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SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 11-290**



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Supplement**

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**Flying Operations**

**COCKPIT/CREW RESOURCE  
MANAGEMENT PROGRAM**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This Instruction implements AFPD 11-4, *Aviation Service*, and AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*. It establishes the USAF cockpit/crew resource management program and is applicable to all units assigned to or gained by major commands (MAJCOMs) and applies to commanders, operations supervisors, and aircrews assigned or attached to all flying activities of these commands. This publication applies to the Air Force Reserve (AFR) and the Air National Guard (ANG). This Instruction may be supplemented. Coordinate supplements with AF/A3O-AI prior to publication. Submit suggested improvements to this Instruction on AF Form 847, *Recommendation for Change of Publication*, through training channels, to AF/A3O-AI, [afa3oai.workflow@pentagon.af.mil](mailto:afa3oai.workflow@pentagon.af.mil). Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms//afirms/afirms/rims.cfm>.

(AMC) This supplement supports Air Force (AF) objectives and extends AFI 11-290, *Cockpit/Crew Resource Management Program* guidance by establishing the AMC Crew

Resource Management and Threat and Error Management Program (CRM/TEM). This Supplement applies to Air Mobility Command (AMC) units and AMC-gained ANG mobility units. The AMC Supplement does not apply to AFRC units. 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. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR), routing AF IMT 847s from the field through the appropriate functional’s chain of command.

This Supplement specifies CRM as *Crew Resource Management* and adds Threat and Error Management (TEM). Unless otherwise restricted, include “TEM” wherever “CRM” is mentioned within this and other AMC documents, as appropriate (i.e. “CRM/TEM”). This supplement provides guidance on how to structure and monitor student and instructor CRM/TEM programs, modifies and enumerates CRM/TEM student and instructor/facilitator program objectives and clarifies waiver authority. It updates MAJCOM and Numbered Air Force (NAF) responsibilities and functions, unit functional and organizational guidance, unit training and flight examiner guidance, and aircrew qualification evaluation and documentation guidance, to include guidance for the aircrew CRM/TEM assessment program. This supplement also adds TEM concepts and training requirements, as they relate to the use and application of the AMC Form 4031 *CRM/TEM Skills Criteria Training/Evaluation Form*.

## ***SUMMARY OF CHANGES***

This document has been substantially revised and must be completely reviewed. Format is revised and procedural guidance is reduced throughout the AFI to place emphasis on MAJCOM/FOA/DRU program oversight. Program goals are updated ([paragraph 1.1](#)), program requirements are modified ([paragraph 2](#)), Steering Committee and Working Group information is updated ([paragraph 6](#) and [paragraph 7](#)), oversight responsibility is specified ([paragraph 8](#)) and waiver guidance is added ([paragraph 9](#)). Updates reflect administrative changes and prescribed format requirements.

### ***Section A—CRM Program Description***

**1. General.** The Air Force Cockpit/Crew Resource Management (CRM) program provides crewmembers with performance-enhancing knowledge and skills directly applicable to their roles in the aerospace mission of the Air Force. CRM training is a key component of a combined effort to identify and manage threats to safe and effective mission operations. The CRM program begins with crewmembers' initial Air Force flying training and is continuously built upon throughout their operational careers. Training objectives will be tailored to the knowledge and skill level of the aircrew member. As the aircrew member becomes more proficient, CRM training should emphasize performance skills more than academic objectives. Lead commands define "crewmember" in terms of their own operational mission requirements.

**1. (AMC)General.** Augmenting and enhancing CRM, TEM is a systems approach to aviation safety and offers an intuitive, flexible, and practical approach to aviation risk management.

TEM supports a positive safety culture by offering a framework for understanding and directing human performance in complex operating environments.

1.1. The CRM program goals are:

1.1.1. Maximize operational effectiveness and combat capability.

1.1.2. Preserve personnel and material resources.

1.1.3. Ensure the safety of non-combatant civilians.

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

1.2. CRM training will be designed and managed to accomplish the following objectives:

1.2.1. Develop aircrew skills in recognizing and responding to the conditions and/or threats that lead to aircrew error.

1.2.2. Develop aircrew proficiency in CRM skills to anticipate conditions and/or threats and minimize their impact in order to safely and effectively meet mission requirements.

**2. Program Requirements.** MAJCOMs, field operating agencies (FOAs) and HQ USAF direct reporting units (DRUs) are responsible for establishing and managing their respective programs in accordance with this Instruction. CRM programs are mandatory for aircrew members.

2.1. Lead Commands will publish guidance in AFI 11-2 mission design series (MDS) specific vol. 1 and vol. 2 AFIs (*Note*: guidance may also be published in a Ready Aircrew Program (RAP) tasking memo or similar product), regarding CRM requirements, currency, tracking, and evaluation, to include:

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

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

2.1.3. If using a contract vehicle, provide a uniform CRM program via a contract vehicle that covers all applicable units to include units gained from AFRC or ANG.

2.2. Each MAJCOM, FOA and DRU CRM training program must:

2.2.1. Provide training to develop and improve CRM knowledge and skills based on **paragraph 3** and AF Form 4031. MAJCOM/FOA/DRU- approved substitute may be used in lieu of AF Form 4031.

2.2.1. (AMC) Provide training to develop and improve CRM/TEM knowledge and skills based on **paragraph 3**, AMC Form 4031 for CRM/TEM process improvement, and sources deemed pertinent by the AMC CRM/TEM Program Director.

2.2.2. Be updated annually to incorporate: "real-world" operational experiences, sanitized mishap data, research data, critiques, and flight evaluation trends.

2.2.3. Identify the process for gathering, analyzing and incorporating trend data from MAJCOMs into existing training and evaluation programs.

2.2.4. MAJCOM, FOA and DRU CRM managers will ensure continuity of course content with AETC's introductory courses.

2.2.5. Ensure that data collected and/or generated through CRM and trend gathering processes is not used for monitoring aircrew performance to initiate punitive or adverse action.

2.2.6. Provide proportional funding as necessary to support the lead MAJCOM CRM program.

2.3. CRM skills will:

2.3.1. Be integrated into flight briefings and debriefings.

2.3.1. (AMC) Be briefed before each flight and debriefed after all flights using an AMC-approved MDS debriefing guide.

2.3.2. Be integrated into training syllabi.

2.3.3. Be evaluated during initial qualification and recurring evaluations.

2.3.4. (Added-AMC) Be assessed during designated CRM/TEM training events using the AMC Form 4031, *CRM/TEM Skills Criteria Training/Evaluation Form*. In addition, the AMC Form 4031 will be used as a framework to assess CRM/TEM skills during all aircrew evaluations while using the AF Form 3862, *Flight Evaluation Worksheet*.

2.4. (Added-AMC) **Courseware Development.** HQ AMC/A3T is responsible for developing and/or overseeing contractor development of CRM/TEM program courseware and continuation training (CT) programs to meet the requirements of the basic AFI and AFI 11-2MDS-specific volumes, as well as incorporating changes resulting from mishap/aircrew evaluation trend data, and other sources, as deemed necessary by the AMC CRM/TEM Program Director.

2.5. (Added-AMC) **Operations Group OSS/OST Responsibilities.** OSS/OST will act as the Operations Group CRM/TEM central point of contact and assist with issues relating to the AMC Form 4031 completion and submittal into the CRM/TEM Skills Trend Analysis & Reporting System (STARS). OST will also acquire/review applicable AMC Form 4031 CRM/TEM trend data for the OG Training Review Panel (TRP) and provide feedback to the AMC CRM/TEM Program Director. In addition, OSS/OST will ensure that non-ATS contract instructors who teach CRM/TEM for required CRM/TEM academic training purposes have successfully completed CRM Facilitator Training, as recognized by the AMC CRM/TEM Program Director.

2.6. (Added-AMC) **Flying Squadron DOT Responsibilities.** Flying squadron DOTs will assist flight instructors, flight evaluators, and simulator contractors to input AMC Form 4031 data into the CRM/TEM Skills Trend Analysis & Reporting System (STARS). In addition, DOTs will acquire/review applicable AMC Form 4031 CRM/TEM trend data for presentation at the Squadron Training Review Panel (STRP) and interface with OSS/OST, as necessary. Units with a single squadron may use OST for this purpose. Though highly encouraged, flying squadron DOT members are not required to be CRM/TEM Facilitators.

**3. CRM core curricula.** Core curricula will include the following knowledge and skill sets:

3.1. Communication. Includes knowledge of common errors, cultural influences, and barriers (i.e., rank, age, experience, position, etc.). Skills will encompass listening, feedback, precision and efficiency of communication with all members and agencies (i.e., Crewmembers, Wingmen, Weather, ATC, Intelligence, etc.).

3.2. Crew/Flight Coordination. Knowledge and skills required within (internal) and outside the crew/flight members (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.

3.3. Mission Analysis. Includes pre-mission analysis and planning, briefing, ongoing mission evaluation, and post mission debrief. Analysis instruction will include specific Threat and Error Management tools and techniques. Debrief instruction will include aircrew responses and outcomes to threats and errors.

3.3. (AMC) Flight debriefings will include an analysis of Undesired Aircraft State occurrences and Threat and Error Management (TEM) techniques that either fostered good TEM or were deficient. Enhancements to the Pilot Monitoring role will also be mentioned.

3.3.1. (Added-AMC) **Threats.** Threats are events or errors that occur outside the influence of the flight crew. They increase operational complexity and must be managed to maintain safety margins. All threats can negatively affect flight operations.

3.3.2. (Added-AMC) **Errors.** Errors are flight crew actions or inactions that lead to a deviation from crew or organization intentions or expectations, reduce safety margins, and increase the probability of adverse operational events on the ground or in flight. Unmanaged or mismanaged errors can lead to an undesired aircraft state (UAS).

3.3.3. (Added-AMC) **Undesired Aircraft States (UAS).** Operational conditions where an unintended situation results in a reduction of safety margin. A UAS is a result of ineffective Threat and Error Management practices.

3.3.4. (Added-AMC) **Threat and Error Management (TEM).** A systems approach that builds multiple layers of defense logically designed to identify, prevent and trap threats and/or mitigate inevitable threats, errors, and undesired aircraft states. The goal of TEM is to build defenses that reduce the likelihood of errors and, when necessary, mitigate or fix committed errors. Error management is a process of understanding that errors will occur during operations; emphasis is placed on crewmember vigilance and effective monitoring/cross-checking so that the error is identified or trapped in a timely manner and then mitigated. The Pilot Monitoring (PM) role and the importance of TEM tools such as, “Verbalize, Verify, and Monitor” (VVM) in mitigating threats and trapping errors cannot be over-emphasized.

3.4. Risk Management (RM)/Decision Making. Includes risk assessment, the risk management processes (Deliberate, Real Time RM)/tools, breakdowns in judgment and flight discipline, problem-solving, evaluation of hazards, and control measures.

3.5. Situational Awareness. Includes knowledge and skill objectives for identifying errors, preventing the loss of situational awareness, recognizing the loss of situational awareness, and techniques for recovering from the loss of situational awareness.

3.6. Task Management. Includes establishing priorities, overload, under-load, complacency, management of automation, available resources, checklist discipline, and standard operating procedures.

**4. CRM 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.

4.1. Introductory or Awareness Training. Normally conducted in a formal training environment by AETC. Trainees learn standard CRM terminology and core concepts. Lesson plans will include a description of the building block approach to CRM training the individual will participate in throughout their operational career.

4.2. Formal Training Unit (FTU)/Combat Crew Training School (CCTS) CRM 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 preflight planning, briefing, in-flight utilization, and debrief techniques for CRM. This should include a brief review of CRM core concepts identified in **paragraph 3**. Mission-Oriented Simulator Training (MOST) sessions or other simulated or actual operational scenarios may be used as an integral part of CRM training. Evaluate students for technical expertise, as well as the skills based on the six core concepts. If aircrew training devices are not available, students should participate in group problem-solving exercises.

4.3. Mission-Specific Continuation Training. MAJCOMs, FOAs and DRUs are responsible for CRM continuation training. This training will reinforce the aircrew's CRM academic knowledge and refocus on skills to accomplish the mission. It also helps aircrews identify and respond to the conditions and/or threats that lead to error.

4.3.1. Emphasize CRM skills in the mission qualification and continuation training programs so they become inseparable parts of operational practices.

4.3.2. Frequency for recurring CRM continuation training is defined in the AFI 11-2 MDS specific volumes 1, a RAP tasking memorandum, or a similar product. Lead commands are responsible for providing guidance to standardize CRM MDS specific training policy and requirements. All aircrew require Mission-Specific Continuation Training. Separating training by crew position should be avoided. However, it is not mandatory to conduct this training with a complete aircrew.

4.4. Flight Instructor Training. All flight and simulator instructors will complete instructor specific CRM training. This training will normally be accomplished as part of instructor upgrade program. Courseware must build upon the previous blocks of training, both to reacquaint candidates with CRM fundamentals and to maintain continuity of terminology and techniques. MAJCOMs, FOAs and DRUs develop courseware related to instructing and evaluating key skills that apply to command and aircraft-specific missions. Personnel may conduct this training at operational units, flying training units, or a combination, as required. Training will include, but is not limited to, proper use of AF Form 4031 (or approved substitute).

4.4. (AMC) The AMC Form 4031, *CRM/TEM Skills Criteria Training/Evaluation Form*, is the approved substitute for AF Form 4031 (see Attachment 2).

4.4.1. CRM instructor or evaluator training will be included into instructor upgrade programs.

4.4.2. CRM instructors and evaluators must be highly proficient in all CRM skills and be experts in the recognition, observation, and reinforcement of these skills as they are applied by aircrew members in a mission environment.

4.5. Facilitator Training. Formal CRM academic curricula must be delivered by a trained CRM facilitator. Facilitator training will include training in running exercises, structured crew observation, and effective academic feedback.

**5. Supporting Information.** HQ Air Force Safety Center, MAJCOM, FOA, and DRU safety staffs will screen mishap reports for human performance errors. This safety information should be available for use at all phases of CRM training, either as part of simulator scenarios or for CRM case studies. Sanitized “Limited Use” information will be provided to CRM program managers in a timely manner by command/unit safety staff(s) according to AFI 91-204, *Safety and Investigation Reports*.

**5. (AMC) Supporting Information.** AMC/SE and AMC/A3TO (Ops RAMS) will screen mishap and other reports for human performance concerns and other applicable safety-related information. This information will be available for use at all phases of CRM/TEM training, either as part of applicable simulator scenarios or for CRM/TEM case studies. Sanitized “limited use” information will be provided to CRM/TEM Program Managers and the AMC CRM/TEM Program Director in a timely manner by command/unit safety staff(s) according to AFI 91-204, *Safety and Investigation Reports*.

5.1. (Added-AMC) **AMC Form 4031.** As the major means of determining aircrew CRM/TEM competency, the AMC Form 4031, *CRM/TEM Skills Criteria Training/Evaluation Form*, provides leaders and training managers with an assessment of aircrew CRM/TEM proficiency and helps to evaluate if the skills/techniques taught are effective and sufficient. Additionally, it provides aircrews with indications of their CRM/TEM proficiency, areas for improvement, and fosters beneficial CRM/TEM techniques.

5.2. (Added-AMC) **CRM/TEM Topic(s) of the Year.** Yearly CRM/TEM topics with supporting materials will be made available to MDS CRM/TEM Program Managers so that current, applicable materials can be developed for classroom and simulator training. Such topics will be procured from AMC Form 4031 trends, LOSA results/recommendations, ASAP reports, MFOQA data analysis, and other applicable sources, as deemed necessary by the AMC CRM/TEM Program Director and approved by the AMC Trend Review and Action Committee (TRAC). Such yearly CRM/TEM topics will be made available no later than 30 September of the preceding calendar year.

## ***Section B—Program Management***

**6. The USAF CRM Steering Committee.** The Steering Committee standardizes CRM program requirements and terminology.

6.1. Steering Committee Membership:

6.1.1. AF/A3O-AI, Chair.

6.1.2. AF/A3O-AC

6.1.3. AF/A3O-AM

6.1.4. AF/A3O-AS

**7. USAF CRM Working Group.** The CRM Working Group will consist of members of the Steering Committee, AFSEC/SE representative, plus MAJCOM/FOA/DRU A3 (or equivalent) representatives and additional personnel as designated by the Steering Committee. The working group reviews program execution and policy issues and will meet in conjunction with Aircrew Management Executive Council (AMEC) meetings.

**7. (AMC) AMC CRM/TEM Working Group.** The CRM/TEM Working Group, chaired by the AMC CRM/TEM Program Director, will convene as required and will consist of representatives designated by the AMC Trend Review and Action Committee (TRAC). The working group reviews CRM/TEM program execution and policy issues.

**8. Oversight.** Oversight of Air Force CRM programs will rest within the MAJCOM, FOA and DRU operations directorates. MAJCOM, FOA and DRU safety and surgeon general directorates will act as advisors and respective subject matter experts to the operations directorates for providing input to course content and delivery.

8.1. Each MAJCOM, FOA and DRU will appoint a CRM program manager within the operations (or equivalent) function. The program manager is responsible for:

8.1.1. Ensuring Lead Command's AFI 11-2 MDS specific vol. 1 and vol. 2 publications (or RAP tasking memo/similar product) provide CRM policy guidance.

8.1.2. Implementing Lead Command CRM policy guidance.

8.1.3. Ensuring each applicable CRM training phase (paragraph 4) is implemented and evaluated.

8.1.4. The forwarding of AF Form 4031 (or approved substitute) trend data to CRM Instructors/Facilitators.

8.1.4. (AMC) The forwarding of AMC Form 4031 trend data to CRM/TEM Program Developers, Instructors and/or Facilitators, as necessary.

8.1.5. Ensuring a system is in place to collect performance data (i.e. Stan/Eval trends (Skills criteria), sanitized mishap data, Hazardous Air Traffic Reports (HATR), and Inspector General reports), and send to CRM instructors and facilitators.

8.1.6. Evaluating contractor implementation of CRM program objectives. Where discrepancies are identified, initiate corrective actions.

8.1.7. Ensuring Quality Assurance Representatives (QARs) and IGs have current evaluation guidance to evaluate CRM program objectives. Where discrepancies are identified, initiate corrective actions.

8.1.8. Providing feedback to CRM Working Group regarding program status covering: Training Continuum, Standardization, and Research and Development needs.

8.1.9. Interacting with MAJCOM, FOA or DRU CRM advisors (Safety, Aerospace Physiology, etc.) ensuring CRM training is effective and minimizes redundancies with other programs given by Safety, Aerospace Physiology, etc.

8.2. Command Steering Committees. MAJCOMs, FOAs and DRUs may establish command steering committees to identify the most effective methods for delivering and administering CRM programs.

8.2. **(AMC) Steering Committees.** The AMC CRM/TEM steering committee is the TRAC.

## 9. Waivers.

9.1. AF/A3O is the waiver authority for provisions of this Instruction. Request waivers through applicable channels to MAJCOM/A3 (or equivalent). As applicable, MAJCOM/A3s will forward requests to AF/A3O, with an info copy to AF/A3O-AI.

9.1. **(AMC)** AMC/A3 is the waiver authority for provisions of supplemental guidance for this Instruction. Request waivers through applicable channels to AMC/A3TO Ops RAMS (T2).

9.2. Waiver authority for supplemental guidance will be as specified in the supplement and approved through higher level coordination authority.

9.3. Waiver authority for MAJCOM/DRU/FOA CRM guidance is the MAJCOM/FOA/DRU A3 or equivalent.

BURTON M. FIELD, Lt Gen, USAF  
DCS, Operations, Plans and Requirements

**(AMC)**

SCOTT M. HANSON, Maj Gen, USAF  
AMC/A3, Director of Operations

## Attachment 1

### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

#### *References*

AFPD 11-4, *Aviation Service*, 1 Sep 2004

AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, 19 Jan 2012

AFI 11-403, *Air Force Aerospace Physiological Training Program*, 20 Feb 2001

AFI 91-204, *Safety Investigations and Reports*, 24 Sep 2008

#### *Prescribed Form*

AF Form 4031, *CRM Skills Criteria Training/Evaluation Form* (MAJCOM/FOA/DRU-approved substitute may be used in lieu of AF Form 4031.)

#### *Adopted Form*

AF Form 847, *Recommendation for Change of Publication*.

#### *Abbreviations and Acronyms*

**AMEC**—Aircrew Management Executive Council

**CCTS**—Combat Crew Training School

**CRM**—Cockpit/Crew Resource Management

**DRU**—Direct Reporting Unit

**FOA**—Field Operating Agency

**HATR**—Hazardous Air Traffic Report

**MAJCOM**—Major Command

**MDS**—Mission Design Series

**MOST**—Mission-Oriented Simulator Training

**RAP**—Ready Aircrew Program

**QAR**—Quality Assurance Representative

**RM**—Risk Management

**SA**—Situational Awareness

**TEM**—Threat and Error Management

#### *Terms*

**Cockpit/Crew Resource Management (CRM)**—The effective use of all available resources-- people, weapon systems, facilities, and equipment, and environment -- by individuals or crews to safely and efficiently accomplish an assigned mission or task. The term "CRM" will be used to refer to the training program, objectives, and key skills directed to this end. MAJCOMs may

implement their programs as either "cockpit" or "crew" resource management based on their respective missions.

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

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

**Crew**—As used in this Instruction, 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 its effectiveness.

**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. Unmanaged and/or mismanaged errors can lead to undesired aircraft states. 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 Integrity**—Utilizing all the members of a flying package to accomplish the mission at hand.

**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 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.

**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, this refers to a aircrew member's continuous perception of self and aircraft in relation to the dynamic environment of flight, threats, and mission, and 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 skill 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), increases the operational complexity of a flight, and requires crew attention and management if safety margins are to be maintained.

**Threat and Error Management**—Crews and flight members proactively using a combination of CRM skills and automation to address internal and external threats to avoid, trap or mitigate their impacts on mission safety and effectiveness.

## Attachment 1 (AMC)

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

*References**Prescribed Form*

AMC Form 4031, CRM/TEM Skills Criteria Training/Evaluation Form.

*Adopted Form*

AF Form 847, Recommendation for Change of Publication.

*Abbreviations and Acronyms*

**ASAP**—Aviation Safety Awareness Program

**CRM/TEM**—Crew Resource Management/Threat and Error Management

**LOSA**—Line Operations Safety Audit

**MFOQA**—Military Flight Operational Quality Assurance

**PF**—Pilot Flying

**PM**—Pilot Monitoring

**STARS**—CRM/TEM Skills Trend Analysis and Reporting System

**TEM**—Threat and Error Management

**TRAC**—Trend Review and Action Committee

**TRP**—Training Review Panel

**UAS**—Undesired Aircraft State

**VVM**—Verbalize, Verify, Monitor

*Terms*

**Aviation Safety Action Program (ASAP)**—A program designed to enhance aviation safety through the prevention of accidents and incidents. It is an identity protected, self-reporting system that encourages the voluntary reporting of operations and maintenance/logistics safety issues and events. It is intended to provide a non-punitive environment for the open reporting of safety concerns and information that might be critical to identifying precursors to mishaps. These safety concerns may be either observed or experienced by the submitter. The goal is to prevent mishaps by addressing those unintentional errors, hazardous situations and events, or high-risk activities not identified and/or correctable by other methods or through traditional safety reporting sources. The reported information is used to reduce mishaps through operational, maintenance/logistics, training and procedural enhancements. Due to its capability of providing early identification of needed safety improvements, ASAP offers significant potential for avoiding mishaps.

**CRM/TEM Skills Trend Analysis & Reporting System (STARS)**—The system used to input AMC Form 4031 data and procure/report CRM/TEM trended data.

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

**Human Factors**—Human Factors involves the mental processes (e.g. perception, memory, reasoning, and motor response) as they affect interactions among humans and other elements of a system.

**Line Operations Safety Audit (LOSA)**—A proactive, structured program built on the observation of front line activities with respect to the Threat and Error Management (TEM) concept. LOSA provides a way to assess the level of organizational resilience to systemic threats in accordance with the principles of a data-driven approach. LOSA uses trained observers to collect data about aircrew behavior and its situational context on “normal” flights. Such monitoring allows the capture of data that can characterize aircrew strategies for managing threats, errors and undesired aircraft states.

**Military Flight Operational Quality Assurance (MFOQA)**—A system of capturing, analyzing and/or visualizing the data generated by an aircraft. Applying the information learned from this analysis helps to find new ways to improve flight safety and increase overall operational efficiency. A goal of MFOQA is to improve overall safety, increase maintenance effectiveness, and reduce operational costs.

**Pilot Flying (PF)**—The pilot in direct maneuvering control of the aircraft.

**Pilot Monitoring (PM)**—The pilot not in direct maneuvering control of the aircraft yet actively monitoring the aircraft’s status. In addition to supporting the PF, the PM’s role is crucial to mitigating threats and trapping errors that may occur by mentally foreseeing and following the PF’s flight tasks. Other crewmembers are encouraged to assist in reducing the effects of threats and errors by unofficially acting in a PM capacity.

**Threat**—An event or error that occurs outside the influence of the aircrew (i.e., it was not caused by the aircrew), increases the operational complexity of a flight, and requires crew attention and management if safety margins are to be maintained.

**Threat and Error Management (TEM)**—An advancement within CRM/TEM based on Human Factors research that focuses on a structured, systems approach. TEM builds multiple layers of defenses, logically designed to identify, prevent, and trap threats and/or mitigate inevitable human errors.

**Trend Review and Action Committee (TRAC)**—An AMC HQ committee that reviews trend information and adjusts operations policy and training programs as necessary to reverse adverse trends and mitigate risk. Additionally, the TRAC standardizes CRM/TEM program requirements and terminology.

**Undesired Aircraft State (UAS)**—Operational conditions where an unintended situation results

in a reduction in margins of safety. They are a result of ineffective Threat and Error Management and reduce the margin of safety.

**Verbalize, Verify, and Monitor (VVM)**—A proven monitoring and cross-checking CRM/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. VVM is typically a closed-loop system of communication designed to significantly reduce automation selection errors between the PF and the PM, however all crewmembers are encouraged to actively participate.

**Attachment 2 (Added-AMC)****AMC FORM 4031**

**A2.1. Purpose.** The AMC Form 4031, *CRM/TEM Skills Criteria Training/Evaluation Form*, supports specific, trending data gathering to ascertain the CRM/TEM proficiency of aircrew members via an aggregate analysis database query system. In addition to providing leaders and training managers with an assessment of aircrew CRM/TEM proficiency, the data provided by the AMC Form 4031 helps to determine if the CRM/TEM skills/techniques taught are effective and sufficient and provides aircrews indications of their CRM/TEM proficiency, areas for improvement, and beneficial CRM/TEM techniques.

**A2.2. Use.** The AMC Form 4031 will be completed by qualified simulator training contractors or qualified aircrew instructors and, as appropriate, aircrew evaluators for all crew positions. The AMC Form 4031 will be used during designated CRM/TEM training events. In addition, it will be used as a framework to assess CRM/TEM skills during all aircrew evaluations while using the AF Form 3862, Flight Evaluation Worksheet. If substandard CRM/TEM performance is observed during an evaluation, the AMC Form 4031 will be completed in its entirety.

**A2.3.** The AMC Form 4031 and The AMC Form 4031 User's Guide can be found at: <https://mafops.us.af.mil>.

**A2.4.** If an AMC Form 4031 is required, it must be input into STARS in accordance with *The AMC Form 4031 User's Guide* within five (5) duty days of the CRM/TEM training event or aircrew evaluation.

**A2.5.** Trending of AMC Form 4031 data will be accomplished by the AMC CRM/TEM Program Director, OSS/OST, and the respective unit DOTs.

**A2.6. Rating Scale.** Students and/or the person being evaluated will be scored on a 1 through 6 scale with 6 being the most competent. Ratings of 1, 2, and 6 require an explanation describing the undesirable or exemplary actions. See The AMC Form 4031 User's Guide for a detailed explanation of ratings.

**6 = Well Above Standards.**

**5 = Above Standards.**

**4 = Meets Standards--Upper Half.**

**3 = Meets Standards--Lower Half.**

**2 = Below Standards.**

**1 = Well Below Standards.**