BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 10-217

22 DECEMBER 2023

Operations

MANAGEMENT OF AIR FORCE OPERATIONAL TRAINING AND UNDERGRADUATE AIRCREW TRAINING SYSTEMS

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e- Publishing website at www.e-Publishing.af.mil for downloading or ordering.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: AF/A3TI

Certified by: AF/A3T
(Major General Spain)

Supersedes: AFI16-1007, 1 October 2019

Pages: 43

This publication implements Department of the Air Force Policy Directive (DAFPD) 10-2, *Readiness*. It provides guidance and procedures for managing, developing, and fielding operational training and undergraduate aircrew training systems. This publication applies to all civilian employees and uniformed members of the Regular Air Force, the Air Force Reserve Command (AFRC), the Air National Guard (ANG), and those with a contractual obligation to abide by the terms of United States Air Force (USAF) issuances. This instruction does not apply to the United States Space Force (USSF). Conflicts between this instruction and Joint Program Office (JPO) direction will be reconciled by the F-35 Integration Office (AF/IO), Air Combat Command (Lead Command), and the JPO. The authorities to waive wing, unit, delta, or garrison level requirements in this publication are identified with a Tier number ("T-0, T-1, T- 2, T-3") following the compliance statement. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, through the chain of command to the publication office of primary responsibility for non-tiered compliance items. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with (IAW) the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility using the Department of the Air Force (DAF) Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. Major commands (MAJCOM), field

operating agencies, and direct reporting units may supplement this instruction after review and coordination by AF/A3TI.

SUMMARY OF CHANGES

This document has been revised and needs to be completely reviewed. It supersedes AFI16-1007; 1 October 2019. This revision reflects the activation of USSF as a service and removes the space mission from the USAF; standardizes USAF to denote the Air Force service IAW Department of the Air Force Manual (DAFMAN) 90-161, *Publications Processes and Procedures*. Tiering and compliance statements are IAW Administrative Assistant to the Secretary of the Air Force recommendations. It includes new or modified guidance on operational training, operational training and undergraduate aircrew training systems, training system responsibilities and management, and reporting on training systems. Changes include a category for Synthetic Environment certification, institutes standards and criteria for capturing simulator utilization data (see **attachment 4**), and includes unclassified threat matrix framework (TMF) information (see **attachment 6**).

Chapter 1

GENERAL INFORMATION

1.1. Purpose. This instruction provides guidance, identifies organizational responsibilities, and describes processes for managing USAF operational training systems and undergraduate aircrew training systems.

1.2. Scope. The following operational training systems and associated training devices are covered by this AFI:

1.2.1. Aircrew training systems: Includes aeromedical evacuation, physiological training, and undergraduate aircrew training systems.

1.2.2. Missile procedures training systems: Includes missile procedures trainers, minuteman enhanced procedures trainers, airborne procedures trainers, and countdown procedures trainers.

1.2.3. Cyberspace training systems.

1.2.4. Mission system training systems: Includes Joint Terminal Attack Controller (JTAC), Air Support Operations Center, Control and Reporting Center, Air Operations Center (AOC), Air Traffic Control, and those systems which are not considered aircrew training, Cyberspace training, or missile procedures training systems.

1.3. Operational Training Concepts.

1.3.1. Live (real people operating real weapon systems), virtual (real people operating simulated systems), and constructive (computer generated entities) are foundational domains for operational training. Live, synthetic, and blended training environments are defined by their use of live, virtual, and/or constructive capabilities. Live training environments can include either virtual or constructive assets. Synthetic training environments include virtual and/or constructive capabilities, and may be in a networked or non-networked environment. When live and synthetic environments are combined, the training environment is blended.

1.3.2. The Operational Training Infrastructure (OTI) framework tailors a balanced mix of capabilities to create the most affordable and effective training environments for warfighters with the intent of maximizing readiness. The OTI framework includes live ranges, threat emitters, aggressors, networks, training centers, and multi-domain command and control training systems.

1.3.3. Effective operational training includes an efficient balance of live and synthetic approaches. Synthetic training solutions should be used to replace or augment live training to the maximum extent practicable where training effectiveness and readiness are not compromised, recognizing that some live training events cannot or should not be replaced by synthetic training.

1.3.4. The Operational Training and Test Infrastructure (OTTI) framework consists of the resources essential to accomplishing USAF operational training and testing (which includes both operational and developmental test) objectives. This encompasses such elements as embedded training and testing capabilities, operational training systems, airspace, ranges and off-range lands, scoring and feedback systems, targets, pods/instrumentation/weapon system

interface devices, aggressors/contract air support, threat environment generators, networks, synthetic environments, operational training centers, workforce, and cybersecurity. OTI is therefore a sub-set of OTTI and the focus of this AFI.

1.3.5. The TMF provides measurable criteria to apply to development of an integrated, interoperable, and scalable architecture that enables tailored and adjustable threat environments (expanded information on TMF levels is contained in **attachment 6**).

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Assistant Secretary of the Air Force for Manpower and Reserve Affairs (SAF/MR): Responsible for military training policy matters.

2.2. Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics (SAF/AQ): Serves as the Air Force Service Acquisition Executive for all USAF programs and oversees all related acquisition programs through the Program Executive Officers. The program executive officers directly influence OTI through the acquisition and sustainment of training systems for USAF warfighters and the USAF's undergraduate aircrew training enterprise.

2.3. Deputy Under Secretary of the Air Force, International Affairs (SAF/IA): Coordinates on policy for international training partners to gain access to USAF OTI and events and provides release authority for classified and unclassified information to foreign training partners.

2.4. Department of the Air Force Chief Information Officer (SAF/CN): Develops, coordinates, and executes USAF information technology policy, strategy, guidance, and oversight for the management of data, information technology systems, and communication networks IAW applicable Office of the Secretary of Defense guidance and DAF 17- & 33-series publications. Chief Information Officer oversight of non-sensitive compartmented information (SCI) networks provides an essential infrastructure capability for distributed operational training by joining distant and disparate training audiences. Approve the Authorizing Official for operational training systems.

2.5. Department of the Air Force Chief Data and Artificial Intelligence Officer (SAF/CND): Develops, coordinates, and executes USAF data and artificial intelligence policy, strategy, guidance, and oversight of USAF data management.

2.6. Department of the Air Force Chief Modeling and Simulation Officer (SAF/CMSO): Provides policy, guidance, and oversight for DAF's modeling and simulation communities.

2.7. Deputy Chief of Staff, Manpower, Personnel, and Services (AF/A1): Develops, coordinates, and executes personnel policy and essential procedural guidance for military training (non-flying) programs.

2.8. Deputy Chief of Staff, Intelligence, Surveillance, Reconnaissance (ISR), and Cyber Effects Operations (AF/A2/6): Develops, coordinates, and executes USAF Intelligence Community information technology policy, strategy, guidance, and oversight for the management of ISR data, SCI ISR networks, and cyber effects operations IAW applicable Office of the Director of National Intelligence guidance and DAF 14-series and 17-series publications.

2.9. Deputy Chief of Staff, Operations (AF/A3) will:

2.9.1. Nominate an Authorizing Official for Operational Training systems to SAF/CN for appointment IAW Department of Defense Instruction (DoDI) 8510.01, *Risk Management Framework (RMF) for DoD Information Technology (IT)*. The Authorizing Official will be a general officer or senior executive service civilian. Authorizing Official responsibilities will be specifically limited to the IT portion of training devices, training aids, models, environment generators, ranges, and systems. The Authorizing Official will designate and ensure the AF/A3

is manned to provide a Security Control Assessor (SCA) and associated SCA Representatives. The SCA is the senior official with the authority and responsibility for the certification of assigned or applicable USAF-governed OTI systems and platform information technology systems. The SCA will work with Air Combat Command Communications Directorate (ACC/A6) for certification for any Operational Training systems that connect to the Air Force Integrated Telecommunications Network. The SCA and SCA Representatives will report to the Authorizing Official.

2.9.2. Act as the training funding advocate for aircrew training systems, missile training systems, cyber training systems, and mission system training systems.

2.9.3. Establish policy and guidance for OTI.

2.10. Chief, Operational Training Infrastructure Division (AF/A3TI) will:

2.10.1. Synchronize operational training system and undergraduate aircrew training system requirements and acquisition strategies with appropriate Secretary of the Air Force (SAF), Air Staff, industry, and program executive officer organizations.

2.10.2. Advocate for operational training systems and undergraduate aircrew training system funding and requirements at SAF, Air Staff, Military Departments, Interagency, and Multi-national processes IAW Air Force Policy Directive (AFPD) 10-6, *Capability Requirements Development*.

2.10.3. Consolidate operational training system and undergraduate aircrew training system funding information from Air Staff functional managers and Program Element Monitors to track USAF-wide operational training system funding status.

2.10.4. Monitor and attend program management reviews, technical interchange meetings, standards working groups, and other training or readiness forums to ensure adherence to established operational training policy and guidance.

2.10.5. Establish policy to ensure sharing of government-owned data, databases, modeling and simulation solutions, and other capabilities to reduce or prevent redundant efforts.

2.10.6. Synchronize MAJCOM efforts to minimize multiple independent USAF networks.

2.10.7. Appoint a training system manager to oversee management of operational training systems and undergraduate aircrew training systems.

2.10.7.1. The training system manager will interface with subject matter experts (SME) across MAJCOMs, total force, joint, and coalition on operational training systems and undergraduate aircrew training systems. Further, the training system manager will analyze MAJCOM reports to provide advocacy to the corporate process.

2.10.7.2. Training system manager will champion the resourcing of concurrency, fidelity, and connectivity of operational training systems and undergraduate aircrew training systems. The training system manager will conduct annual data calls to assess the health of the USAF training system enterprise.

2.10.8. Advocate for OTI requirements, technology, and planning throughout the Joint Capabilities Integration and Development System (JCIDS) IAW 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, and AFI 10-601, *Operational Capability Requirements Documentation and Validation*.

2.10.9. As co-chair of the OTTI Capability Development Team, advocate for the broader OTTI requirements (see **paragraph 1.3.4.)** and synchronize overlapping developmental and operational test requirements with Capability Development Team co-chair, Air Force Test and Evaluation Programs and Policy (AF/TEP).

2.11. Commander, Air Force Modeling and Simulation Agency (AFAMS) will:

2.11.1. Develop capability-based modeling and simulation (M&S) requirements in support of Training and Readiness.

2.11.2. Oversee all components of the Air, Space, and Cyberspace Constructive Environment, as well as follow-on efforts. This includes providing oversight of user test and integration efforts.

2.11.3. Monitor and attend program management reviews, technical interchange meetings, standards working groups, and other training or readiness forums to champion transformation capabilities.

2.11.4. Synchronize MAJCOM efforts to ensure sharing of government-owned datasets, databases, modeling and simulation solutions, and other capabilities to reduce or prevent redundant efforts.

2.11.5. Provide support to the SAF/CN-designated OTTI Authorizing Official for Risk Management Framework assessments and authorizations.

2.12. Lead Commands Will:

2.12.1. Establish training system management structures to holistically plan, fund, and manage training systems and associated distributed training capabilities (for example, distributed mission operations (DMO)) as part of an OTI framework, to include ensuring training system requirements are included in the Air Force Corporate Structure program objective memorandum process. Lead commands will ensure the major weapon system or prime mission system will not be modified or upgraded unless funding is sufficient to also modify/upgrade all impacted aspects of the operational training system or undergraduate aircrew training system IAW DAFPD 10-9, *Lead Command/Lead Agent Designation and Responsibilities for United States Air Force Weapon Systems, Non-Weapon Systems, and Activities*.

2.12.2. Manage training requirements by:

2.12.2.1. Establishing aircrew, mission, missile, and cyberspace crew training requirements and document in system training plans (STP) and/or concept documents. The STP is an iterative planning document that defines the justification, design, development, funding, resources, support, modification, operation, and management of a training system. For fielded systems, the STP may be a stand-alone document, or it may be referenced and summarized in the Life Cycle Sustainment Plan or other Human Systems Integration documents. All references to the STP in this document incorporate the possibility that the intended documentation may be part of a Life Cycle Sustainment Plan or Human Systems Integration documents. Training considerations prior to fielding will be addressed in coordination with the prime mission system/weapons system platform or separate training

system program manager. Expanded information on the STP is contained in **attachment 3**.

2.12.2.2. Defining training system life cycle (development through sustainment) requirements IAW AFPD 63-1/20-1, *Integrated Life Cycle Management*.

2.12.2.3. Establishing training system standards, tasks, and requirements in coordination with Air Force career field managers, functional area managers, MAJCOM functional managers, training pipeline managers, and Air Education and Training Command (AETC) training managers, when applicable, IAW DAFMAN 36-2689, *Training Program*.

2.12.2.4. Setting requirements for, and leading training system requirements analysis (TSRA) and STP development and execution, in coordination with Air Force Life Cycle Management Center (AFLCMC), AETC, and using commands, as warranted.

2.12.2.5. Conducting TSRAs, in coordination with using commands, through the prime mission system program office, Training System Program Office (SPO), acquisition program office, or AETC. The TSRA process is designed to derive and allocate training requirements from user identified operational needs. A TSRA integrates the products of the instructional system development process and the systems engineering process to describe the training system to be procured. The TSRA process results in a written record of the compilation and distillation of four complementary elements, including the mission-task analysis, training requirements analysis, media analysis, and the training systems basis analysis. Review standing TSRAs every 5 years, or sooner if changes to the system or training environment dictates, to determine if TSRA modifications are required. The lead command makes final decision on whether a TSRA update or modification will be undertaken. Expanded information on the TSRA is contained in **attachment 2** of this AFI.

2.12.2.6. Maintaining prime mission system requirements, including those validated through the JCIDS process.

2.12.2.7. Reviewing prime mission system, product group, and MAJCOM standards impacting training system requirements, annually.

2.12.2.8. Prioritizing requirements using USAF-approved criteria following Air Force Materiel Command (AFMC) procedures as defined in Air Force Manual (AFMAN) 63-143, *Centralized Asset Management Procedures*.

2.12.2.9. Establishing MAJCOM policy and requirements that reflect the sharing, validation, and reuse of visual (image generator), computer generated forces (CGF) models, threat databases, weapons modeling, and associated databases, etc. to gain efficiencies and enhance interoperability.

2.12.2.10. Semi-annually report simulator utilization metrics on all contracted weapon system platform training systems. Forward reports to AF/A3TI by 30 April for the prior semi-annual period October through March and by 31 October for the prior semi-annual period April through September. Reference **attachment 4**.

2.12.3. Support using commands by:

2.12.3.1. Assisting with development of command requirements and specifications.

2.12.3.2. Identifying the best mix of live and synthetic training capabilities (networked or non-networked) to accomplish training requirements.

2.12.4. Support prime mission system and training system program management by:

2.12.4.1. Providing guidance and assistance to program managers in the development, acquisition, and sustainment of training systems and associated distributed training capabilities (for example, DMO).

2.12.4.2. Ensuring the training system is available, network-capable, if applicable, and compliant with required standards prior to fielding the prime mission system.

2.12.4.3. Defining training system requirements for the prime mission system fielding strategy.

2.12.4.4. Notifying the training system program manager of weapon system modifications to ensure training system concurrency.

2.12.4.5. Coordinating with Air Force Operational Test and Evaluation Center or MAJCOM operational test organizations to guide program managers on test or operational issues for the acquisition and sustainment of training systems.

2.12.4.6. Informing program managers of databases, models, and other enterprise capabilities available to increase interoperability and reduce costs.

2.12.4.7. Assessing approved Air Force Forms 1067, *Modification Proposal*, training system impacts and budget estimate with the program manager before the modification proceeds.

2.12.4.8. Establishing and maintaining an administrative control process to record and track evaluations of the training system, to include any simulator and synthetic environment certification or simulator validation (see **attachment 5**).

2.12.4.9. Providing information and assistance to the program manager for development and modifications to the Systems Engineering Plan, Materiel Fielding Plan, Acquisition Strategy, and other applicable acquisition documents to ensure operational training is appropriately considered in the acquisition process. See AFPD 63-1/20-1, *Integrated Life Cycle Management*, for additional guidance with respect to planning for training in the acquisition process.

2.12.4.10. Designating in writing an Information System Security Officer (ISSO) and alternate to ensure cybersecurity compliance.

2.12.5. Manage simulator and synthetic environment certification programs by:

2.12.5.1. Coordinating with appropriate agencies (i.e., using command, AFLCMC and/or product or materiel group) to establish simulator/synthetic environment certification requirements based on training device complexity, desired level of creditable training events, and industry accepted standards, such as Federal Aviation Administration standards, to include training tasks, criteria, and certification interval. Simulator/synthetic environment certifications examine fidelity and usability characteristics to support training system accreditation and identify capabilities and limitations. Expanded information on simulator/synthetic environment certification is contained in **attachment 5** of this AFI.

2.12.5.2. Ensuring all system types receive simulator/synthetic environment certification at least once every 48 months. Certification procedures and documentation will comply with guidance in USAF 10-series and USAF 11-series publications and MAJCOM guidance. Ensuring simulator/synthetic environment certification procedures confirm that enterprise standard solutions integrated into training systems comply with enterprise standards (for example, motion or visual systems are current with enterprise standard for that model).

2.12.5.3. Allocating and providing funding to accomplish simulator/synthetic environment certification actions.

2.12.5.4. Designating a simulator/synthetic environment certification agent who will:

2.12.5.4.1. Establish deadlines for initial certification of newly delivered devices, upon fielding major modifications, or after relocation of devices.

2.12.5.4.2. Perform a simulator/synthetic environment certification IAW lead command or MAJCOM guidance.

2.12.5.4.3. Document training system simulator/synthetic environment certification status. Lead command guidance will be used to establish further procedures, processes, and requirements. Resources for conducting training system simulator/synthetic environment certification will be provided by the lead command.

2.12.5.4.4. Provide simulator/synthetic environment certification results and the accreditation recommendation to the lead command, or designated accreditation proponent, for review.

2.12.5.5. Responding to simulator/synthetic environment certification agent reports within 14 days, through a designated accreditation proponent if desired and appropriate.

2.12.6. Manage simulator validation programs by:

2.12.6.1. Being the validation authority and ensuring CGFs or human-in-the-loop (HITL) for specific training systems are accredited.

2.12.6.2. Establishing training system simulator validation requirements and evaluation criteria based on training device complexity, desired TMF level of creditable training events, and industry accepted standards such as Federal Aviation Administration standards, to include training tasks, criteria, and simulator validation interval. Training system simulator validations compare a training device's operating parameters and performance to constructive interactions to ensure highest-fidelity training. Expanded information on simulator validation is contained in **attachment 5** of this AFI. Expanded information on TMF levels is contained in **attachment 6**.

2.12.6.3. Being the validation proponent for training systems procured or sustained by the respective lead command.

2.12.6.4. Allocating and providing funding to accomplish simulator validation actions.

2.12.6.5. Informing using commands about training system changes that will impact accreditation and if a complete or partial simulator validation is required.

2.12.6.6. Using the training system simulator validation control process to record training system simulator validation results related to CGF configurations.

2.12.6.7. Reviewing the results of simulator validations and ensure CGF accreditation for the specific training system.

2.12.6.8. Designating a simulator validation agent. The agent will perform validations as directed by the lead command and provide results to the lead command for accreditation approval.

2.12.6.9. Ensuring all training system types (flight, mission, part-task, etc.) receive simulator validation at least once every 48 months. Validation procedures and documentation will comply with guidance in USAF 16-series and USAF 10-series publications.

2.12.7. Manage training system use, distribution, and disposition.

2.12.8. Provide resources required to obtain and maintain cybersecurity certification and Authority to Operate, and Authority to Connect.

2.12.9. Designate SMEs for the training system.

2.12.10. Provide SME support for contract performance evaluations and government acceptance testing.

2.12.11. In coordination with the program manager and using command, provide representation at source selections, technical reviews and audits, program management reviews, technical interchange meetings, contract award conferences, training system working groups, testing and logistics interchange meetings, and facility design and construction meetings.

2.12.12. Chair the Training Planning Team (TPT).

2.12.13. Define the scope and support requirements of the Training System Support Center (TSSC), as required.

2.12.14. Develop, maintain, and review the STP for all lead-command major weapon systems.

2.12.15. Ensure the training system is included in the major weapon system modification budgeting profile, maintains concurrency, cybersecurity accreditation, addresses diminishing manufacturing sources and material shortages, and complies with networked training and synthetic environment integration standards.

2.12.16. Ensure future aircraft operational training systems used for synthetic high-end advanced tactics and training integrate with the Joint Simulation Environment (JSE).

2.12.17. Accomplish biennial program reviews of each legacy training system used for high-end tactics and training to determine the appropriate degree of JSE integration. At a minimum, future modifications to legacy high-end training systems should consider JSE compatibility.

2.12.18. Provide guidance to fund and provide Contracting Officer’s Representative (COR) positions, on-site and on-call, for their assigned training enterprises. The COR performs oversight for the contracting officer.

2.12.19. Unit manning document billets generated to support a training system will remain assigned to that system and will not be re-assigned to perform other purposes in the unit. Personnel filling that billet may perform additional duties on a non-interference basis.

2.12.20. Report training system data on all assigned weapon system platforms to the AF/A3TI training system manager no later than 31 January (annually). Specific requirements will be detailed in the AF/A3TI tasking message (see **paragraph 3.3.1**.).

2.12.21. Take appropriate program objective memorandum actions to replace existing orphan training systems before those training systems can no longer meet training needs due to obsolescence or serviceability**.**

2.12.22. Provide concepts of operation, force development concepts, operational roadmaps, and applicable operations training requirements.

2.12.23. Provide updates on training capabilities and infrastructure development which impact training system planning.

2.12.24. Implement a training device fleet flying hour program. Provide "Available Hours Contracted for Use" from Training System Metrics (Item C from **Figure A4.1**), which are reported semi-annually to AF/A3TI, to AFLCMC on the same schedule for Operational Cost per Training System Flying Hour calculations.

2.12.25. Ensure safety requirements for training systems comply with DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*.

2.13. Using Commands will:

2.13.1. Identify training and operational training system requirements to the lead command for advocacy, programming, and funding.

2.13.2. Designate in writing an ISSO and alternate to ensure cybersecurity compliance.

2.13.3. Submit reporting information to the lead command as directed in this AFI.

2.13.4. Identify technology gaps and operational requirements to the lead command to facilitate sustainment support and identify trainer sustainment requirements in conjunction with all mission design series and training system requirements.

2.13.5. Assume lead command responsibilities for simulator/synthetic environment certification and simulator validation when the operational training system is unique to a respective using command. Simulator/synthetic environment certification and simulator validation procedures will comply with guidance in AFI 16-1001, *Verification, Validation and Accreditation (VV&A)*.

2.13.6. Fund repairs on all command-unique training devices not associated with prime mission systems, including obsolescent systems where training system parts are no longer procurable or available through original equipment manufacturer.

2.14. MAJCOMs, National Guard Bureau, Direct Reporting Units, and Field Operating Agencies will: Assume both using command and lead command responsibilities for training systems developed or acquired by those commands to meet unique training needs.

2.14.1. **Air Education and Training Command (AETC) will:**

2.14.1.1. Act as the USAF's Executive Agent for formal, undergraduate training programs technology and development, for which AETC is the lead command.

2.14.1.2. Advocate for distributed training/remote instruction capabilities in formal education and training under its command.

2.14.1.2.1. Ensure training systems requirements are addressed from the start of the program by membership on the TPTs with other system stakeholders as early in the system concept as possible.

2.14.1.2.2. Ensure AETC TPT participation directly supporting SME participation for the development of the STP and TSRA.

2.14.1.2.3. Establish a command position for training system requirements and resources required to meet AETC's training requirements.

2.14.1.2.4. Establish AETC TPT support teams to develop, support, and maintain each training system.

2.14.1.2.5. Monitor new acquisitions, modifications, or changes to the weapon system managed by the acquisition SPO that affect training systems and equipment. These SPO activities include fielded training systems that require the development of requirements documents IAW AFI 10-601.

2.14.1.3. Provide advice and expertise to the lead command, program manager, and TPTs.

2.14.1.4. Perform TSRAs, when requested by the lead command, in coordination with the TPT.

2.14.1.5. Semi-annually report simulator utilization metrics on all contracted undergraduate aircrew training systems. Forward reports to AF/A3TI by 30 April for the prior semi-annual period October through March and by 31 October for the prior semi-annual period April through September. Reference **Attachment 4**.

2.14.1.6. Accomplish simulator/synthetic environment certification of undergraduate training aircraft simulators IAW **paragraph 2.12.5** and **attachment 5**.

2.14.1.7. Report training system data on all assigned undergraduate aircrew platforms to the AF/A3TI training system manager no later than 31 January (annually). Specific requirements will be detailed in the AF/A3TI tasking message (see **paragraph 3.3.1**.).

2.14.2. **Air Force Materiel Command (AFMC) will:**

2.14.2.1. Coordinate lead command and prime mission system program offices' training system requirements and solutions. Provide support to SPOs responsible for training system acquisition and sustainment through the parent prime mission systems program office(s) and/or AFLCMC.

2.14.2.2. With AFLCMC and Air Force Research Laboratory (AFRL) Warfighter Readiness Research Division, provide technical support to AF/A3TI.

2.14.2.3. Manage sustainment fund programming and allocation through AFMC centralized asset management.

2.14.2.4. Ensure prime mission system modification development in tandem with the training system to ensure concurrency.

2.14.3. **Air Force Life Cycle Management Center (AFLCMC) will:**

2.14.3.1. Perform training system contract management, support (including TSSC establishment), relocation, and disposition activities.

2.14.3.2. Host an All-Command simulator/training device summit to review training system status and discuss lessons learned, potential program synergies, training opportunities, advocacy issues, and future technology needs. Consider holding the summit in conjunction with a training system industry day.

2.14.3.3. Through the simulator SPO, acquisition program office, or AETC, and in coordination with the lead command, conduct TSRAs.

2.14.3.4. Assume Planning, Programming, Budgeting, and Execution System responsibility for active contractor logistics support, and operations and maintenance.

2.14.3.5. Provide programmed contractor logistics support to all fielded operational training systems, including programs of record and interim devices.

2.14.3.6. Lead training system research and development and develop or assist with use case demonstrations and training program and exercise integration.

2.14.3.7. Work with Lead MAJCOMs to ensure training systems comply with architecture standards and maintain common interfaces for integration into high-end synthetic environments to support large force events.

2.14.3.8. Support JCIDS documentation and supporting analyses, technical documentation and validation regarding training efforts, and training system and support service integration and procurement.

2.14.3.9. Ensure the ISSO assists the Program Management Office-appointed Information System Security Manager to complete Risk Management Framework Assessment and Authorization packages and serve as the focal point for cybersecurity compliance involving networked (for example, DMO) and non-networked activities.

2.14.3.10. Provide resources required to obtain and maintain cybersecurity certification and Authority to Operate.

2.14.3.11. Capture Operations & Support costs from current contracts to the extent practical. Establish and maintain a methodology for Materiel Leaders and Lead Commands to jointly report annual Operational Cost per Training System Flying Hours by training device fleet.

2.15. Training Planning Team (TPT) will:

2.15.1. Develop the STP after the TSRA is completed.

2.15.2. Provide guidance on master task list content, as warranted.

2.15.3. Use the STP to ensure training considerations are adequately addressed in the prime mission system acquisition and modification processes. The STP is an iterative planning document that defines the justification, design, development, funding, resources, support,

modification, operation, and management of an operational training system. The STP also provides instructional considerations and usage to maximize use as an effective educational tool. Expanded information on the STP is contained in **Attachment 3** of this AFI.

2.16. Training System Support Center (TSSC). The TSSC will provide configuration management functions, engineering development, feasibility studies, life cycle hardware, software, and courseware support for the operational training system.

2.17. Host Unit. The host unit (the unit with primary responsibility for the systems) will:

2.17.1. Provide guidance for the unit's training system and assign personnel for COR duty, on-site and on-call, for their assigned training system. **(T-2)**

2.17.2. Fund travel for training system training and COR certification training. **(T-2)**

2.17.3. Provide personnel to support training system testing. **(T-2)**

2.17.4. Maintain training system simulator utilization records and report utilization data to lead command monthly (supports lead command requirement to report simulator utilization data IAW **paragraph 2.12.2.10** and **attachment 4**). **(T-2)**

2.17.5. Debrief maintenance technicians after each training period and provide documentation of all discrepancies in the method prescribed by the system sustainment plan or contract. **(T-2)** Missile procedures training device discrepancy forms may be developed locally.

2.17.6. Ensure the ISSO assists the Program Management Office-appointed Information System Security Manager to complete Risk Management Framework Assessment and Authorization packages and serve as the focal point for cybersecurity compliance involving networked (for example, DMO) and non-networked activities. **(T-0)**

2.17.7. Ensure local communications support for distributed training capabilities. **(T-2)**

2.17.8. Secure training system facilities to the extent necessary to allow for required classified training. **(T-2)**

2.17.9. Ensure facilities are accredited and maintain security accreditation for the simulator/training device and training operations hosted within the facility.

Chapter 3

PLANNING AND REPORTING REQUIREMENTS

3.1. Advocacy. AF/A3TI supports readiness by ensuring OTI addresses training requirements balanced with affordability. Training system status information from the field is used to advocate in support of OTI capabilities and readiness.

3.2. Planning. Lead commands accomplish training system planning to ensure training requirements are met and adjusted over time for changes that occur. The process evaluates training system requirements against current and projected training system capabilities to identify shortfalls, and then to guide sustainable development to mitigate these shortfalls. This process results in lead command plans for training systems that are formulated and updated on a recurring basis.

3.2.1. Lead commands will ensure that all appropriate forums consider all training systems. **(T-1)**

3.2.2. As a minimum, operational training systems will be included in all training review activities. **(T-1)** Undergraduate aircrew training systems should be included in all undergraduate training review activities. Training review boards and Weapons and Tactics Conferences are leveraged to maximize the quality of unit training and convene (usually annually) to update training events, frequency, and standards.

3.2.3. When training roadmaps are updated, lead commands will ensure the updated documents are delivered to AF/A3TI. **(T-1)** Roadmaps should include training systems location, prime mission, training system modifications over the next 5 years, and known shortfalls or funding disconnects.

3.3. Reporting.

3.3.1. AF/A3TI will conduct one data call per year to gather detailed information on the training system enterprise; specific requirements will be detailed in the tasking message. AF/A3 will use the data collected to assess the synthetic training enterprise against established OTI metrics based on the TMF (expanded information on TMF levels is contained in **Attachment 6**).

3.3.2. MAJCOMs will semi-annually report simulator utilization metrics as prescribed in **paragraph 2.12.2.10.**, **paragraph 2.14.1.5**, and in **attachment 4**. **(T-1)**

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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Adopted Forms

AF Form 1067, *Modification Proposal*

DAF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AETC—Air Education and Training Command

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFMC—Air Force Materiel Command

AFPD—Air Force Policy Directive

AFRL—Air Force Research Laboratory

AFLCMC—Air Force Life Cycle Management Center

AFRC—Air Force Reserve Command

ANG—Air National Guard

AOC—Air Operations Center

CGF—Computer Generated Forces

COR—Contracting Officer's Representative

DAF—Department of the Air Force

DAFMAN—Department of the Air Force Manual

DAFI—Department of the Air Force Instruction

DAFPD—Department of the Air Force Policy Directive

DoDI—Department of Defense Instruction

DMO—Distributed Mission Operations

ESOH—Environment, Safety, and Occupational Health

HITL—Human-In-The-Loop

IAW—In Accordance With

ISR—Intelligence, Surveillance and Reconnaissance

ISSO—Information System Security Officer

IT—Information Technology

JCIDS—Joint Capabilities Integration and Development System

JPO—Joint Program Office

JSE—Joint Simulation Environment

JTAC—Joint Terminal Attack Controller

OTI—Operational Training Infrastructure

OTTI—Operational Training and Test Infrastructure

MAJCOM—Major Command

M&S—Modeling and Simulation

MDS—Mission Design Series

PESHE—Programmatic Environment, Safety, and Occupational Health Evaluation

SAF—Secretary of the Air Force

SCA—Security Control Assessor

SCI—Sensitive Compartmented Information

SME—Subject Matter Expert

SPO—System Program Office

STP—System Training Plan

TPT—Training Planning Team

TMF—Threat Matrix Framework

TSRA—Training System Requirements Analysis

TSSC—Training System Support Center

USAF—United States Air Force

USSF—United States Space Force

Office Symbols

ACC/A6—Air Combat Command Communications Directorate

AF/A1—Deputy Chief of Staff, Manpower, Personnel, and Services

AF/A2/6—Deputy Chief of Staff, Intelligence, Surveillance, Reconnaissance, and Cyber Effects Operations

AF/A3—Deputy Chief of Staff, Operations

AF/A3T—Training and Readiness Directorate

AF/A3TI—Chief, Operational Training Infrastructure Division

AF/IO—F-35 Integration Office

AF/TEP—Air Force Test and Evaluation Programs and Policy

AFAMS—Air Force Agency for Modeling and Simulation

SAF/AQ—Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics

SAF/IA—Deputy Under Secretary of the Air Force, International Affairs

SAF/MR—Assistant Secretary of the Air Force for Manpower and Reserve Affairs

SAF/CMSO—Department of the Air Force Chief Modeling and Simulation Officer

SAF/CN—Department of the Air Force Chief Information Officer

SAF/CND—Department of the Air Force Chief Data and Artificial Intelligence Officer

Terms

Accreditation—Official determination that the operational training system is acceptable for the specific training tasks or events to be accomplished in the device.

Air Force career field managers—Individuals appointed by their respective Headquarters Air Force Deputy Chief of Staff or director to ensure development, implementation, and maintenance of career field education and training plans for their assigned Air Force specialties. Air Force career field managers communicate directly with MAJCOM functional manager, Air Reserve Component, and AETC training pipeline manager to disseminate Air Force and career field policies and program requirements.

Aircrew training device—A training device used to prepare aircrew members for the actual performance of aircrew duties. Aircrew training devices can include training devices such as: cockpit familiarization trainers, cockpit procedures trainers, operational flight trainers, part task trainers, fuselage trainer, boom-operator weapon system trainer, and weapon system trainers, just to name a few.

Centralized asset management—AFMC's Program Office process to develop and manage programs using the following four main pillars: Centralized sustainment funding, logistics requirements determination, performance-based logistics, and integrated wholesale supply and depot maintenance operations.

Computer generated forces—A generic term used to refer to computer representations of forces in models and simulations that attempts to model human behavior sufficiently so that the forces will take some actions automatically (without requiring human-in-the-loop interaction). Types of CGF include automated forces - CGFs that require little or no human interaction; semi-automated forces - CGFs in which the individual platform simulation is operated by computer simulation of the platform crew and command hierarchy. (IEEE 1278.3-1996)

Concurrency—The condition where the configuration and operation of the training system matches the configuration and functionality of the reference prime mission system(s), to the extent necessary to provide required training. For training devices, this condition includes the operational [flight] program, mission software, weapons, hardware, and third-party systems that sufficiently and accurately reflects the current configuration of the prime mission system(s) functionality.

Connectivity—The capability of connecting to secure networks to conduct local and long-haul training with other players (shooters, command and control, Intelligence, Surveillance, and Reconnaissance capabilities, and so forth), based at other locations including network training centers (for example, distributed training centers).

Contractor logistics support—A support concept where a contractor is used to provide logistics support for a system, subsystem, modification, or equipment. Contractor logistics support covers activities equivalent to depot maintenance and, as negotiated with the using command, necessary organizational and intermediate level maintenance, software support, and other operation and maintenance tasks.

Contracting officer's representative—An individual who is designated and authorized in writing by the Contracting Officer to perform specific technical or administrative functions on contracts or orders. This individual may perform the duties of a contractor logistics support Contracting Officer's Representative or a TSSC Contracting Officer's Representative.

Courseware—All instructional material including technical data, textual materials, audio tapes, slides, movies, video tapes, video discs, and other audiovisual materials.

Distributed mission operations—The networking of warfighter training that utilizes the integration of virtual and constructive entities, systems, and environments via secure wide-area network to acquire and sustain mission essential competencies required for operational readiness. Distributed mission operations expand a unit's training capabilities and resources to facilitate inter-team training among geographically separated and composite force teams to execute major weapon system training tables, ready aircrew program activities, mission rehearsals, tactics, techniques, and procedures training, and large force exercises.

Distributed Training Center—A center for operational management of distributed training activity and capabilities and a portal for connectivity with and/or management of training activity with other entities.

Fidelity—The degree to which the synthetic environment (for example, visuals, databases, threats, CGFs, weapons performance, aero modeling, and so forth) correctly represents the real-world environment to the operator to accomplish mission training. Operational training models need to support a high-fidelity simulation capability. Access to accurate and representative models and simulation is crucial, and all entities should be available and simulated to the appropriate level of detail. The quality of models directly determines the quality of simulation products.

Formal training—Training in an officially designated course conducted or administered IAW appropriate course outline and training objectives.

Full operational capability—The full attainment of the capability to effectively employ a weapon system, item of equipment, or system of approved specific characteristics, which is manned and operated by a trained, equipped, and supported military unit or force. Full operational capability is not necessarily a date; it defines the criteria necessary to declare full operational capability.

High-end advanced tactics and training—The highest level of tactics development and training that can be accomplished by a platform in a controlled venue (live, synthetic, and/or blended) to meet its expected TMF level mission environment. Normally, this is also the venue where the highest level of instructor training or operational readiness validation is accomplished. This is also where Tactics, Techniques, and Procedures (TTP) development or validation occurs for specific platforms based upon their expected threat environments or new employment concepts.

Human in the loop simulation—A model type that requires human interaction during runtime. It employs one or more human operators in direct control of the simulation/simulator or in some key support function. Human-centered M&S is distinguished from science and process-based simulations where human intervention and modeling does not occur. (DoD M&S Book of Knowledge)

Human systems integration—The process of effective integration of manpower, personnel, training, human factors, safety and occupational health, personal survivability, and habitability considerations into the acquisition of prime mission systems to improve total system performance and reduce costs by focusing attention on the capabilities and limitations of humans.

Initial operational capability—That first attainment of the capability to employ a weapon effectively, item of equipment, or system of approved specific characteristics with the appropriate number, type, and mix of trained and equipped personnel necessary to operate, maintain, and support the system. It is normally defined in the capability development document. **Note:** initial operational capability is event-driven and not tied to a specific future date.

Instructional system development—A deliberate and orderly process for planning and developing instructional programs that make sure personnel are taught the knowledge, skills, and attitudes essential for successful job performance. It depends on a description and analysis of the tasks necessary for performing the job, objectives, and tests clearly stated before instruction begins, evaluation procedures to determine whether the objectives have been reached, and methods for revising the process based on empirical data.

Interoperability—The ability of systems, units, or forces to provide data, information, materiel, and services to, and accept the same from, other systems, units, or forces, and to use the data, information, materiel, and services exchanged to enable them to operate effectively together. Information Technology (IT) interoperability includes both the technical exchange of information and the end-to-end operational effectiveness of that exchange of information as required for mission accomplishment. Interoperability is more than just information exchange. It includes systems, processes, procedures, organizations, and missions over the life cycle and must be balanced with cybersecurity.

Lead command—The MAJCOM that is the primary operator of a system, subsystem, or item of equipment. This designation generally applies to those operational commands or organizations designated by Headquarters Air Force to conduct or participate in operations or operational testing (see DAFPD 10-9). The USAF assigns responsibility for overall management of each system, subsystem, or item of equipment to a lead command. The lead command contributes to the process of developing and maintaining a force structure with a balance of complementary capabilities, and it establishes a basis for rational allocation of scarce resources among competing requirements. The lead command is responsible for advocating, programming, and allocating funding for those systems assigned to it.

Mission-task analysis—A process of reviewing mission requirements, developing collective task statements, and arranging the collective tasks in a hierarchical relationship.

Master task list—Documentation of total tasks that may be performed on a weapon system. These lists may include the entire spectrum of tasks in each functional area (operations, maintenance, and support). The master task list provides a task baseline enabling further analysis and the formulation of formal training decisions.

Milestone A—An investment decision to pursue specific product or design concepts, and to commit the resources required to mature technology and/or reduce any risks that must be mitigated prior to decisions committing the resources needed for development leading to production and fielding.

Mission system training device—A device that provides the trainees with a simulated warfare environment that is specifically mission oriented to the type of prime mission system involved. The device can provide specific prime mission system operator modes or a mission mode that requires tactical decision-making.

Objectives/Media analysis—A process designed to identify all training objectives. It also allocates and justifies instructional strategies, methods, and media for each training objective. The objectives/media analysis defines training objectives in terms of conditions, required behavior, and standards of acceptable performance. Defines a media analysis and selection process. Documents the method/media trade process. Selects the method/media to be used and, with rationale, allocates the training objectives.

Operational training—Mission-oriented training in support of operational forces readiness. It is a crucial element of all the Air Force Service Core Functions. It usually distinguishes itself from initial skills training due to its focus on employment of a weapon system and skills in an operational setting as opposed to learning the basic use of equipment or development of basic skills. Spans all domains and large scale (Tier 1) through small scale (Tier 4) events across the breadth of multiple security levels and releasability restrictions.

Operational training infrastructure—A framework that includes training systems, live ranges, training devices, environment generators, threat emitters, aggressors, networks, training centers, and multi-domain command and control training systems.

Operational training system—A systematically developed curriculum including, but not necessarily limited to, courseware, classroom aids, training devices, operational equipment, embedded training capability, and personnel to operate, maintain, or employ a system. The operational training system includes all necessary elements of logistic support.

Orphan training system—Training devices/systems that are not supported by specific prime mission system programs or part of existing training maintenance contracts.

Prime mission system (equipment)—Any weapon system, support system, workstation, or end-item that supports a specific military mission, therefore requiring operations, maintenance, or support personnel training. Also called a defense system or parent system.

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 program manager has life cycle responsibility for the prime mission system. Program manager duties include providing assessments of program status and risk to higher authorities and to the operator or operator's representative; actively managing within approved resources, program cost, performance, and schedule; and providing assessments of contractor performance. Program managers report to SAF/AQ through the appropriate program executive officer (even though they may be physically located within AFMC).

Ready aircrew program—MAJCOM program that defines the minimum required mix of annual sorties, simulator missions, and training events aircrew must accomplish to sustain mission readiness.

Simulation—A method for implementing computer generated entities over time. Also, a technique for testing, analysis, or training in which real-world systems are used, or where real-world and conceptual systems are prepared by a model.

Simulator—A training device that permits development and practice of the necessary skills for accomplishing tasks to a prescribed standard of competency in a specific prime mission system and duty position.

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 ensures the device continues to perform to the delivered specifications, performance criteria, and configuration levels. It also sets-up an audit trail regarding specification and baseline data for compliance and subsequent contract solicitation or device modification.

Simulator validation—The process for (1) comparing a training device's operating parameters and performance to the current intelligence assessment of a prime mission system and threat and interaction between the prime mission system and threat; and (2) documenting the differences and impacts between the prime mission system's performance and the threat environment. 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.

Synthetic environment—The integrated set of data elements that define the environment within which a given simulation application operates. The data elements include information about the initial and subsequent states of the terrain including cultural features, and atmospheric and oceanographic environments throughout an exercise. The data elements include databases of externally observable information about instantiable entities, and are adequately correlated for the type of exercise to be performed. More generally, it is the combination of simulators and constructive environments.

Synthetic environment certification—The process of ensuring, through validation of software baselines, physics-based attributes, constructive entities, and threat representation, that a synthetic environment and its components provide accurate, credible, and operationally relevant interactions to support training objectives. The process also ensures the environment continues to perform to the delivered specifications, performance criteria, and configuration levels. It also sets up an audit trail regarding specification and baseline data for compliance and subsequent contract solicitation or environment modification.

System training plan—An iterative planning document that defines the justification, design, development, funding, resources, support, modification, operation, and management of an operational training system. The STP is designed to provide for planning and implementation of training and to make sure all resources and supporting actions required for establishment and support are considered. For fielded systems, the STP may be a stand-alone document, or it may be referenced and summarized in the life cycle sustainment plan or other human systems integration documents. All references to the STP in this AFI incorporate the possibility that the intended documentation may be part of a life cycle sustainment plan or human systems integration documents. Training considerations prior to fielding will be addressed in coordination with the program manager.

Training—Instruction and applied exercises for the acquisition and retention of knowledge, skills, and attitudes required to accomplish military tasks.

Training device—A device that permits learning, development, and the practice of skills and procedures necessary for understanding and operating the integrated systems of a specific prime mission system (Simulator is a subset of Training Device). For AETC, a training device that permits development and practice of the basic skills and tasks for completion of undergraduate aircrew training to a prescribed standard of competency.

Training pipeline managers—Responsible for life cycle management (planning, directing, implementing, and overseeing) formal training courses. This process begins with basic military training and extends through advanced skills courses. Training pipeline managers administer and execute MAJCOM level training management to include prioritizing and advocating training resource requirements to the Air Staff.

Training planning team—An action group composed of representatives from all pertinent functional areas, disciplines, and interests involved in the life cycle design, development, acquisition, support, modification, funding, and management of a specific prime mission operational training system. The TPT uses the STP to ensure training considerations are adequately addressed in the prime mission system acquisition and modification processes.

Training requirement—The knowledge, skills, and attitudes that are required for satisfying the job performance requirements and are not already in the incoming students' repertoire.

Training requirements analysis—A process that allows for determination of training requirements and allocation of proficiency level to resolve a performance deficiency.

Training system basis analysis—A process that analyzes the existing operational training systems, training deficiencies, assess new training technology for potential application, evaluates alternative training system concepts, system configurations, and recommend solutions.

Training system manager—Expert who works with USAF and industry training system managers and SMEs to ensure training systems are adequately funded and properly provisioned to support USAF operations training.

Training systems product group—An umbrella term to describe the USAF organizations to include AFRL and AFLCMC that support warfighter and multinational partner training through the use of modeling and simulation techniques. Collectively, the training systems product group provides the warfighter with a full range of operational training system life cycle support. Key capabilities include research and development; acquiring and/or sustaining training systems; conducting contract training support to include TSRAs, student instruction, courseware development and maintenance, training management systems, device operation and maintenance, and on-site or on-call service; assistance; concurrency modifications; technology insertion upgrades; multiple database sources; contractual vehicles for task orders; and disposition.

Training system requirements analysis—A systematic approach to assess prime mission systems based on the instructional system development process that develops data items to document the training and preliminary system requirements to ensure personnel are taught in a cost-efficient way based on the knowledge, skills, and attitudes essential for successful mission performance. During this process, analysts extract and allocate training requirements identified from the user’s operational needs. The training system requirements analysis process is the written record from a compilation of the following four complementary elements: mission/task analysis, training requirements analysis, objectives/media analysis, and the training system basis analysis. It serves as a required input to the STP. AFLCMC, through the training system program office, acquisition program office, or AETC, and in coordination with the lead command, shall conduct the training system requirements analysis. Expanded information on the TSRA process is contained in **Attachment 2** of this AFI.

Training system support center—Normally a government-owned, contractor-operated consolidated function that includes the contractor personnel, government owned equipment, facilities, tools, and data necessary to provide configuration management functions, engineering development, and feasibility studies, life cycle hardware, software, and courseware support for an operational training system. Contractor logistics support contracted TSSCs maintain operational training system operational training baselines by merging configuration management baselined weapon system(s) functionality with mission and training profiles, etc., to provide the using unit with an effective trainer for initial and continuation training, ready aircrew program, and distributed training capabilities. Contractor logistics support TSSCs normally support aircrew and maintenance training systems.

Using command—Any command or organization (above the Wing level) that possesses a prime mission system and uses the products of the operational training system. The using command is

responsible for managing and conducting mission operations using the resources allocated by the lead command and higher headquarters. As such, the using command is responsible for defining the system requirements necessary to conduct and sustain operations. These requirements are submitted to the lead command for advocacy, programming, and funding allocation. If only one MAJCOM or agency possesses the prime mission system, that MAJCOM or agency is the designated lead command.

Utilization rates—the rate of actual resource use versus planned resource use.

Validation—(1) For the purposes of this instruction, determination of the degree to which the operational training system represents the real-world asset from the perspective of the specific training to be accomplished. The lead command is the validation authority and will designate a validation agent. (2) The process of determining the degree to which a model is an accurate representation of the real-world from the perspective of the intended uses of the model.

Verification—(1) For the purposes of this instruction, determination if the operational training system accurately represents the contract design specification or Statement of Work or Performance Work Statement. The acquisition agent is the verification authority with support from the lead command. (2) The process of determining that a model implementation accurately represents the developer's conceptual description and specifications.

Attachment 2

TRAINING SYSTEMS REQUIREMENTS ANALYSIS

A2.1. Training system requirements analysis process. The TPT will initiate a front-end TSRA after Acquisition Milestone A. Guidance covering front-end TSRAs is provided in DoDI 5000.02, *Operation of the Adaptive Acquisition Framework*, to inform STP development. The TPT will initiate and define the follow-on TSRA scope relative to the information required. **(T-1)** For new and emerging prime mission systems, the lead command will conduct a TSRA, in coordination with the training system program office, acquisition program office, using commands and/or AETC. **(T-1)** For existing systems, the lead command, program manager, or TPT will conduct recurring TSRAs when major modifications occur, including but not limited to aircraft software releases, new mission capabilities (weapons, sensors, communications), or changes to mission essential and training task lists. **(T-1)**

A2.2. Training system requirements analysis components. A TSRA is comprised of four sequential components to ensure training considerations are addressed in the prime mission system acquisition and modification processes. The TPT may direct separate front-end TSRAs to address specific mission areas, such as separate operations and maintenance TSRAs. The analytic components remain the same. The TPT may focus follow-on TSRAs to fewer components when appropriate for the defined scope.

A2.2.1. Mission-task analysis. The mission-task analysis identifies and analyzes all tasks required for the operation, maintenance, and/or support of the prime mission system. The mission-task analysis will result in a Master Task List detailing tasks for each mission. The master task list should be derived from analysis of mission tasks, associated system tasks, legacy mission systems, similar mission systems, or operational training system task lists. The TPT may provide guidance on master task list content. Based on the mission area(s) assessed, the mission-task analysis may:

A2.2.1.1. Break each mission into tasks, situational context, and coordination requirements. Each mission should be described in terms of mission objectives, scenarios, segments, and mission profiles.

A2.2.1.2. Provide a full range of threat and environmental conditions.

A2.2.2. Training requirements analysis. The training requirements analysis will develop the master task list into the training task list for the prime mission system. **(T-1)** The analysis will identify tasks requiring formal training and the criteria for successful performance in a mission context. **(T-1)** The training requirements analysis will:

A2.2.2.1. Identify target populations and tasks for which current students/trainees lack the knowledge, skills, and attitudes required for their performance. **(T-1)** Knowledge, skills, and attitudes are classified as perceptual, motor, cognitive, information processing abilities.

A2.2.2.2. Define formal training entry level and exit level knowledge, skills, and attitudes for each unique target student population. **(T-1)** Baseline target populations can include upgrade, qualification, or continuation training.

A2.2.3. Objectives/media analysis. The objectives/media analysis develops training objectives from the training requirements analysis-developed training task list and selects

delivery media. The analysis will result in clearly stated and organized training objectives mapped to an effective and feasible media solution. The objectives/media analysis will:

A2.2.3.1. Develop enabling objectives for each task defined in terms of conditions, required behavior, and lead command defined standards of acceptable performance. **(T-1)** These objectives should be organized and grouped logically under terminal objectives to use later for syllabus and course map development.

A2.2.3.2. Define and document a media analysis and selection process. **(T-1)**

A2.2.4. Training system basis analysis. The training systems basis analysis develops the training system concept and defines the training system configuration. **(T-1)** The analysis will result in a functional baseline for the design, development, and operation of an integrated training system. The training systems basis analysis may:

A2.2.4.1. Analyze legacy or similar training systems and identify deficiencies.

A2.2.4.2. Assess new training technology for potential application in training system concepts.

A2.2.4.3. Evaluate alternative training system concepts and system configurations.

A2.2.4.4. Recommend numbers, functions, and types of training media, courseware requirements, and training management system functions.

A2.2.4.5. Provide rationale and justification concerning how a proposed system will remedy deficiencies.

Attachment 3

SYSTEM TRAINING PLAN

A3.1. The Lead Command will:

A3.1.1. Establish operational training system definition through acquisition and modification documentation that will support the review and decision process. **(T-2)**

A3.1.2. Identify training needs (including networking capabilities if applicable), concepts, strategies, constraints, risks, data, alternatives, resources, responsibilities, and other areas, through an iterative process. **(T-1)**

A3.1.3. Include an instructional system development analysis of the ground-based media. Analyze how it complements hands-on training or supplements training when resource availability, security, cost, and environmental, safety, and occupational health (ESOH) constraints limit use of the prime mission system equipment as a training media. **(T-1)**

A3.1.4. Identify tasks for which personnel cannot currently be adequately trained (training gaps). These tasks will be documented in the STP as unmet requirements and identified as potential limiting factors in the ability to accomplish the prime mission system mission. **(T-1)**

A3.1.5. Document the results of early, front-end, and follow-on TSRAs. **(T-1)**

A3.1.6. Provide the basic concepts and strategy to attain and maintain operational training system concurrency and networking capability to support desired training capability at the appropriate time. **(T-1)**

A3.1.7. Establish milestones and schedules to ensure timely development, testing, and fielding of training capability and training support. **(T-1)**

A3.1.8. Identify how subsystems and components should be integrated into the total operational training system. Include distributed training capabilities (for example, DMO) implementation, sustainment, and utilization, if applicable. **(T-1)**

A3.1.9. Provide information and identify resources for management decisions within the planning, programming, budgeting, and execution system process which support operational training system acquisition, modification, and sustainment processes. **(T-1)**

A3.1.10. Identify alternate training strategies, to include methodology and media, if funding, concurrency, or other unknowns negatively impact required operational training system capabilities. **(T-1)**

A3.1.11. Recommend areas for new technology applications to improve future operational training system effectiveness and efficiency. **(T-1)**

A3.2. System Training Plan format. The TPT may choose to utilize one of two formats for the STP depending upon the life cycle phase of the prime mission systems: emerging mission systems and existing mission systems.

A3.2.1. STP format for emerging prime mission systems. The exact composition of the STP is at the discretion of the TPT. The STP will be referenced and summarized in the life cycle sustainment plan or other human systems integration documents. The STP is a top-level document that provides input to the requirements generation, acquisition program planning,

and budget development processes. The details needed to support this analysis may be maintained in other documents and referenced in the STP.

A3.2.2. Suggested STP sections. Include only those sections necessary to guide the development, fielding, and management of the operational training system:

A3.2.2.1. Executive summary. Provide an overview of the STP. Highlight sufficient and significant elements to support the program, shortfalls, and future objectives. Briefly describe the overall mission of the prime mission system, the operational training system, and requirements. Show the relationship of the resource to meeting the overall mission, shortfalls, and alternatives.

A3.2.2.2. Mission and prime mission system description. Describe the mission and prime mission system based on the operational requirement, threat environment, and the designed operational capability, when determined. Include a thorough analysis of the mission performed by the prime mission system; a classified attachment may be required. Include title, nomenclature, and program elements for budget, security classification, prime mission system priority rating, and principal agencies. Reference other plans and documents that support the prime mission system mission or operational training system acquisition and modification process. Include a brief summary of the baseline system to be replaced, modified, or augmented; shortcomings, displacement, or disposition, if being replaced.

A3.2.2.3. Training planning team (TPT) membership. The STP should document TPT membership, which must comprise the lead command, using commands, weapon system program office, and training systems product group representatives.

A3.2.2.4. Operational training system description. Describe the total operational training system by functional area, including instructional strategy, duration, content, media, training devices and utilization rates, and facilities. Provide strategy and alternative methodologies throughout the training continuum. Address the use of distributed training capabilities (for example, DMO) or describe how this requirement will be waived in coordination with using commands and the training systems product group. Identify proposed approach to acquire training equipment and facilities. Estimate training qualification time required to achieve full proficiency. Include description of database, systems integration, networking standards, controlled interfaces, compatibility, transportability, and deployment requirements. Address ability to efficiently and cost effectively modify operational training system software concurrently with the prime mission system. Identify requirement for computer-based training and interactive courseware. Provide a course summary document.

A3.2.2.5. Diagram a timeline which includes the training progression of each operational and maintenance functional area from entry into and through exit from the prime mission system. Identify on the continuum all qualification levels, evaluation checkpoints, and reentry qualification points. State the policy upon which decisions will be based for critical points, such as course sequence and media allocation on prime mission system equipment training. Indicate basic training principles to be considered, such as a building-block approach.

A3.2.2.6. Describe operational training systems.

A3.2.2.7. List and describe operational training system component's role, use, and capabilities:

A3.2.2.7.1. Actual prime mission system mission and non-prime mission system equipment.

A3.2.2.7.2. Courseware and associated equipment.

A3.2.2.7.3. Training aids and devices.

A3.2.2.7.4. Embedded training capability in the weapon system.

A3.2.2.8. Describe AFRC and ANG participation.

A3.2.2.9. Identify all composite, joint, interagency, or multinational training applications.

A3.2.2.10. Address potential or unresolved training issues.

A3.2.2.10.1. Operational training system requirements. Summarize the key capability needs and operational and sustainment requirements for the operational training system as expressed in appropriate operational capability documents, concepts of operations, and other basic requirements documents. Describe how manpower, personnel, training, human factors engineering, safety, and occupational health considerations are applied to the design and development of the prime mission system operational training systems to reduce costs and enhance capabilities. Establish initial objectives that support readiness, force structure, affordability, and operational objectives.

A3.2.2.10.2. Training system requirements analysis (TSRA). The TPT will use the results of the TSRA to identify the prime mission system training requirements. The TPT will validate the TSRA products for use in the design of the operational training system. The mission-task analysis report and training requirements analysis report will be used by the TPT to develop the training task list with performance criteria for inclusion in the operational training system requirement documents. The objectives/media analysis report and training system basis analysis report may be used to identify other operational training system requirements, such as the numbers and types of training devices, courseware, potential training alternatives, technology assessment, observations, and recommendations to be incorporated into the training requirement documents.

A3.2.2.11. Implementation. Describe data sources, implementation procedures, special authorization or approvals, and assign responsibilities. Identify those training areas not supported by a complete task analysis process. Describe the use of distributed training capabilities (for example, DMO) or how this requirement will be waived in coordination with using commands or training systems product group.

A3.2.2.12. Operational training system concurrency strategy. Identify and group critical training tasks consistent with mission training development and implementation that are impacted by concurrency. When incremental (phased) delivery of training capability is advantageous or necessary, training capabilities should support the following priorities as agreed to by the TPT:

A3.2.2.12.1. Safety training requirements and tasks.

A3.2.2.12.2. Warfighting training requirements and tasks.

A3.2.2.12.3. Full mission training and rehearsal requirements and tasks.

A3.2.2.13. Organizational interfaces. Identify government organizations necessary to ensure timely approvals and transfer of data, equipment, and property, which should be concurrent with the first contract award and renewed throughout the life cycle of the prime mission system operational training system. Include established agreements such as service-level agreements, statements of work, and memorandums of understanding. Briefly list responsibilities for each command or organization.

A3.2.2.14. Operational training system management and support concept. Concurrency must be given primary consideration in contracting. Identify the concept and strategy for achieving life cycle management and support of the operational training system, to include cybersecurity. Describe requirements and options for logistics support. Contractor logistics support contracts that include hardware and/or software modifications should be developed and used. Consider:

A3.2.2.14.1. Contractor logistic support management.

A3.2.2.14.2. Technical data.

A3.2.2.14.3. Spares.

A3.2.2.14.4. Consumables.

A3.2.2.14.5. Organizational-, intermediate-, and depot-level maintenance.

A3.2.2.14.6. Special or system operational equipment.

A3.2.2.14.7. Common or special tools and equipment.

A3.2.2.14.8. Facilities.

A3.2.2.15. Manpower support concept, military personnel utilization concept, and personnel training requirements. Consider student demographics, entry requirements, and student throughput estimates; estimate portion of military, civilian, or contract personnel, to include Cybersecurity requirements. Describe Air Force Specialty Code employed. Identify these and any other unique requirements for this system in each of the following functional areas:

A3.2.2.15.1. Combined test force.

A3.2.2.15.2. Initial cadre.

A3.2.2.15.3. Operations.

A3.2.2.15.4. Maintenance.

A3.2.2.15.5. Depot.

A3.2.2.15.6. Security forces.

A3.2.2.15.7. Munitions and explosive ordnance.

A3.2.2.15.8. Contract support, contractor logistics support, or contract training.

A3.2.2.16. Training Constraints and Risks. Include all potential limitations that will or may affect timely implementation of training objectives to meet initial operational capability and maintain full operational capability. Describe all peacetime training

constraints. Consider manpower or personnel and resource availability, security, cost, and ESOH considerations, which may influence training media and methodology design, development, and selection. Program managers document the status of operational training system (or any other type of system) ESOH risk management in the Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE). The lead command and using command should refer to the PESHE for the identification and status of ESOH risks. For operational training system programs, the ESOH risk acceptance authorities should be aligned with DoDI 5000.02. Include peacetime restrictions on the use of the prime mission system. Identify risks and assign risk levels that may affect deployment schedules or other milestones. Identify the expected impact of late to need or unusable training devices in terms of workarounds, dollar costs for alternative training, increased use of the prime mission system, or impact of failure to perform on combat capability. Consider initiatives such as advanced prime mission system design change data deliveries and long-lead contractor provided equipment or government-furnished equipment, information, or property. The risk government-furnished property adds to a concurrent delivery schedule must be discussed and tradeoffs identified.

A3.2.2.17. Prime mission system and operational training system milestones. Identify the prime mission system and operational training system schedules and priority ratings necessary for concurrency required to deliver the operational training system. Show "need dates" in terms of milestones. Include key engineering change proposals, management responsibility, and operational milestones. Consider all schedules pertinent to satisfying training objectives through definitive milestones. These could include:

A3.2.2.17.1. Weapon system major milestones to include initial operational capability through full operational capability.

A3.2.2.17.2. Task requirements and analyses completion dates.

A3.2.2.17.3. Training equipment requirements and delivery.

A3.2.2.17.4. Facility beneficial occupancy dates.

A3.2.2.17.5. Prime mission system and operational training system deployment dates.

A3.2.2.17.6. TSSC activation.

A3.2.2.17.7. Factory or contractor training dates.

A3.2.2.17.8. Instructional course start dates.

A3.2.2.17.9. Logistics support requirements dates.

A3.2.2.17.10. Ready for Training and Required Assets Available dates.

A3.2.2.17.11. Technical data availability.

A3.2.2.17.12. Courseware development completion dates.

A3.2.2.17.13. Training management system completion dates.

A3.2.2.17.14. Operational training system evaluation plan and review dates.

A3.2.2.17.15. Distributed training capability (for example, DMO) implementation and sustainment plan, training objectives, initial operational capability, and full operational capability dates.

A3.2.2.18. Resource Summary. Identify total resource requirements to develop and operate the operational training system throughout the prime mission system life cycle. Include recommended tradeoffs to support training and impact of not funding or procuring desired training capability.

A3.2.2.18.1. Indicate funding by allocation and fiscal year.

A3.2.2.18.2. Include training or test equipment, courseware, training aids, technical manuals, and documentation by types, numbers, and life cycle support.

A3.2.2.18.3. Manpower, to include officer, enlisted, and civilian.

A3.2.2.18.4. Personnel, to include instructor cadre and support personnel.

A3.2.2.18.5. Military construction or facility modification. Describe project and costing by fiscal year. Establish physical, power, security, and other relevant requirements.

A3.2.2.18.6. Contractor support. Time, effort, and cost. Initial training support.

A3.2.2.18.7. Travel and per diem requirements and costs.

A3.2.2.18.8. Other: Airspace, ranges, flying hours, munitions, etc.

A3.2.2.19. Training evaluation and validation. Develop and document evaluation and validation criteria, methodology, and responsibilities. Provide cost-benefit analysis of proposed alternatives. Include plan for evaluation of training effectiveness.

A3.2.2.20. Research and development efforts. Describe current and future research and development studies and cost-benefit analysis that may support upgrades to the systems or alternative methodologies to close any training gaps or accomplish the training with fewer resources.

A3.2.2.21. Lessons learned. Identify problem areas common with other programs and potential solutions. Document assumptions made, fixes, workarounds, or changes to requirements based on lessons learned. Include impact on system costs, effectiveness, and combat capability.

A3.2.2.22. Distribution. Distribute to members of the TPT and other designated agencies.

A3.2.3. STP format for existing prime mission systems. After fielding of the operational training system, the STP for an emerging weapon system becomes a historical document providing direction, perspective, and guidance for managers of the operational training system. The STP for an existing weapon system is a road map of the operational training system. The exact composition of the STP is at the discretion of the TPT. It may include the following:

A3.2.3.1. An assessment of future training needs caused by changes in the prime mission system and/or its mission tasking.

A3.2.3.2. A timeline to show the plan for sustaining, modifying, disposing, and replacing the operational training system components.

A3.2.3.3. Any analysis, assessment, or background documentation that provides justification for acquisition, modification, and funding support for operational training system components. Include distributed training capabilities (for example, DMO) implementation and sustainment, if previously included.

A3.2.3.4. An assessment of operational training system deficiencies and their impact on the operational training system costs, effectiveness, and combat capability. Document recommended fixes, work-a-rounds, or changes to requirements.

A3.2.3.5. An assessment of future research and development efforts or technological advances that could improve training effectiveness and/or efficiency, including cost-benefit analysis data. Include distributed training capability, timelines, and funding considerations.

A3.2.3.6. A current version of the PESHE.

Attachment 4

TRAINING SYSTEM METRICS

A4.1. Training System Metrics Tracking. Training system metrics are used to track training system simulator utilization and to communicate the status and health of training systems through the MAJCOMs to AF/A3TI. The intent is to gain and maintain visibility on issues affecting training systems and measure and improve on how simulator training is conducted. MAJCOMs will track, as a minimum, the metrics data shown in **Figure A4.1**. **(T-1)** Utilization will be tracked for simulators that are used to meet AFI11-2MDS Vol 1 currency and Ready Aircrew Program requirements and for simulators that use contracted hours to provide contractor instructor-based training. **(T-1)** Simulators that have contractor logistics support but do not contract for set availability hours will report "Not Applicable" for contracted hours. **(T-1)** IAW **paragraph 2.12.2.10**, simulator utilization metrics will be reported to AF/A3TI semi-annually. Report by 30 April for the prior semi-annual period October through March and by 31 October for the prior semi-annual period April through September. MAJCOMs will upload their data to the platform-specific worksheets located in their respective folders in Synthetic Training and Test folder on the OTTI Capability Development Team sharepoint site: **https://usaf.dps.mil/sites/HAF-A5/center2/otti_cft/SitePages/OTTI.aspx**. **(T-1)** Forward any questions to the AF/A3TI Workflow email address (**AF.A3TI.Workflow@us.af.mil**).

Figure A4.1. Training System Simulator Metrics.

Report Month and Year:										
Contract ID:						**PEC:**				
Type of Contract:						**Cost Cat:**				
(A) Prime Mission System	MAJCOM	Base / Location	Device Serial Number	(B) Type of Training Device	(C) Available Hours Contracted for Use	(D) Official Purpose Hours	(E) Hours Executed	Utilization Rate: E divided by D	(F) Official Purpose Hours Not Used: D minus E	Hours used for DMO
Total										

A4.2. See Figure A4.1 column headers explained below:

A4.2.1. {A} Prime Mission System—See **attachment 1** Terms (i.e., F-15C, C-130J, JTAC, AOC).

A4.2.2. {B} Type of Training Device—Nomenclature for the training system device (i.e., WST, OFT, FMT, FMS, PPT, CPT, MCTS).

A4.2.3. {C} Available Hours Contracted for Use—Hours the contractor is required to have the training device available to be scheduled for Official Purpose use.

A4.2.4. {D} Official Purpose Hours—Contracted hours used for Official Purposes (See **paragraph A4.3**.).

A4.2.5. {E} Hours Executed—Official Purposes Hours actually used.

A4.2.6. {F} Official Purpose Hours Not Used—Hours the training device was not being used for Official Purposes. Provide rationale breakout in **Figure A4.2** for utilization rates less than 80%.

A4.3. Examples of Official Purposes:

A4.3.1. Aircrew Training (Scheduled or Unscheduled).

A4.3.2. Simulator modification/upgrade/maintenance.

A4.3.3. Simulator facility/bay maintenance.

A4.3.4. Contractor use (pre-mission simulator set-up, pre-briefs, post-briefs, syllabus prep, instructor training, etc.).

A4.3.5. Very Important Person Tours.

A4.3.6. Maintenance Training.

Figure A4.2. Training System Simulator Non-Use Breakout.

Reason	Number of Official Purpose hours not used (F)
Flex time built into contract	
Unscheduled simulator repair	
Unscheduled simulator facility/bay repair	
Weather (lightning, flooding/leaking roof, heat/HVAC, etc.)	
Crew no-show (reason unknown)	
Short-notice crew cancellation for operational reasons	
(List other reasons as applicable)	
Total [Must match total of column (F) on Table A4.1]	

Attachment 5

TRAINING SYSTEM SIMULATOR AND SYNTHETIC ENVIRONMENT CERTIFICATION AND SIMULATOR VALIDATION

A5.1. General. Training system simulator/synthetic environment certification ensures that training systems and their components support accurate and credible networked (for example, DMO) and non-networked training for allocated tasks, missions, and events through training system hardware and software performance.

A5.1.1. Simulator validation verifies and validates the networked and/or non-networked simulated weapon system and self-generated mission environment performance. JSE-compliant "Aircraft In A Box" simulators will be used to validate the simulator using JSE as the synthetic environment. Simulator and environment validation will be documented separately. **(T-1)**

A5.1.2. Operational training system training device simulator/synthetic environment certification and simulator validation examine fidelity, concurrency, connectivity, and usability characteristics to support operational training system accreditation and identify capabilities and limitations.

A5.1.3. Operational assessments supporting operational training system acquisition, modification and modernization may use simulator/synthetic environment certification and simulator validation methodologies managed by the acquisition agent and supported by the lead command.

A5.1.4. Simulator/synthetic environment certifications and simulator validations will recur throughout the life cycle of the system/environment, and each assessment will focus on training fidelity and quality of a lead command-approved, TSSC-developed, hardware and software configuration for that device. **(T-1)**

A5.1.5. The reports generated by the simulator/synthetic environment certification and simulator validation support the Accreditation Authority's decision to accredit the associated operational training system for its intended use.

A5.2. Simulator certification program.

A5.2.1. Evaluate the simulator in an operational training environment and assess the following:

A5.2.1.1. Concurrency, connectivity, and fidelity.

A5.2.1.2. Major systems (for example, visual, motion, threat systems, CGFs, aerodynamic, weapons, sensors, electronic warfare, and control input).

A5.2.1.3. Instructor functions and interfaces.

A5.2.1.4. Brief/debrief and performance measurement.

A5.2.1.5. Integration and interoperability.

A5.2.2. Simulator certification accreditation. The simulator certification agent will provide certification results and the accreditation recommendation to the lead command, or designated accreditation proponent, for review.

A5.3. Synthetic environment certification program (not required for self-generated mission environments integral to the simulator).

A5.3.1. Evaluate the synthetic environment in an operational training environment and assess the following:

A5.3.1.1. Physics and threat representation.

A5.3.1.2. Concurrency, connectivity, and fidelity.

A5.3.1.3. Major systems (for example, image generation, threat systems, constructive entities, observable states, red/blue weapons, sensors, electromagnetic environment, and multi-spectral environmental effects).

A5.3.1.4. Instructor functions and interfaces.

A5.3.1.5. Data capture for brief/debrief and performance measurement.

A5.3.1.6. Integration and interoperability.

A5.3.2. Synthetic environment certification accreditation. The synthetic environment certification agent will provide certification results and the accreditation recommendation to the lead command, or designated accreditation proponent, for review.

A5.3.3. Synthetic environment certification should be accomplished for both networked and non-networked activities.

A5.4. Simulator validation program.

A5.4.1. Simulator validation is the process for (1) comparing a training device's operating parameters and performance to the current intelligence assessment of a prime mission system, threat, and interaction between the prime mission system and threat; and (2) 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.

A5.4.2. Operational training system simulator validation performed on a common CGF or HITL may not be used as the only source in formulating the accreditation decision for all operational training systems that use that CGF or HITL because the interactions between the simulated weapon systems and the simulated threats may not be consistent or equivalent. Regression testing must be accomplished to verify the consistency of the CGFs or HITLs interactions with the simulated weapon systems and to confirm the operational training system uses CGF or HITL inputs correctly. JSE-compliant "Aircraft In A Box" simulators will be used to certify the simulators using JSE as the synthetic environment.

A5.4.3. Simulated physical systems accurately representing entities in all ways are needed to stimulate all platform sensors and provide needed characteristics for weapons employment and primary training activities. The emphasis will be on assuring modeling to appropriate fidelity for the operational training system.

A5.4.4. New threats or changed threats in the CGF or HITL entity tables may require a simulator validation.

A5.4.5. Operational training system simulator validation acquisition of systems and modifications programs will be conducted IAW AFI 16-1001 and MAJCOM guidance. The simulator validation will include:

A5.4.5.1. Physical models. Validate physical performance and environmental interaction models in the CGF with authoritative sources: (for example, intelligence community estimates, test results, instrumented range data, etc.).

A5.4.5.2. Behavioral models. Base individual and organizational behavior models on accepted cognitive modeling methodologies. They will be executed at fidelity levels consistent with the warfighter tactical interactions.

A5.4.5.3. A summary of operational training system differences from threat and live weapon systems.

A5.4.5.4. Simulator validation requirements in the STP, life cycle sustainment plan, or human systems integration.

A5.4.6. Operational training system simulator validation accreditation. The operational training system simulator validation and accreditation results are forwarded to appropriate MAJCOM and unit leadership.

Attachment 6

THREAT MATRIX FRAMEWORK (TMF)

A6.1. Overview. TMF is intended to be used in planning and execution for effective training event mission accomplishment. It provides a standardized assessment framework for air, space, and cyberspace domains and is designed for tactical applications for unit training. TMF is not designed to measure the capabilities of an entire country/region, but only smaller vignettes and is not intended to replace in-depth analysis that requires an analyst in the loop. To apply this standard framework to a scenario, one must bound the scenario by geography, time, and political situation. There are inherent limitations underlying the TMF. When applied to an enemy in a scenario, the TMF is an estimate of that enemy. This approximation is not intended to replace the in-depth analysis behind a TMF assessment but act as an augmentation to enable better communication across differing MDS or communities. For example, an environment labeled as contested could actually be permissive for a 5th generation aircraft yet simultaneously be highly contested for a C-17. Utilizing the TMF and numerically categorizing the adversary threat environment overcame the ambiguity associated with terms such as contested and permissive. A level-2 fighter is a level-2 fighter threat to every MDS.

A6.2. TMF contains criteria in each of the following nine categories:

A6.2.1. Air Surveillance.

A6.2.2. Battle Management.

A6.2.3. Fighters.

A6.2.4. Intercept Control.

A6.2.5. Surface Based Air Defense.

A6.2.6. Electronic Attack.

A6.2.7. Cyber.

A6.2.8. Space.

A6.2.9. Integration.

A6.3. These categories list the criteria and what is required (“Yes/No”) for each threat level. To aid in discriminating between the various Threat Levels these criteria make the following distinctions:

A6.3.1. "No" simply means it is not "Required" to Train/replicate a certain Threat Level, it may still be highly "desired" at a Lower Threat Level.

A6.3.2. Threat replication type and density is dependent on the TMF Level; while every attempt was made to create specific details for each TMF Level, functional area manager analysis is needed to discern a Level 3 vs 4 "advanced threat".

A6.3.3. The assessment is based on operational training requirements for CMR aircrew/operators not Undergraduate or Initial Qualification criteria.

A6.4. TMF Level Definitions.

A6.4.1. TMF 0-2—Defined as the ability to replicate and train against varying degrees of lower threat environments.

A6.4.2. TMF 3—Defined as the ability to replicate and train against an advanced adversary with legacy capabilities.

A6.4.3. TMF 4—Defined as the ability to replicate and train against a peer/near-peer adversary.

A6.4.4. TMF 5—Defined as the ability to replicate and train against emerging/future capabilities.