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SECRETARY OF THE AIR FORCE**

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Supplement**

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Flying Operations

**COCKPIT/CREW RESOURCE
MANAGEMENT AND THREAT &
ERROR MANAGEMENT PROGRAM**



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This publication implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, Air Force Instruction (AFI) 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, and is consistent with AFPD 11-4, *Aviation Service*. It establishes the Air Force Cockpit/Crew Resource Management and Threat & Error Management (CRM/TEM) Program. This publication is applicable to all civilian employees and uniformed members of the Regular Air Force, Air Force Reserve (AFR), and Air National Guard (ANG). This publication does not apply to the United States Space Force. 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. Submit suggested changes to this publication on Air Force (AF) Form 847, *Recommendation for Change of Publication*, through the chain of command, to AF/ACTF, usaf.pentagon.af-a3.mbx.actf-workflow@mail.mil. Major commands (MAJCOMs), direct reporting units (DRUs), and Headquarters Air Force Field Operating Agencies (FOAs) may supplement this publication; coordinate supplements with the Deputy Chief of Staff, Operations, Directorate of Training and Readiness, and Aircrew Task Force (AF/ACTF) before publishing. 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 DAF Instruction (DAFI) 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, as directed at [paragraph 1.4](#). Compliance with attachments to this publication are mandatory.

(AFSOC) This publication supplements AFMAN 11-290. This supplement applies to AFSOC units. This supplement applies to the ANG and AFRC, this supplement does not apply to the United States Space Force. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW AFI 33-322, *Records Management and Information Governance Program*, and disposed of IAW Air Force Records Information Management System & Records Disposition Schedule. Refer recommended changes and questions about this publication to the OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Form 847 from the field through the appropriate functional’s chain of command. Requests for waivers must be submitted to the OPR listed above for consideration and approval. The authorities to waive wing/unit level requirement in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. Requests for waivers must be submitted through the chain of command to the appropriate Tier waiver approval authority IAW DAFMAN 90-161, *Publishing Processes and Procedures*. Requests for waivers of non-tiered items must be processed through command channels to the publication OPR for consideration. This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval.

SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. Major changes include the addition of Threat and Error Management (TEM) requirements under the umbrella of the CRM/TEM Program.

(AFSOC) This document has been substantially revised and needs to be completely reviewed. Major changes include the addition of Threat and Error Management (TEM) requirements under the umbrella of the CRM/TEM Program.

Section A—Cockpit/Crew Resource Management and Threat & Error Management (CRM/TEM) Program Description

1. Overview. The Air Force CRM/TEM program provides crewmembers with performance-enhancing knowledge and skills directly applicable to their roles in the mission of the Air Force. CRM/TEM Program training is a key component of a combined effort to identify and manage threats to ensure safe and effective mission operations. CRM/TEM Program training begins with

crewmembers' initial Air Force flying training and is continuously built upon throughout their operational careers. Training objectives are tailored to the knowledge and skill level of the crewmember. CRM/TEM Program training should emphasize performance skills more than academic objectives as the crewmember becomes more proficient.

1.1. **CRM/TEM Program Purpose.** The CRM/TEM Program focuses on the effective utilization of all appropriate and available resources as countermeasures to operational threats and human errors so as to ensure mission success. CRM and TEM are independent, yet also interdependent. CRM emphasizes how flight and crewmembers communicate, manage resources, and make decisions. TEM emphasizes effective management and communications regarding operational threats and human errors. Crewmembers must be proficient in CRM and TEM skills. Safe and effective operations are achieved when CRM/TEM Program skills and technical expertise are employed together.

1.2. **Goals.** The CRM/TEM Program goals are:

1.2.1. Maximize operational effectiveness and combat capability.

1.2.2. Preserve personnel and material resources.

1.2.3. Ensure the safety of non-combatant civilians and friendly forces.

1.2.4. Facilitate mishap reduction by providing skills, processes, tools, and techniques to aircrew members to effectively identify threats and mitigate errors in aviation operations.

1.3. **Objectives.** Design and manage CRM/TEM Program training to accomplish the following objectives:

1.3.1. Develop aircrew understanding and proficiency of human factors skills to cultivate a safe and effective operational environment while accomplishing mission requirements.

1.3.2. Develop aircrew skills and strategies in recognizing and responding to threats and aircrew errors to prevent conditions that may lead to mishaps.

1.4. **Waivers.** Unless otherwise specified or tiered, the Deputy Chief of Staff for Operations, Director of Training and Readiness (AF/A3T) is the waiver authority for the provisions of this publication. Route waivers through applicable channels to MAJCOM/A3 (operations or equivalent). As applicable, MAJCOM/A3s will forward requests to AF/A3T, with an info copy to AF/ACTF.

1.4. **(AFSOC)** Unless otherwise noted, the waiver authority for the AFSOC supplement to this instruction is AFSOC/A3.

2. Roles and Responsibilities.

2.1. **Headquarters Air Force, Director of Training and Readiness (AF/A3T).** Through the ACTF, manages the CRM/TEM Program and provides resources to implement guidance in this publication.

2.2. Commanders.

2.2.1. MAJCOMs, FOAs and DRUs establish and manage their respective programs in accordance with this publication. MAJCOMs may implement their CRM/TEM Programs as either "Cockpit" or "Crew" Resource Management, based on their respective missions.

2.2.2. Provide proportional funding as necessary to support the lead MAJCOM CRM/TEM Program.

2.3. **Air Force Safety Center (AFSEC).** Provides advice and support to AF CRM/TEM Program Working Group as defined in **Section B** of this publication.

2.4. **CRM/TEM Program Managers.** MAJCOM, FOA, and DRU CRM/TEM Program Managers develop and implement local CRM/TEM Program requirements in accordance with this manual. (T-2) See [paragraph 5.3.1](#).

2.5. **Flight/Crew Members.** Attends CRM/TEM Program training sessions and adheres to established policies and procedures in accordance with this publication. (T-3) Lead commands define "crew member" in terms of their own operational mission requirements.

2.6. **Air Education and Training Command** shall ensure aircrew training curricula adheres to guidance in this publication.

3. Program Requirements. Compliance with the CRM/TEM Program is mandatory for aircrew members. (T-2)

3.1. **Guidance.** Lead MAJCOMs ensure CRM/TEM Program requirements, currency, tracking, and evaluation guidance are in AFMAN 11-2 mission design series (MDS) specific volumes 1 and 2, in accordance with AFI 11-200. (T-2) Ready Aircrew Program (RAP) tasking memo or similar product may provide additional guidance. Guidance includes:

3.1.1. Establishing training frequency, required attendees, and method for tracking crewmember currencies.

3.1.2. Use of AF Form 4031, *CRM/TEM Skills Criteria Training/Evaluation Form*, or MAJCOM/FOA/DRU approved substitute, to establish the skills training/evaluation criteria.

3.1.3. If using a contract vehicle, provide a uniform CRM/TEM Program via a contract vehicle that covers all applicable units to include units gained from AFR or ANG.

3.2. **Training Program.** Each MAJCOM, FOA and DRU CRM/TEM Program Training Manager will address the following CRM/TEM Program skills. Skills must be:

3.2.1. Integrated into flight briefings and debriefings. (T-2)

3.2.2. Integrated into training syllabi. (T-2)

3.2.3. Evaluated during initial qualification and recurring evaluations and assessed during designated CRM/TEM Program training events using the AF Form 4031, or approved MAJCOM substitute. (T-2) In addition, the AF Form 4031 will be used as a framework to assess CRM/TEM Program skills and strategies during all aircrew evaluations while using the AF Form 3862, *Flight Evaluation Worksheet*, or MAJCOM approved substitute. (T-2)

3.2.4. (Added-AFSOC) Applicable AFMAN 11-2MDS, Volumes 2, will include grading criteria for all CRM core curricula listed in [paragraph 3.2.2](#), of the basic publication.

3.3. **CRM/TEM Program Model.** Mission effectiveness and safe operations represent the desired operating environment. As crewmembers encounter operational threats or make errors, there is a potential to move away from the desired operating environment. Unmitigated, the

result may be an Undesired State (US)—possibly leading to a mishap. The effective application of CRM/TEM Program skills and strategies creates a proactive pathway, returning crewmembers to mission effectiveness and safe operations. **Figure 1** is a CRM/TEM Program model depicting the interaction and employment of CRM/TEM Program skills.

Figure 1. CRM/TEM Program Model.



3.4. CRM Core Curricula. The CRM/TEM Program core curricula includes the following knowledge and skill sets that are to be taught and demonstrated during classroom and simulator training (see AF Form 4031 or approved substitute).

3.4.1. *Mission Analysis* . Includes pre-mission analysis and planning, briefing, ongoing mission evaluation, and post mission debrief. Clearly define mission overview/goals and existing/potential threats or anticipated errors that might adversely affect mission success, along with relevant threat/error mitigation strategies. **(T-2)** Mission analysis instruction will include specific TEM tools and techniques throughout the mission/flight. **(T-2)** Debrief instruction will include aircrew responses and outcomes to threats and errors, giving emphasis to any US that may have occurred. **(T-2)**

3.4.2. *Situational Awareness (SA)* . Includes knowledge and skill objectives for identifying errors, preventing the loss of SA, recognizing the loss of SA, and techniques for recovering from the loss of SA. Recognize the need for action and verbalize/act on unexpected events.

3.4.3. *Communication* . Includes knowledge of common errors, cultural influences, and barriers (rank, age, experience, position, etc.). Skills will encompass listening, feedback, precision and efficiency of communication with all members and agencies (crewmembers, wingmen, weather, air traffic control, intelligence, etc.). Use precise terminology, acknowledge all communications, and ask questions/provide clarification as applicable.

3.4.4. *Risk Management (RM)/Decision Making*. Includes risk assessment, the RM processes (deliberate, real time RM)/tools, breakdowns in judgment and flight discipline,

problem-solving, evaluation of hazards, and control measures. Identify contingencies and alternatives, gather all available decision data, and clearly state decisions.

3.4.4. **(AFSOC) Risk Management (RM)/Decision Making.** Includes policy and instruction review, to include AF and AFSOC policy and instructions, standards, checklists, technical orders, and operating procedures. This covers common causes for inadvertent departure from policy, purposeful departure without necessity, and purposeful departure with necessity. It establishes each crewmember's responsibility to ensure compliance with policy and instruction for safe mission accomplishment.

3.4.5. **Crew/Flight Coordination** . Includes the knowledge and skills required within (i.e., internal) and outside the crew/flight members (i.e., external) for mission coordination, flight/mission integrity contracts, team-building, leadership, command authority, responsibility, behavioral styles, assertiveness, persistence, conflict resolution, hazardous attitudes, legitimate avenues/methods of dissent, and solution driven statements. Adapt as situational demands require, focus attention on task, and ask for inputs.

3.4.6. **Task Management** . Includes establishing priorities, using available resources to manage workload, overload/under-load, complacency, management of automation, checklist discipline, standard operating procedure (SOP), the verbalization of concerns relating to tasks, and the proposal of solutions to known task issues.

3.5. **TEM Core Curricula.** Includes knowledge that TEM is a structured, proactive, systems approach to principles employed using multiple layers of defenses. Recognize and enforce that TEM strategies are intuitive, logical, and flexible, designed to identify, prevent, and mitigate threats and/or trap (allay) inevitable crewmember-made errors. TEM promotes vigilance versus complacency by implementing an active, continuous process of identifying and preparing for threats and identifying and repairing errors at the earliest opportunity. Failing to effectively manage threats or errors negatively influences safe operations, which may lead to US and possible mishaps.

3.5.1. **Threat Identification and Mitigation** . Effective threat identification and mitigation strategies enhance SA and reduce the potential for crewmember error. The appropriate response to a threat is: Identify and Prepare. The earlier threats are identified (both anticipated and unanticipated), the more quickly and effectively they can be managed. Threats not properly identified, or identified but not effectively mitigated, may result in a degradation of safe operations. Effective threat mitigation strategies include: persistently briefing known and anticipated threats along with expected actions, evaluating and confirming current and expected tasks and/or flight progress, effective wingman duties, and adhering to SOP.

3.5.2. **Error Recognition and Mitigation** . Effective error management addresses the negative consequences of human errors, either made by oneself or by another flight/crewmember. Anticipate errors based on task complexity and circumstance. The earlier an error is identified, the more quickly it can be repaired. Effective strategies for error management include: anticipation of errors (e.g., as discussed during mission planning), maintaining awareness of aircraft status and flight/crew actions, appropriate task prioritization, and confirmation of the appropriately selected automation level for the situation. Effective error-countermeasures include continuous employment of flight path management (FPM) concepts, effective pilot monitoring (PM) and crewmember

monitoring (CM), and communication/ coordination techniques such as verbalize, verify, and monitor (VVM).

3.5.3. **Undesired State (US)** . A US is a safety- or mission-compromised aircraft state (position, altitude, condition, configuration, or mission crew events/performance) resulting from ineffective CRM/TEM. The appropriate response to a US is: Identify and Recover. Once the US has been identified, aircrews must take immediate corrective action—this action will likely include a combination of CRM, TEM, and technical skills. A US from which a crew does not immediately recover may lead to an incident, accident, mishap, or mission failure.

3.6. **CRM/TEM Program Training Phases.** Each phase of training should prepare individuals to apply the knowledge and skills acquired in their specialty and motivate participants for the next phase of training. Training phases will include up-to-date CRM/TEM Program best practices. **(T-2)** Curricula will tailor CRM/TEM Program knowledge and skill objectives to fit the unique characteristics of each primary mission. **(T-2)** Discussions will include the practical application of CRM/TEM Program skills and strategies for each crew position. **(T-2)**

3.6.1. **Introductory or Awareness CRM/TEM Program Training.** Normally conducted in a formal training environment by Air Education and Training Command. Students learn standard CRM/TEM Program terminology and core concepts, along with TEM principles and introductory strategies (e.g., effective pilot flying (PF) and PM behaviors, flight member monitoring, CM behaviors, and VVM). Lesson plans will include a description of the building block approach to CRM/TEM Program training that the individual will participate in throughout their operational career. **(T-2)**

3.6.2. **Formal Training Unit/Combat Crew Training School CRM/TEM Program Training** . Students learn to apply knowledge and skills related to their assigned aircraft. Academic training is complemented during aircraft/simulator training. Emphasis should be placed on CRM/TEM Program techniques relating to preflight planning, briefing, in-flight utilization, and debriefing. This should include a succinct review of the CRM/TEM Program Model and CRM/TEM Program core concepts, as identified in paragraphs 3.3, 3.4, and 3.5 Mission-oriented simulator training (MOST) sessions or other simulated or actual operational scenarios may be used as an integral part of CRM/TEM Program training. Evaluate students for technical expertise, as well as CRM/TEM skills based on the core curricula concepts. **(T-2)** If aircrew training devices are not available, students should participate in group problem-solving exercises.

3.6.2.1. **(Added-AFSOC) Initial/Mission Qualification Training.** This training is intended for all AFSOC aircrew members attending an AFSOC FTU or initial qualifications training course. The FTU course is designed for the recent graduate of Undergraduate Pilot Training/Undergraduate Combat System Officer Training, Basic Flight Engineer School, and Enlisted Aircrew Undergraduate Course.

3.6.2.2. **(Added-AFSOC) Requalification/Transition/Crossflow Training.** This course is designed for the crewmember with previous experience in the assigned MDS aircraft or experienced air crew transitioning to another AFSOC aircraft.

3.6.3. ***Mission-Specific Continuation CRM/TEM Program Training*** . MAJCOMs, FOAs and DRUs are responsible for CRM/TEM Program continuation training. (T-2) This training reinforces aircrew CRM/TEM Program academic knowledge, skills, and strategies. In addition, it bolsters the preemptive identification and mitigation of operational threats and aircrew-made errors, thereby reducing the potential for mishaps.

3.6.3.1. Emphasize CRM/TEM Program skills and strategies in the mission qualification and continuation training programs so they become part of crewmembers' habit patterns and inseparable parts of operational practices. (T-2) Debriefings will include crewmembers' CRM/TEM Program performance (highlights/deficiencies) using AF 4031 (or approved substitute) as a guide. (T-2)

3.6.3.2. Frequency for recurring CRM/TEM Program continuation training is defined in the AFMAN 11-2 MDS specific volume 1, a RAP tasking memorandum, or a similar product. Lead commands are responsible for providing guidance to standardize CRM/TEM Program MDS-specific training policies and requirements. All aircrew require mission-specific continuation training. (T-2) Separating training by crew position should normally be avoided, however, it is not mandatory to conduct this training with a complete aircrew.

3.6.3.3. **(Added-AFSOC)** Mission-Specific Continuation Training.

3.6.3.3.1. **(Added-AFSOC)** AFSOC rated Officers and Career Enlisted Aviators are required to take CRM refresher training at a minimum every 24 months. (T-2)

3.6.3.3.2. **(Added-AFSOC)** Flight Surgeons will follow the requirements of AFMAN 11-202, Volume 1, *Aircrew Training*, and the AFSOC Flight Surgeon Ready Tasking Message (RTM). (T-2)

3.6.3.3.3. **(Added-AFSOC)** CRM Facilitator training satisfies the periodic CRM refresher currency requirement. See AFMAN 11-2MDS, Volumes 1, for any more restrictive currency requirements.

3.6.3.3.4. **(Added-AFSOC)** AFSOC refresher training will include AFSOC MDS-specific and mission-specific exercises and case studies. (T-2) It should also include group interaction incorporating a cross section of crewmembers whenever possible. The cross section may include crewmembers from other AFSOC MDSs. Case studies should be presented using group interaction techniques to stimulate classroom discussion.

3.6.3.3.5. **(Added-AFSOC)** Refresher training should include a MOST mission.

3.6.3.3.6. **(Added-AFSOC)** For dual-qualified aircrew members, accomplishing CRM Refresher training in one aircraft satisfies the requirement for both aircraft.

3.6.4. ***Flight Instructor/Evaluator Training*** . All flight and simulator instructors/evaluators (military and civilian) will complete instructor and evaluator specific CRM/TEM Program training (T-2) This training will normally be accomplished as part of an instructor or evaluator upgrade program. (T-2) Existing aircrew instructors and evaluators, who have not previously attended the Instructor CRM/TEM Program course, must complete this training. (T-2) Courseware builds on the previous blocks of training, both to reacquaint candidates with CRM/TEM Program fundamentals and to maintain

continuity of terminology and strategies. MAJCOMs, FOAs, and DRUs develop courseware related to instructing and evaluating key CRM/TEM Program skills that apply to command and aircraft-specific missions. **(T-2)** Personnel may conduct this training at operational units, formal training units, or a combination, as required. Training includes, but is not limited to, the proper use of AF Form 4031 (or approved substitute). See AFMAN 11-2MDS, Volume 1, RAP tasking memo, or similar product for specific requirements. Annotate “CRM/TEM Program Instructor” within the crewmember’s training record upon completion of this course. **(T-2)**

3.6.4.1. Include CRM/TEM Program instructor or evaluator training in all instructor and evaluator upgrade programs. **(T-2)**

3.6.4.1. **(AFSOC)** AFSOC’s CRM for Instructors training will be given to AFSOC students receiving secondary method training (SMT). **(T-2)** SMT CRM training will be conducted by a CRM facilitator. **(T-2)**

3.6.4.2. Flight instructors and evaluators should be highly proficient in all CRM/TEM Program skills and be experts in the recognition, observation, and reinforcement of these skills as they are applied by aircrew members in a mission environment.

3.6.4.3. Commanders will ensure contractor simulator instructor pilots have the CRM/TEM Program Instructor training requirement written into their performance work statement (PWS) to ensure the aforementioned instructors receive this training. **(T-2)**

3.6.5. ***CRM/TEM Program Facilitator Training*** . The CRM/TEM Program Facilitator Training course is intended to teach foundational CRM/TEM Program skills and principles that make CRM/TEM Program effective and motivating to aircrew members.

3.6.5. **(AFSOC)** The CRM/TEM Program Facilitator Training course is intended to provide a thorough review of the Air Force and AFSOC CRM Programs to instructor aircrew to certify them to teach AFSOC CRM Courseware as CRM Facilitators IAW AFM 11-290 *Cockpit/Crew Resource Management and Threat & Error Management Program*.

3.6.5.1. CRM/TEM Program Facilitator Requirements. Formal CRM/TEM Program academic curricula must be delivered by a trained CRM/TEM Program Facilitator. **(T-2)** Facilitator training will include training in running exercises, structured crew observation, and effective academic feedback. **(T-2)**

3.6.5.1. **(AFSOC)** Formal Training CRM/TEM programs are listed in the AFSOC CRM Syllabus of Instruction.

3.6.5.2. Obtaining CRM/TEM Program Facilitator Training. CRM/TEM Program Facilitator training is obtained via any Department of Defense (DoD) or non-DoD agency that provides certified or accredited CRM/TEM Program or CRM/TEM Program Facilitator training and/or is recognized by the MAJCOM CRM/TEM Program Manager. **(T-2)** Annotate “CRM/TEM Program Facilitator” within the crewmember’s training record upon completion of this training.

3.6.5.2. **(AFSOC)** CRM facilitator courseware is uploaded to the CHUB and current Learning Management System.

3.6.5.2.1. **(Added-AFSOC)** AFSOC’s CRM facilitators must be instructor

qualified. Crewmembers should complete or be enrolled in instructor upgrade training prior to attending facilitator training. However, a crewmember may attend facilitator training once identified by the squadron training review board for instructor upgrade with the concurrence of the FTU. The individual will not be authorized to act as a CRM facilitator until instructor certification is complete. (T-3)

3.6.5.2.2. **(Added-AFSOC)** AFSOC Instructors selected to become CRM facilitators will attend training conducted by an AFSOC formal training unit. Follow SMT waiver process if FTU attendance is not possible.

3.6.5.2.3. **(Added-AFSOC)** AFSOC/A3T may credit facilitator training for an individual who attended training provided by another MAJCOM or service.

3.6.5.2.4. **(Added-AFSOC)** Crewmembers attending AFSOC aircrew instructor upgrade courses should complete CRM Facilitator training. Coordinate with FTU for availability of class attendance. This is not a prerequisite to complete upgrade training and certification.

3.6.5.3. CRM/TEM Program Facilitator Responsibilities. Once trained, CRM/TEM Program Facilitators are expected to maintain knowledge of current CRM/TEM Program concepts. Though the formal CRM/TEM Program Facilitator training course provides foundational CRM/TEM Program concepts and principles, CRM/TEM Program Facilitators should continually update their CRM/TEM Program knowledge, in addition to updating their classroom academic skills.

3.6.5.3. **(AFSOC)** Facilitators will review facilitator hot topics every 12 months. (T-2) Facilitators who fail to review hot topics will not be able to provide CRM academic instruction. (T-2)

4. Supporting Information. HQ Air Force Safety Center, MAJCOM, FOA, DRU and unit safety staffs will screen mishaps and human factors-related information for human performance errors. (T-2) MAJCOM, FOA, DRU and unit safety staffs should utilize HAF and lead command safety newsletters, or equivalent, related to CRM/TEM trend analysis. This information should be available for use during all phases of CRM/TEM training, as part of academics, simulator scenarios or for CRM/TEM case studies. When specifically requested, MAJCOM safety staffs will provide sanitized, non-privileged mishap/hazard driven safety information relating to human performance to include safety metrics related to CRM/TEM.

Section B—CRM/TEM Program Administration

5. Air Force Oversight. AF/A3T provides oversight of the AF CRM/TEM Program. The AF CRM/TEM Program Steering Committee and AF CRM/TEM Program Working Group provide a means of gathering and analyzing program effectiveness and changes.

5.1. **The AF CRM/TEM Program Steering Committee.** The Steering Committee provides resources for administrative support to the AF CRM/TEM Program Working Group and standardizes CRM/TEM Program requirements, terminology, and change management.

5.1.1. Membership.

5.1.1.1. ACTF, Chair.

5.1.1.2. Deputy Chief of Staff, Operations, Directorate of Training and Readiness, Combat Air Forces Division (AF/A3TC).

5.1.1.3. Deputy Chief of Staff, Operations, Directorate of Training and Readiness, Mobility Air Forces Division (AF/A3TM).

5.1.1.4. HQ Air Force Flight Standards Agency/Operations Directorate (AFFSA/XO).

5.1.2. **Schedule.** The Steering Committee meets prior to each Aircrew Management Executive Council (AMEC) meeting and, as needed, to review inputs and set working group agenda items.

5.1.3. **Contact information.** ACTF workflow email: usaf.pentagon.af-a3.mbx.actf-workflow@mail.mil.

5.2. The AF CRM/TEM Program Working Group.

5.2.1. **Membership.** Members of the AF CRM/TEM Program Steering Committee, AFSEC representative, MAJCOM/FOA/DRU A3 (or equivalent) representatives, and additional personnel, as designated by the aforementioned steering committee.

5.2.1. **(AFSOC) AFSOC CRM Working Group.** The AFSOC CRM Working Group will consist of designated representatives from the AFSOC CRM Steering committee. At a minimum, the CRM Working Group should include representatives from AFSOC/A3, AFSOC/SE, and AFSOC FTUs. The working group should convene annually in the first quarter of the calendar year prior to the AFSOC steering committee.

5.2.2. **Scope and Administration.** The Working Group reviews program execution, policy changes, industry standards, and receives feedback from command programs.

5.2.2.1. The Working Group will meet in conjunction with AMEC meetings or as designated by the AF CRM/TEM Program Steering Committee. Agenda items may be submitted to the Steering Committee for consideration.

5.2.2.2. Report recommendations and findings to the Director of Training and Readiness (AF/A3T) and then disseminate to MAJCOM, FOA and DRU operations directorates.

5.3. **Command Execution and Oversight.** Execution and oversight of command CRM/TEM Programs rests within the MAJCOM, FOA and DRU operations directorates. MAJCOM, FOA and DRU Safety and Surgeon General Directorates are advisors and provide respective subject matter experts to the operations directorates for inputs to course content and delivery.

5.3.1. **CRM/TEM Program Manager.** Each MAJCOM, FOA and DRU will appoint a CRM/TEM Program Manager within the operations (or equivalent) function that will be responsible for the command program. **(T-1)** The CRM/TEM Program Manager will:

5.3.1. **(AFSOC) AFSOC/A3T (Chief, Operations Training)** is the AFSOC CRM manager.

5.3.1.1. Ensure lead command's 11-2 MDS specific volumes 1 and 2 publications (or RAP tasking memo/similar product) provide CRM/TEM Program policy guidance. **(T-2)**

5.3.1.2. Implement lead command CRM/TEM Program policy guidance. **(T-2)**

5.3.1.3. Ensure each applicable CRM/TEM Program training phase ([paragraph 3.6](#)) is implemented and evaluated. **(T-2)**

5.3.1.4. Forward AF Form 4031 (or approved substitute) trend data to CRM/TEM Program instructors/facilitators. **(T-2)**

5.3.1.5. Ensure a system is in place to collect topic-relevant aircrew performance information (e.g., Standardization and Evaluation trends, sanitized mishap data, hazardous air traffic reports (HATR), military flight operations quality assurance (MFOQA) analysis, Line Oriented Safety Audit (LOSA) findings, Airman Safety Action Program (ASAP) reports, and inspector general reports), and send to CRM/TEM Program Facilitators and Instructors. **(T-2)**

5.3.1.5. **(AFSOC)** Wildlife Strike Data. Additional data for trend analysis including airfields/LZs with higher-than-average wildlife strikes.

5.3.1.6. Evaluate contractor implementation of CRM/TEM Program objectives. **(T-2)** Where discrepancies are identified, initiate corrective actions. **(T-2)**

5.3.1.7. Ensure quality assurance representatives (QARs) and Inspectors General have current evaluation guidance to evaluate CRM/TEM Program objectives. **(T-2)** Where discrepancies are identified, initiate corrective actions. **(T-2)**

5.3.1.8. Provide feedback to the AF CRM/TEM Program Working Group regarding program status covering: training continuum, standardization, and research and development needs. **(T-2)**

5.3.1.9. Interact with MAJCOM, FOA or DRU CRM/TEM Program advisors (Safety, Aerospace Physiology, etc.), ensuring CRM/TEM Program training is effective and minimizes redundancies with other programs as provided by Safety, Aerospace Physiology, etc. **(T-2)**

5.3.1.9. **(AFSOC)** Interact with other MAJCOMs to ensure the AFSOC CRM course content is aligned as a minimum with AETC introductory courses and with any courseware and/or technologically advanced learning aids within the rest of the Air Force.

5.3.1.10. Provide training to develop and improve CRM/TEM Program knowledge and skills, based on paragraphs [3.3](#), [3.4](#), [3.6](#), information procured via the AF Form 4031 (or approved substitute), and sources deemed pertinent by the MAJCOM CRM/TEM Program Manager. **(T-2)** Sources may include: AFSEC and MAJCOM safety reports, military and civilian aviation mishaps, ASAP reports, MFOQA analysis, MAJCOM standardization/evaluation information, Federal Aviation Administration (FAA) Advisory Circulars, FAA Safety Alerts, LOSA recommendations, and findings from the aviation industry.

5.3.1.11. Ensure continuation training incorporates real-world operational experiences, sanitized mishap data, research findings, critiques, and flight evaluation trends. **(T-2)** Courseware will contain up-to-date case studies covering human factors elements and will be presented in an interactive format so as to exercise students' decision making and reasoning skills and, where appropriate, stimulate discussion. **(T-**

- 2) The CRM/TEM Program knowledge and skill objectives taught will be tailored to the unique characteristics of the MAJCOM's, FOA's, DRU's primary missions. **(T-2)**
- 5.3.1.12. Identify the process for gathering, analyzing, and incorporating CRM/TEM Program trend data from MAJCOMs into existing training and evaluation programs. **(T-2)**
- 5.3.1.12.1. **(Added-AFSOC)** AFSOC/SE, using relevant data and safety mishap reports will assess and present applicable case studies to the CRM Working Group no later than the fourth quarter of the calendar year. Mishap case studies will be properly sanitized IAW AFI 91-204, *Safety Investigations and Reports*, and proper methods of handling and briefing safety privileged information will be strictly adhered to.
- 5.3.1.12.2. **(Added-AFSOC)** The CRM Working Group will present applicable case studies to the CRM Steering Committee.
- 5.3.1.12.3. **(Added-AFSOC)** The CRM Working Group will ensure case studies are incorporated into CRM curriculum, instruction, and courseware (as applicable).
- 5.3.1.13. Ensure continuity of course content with Air Education and Training Command's Introductory or Awareness CRM/TEM Program Training. **(T-2)** See [paragraph 3.6.1](#).
- 5.3.1.14. Ensure that data collected and/or generated through CRM/TEM Program and trend gathering processes are not used for monitoring aircrew performance to initiate punitive or adverse action. **(T-2)**
- 5.3.1.15. The above requirements are not all inclusive and MAJCOMs may augment their CRM/TEM Program training with aviation industry standard practices or methodologies. Training for CRM/TEM Program or other programs should comply with MAJCOM-specific supplements, if any, to this publication. MAJCOMs will continue to adhere to the training requirements outlined in this publication. **(T-2)**
- 5.3.2. **Command Steering Committees.** MAJCOMs, FOAs and DRUs may establish command steering committees to identify the most effective methods for delivering and administering CRM/TEM Programs.
- 5.3.2. **(AFSOC)** Command Steering Committee. The AFSOC CRM Steering Committee, chaired by the AFSOC program manager or designated representative, is established to provide oversight and support for the AFSOC CRM program. The committee ensures the AFSOC CRM program is maintained and executed IAW AFMAN 11-290, and this supplement. The Steering Committee will meet annually in the second quarter of calendar year or more frequently if required. AFSOC/A3T will provide steering committee meeting minutes to the AFSOC/A3.
- 5.3.2.1. **(Added-AFSOC)** AFSOC Command CRM Steering Committee Responsibilities.
- 5.3.2.1.1. **(Added-AFSOC)** Develop command positions on CRM issues presented to the USAF CRM Steering Committee.
- 5.3.2.1.2. **(Added-AFSOC)** Establish a system to ensure CRM-enhancing data

and information from units, FOAs and DRUs are reviewed by the CRM Steering Committee.

5.3.2.1.3. **(Added-AFSOC)** Ensure final recommendations are disseminated appropriately to units, DRUs and FOAs via CRM Program Managers.

5.3.2.1.4. **(Added-AFSOC)** Ensure the most recent operational experiences and mishaps are incorporated into AFSOC CRM training so that it remains relevant to AFSOC's current mission sets.

5.3.2.1.5. **(Added-AFSOC)** Review recommended improvements to the AFSOC CRM program.

5.3.2.2. **(Added-AFSOC)** Permanent members of the AFSOC CRM Steering Committee include: AFSOC/A3T (Chair), AFSOC/SE, AFSOC/A3V, AFSOC/IG, representatives from AFSOC FTUs, AFSOC/SGP and Aerospace Physiology representatives.

5.3.3. **(Added-AFSOC)** AFSOC FTUs will:

5.3.3.1. **(Added-AFSOC)** Provide CRM Initial/Mission Qualification, Requalification, Refresher, Instructor, Aircraft Commander, and Facilitator training. **(T-2)**.

5.3.3.2. **(Added-AFSOC)** Review and evaluate Aircrew Training System execution of CRM program objectives. Forward all unresolved issues to the AFSOC CRM Steering Committee. **(T-2)**.

5.3.3.3. **(Added-AFSOC)** Collect, analyze, and track CRM-related implications in student critiques from formal training programs to assess student feedback and present recommendations to the AFSOC CRM Steering Committee. **(T-2)**.

5.3.3.4. **(Added-AFSOC)** 492 SOTRSS is responsible for developing CRM SOI's and courseware. **(T-2)**

5.3.3.4.1. **(Added-AFSOC)** Maintain AFSOC CRM courseware and distribute new courseware to using units. **(T-2)**.

5.3.3.4.2. **(Added-AFSOC)** In coordination with AFSOC/A3T, ensure effective training transitions and continuity between AFSOC and AETC CRM courseware and CRM training programs. **(T-2)**.

5.3.4. **(Added-AFSOC)** Special Operations Wings/Groups. Commanders will appoint a CRM program point of contact in the wing or operations group staff. **(T-3)**

5.3.4.1. **(Added-AFSOC)** The POC must be an instructor **(T-2)** in a primary weapon system of their wing/group. **(T-3)**

5.3.4.2. **(Added-AFSOC)** The POC will:

5.3.4.2.1. **(Added-AFSOC)** Complete AFSOC CRM facilitator training and provide oversight to the CRM program manager.

5.3.4.2.2. **(Added-AFSOC)** Ensure CRM topics are briefed by the flying units during training and safety days.

5.3.4.2.3. **(Added-AFSOC)** Distribute updated courseware and trend data to Group/Squadron CRM facilitators.

5.3.4.2.4. **(Added-AFSOC)** Collect and forward CRM-pertinent data to include that on the AF Form 4031. They will then forward this data to AFSOC CRM Steering Committee via AFSOC/A3V.

5.3.4.2.5. **(Added-AFSOC)** Ensure inspectors have appropriate CRM program evaluation guidance during wing/group level inspections.

5.3.5. **(Added-AFSOC)** Flying Units.

5.3.5.1. **(Added-AFSOC)** Squadron commanders will appoint a CRM program coordinator to oversee (manage) the squadron CRM program. **(T-3)**

5.3.5.1.1. **(Added-AFSOC)** This individual will be a flight instructor with CRM Facilitator training. **(T-3)**

5.3.5.1.2. **(Added-AFSOC)** Program coordinators must complete facilitator training within three months of appointment. **(T-3)**

5.3.5.2. **(Added-AFSOC)** Flying units will maintain a minimum of two CRM Facilitators (may include the Program Coordinator) to instruct CRM refresher training and provide CRM training for students receiving in-unit secondary method training. **(T-3)** Commanders may designate more than two CRM facilitators as required.

5.3.5.2.1. **(Added-AFSOC)** Squadron CRM Facilitators will use the AFSOC CRM Syllabus of Instruction and approved AFSOC courseware when teaching CRM courses. **(T-2)**

5.3.5.2.2. **(Added-AFSOC)** Units will identify current facilitators to the wing/group CRM program manager. **(T-2)**

JOSEPH T. GUASTELLA, Jr., Lt Gen, USAF
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(AFSOC)

JOCELYN J. SCHERMERORN, Colonel, USAF
Director of Operations

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, 21 September 2018

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

AFPD 11-2, *Aircrew Operations*, 31 January 2019

AFPD 11-4, *Aviation Service*, 12 April 2019

DAFI 33-360, *Publications and Forms Management*, 1 December 2015

(Added-AFSOC) DAFMAN 90-161, *Publishing Processes and Procedures*, 15 April 2022

Prescribed Form

AF Form 4031, *CRM/TEM Skills Criteria Training/Evaluation Form*

Adopted Form

AF Form 847, *Recommendation for Change of Publication*

AF Form 3862, *Flight Evaluation Worksheet*

Abbreviations and Acronyms

A3—Operations

AF—Air Force

AFI—Air Force Instruction

AFR—Air Force Reserve

AFSEC—Air Force Safety Center

(Added-AFSOC) AFSOC—Air Force Special Operations Command

AMEC—Aircrew Management Executive Council

ANG—Air National Guard

ASAP—Airman Safety Action Program

CM—Crewmember Monitoring

CRM—Cockpit/Crew Resource Management

DAFI—Department of the Air Force Instruction

DAFPD—Department of the Air Force Policy Directive

DOD—Department of Defense

DRU—Direct Reporting Unit

FAA—Federal Aviation Administration
FPM—Flight Path Management
FOA—Field Operating Agency
(Added-AFSOC) FTU—Formal Training Unit
HATR—Hazardous Air Traffic Report
LOSA—Line Oriented Safety Audit
MAJCOM—Major Command
MDS—Mission Design Series
MFOQA—Military Flight Operations Quality Assurance
MOST—Mission-Oriented Simulator Training
PF—Pilot Flying
PM—Pilot Monitoring
PWS—Performance Work Statement
QAR—Quality Assurance Representative
RAP—Ready Aircrew Program
RM—Risk Management
SA—Situational Awareness
(Added-AFSOC) SMT—Secondary Method Training
SOP—Standard Operating Procedure
TEM—Threat & Error Management
US—Undesired State
VVM—Verbalize, Verify, Monitor

Terms

A3—Standard A-Staff two-digit office symbol for Operations.

Cockpit/Crew Resource Management (CRM)—The effective use of all available resources (people, weapon systems, facilities, equipment, and environment) by individuals or crews to safely and efficiently accomplish an assigned mission or task.

Communication—The act of sharing information with others to cause action: to direct, to inform, to question, or to persuade.

Coordination—As used in this publication, the act of working with all the members of the crew/flight to accomplish the tasks of the mission.

Crew—As used in this publication, any collection of Air Force personnel who routinely work together to accomplish an Air Force mission. For example, an air task order-designated team of

fighter pilots and airborne battle managers prosecuting an interdiction mission uses "crew" skills to maximize effectiveness.

Crewmember Monitoring (CM)—A crewmember who is not in direct maneuvering control of the aircraft, yet jointly responsible for actively monitoring the aircraft's current/projected flight path and energy state, intervening if necessary.

Decision Making—The ability to choose a course of action using logical and sound judgment based on available information.

Errors—Actions or inactions that lead to deviations from organizational or flight crew intentions or expectations, reduce safety margins, and increase the probability of adverse operational events on the ground or in flight. Unmanaged and/or mismanaged errors can lead to an undesired aircraft state. Errors in the operational context tend to reduce the margins of safety and increase the probability of adverse events.

Flight Discipline—The judgment and actions exercised by AF personnel to adhere to the spirit, intent, and written word of governing guidelines in the presence of temptation to do otherwise, while executing the Air Force flying mission. It also includes the prioritization of tasks based on crew responsibilities to ensure safe mission accomplishment while demonstrating the highest degree of integrity in the performance of flight duties.

Flight Path Management (FPM)—The planning, execution, and monitoring of the aircraft's guidance, trajectory, and energy state. FPM applies anytime the aircraft is in motion—in flight or on the ground. All cockpit crewmembers must ensure that effective FPM is a primary and shared responsibility during all phases of flight.

Mission Debrief—Reviewing and discussing mission accomplishment, looking at what was achieved, what barriers were encountered, and how the mission could be accomplished better next time.

Mission-Oriented Simulator Training (MOST)—Training presented as a part of a CRM/TEM Program in a realistic, operationally-based simulator environment in real time.

Mission Planning—Taking all of the information for a mission and developing short term, long term, and contingency plans to coordinate, allocate, and monitor crew/flight and aircraft resources. Effective planning leads to flight conduct that removes uncertainty, increases mission effectiveness, and enhances safety.

Performance Work Statement (PWS)—In layman's terms, a document incorporating standards that inform the contractor of specific contractual requirements and relevant desired outcomes.

Pilot Flying (PF)—The pilot at the flight controls who is in direct maneuvering control of the aircraft. The PF is primarily responsible to control and monitor the aircraft's current/projected flight path and energy state (including autoflight systems, if engaged).

Pilot Monitoring (PM)—The pilot at the flight controls who is not in direct maneuvering control of the aircraft, yet is primarily responsible for actively monitoring the aircraft's current/projected flight path and energy state, intervening if necessary.

Risk Management—The systematic process of identifying hazards, assessing risk, making control decisions, implementing control decisions, and supervising/reviewing the activity for effectiveness for both on- and off-duty missions/activities.

Situational Awareness (SA)—In flying and aircraft operations, refers to an aircrew member's continuous *accurate* perception of self and aircraft in relation to the dynamic environment of flight, threats, and mission, as well as the ability to forecast, then execute, tasks based upon that perception.

Skills Criteria—Defined skills used as the basis for operational training and evaluation. The characteristics of the skills are that they are easily identifiable and offer consistency in grading evaluation.

Task Management—The ability to alter a course of action based on new information, maintain constructive behavior under pressure, and adapt to internal and external environment changes.

Threat—An event or error that occurs outside the influence of the aircrew (i.e., it was not caused by the crew), that increases operational complexity and must be managed to maintain safety margins, and requires crew attention. All threats have the potential to negatively affect flight operations.

Threat and Error Management (TEM)—An aviation industry-recognized best practice, TEM is a structured, proactive, systems approach that builds on multiple layers of defenses; and, applies to all single and multi-seat aircraft operators, flight, and crewmembers. TEM is intuitively, logically, and flexibly designed to identify, avoid, trap (allay) and mitigate threats and/or inevitable human errors to avoid US, mission failure, and potential mishaps.

Undesired State (US)—Operational conditions where an unintended situation results in a reduction in margins of safety. US' are a result of ineffective CRM/TEM and may lead to an incident, accident, mishap, or mission failure.

Verbalize, Verify, and Monitor (VVM)—An aviation industry-proven monitoring and cross-checking TEM technique. Using VVM, aircrew members: (1) Verbalize their intentions prior to acting on them, (2) Verify that the intended actions have been made, and (3) Monitor those actions to ensure the intended outcome(s) have occurred, thereby mitigating threats and trapping errors.