sustainment of systems, and the creation of information through analysis that is useful to technical personnel and decision makers for reducing design and acquisition risks. The process by which systems are measured against requirements and specifications, and the results analyzed so as to gauge progress and provide feedback.
Test and Evaluation Master Plan	Documents the overall structure and objectives of the T&E program. It provides a framework within which to generate detailed T&E plans and it documents schedule and resource implications associated with the T&E program. The TEMP identifies the necessary developmental, operational, and live-fire test activities. It relates program schedule, test management strategy and structure, and required resources to: Critical Operational Issues; Critical Technical Parameters; objectives and thresholds documented in the requirements document; and milestone decision points. A test strategy is the same as a TEMP for programs not on the major capability acquisition adaptive acquisition framework pathway.
Test and Evaluation Organization	Any organization whose designated mission includes test and evaluation.
Test and Evaluation oversight	A program on the T&E Oversight List for DT&E, LFT&E, and/or OT&E. The list includes Major Defense Acquisition Programs (e.g., ACAT I or BCAT I) and any other programs selected for T&E oversight in accordance with AFI 63-101_20-101. These programs require additional documentation and have additional review, reporting, and approval requirements.
Test Deferral	The movement or delay of testing and/or evaluation of a specific critical technical parameter, operational requirement, or critical operational issue to a follow-on increment or later test period. A test deferral does not change the requirement to test a system capability or function.
Test Director	A person responsible for coordinating, leading, and executing a test and reporting the results according to a specific test plan.
Test Integrated	Any temporary group consisting of testers and other experts

Product Team	who are focused on a specific test issue or problem. There may be multiple Test Integrated Product Teams for each acquisition program/project.
Test Limitation	Any condition that hampers but does not preclude adequate test and/or evaluation of a critical technical parameter, operational requirement, or critical operational issue during a T&E program.
Test Manager	A designated government T&E professional in a ACAT II, ACAT III, BCAT II, BCAT III, MTA, or software acquisition pathway program office selected to coordinate, plan, and manage all DT&E activities, to include contractor testing, and who makes technically informed, objective judgments about DT&E results. See CDT for CDT definition.
Test Resources	A collective term that encompasses all elements necessary to plan, conduct, and collect/analyze data from a test event or program. Elements include test funding and support manpower (including temporary duty costs), test assets (or units under test, test asset support equipment, technical data, simulation models, test data analysis software, test beds, threat simulators, surrogates and replicas, special instrumentation peculiar to a given test asset or test event, targets, tracking and data acquisition, instrumentation, equipment for data reduction, communications, meteorology, utilities, photography, calibration, security, recovery, maintenance and repair, frequency management and control, and base/facility support services.
Test Resource Plan	The single program document AFOTEC uses to request personnel and other resource support for OT&E from MAJCOMs, STARCOM, and other agencies.
Test Team	A group of testers and other experts who carry out integrated testing according to a specific test plan. Note: A combined test force is one way to organize a test team for integrated testing.
Threshold	A minimum acceptable operational value below which the utility of the system becomes questionable.
Trusted Systems and Networks	A comprehensive systematic approach that analyzes threats, vulnerabilities, and mitigation strategies to preserve mission assurance.
User	Refers to the operating command which is the primary command operating a system, subsystem, or item of equipment. Generally, applies to those operational commands or

organizations designated by DAF Headquarters to conduct or participate in operations or operational testing, interchangeable with the term "using command" or "operator." In other forums the term "warfighter" or "customer" is often used. Also refers to maintainers. "User" is the preferred term in this DAFI.

Validation	The process of evaluating a system or software component during, or at the end of, the development process to determine whether it satisfies specified requirements.
Verification	Confirms that a system element meets design-to or build-to specifications. Throughout the system's life cycle, design solutions at all levels of the physical architecture are verified through a cost-effective combination of analysis, examination, demonstration, and testing, all of which can be aided by modeling and simulation.
Verification, Validation and Accreditation	A continuous process in the life cycle of a model or simulation as it gets upgraded or is used for different applications.
Vulnerability	The characteristic of a system that causes it to suffer a definite degradation (loss or reduction of capability to perform its designated mission) as a result of having been subjected to a certain (defined) level of effects in an unnatural (man-made) hostile environment. Vulnerability is considered a subset of survivability.
(Added)(AFMC) These terms and definitions are DAFI 99-103 AFMC Supplement adds.	
Safety Review Board	An independent panel of subject knowledgeable individuals that review the test safety plan to ensure test hazards are identified; then eliminated, minimized or controlled to an acceptable level; and to establish the overall risk level.
Test Execution Authority	The government individual responsible for accepting the Safety Review Board and Technical Review Board results and approving the test to proceed with any residual risk.
Technical Review Board	A board convened to review test objectives, refine test plans, and assess the overall technical soundness of the test / experimental design.

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