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MANAGEMENT OF AIR FORCE OPERATIONAL TRAINING SYSTEMS

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This instruction implements Air Force Policy Directive (AFPD) 16-10, *Modeling and Simulation*. It provides guidance and procedures for managing, developing and fielding operational training systems. This publication applies to Air Force organizations at all Echelons including Air Force Reserve Command (AFRC) and Air National Guard (ANG). While the Joint Program Office (JPO) retains control of F-35 operational training systems, this instruction is not applicable to F-35 systems, to include roles and responsibilities and reporting procedures with the exception of operational training system reporting procedures contained in this Air Force Instruction (AFI). Conflicts between this instruction and JPO direction will be reconciled by the F-35 Integration Office (AF/IO), ACC (Lead Command), and the JPO. In the event of conflict with other instructions, refer to AFI 33-360, *Publications and Forms Management*. The authorities to waive wing or unit level requirements in this publication are identified with a Tier number ("T-0, T-1, T-

2, T-3") in accordance with AFI 33-360. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's commander for non-tiered compliance items. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFM) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule located in the Air Force Records Information Management System. Submit suggested improvements to this instruction on Air Force Form 847, *Recommendation for Change of Publication*, through the appropriate chain of command to Air Force/Operational Training Infrastructure Division, (AF/A3TI). Major Commands (MAJCOMs), field operating agencies, and direct reporting units may supplement this instruction after coordination with, and approval by, AF/A3TI.

(AETC) This supplement implements and extends the guidance of AFI 16-1007, *Management of Air Force Operational Training Systems* as follows: It provides information and instructions for the AETC Undergraduate Aircrew Training Device Program. This supplement applies to all AETC Undergraduate assigned units. With the exception of personnel participating in an AETC Associate Instructor program, this supplement does not apply to Air Force Reserve Command or Air National Guard units unless specified by Major Command Memorandum of Understanding. Submit suggested improvements to this supplement via AF Form 847, *Recommendation for Change of Publication*, through Standardization and Evaluation channels to the office of primary responsibility (OPR), 19 AF/SDP. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. This publication may not be supplemented by lower units.

SUMMARY OF CHANGES

This is a new AFI and must be reviewed in its entirety. Tiering and compliance statements have been updated in accordance with Administrative Assistant to the Secretary of the Air Force recommendations. This AFI supersedes AFI 36-2251, *Management of Air Force Training Systems*, and supersedes AFI 36-2248, *Operations and Management of Aircrew Training Devices*. This AFI includes new or modified information on operational training, operational training systems, operational training system responsibilities and management, and reporting on operational training systems.

(AETC) This supplement has been totally revised from previous guidance, and must be reviewed in its entirety due to system wide changes in Headquarters Air Force guidance. The AETC Form 776 has been rescinded and replaced by various computer products generated by the training management system currently in use throughout AETC.

Chapter 1

GENERAL INFORMATION

1.1. Purpose. The instruction provides guidance for the management of Air Force operational training systems**,** identifies organizational responsibilities, and describes processes used in the management of operational training systems. Operational training is mission-oriented training in support of warfighter readiness.

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

1.2.1. Aircrew Training Devices: includes Aircrew Training Systems and Physiological Training Devices.

1.2.2. Missile Procedures Training Devices: includes Missile Procedures Trainer, Minuteman Enhanced Procedures Trainer, Airborne Procedures Trainer, and Countdown Procedures Trainer.

1.2.3. Mission System Training Devices: includes Joint Terminal Attack Controller, Air Support Operations Center, Control and Reporting Center, Air Operations Center, Air Traffic Control, and those devices which are not considered Aircrew Training Devices or Missile Procedures Training Devices.

1.2.4. Cyberspace trainers.

1.2.5. Space System Training Devices: includes Standard Space Trainer (SST).

1.3. Operational training concepts.

1.3.1. Live, synthetic and blended training environments are defined by their use of live, virtual and/or constructive capabilities. Live (real people operating real weapon systems), virtual (real people operating simulated systems), and constructive (computer generated entities) are foundational domains for operational training.

1.3.2. Live training environments can include either virtual or constructive assets. Synthetic training includes virtual and/or constructive capabilities. When live and synthetic environments are combined, the training environment is blended.

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

1.3.4. 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 operational readiness are not compromised, recognizing that some live training events cannot or should not be replaced by synthetic training.

Chapter 2

ROLES AND RESPONSIBILITIES

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

2.2. The Assistant Secretary of the Air Force for Acquisition, Technology and Logistics (SAF/AQ) serves as the Air Force Service Acquisition Executive for all Air Force 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 Air Force warfighters.

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

2.4. Air Force Chief Information Officer (SAF/CN) develops, coordinates, and executes Air Force information technology policy, strategy, guidance, and oversight for the management of data and communication networks in accordance with (IAW) applicable Office of the Secretary of Defense guidance and Air Force 1733-series publications. CIO oversight of non-Sensitive Compartmented Information (SCI) networks provides an essential infrastructure capability for distributed operational training by joining distant and disparate training audiences.

2.5. Air Force Chief Data Officer (SAF/CO) develops, coordinates, and executes Air Force data policy, strategy, guidance, and oversight of Air Force data management.

2.6. Deputy Chief of Staff, Manpower, Personnel and Services (A1) develops, coordinates, and executes personnel policy and essential procedural guidance for military training (non-flying) programs.

2.7. Deputy Chief of Staff, ISR (AF/A2) develops, coordinates, and executes Air Force Intelligence Community information technology policy, strategy, guidance, and oversight for the management of Intelligence, Surveillance and Reconnaissance (ISR) data and SCI ISR networks IAW applicable Office of the Director of National Intelligence guidance and Air Force 14-series publications.

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

2.8.1. Nominate an Authorizing Official for Operational Training systems to SAF/CN for appointment IAW Department of Defense Instruction 8510.01, *Risk Management Framework (RMF) for DOD Information Technology (IT)*, Change 1, 24 May 2016. 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 simulators, training aids, models, environment generators, ranges, and systems. The Authorizing Official will designate the Security Control Assessor and Security Control Assessor Representatives, who will report to the Authorizing Official.

2.8.2. Act as the operational training funding advocate for aircrew training devices, mission system training devices, space training devices, cyber training devices, and missile training devices.

2.8.3. Establish policy and guidance for OTI.

2.9. Director, Operational Training Infrastructure Division (AF/A3TI) will:

2.9.1. Ensure the Operational Training Infrastructure Division is manned to provide a Security Control Assessor and associated Security Control Assessor Representatives. The Security Control Assessor is the senior official with the authority and responsibility for the certification of assigned or applicable Air Force-governed OTI systems and platform information technology systems.

2.9.2. Synchronize operational training system requirements and acquisition strategies with appropriate SAF, Air Staff, Space and Missile Systems Center, industry, and program executive officer organizations.

2.9.3. Advocate for operational training systems funding and requirements at SAF, Air Staff, Military Departments, Interagency, and Multi-national processes IAW AFPD 10-6, *Capability Requirements Development*.

2.9.4. Consolidate operational training system funding information from Air Staff functional managers and Program Element Monitors to track Air Force-wide operational training system funding status IAW AFPD 90-11, *Air Force Strategy, Planning and Programming Process*.

2.9.5. 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.

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

2.9.7. Synchronize MAJCOM efforts to minimize multiple independent Air Force networks.

2.9.8. Appoint a training system manager to oversee management of operational training systems. The training systems manager will interface with subject matter experts across MAJCOMs, total force, joint, and coalition on operational training systems. Ensure compliance with AFI 36-2201, *Air Force Training Program*. Further, the training systems manager will analyze MAJCOM reports in order to provide advocacy to the corporate process.

2.9.9. Conduct bi-annual data calls to assess the health of the Air Force training system enterprise.

2.9.10. Advocate for OTI requirements, technology, and planning throughout the Joint Capabilities Integration and Development System (JCIDS) IAW Chairman of the Joints Chief of Staff Instruction 5123.01H, *Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*, and AFI 10-601, *Operational Capability Requirements Development*.

2.10. Lead commands will:

2.10.1. 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 IAW AFPD 10-9, *Lead Command Designation and Responsibilities for Weapon Systems*. **(T-1).** Lead commands will establish training system management structures to holistically plan, fund, and manage training systems as part of an

OTI framework, to include ensuring operational training system requirements are included in core function support plans. **(T-1).**

2.10.1. **(AETC)** AETC Requirements and Acquisition and Sustainment Program Managers will ensure that aircraft modification proposals include planning, programming, and budgeting to ensure sufficient funds to modify the associated aircrew training devices to ensure timely concurrency between the aircraft platform and all associated training devices **(T-2)**.

2.10.1.1. **(Added-AETC)** Recommended changes from the field will be submitted to 19 AF/SDP using an AETC Form 103, *Simulator Software/Publication Critique*, Training System Change Request (TSCR), or other MAJCOM approved form which includes the data required of the previous mentioned forms **(T-2)**.

2.10.2. With regard to requirements, the lead command will:

2.10.2.1. Establish aircrew, mission, missile, space, and cyberspace crew training requirements and document in system training plans and/or concept documents. **(T-1).** The system training plan is an iterative planning document that defines the justification, design, development, funding, resources, support, modification, operation, and management of an operational training system. For fielded systems, the system training plan 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 system training plan 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 program manager. Expanded information on the system training plan is contained in **Attachment 3** of this AFI.

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

2.10.2.3. Establish operational 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. **(T-1).**

2.10.2.4. Set requirements for, and lead, training system requirements analysis (TSRA) and system training plan development and execution, in coordination with Air Force Life Cycle Management Center (AFLCMC), AETC, and using commands, as warranted. **(T-1).**

2.10.2.4. **(AETC)** None of the Undergraduate Flying Training operational training systems meet FAA standards to be classified as a flight simulator of any FAA level or category as of June 2020.

2.10.2.5. Conduct TSRAs, in coordination with using commands, through the Training System Program Office (SPO) or AETC. **(T-1).** 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 operational 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. Expanded information on the TSRA is contained in **Attachment 2** of this AFI.

2.10.2.6. Maintain prime mission system requirements, including those validated through the JCIDS process. **(T-1).**

2.10.2.7. Review prime mission system, product group, and MAJCOM standards impacting training system requirements, annually. **(T-1).**

2.10.2.8. Prioritize requirements using Air Force-approved criteria following Air Force Materiel Command (AFMC) procedures as defined in AFM 63-143, *Centralized Asset Management Procedures*. **(T-1).**

2.10.2.9. Establish 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. **(T-1).**

2.10.3. With regard to using commands, the lead command will:

2.10.3.1. Support using command requirements and specifications development. **(T-1).**

2.10.3.2. Identify the best mix of live and synthetic training capabilities to accomplish training requirements. **(T-1).**

2.10.4. With regard to prime mission system and training system program managers, the lead command will:

2.10.4.1. Provide guidance and assistance to program managers in the development, acquisition and sustainment of operational training systems. **(T-1).**

2.10.4.2. Ensure the operational training system is available, network-capable, if applicable, and compliant with required standards prior to fielding the prime mission system. **(T-1).** Define operational training system requirements for the prime mission system fielding strategy. **(T-1).**

2.10.4.3. Notify the program manager of weapon system modifications to ensure operational training system concurrency. **(T-1).**

2.10.4.4. Direct Air Force Operational Test and Evaluation Center or MAJCOM operational test organizations to advise the program manager on test or operational issues for the acquisition and sustainment of operational training systems. **(T-1).**

2.10.4.5. Inform program managers of databases, models and other enterprise capabilities available to increase interoperability and reduce costs. **(T-1).**

2.10.4.6. Assess approved Air Force Forms 1067, *Modification Proposal*, operational training system impacts and budget estimate with the program manager before the modification proceeds. **(T-1).**

2.10.4.7. Establish and maintain an administrative control process to record and track evaluations of the training system, to include any simulator certification or simulator validation. **(T-1).**

2.10.4.7. **(AETC)** 19 AF/SDP will record and track evaluations of the Undergraduate Flying Training operational training systems and any simulator certification (SIMCERT) or simulator validation (SIMVAL).

2.10.4.7.1. **(Added-AETC)** 19 AF/SDP and 19 AF/DOU will determine when all SIMCERT deficiencies have been corrected and the operational training devices have been returned to "performs like the aircraft" status. At this time, the SIMCERT report will be closed.

2.10.4.8. Provide 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 AFI 63-101/20-101, *Integrated Life Cycle Management*, for additional guidance with respect to planning for training in the acquisition process.

2.10.5. With regard to simulator certification, the lead command will:

2.10.5.1. Coordinate with appropriate agencies (i.e. using command, AFLCMC/Spacelift Range and Network Systems Division, Space Training Acquisition Office (STAO), and/or product or materiel group), will:

2.10.5.1.1. Establish operational training system simulator 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 simulator certification interval. **(T-1).** Operational training system simulator certifications examine fidelity and usability characteristics to support operational training system accreditation and identify capabilities and limitations. Expanded information on simulator certification is contained in **Attachment 4** of this AFI.

2.10.5.1.1. **(AETC)** UFT platform training systems will use the integrated test team approved or standard Acceptance Test Procedure (ATP) checklists for the SIMCERT to verify training system concurrency or compatibility with aircraft performance for intended training maneuvers.

2.10.5.2. Ensure all system types receive simulator certification at least once every 48 months. Simulator certification documentation and policies will comply with guidance in AFI 16-series publications and MAJCOM guidance. **(T-1).** Ensure simulator certification procedures confirm that enterprise standard solutions integrated into operational training systems comply with enterprise standards (for example motion or visual systems are current with enterprise standard for that model, and so forth.). **(T-1).**

2.10.5.2. **(AETC)** 19 AF/SDP will monitor and record the frequency of simulator certification dates for UFT platform training systems.

2.10.5.3. Allocate and provide funding to accomplish required actions. **(T-1).**

2.10.5.3. **(AETC)** For all Undergraduate Flying Training operational training systems, SIMCERTs will be scheduled and performed by personnel obtained by 19 AF/SDP. 19 AF/SD will budget TDY funding to accomplish SIMCERTS. 19 AF agencies will provide SIMCERT planning information to 19 AF/SD for this TDY budgeting purpose.

2.10.5.4. Designate a simulator certification agent who will:

2.10.5.4.1. Establish deadlines for initial certification of newly delivered devices, upon fielding major modifications, or after relocation of devices. **(T-2).**

2.10.5.4.1. **(AETC)** 19 AF/SDP, as the AETC simulator certification agent, will not accept newly delivered aircrew training devices, major modifications to devices, nor relocated devices, delivered by contractor(s) or USG activities until the approved Acceptance Test Procedure (ATP) is performed and completed on the ATD and all deficiencies are corrected and closed. The current CLS contractor will measure the simulator's Control Loading Forces if the simulator has this capability.

2.10.5.4.2. Perform a simulator certification IAW lead command guidance. **(T-2).**

2.10.5.4.3. Document operational training system simulator certification status. Lead command guidance shall be used to establish further procedures, processes, and requirements. **(T-1).** Resources for conducting operational training system simulator certification shall be provided by the lead command. **(T-1).**

2.10.5.5. The lead command, or designated accreditation proponent, will respond to simulator certification agent reports within 14 days. **(T-1).**

2.10.6. With regard to simulator validation, the lead command will:

2.10.6.1. Be the validation authority and ensure CGFs for specific operational training systems are accredited. **(T-1).**

2.10.6.2. Establish operational training system simulator validation requirements and evaluation criteria 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 simulator validation interval. **(T-1).** Operational 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 4** of this AFI.

2.10.6.3. Be the validation proponent for operational training systems procured or sustained by the respective lead command. **(T-1).**

2.10.6.4. Manage the simulator validation program. **(T-1).**

2.10.6.5. Inform using commands about operational training system changes that will impact accreditation and if a complete or partial simulator validation is required. **(T-1).**

2.10.6.6. Use the operational training system simulator validation control process to record operational training system simulator validation results related to CGF configurations. **(T-1).**

2.10.6.7. Review the results of simulator validations and ensure CGF accreditation for the specific operational training system**. (T-1).**

2.10.6.8. Designate a simulator validation agent. **(T-1).**

2.10.6.8.1. **(Added-AETC)** 19 AF/SDP will act as the AETC simulator certification agent for all Undergraduate Flying Training aircraft simulators. This agent will work

in close coordination with 19 AF/DOV evaluator pilots to ensure maximum compatibility with actual aircraft performance capabilities.

2.10.6.9. Ensure all training system types (flight, mission, part-task, etc.) receive simulator validation at least once every 48 months. Simulator validation policies will comply with guidance in AFI 16-series publications. **(T-1).**

2.10.7. Manage operational training system use, distribution, and disposition. **(T-1).**

2.10.8. Provide resources required to obtain and maintain cybersecurity certification and Authority to Operate. **(T-1).**

2.10.9. Designate subject matter experts for the operational training system. **(T-1).**

2.10.10. Provide subject matter expert support for contract performance evaluations and government acceptance testing. **(T-1).**

2.10.11. 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, operational training system working groups, testing and logistics interchange meetings, and facility design and construction meetings. **(T-1).**

2.10.12. Chair the training planning team. **(T-1).**

2.10.13. Define the scope and support requirements of the training system support center, as required. **(T-1).**

2.10.14. Develop, maintain, and review the system training plan for all major weapon systems assigned to the command, as required. **(T-1).**

2.10.15. Ensure the operational training system is included in the major weapon system modification budgeting profile, maintains concurrency, and complies with network training standards. **(T-1).**

2.10.16. Provide guidance to fund and provide Contract Officer's Representative (COR) positions, on-site and on-call, for their assigned training enterprises. **(T-1).** The COR performs oversight for the contracting officer. Manpower billets generated to support a training system will remain assigned to that device and will not be used for other purposes in the unit. **(T-1).**

2.10.17. Report operational training system data on all assigned major weapon system platforms to the AF/A3TI training system manager no later than 31 January and 31 July (semi-annually). **(T-1).**

2.10.18. Review standing TSRAs every 5 years, or sooner if changes to the operational training system or training environment dictates, to determine if TSRA modifications are required. **(T-1).** The lead command makes final decision on whether a TSRA update or modification will be undertaken. **(T-1).**

2.10.19. 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. **(T-1).**

2.10.20. 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**. (T-1).**

2.10.21. Provide concepts of operation, force development concepts, operational roadmaps, and applicable operations training requirements. **(T-1).**

2.10.22. Provide updates on training capabilities and infrastructure development which impact training system planning. **(T-1).**

2.11. Using commands, will:

2.11.1. Identify training and operational training system requirements to the lead command for advocacy, programming, and funding. **(T-1).**

2.11.2. Designate in writing an Information System Security Officer (ISSO) and alternate to ensure cybersecurity compliance. **(T-1).**

2.11.3. Submit reporting information to the lead command as directed in this AFI and its supplements. **(T-1).**

2.11.4. 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. **(T-1).**

2.11.5. Assume lead command responsibilities for simulator certification and simulator validation when the operational training system is unique to a respective using command. **(T-1).** Simulator certification and simulator validation policies will comply with guidance in AFI 16-1001, *Verification, Validation and Accreditation (VV&A)*. **(T-1).**

2.12. MAJCOMs, NGB, Direct Reporting Units, and Field Operating Agencies will: assume both owning command and lead command responsibilities for operational training systems developed or acquired by those commands to meet unique training needs. **(T-1).**

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

2.12.1.1. Act as the Air Force's Executive Agent for formal, undergraduate training programs technology and development, for which AETC is the lead command. **(T-1).**

2.12.1.2. Advocate for distributed training capabilities in formal education and training under their command. **(T-1).**

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

2.12.1.2.2. Ensure AETC Training Planning Team participation directly supporting subject matter expert participation for the development of the system training plan and TSRA.

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

2.12.1.2.4. Establish AETC training planning team support teams to develop, support, and maintain each training system.

2.12.1.2.5. Monitor new acquisitions, modifications or changes managed by the 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, *Capabilities Based Requirements Development*.

2.12.1.3. Provide advice and expertise to the lead command, program manager, and training planning teams. **(T-1).**

2.12.1.4. Perform TSRAs, when requested by the lead command, in coordination with the training planning team. **(T-1).**

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

2.12.2.1. Coordinate lead command and prime mission system program offices' operational training system requirements and solutions. **(T-1).** Provide support to SPOs responsible for operational training system acquisition and sustainment through the parent prime mission systems program office(s) and/or AFLCMC. **(T-1).**

2.12.2.2. With AFLCMC and Air Force Research Laboratory (AFRL) Warfighter Readiness Research Division, provide technical support to AF/A3TI. **(T-1).**

2.12.2.3. Manage sustainment fund programming and allocation through AFMC centralized asset management, or STAO for space systems. **(T-1).**

2.12.2.4. Ensure prime mission system modification development in tandem with the training system to ensure concurrency. **(T-1).**

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

2.12.3.1. Perform operational training system contract management, support (including training system support center establishment), relocation, and disposition activities. **(T-1).**

2.12.3.2. Host All-Command simulator summit to review operational training system status and discuss lessons learned, potential program synergies, operational training opportunities, advocacy issues, and future technology needs. **(T-1).** Consider holding the summit in conjunction with an operational training system industry day.

2.12.3.3. Through the simulator SPO, acquisition program office, or AETC, and in coordination with the lead command conduct the TSRA. **(T-1).**

2.12.3.4. Assume Planning, Programming, Budgeting, and Execution System responsibility for active contractor logistics support, and operations and maintenance. **(T-1).**

2.12.3.5. Provide programmed contractor logistics support to all fielded operational training systems, including programs of record and interim devices. **(T-1).**

2.12.3.6. With Space and Missile Systems Center (SMC), Spacelift Range and Network Systems Division, lead operational training system research and development and develop or assist with use case demonstrations, training program and exercise integration. **(T-1).**

2.12.3.7. Support JCIDS documentation and supporting analyses, technical documentation and validation regarding operational training efforts, and operational training system and support service integration and procurement. **(T-1).**

2.12.3.8. Ensure the ISSO assists the Program Management Office-appointed Information System Security Manager to complete Risk Management Framework Assessment and Authorization packages. **(T-1).** Serve as the focal point for cybersecurity compliance involving networked (for example, distributed mission operations (DMO)) and non-networked activities. **(T-1).**

2.12.3.9. Provide resources required to obtain and maintain cybersecurity certification and Authority to Operate. **(T-1).**

2.12.4. **Air Force Space Command (AFSPC) is responsible for acquisition and sustainment programs assigned to the Space and Missile Systems Center (SMC).**

2.12.4.1. SMC/Spacelift Range and Network Systems Division's STAO is the space enterprise center lead for space systems operations training within the Air Force Program Executive Officer for the space portfolio. STAO and will:

2.12.4.1.1. Provide program management of the SST and DMO – Space programs. **(T-1).** The SST is the common training architecture for all combat mission ready and mission ready space operations training.

2.12.4.1.2. Work with program managers to ensure space operational training system interoperability, interface with SST architecture, and meet AFSPC training requirements. **(T-2).**

2.12.4.1.3. Acquire and sustain space operational training systems (simulators, stimulation capability and environment generators) to support DMO - Space and DMO Center – Space training, exercises, and mission rehearsal operations. **(T-2).**

2.12.4.1.4. Review and coordinate space system TSRAs, system training plans, requests for proposal and all acquisition or program documents that impact operational training system development and sustainment. **(T-2).**

2.12.4.1.5. Serve as principal advisor to the Space Program Executive Officer and Senior Materiel Leaders on Department of Defense, Air Force, and AFSPC training systems. Update Air Force Program Executive Office quarterly on all system training plans, TSRAs, and operational training systems. **(T-2).**

2.12.4.1.6. Work with program managers, HQ AFSPC, and appropriate training planning team to define user training requirements through the TSRA process. **(T-1).**

2.12.4.1.7. Document requirements in the system training plan prior to request for proposal release to ensure space operational training systems are affordable, effective, sustainable, and meet operator requirements.

2.12.4.1.8. Guide and assist program managers in developing, acquiring, and sustaining operational training systems and facilitate information sharing between space programs.

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

2.13. Training planning team will:

2.13.1. Develop the system training plan after the TSRA is completed. **(T-1).**

2.13.2. Provide guidance on master task list content, as warranted. **(T-1).**

2.13.3. Use the system training plan to ensure training considerations are adequately addressed in the prime mission system acquisition and modification processes. **(T-1).** The system training plan is an iterative planning document that defines the justification, design, development, funding, resources, support, modification, operation, and management of an operational training system. Expanded information on the system training plan is contained in **Attachment 3** of this AFI.

2.14. Training system support center will provide configuration management functions, engineering development, feasibility studies, life cycle hardware, software and courseware support for the operational training system.

2.15. Training system manager will champion and resource concurrency, fidelity, and connectivity of operational training systems. (T-1).

2.16. The host unit (in other words, the unit with primary responsibility for the systems) will:

2.16.1. Provide guidance for the unit's training system and provide COR positions, on-site and on-call, for their assigned training enterprises. **(T-2).**

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

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

2.16.4. Maintain operational training system usage records. **(T-2).**

2.16.5. Debrief maintenance technicians after each training period and enter all discrepancies in the Air Force Technical Order Form 781A. **(T-2).** Missile procedures training device discrepancy forms may be developed locally.

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

2.16.7. Ensure local communications support for networked training capabilities. **(T-2).**

2.16.8. Secure training system facilities to the extent necessary to allow for required classified training.

2.17. Simulator certification agent will:

2.17.1. Establish deadlines for initial certification of newly delivered devices, upon fielding major modifications, or after movement of devices. **(T-2).**

2.17.2. Perform simulator certifications IAW lead command or MAJCOM guidance. **(T-2).**

2.17.3. Provide simulator certification results and the accreditation recommendation to the lead command, or designated accreditation proponent, for review.

2.18. Simulator validation agent will perform simulator validations as directed by the lead command, and provide results to the lead command for accreditation approval. (T-2).

Chapter 3

PLANNING AND REPORTING REQUIREMENTS

3.1. Advocacy. AF/A3TI is responsible for supporting warfighter readiness by ensuring OTI addresses training requirements balanced with affordability. Operational training system status information from the field is used to advocate in support of warfighter readiness.

3.2. Planning. Lead commands accomplish training system planning to ensure training requirements are met and are 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. Lead commands will ensure that consideration of all operational training systems are included in all appropriate forums. **(T-1).** As a minimum, operational training systems will be included in all training review board activities. **(T-1).** 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. 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 and training system modifications over the next 5 years, and known shortfalls or funding disconnects.

3.3. Reporting. AF/A3 will conduct two data calls per year to assess the health of the training system enterprise; specific requirements will be detailed in the tasking message. AF/A3 will use the data collected to measure the synthetic training environment against established OTI metrics based on the *Air Force Tactics, Techniques, and Procedures 3-1 Volume Threat,* Threat Matrix Framework.

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(AETC)

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System,* 7 January 2015

Department of Defense Instruction 5000.61, *DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A),* 09 Dec 2009

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Air Force Manual 63-143, *Centralized Asset Management Procedures*, 12 August 2015

Air Force Policy Directive 10-6, *Capability Requirements Development*, 6 November 2013

Air Force Policy Directive 10-9, *Lead Command Designation and Responsibilities for Weapon Systems*, 8 March 2007

Air Force Policy Directive 16-10, *Modeling and Simulation,* 23 January 2015

Air Force Policy Directive 36-26, *Total Force Development and Management*, 18 March 2019

Air Force Policy Directive 63-1/20-1, *Integrated Life Cycle Management*, 3 June 2016

Air Force Policy Directive 90-6, *Air Force Strategy, Planning and Programming, Budgeting, and Execution Process,* 26 June 2019

Air Force Space Command Guidance Memorandum 2018-13-01, *Space Operations Crew Force Management, Training, Standardization and Evaluation,* 30 September 2018

Air Force Tactics, Techniques, and Procedures Volume Threat, 15 November 2018

Prescribed Forms

(**Added-AETC**) AETC Form 103, *Simulator Software/Publication Critique*

Adopted Forms

(**Added-AETC**) AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*

(**Added-AETC**) AF Form 847, *Recommendation for Change of Publication*

Air Force Form 847, *Recommendation for Change of Publication*

Air Force Technical Order Form 781A, *Maintenance Discrepancy and Work Document*

AFMAN 33-363, Management of Records

Air Force Form 1067, *Modification Proposal*.

Abbreviations and Acronyms

AETC—Air Education and Training Command

AFI—Air Force Instruction

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

AFSPC—Air Force Space Command

(Added-AETC) ATD—Aircrew Training Device

(Added-AETC) ATP—Acceptance Test Procedure

CGF—Computer Generated Forces

(Added-AETC) CLS—Contractor Logistics Support

COR—Contracting Officer's Representative

DMO—Distributed Mission Operations

ESOH—Environment, Safety, and Occupational Health

(Added-AETC) FAA—Federal Aviation Administration

IAW—In Accordance With

ISSO—Information System Security Officer

JCIDS—Joint Capabilities Integration and Development System

JPO—Joint Program Office

(Added-AETC) OPR—Office of Primary Responsibility

OTI—Operational Training Infrastructure

MAJCOM—Major Command

NGB—National Guard Bureau

PESHE—Programmatic Environment, Safety, and Occupational Health Evaluation

(Added-AETC) SIMCERT—Simulator Certification

(Added-AETC) SIMVAL—Simulator Validation

SMC—Space and Missile Systems Center

SPO—System Program Office

SST—Standard Space Trainer

STAO—Space Training Acquisition Office

(Added-AETC) SUP—Supplement

(Added-AETC) TSCR—Training System Change Request

TSRA—Training System Requirements Analysis

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.

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

Courseware—All instructional material including technical data, textual materials, and 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 expands 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.

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 in accordance with 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.

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 or not 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 AFPD 10-9). The Air Force assigns responsibility for overall management of each weapon system 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—Operational training is mission-oriented training in support of warfighter readiness. It is a crucial element of all the Air Force Service Core Functions. It distinguishes itself

from initial training due to its focus on employment of a weapon system in an operational setting as opposed to learning the basic use of equipment or development of basic skills.

Operational Training Infrastructure—A framework that includes training systems, live ranges, simulators, 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 simulators and 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 weapon system programs or part of existing training maintenance contracts.

Prime mission system (equipment)—Any weapon system, support system, work station, 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 or AFSPC).

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

System training plan—The system training plan is an iterative planning document that defines the justification, design, development, funding, resources, support, modification, operation, and management of an operational training system. The system training plan 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 system training plan 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 system training plan 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.

Training pipeline managers—Responsible for life cycle management (planning, directing, implementing, and overseeing) AETC 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 training planning team uses the system training plan 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 services—Work performed in support of meeting objectives to train personnel in their assigned duties. Examples of training services include, but are not necessarily limited to, contract aircrew training, courseware development, document review and writing, academic (classroom) instruction, scheduling, training device operation and instruction, and conducting briefings and debriefings.

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 Air Force and industry training system managers and subject matter experts to ensure operational training systems are adequately funded and properly provisioned to support Air Force operations training.

Training systems product group—An umbrella term to describe the Air Force 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 TRSAs, 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, analyst 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 system training plan. AFLCMC, through the simulator 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 training system support centers maintain operational training system operational training baselines by merging configuration management baselined weapon system(s) functionality with mission and training profiles, and so on, to provide the using unit with an effective trainer for initial and continuation training, ready aircrew program, and DMO. Contractor logistics support training system support centers normally support aircrew and maintenance training systems.

Using command—Any command or organization 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. For new and emerging prime mission systems, the lead command will conduct a TSRA, in coordination with the simulator program office, acquisition program office, using commands and/or AETC. **(T-1).** The training planning team will initiate this front-end TSRA after Acquisition Milestone A, IAW DoDI 5000.02, *Operation of the Defense Acquisition System*, to inform system training plan development. **(T-1).** For existing systems, the lead command, program manager, or training planning team will conduct recurring TSRAs when major modifications, 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).** The training planning team will initiate and define the follow-on TSRA scope relative to the information required. **(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 training planning team 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 training planning team 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 training planning team 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 develops 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. Knowledge, skills, and attitudes are classified as perceptual, motor, cognitive, information processing abilities. **(T-1).**

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

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.

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 system training plan 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 training system requirements analyses.

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.

A3.1.7. Establish milestones and schedules to ensure timely development, testing, and fielding of training capability and training support.

A3.1.8. Identify how subsystems and components should be integrated into the total operational training system. Include DMO implementation, sustainment, and utilization, if applicable.

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.

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.

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 training planning team may choose to utilize one of two formats for the system training plan depending upon the life cycle phase of the prime mission systems: emerging mission systems and existing mission systems.

A3.2.1. System training plan format for emerging prime mission systems. The exact composition of the system training plan is at the discretion of the training planning team. The

system training plan will be referenced and summarized in the life cycle sustainment plan or other human systems integration documents. The system training plan 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 system training plan.

A3.2.2. Suggested system training plan 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 system training plan. 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 membership. The system training plan should document training planning team membership, which shall comprise the lead command, using commands, weapon system program office and training systems product group or STAO 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 DMO or describe how this requirement will be waived in coordination with using commands, training systems product group or STAO. 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, the training progression of each operational and maintenance functional area from entry into 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 taken into account, such as a building-block approach.

A3.2.2.6. Describe operational training systems.

A3.2.2.7. List and describe operational training system components 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 Air Force Reserve 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. The training planning team will use the results of the TSRA to identify the prime mission system training requirements. The training planning team 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 training planning team 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 DMO or how this requirement will be waived in coordination with using commands, training systems product group or STAO (for space systems).

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 training planning team:

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) environment, safety and occupational health 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 Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System*. 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. Training System Support Center 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. 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 so on, 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, and so on.

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 training planning team and other designated agencies.

A3.2.3. System training plan format for existing prime mission systems. After fielding of the operational training system, the system training plan for an emerging weapon system becomes a historical document providing direction, perspective, and guidance for managers of the operational training system. The system training plan for an existing weapon system is a road map of the operational training system. The exact composition of the system training plan is at the discretion of the training planning team. 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 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 networked training capability, timelines, and funding considerations.

A3.2.3.6. A current version of the PESHE.

Attachment 4

TRAINING SYSTEM SIMULATOR CERTIFICATION AND SIMULATOR VALIDATION

A4.1. General. Operational training system simulator certification ensures that operational training systems and their components support accurate and credible networked (for example DMO) and non-networked training for allocated tasks, missions, and events through operational training system hardware and software performance.

A4.1.1. Simulator validation verifies and validates the networked and/or non-networked simulated mission environment performance.

A4.1.2. Operational training system training device simulator certification and simulator validation examine fidelity, concurrency, connectivity, and usability characteristics to support operational training system accreditation and identify capabilities and limitations.

A4.1.3. Operational assessments supporting operational training system acquisition, modification and modernization may use simulator certification and simulator validation methodologies, and are managed by the acquisition agent and supported by the lead command.

A4.1.4. Simulator certifications and simulator validations will recur throughout the life cycle of the system, and each assessment will focus on training fidelity and quality of a lead command-approved, training system support center-developed, hardware and software configuration for that device. **(T-1).**

A4.1.5. The reports generated by the simulator certification and simulator validation support the Accreditation Authority's decision to accredit the associated operational training system for its intended use.

A4.2. Simulator certification program.

A4.2.1. Simulator certification process.

A4.2.2. Evaluate the training device in an operational training environment and assess the following:

A4.2.2.1. Concurrency, connectivity, and fidelity.

A4.2.2.2. Major systems (for example, visual, motion, threat systems, CGFs, aerodynamic, weapons, sensors, EW and control input).

A4.2.2.3. Instructor functions and interfaces.

A4.2.2.4. Brief/debrief and performance measurement.

A4.2.2.5. Integration and interoperability.

A4.2.3. Simulator certification accreditation. The simulator certification agent will provide simulator certification results and the accreditation recommendation to the lead command, or designated accreditation proponent, for review.

A4.3. Simulator validation program.

A4.3.1. 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.

A4.3.2. Operational training system simulator validation performed on a common CGF may not be used as the only source in formulating the accreditation decision for all operational training systems that use that CGF 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 CGF's interactions with the simulated weapon systems and to confirm the operational training system uses CGF inputs correctly.

A4.3.3. 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.

A4.3.4. New threats or changed threats in the CGF entity tables may require a simulator validation.

A4.3.5. Operational training system simulator validation acquisition of systems and modifications programs will be conducted in accordance with Air Force Instruction 16-1001 and MAJCOM guidance. The simulator validation shall include:

A4.3.5.1. 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, and so on).

A4.3.5.2. 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.

A4.3.5.3. A summary of operational training system differences from threat and live weapon systems.

A4.3.5.4. Simulator validation requirements in the system training plan, life cycle sustainment plan, or human systems integration.

A4.3.6. Operational training system simulator validation accreditation. The operational training system simulator validation and accreditation results are forwarded to appropriate MAJCOM and unit leadership.