

**BY ORDER OF THE COMMANDER
AIR MOBILITY COMMAND**

**AIR MOBILITY COMMAND
INSTRUCTION 90-903**



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Special Management

**AVIATION OPERATIONAL RISK
MANAGEMENT (AVORM) PROGRAM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This publication implements AFI 90-802, *Risk Management*, by creating the Air Mobility Command (AMC) Aviation Operational Risk Management (AvORM) Program to assess the risk of our flying missions. AMCI 90-903, *Aviation Operational Risk Management (AvORM) Program*, is issued under AMC authority as Air Force Transportation Component (AFTRANS), the air component of United States Transportation Command (USTRANSCOM). It provides guidance for completion of AvORM and AMC Aeromedical Evacuation Crew Member (AECM) risk management worksheets. The AvORM tool assists, highlights, and shares responsibility for safe mission accomplishment among planners, leadership, and aircrew. See AFPD 90-8, *Environment, Safety & Occupational Health Management and Risk Management*, and AFPAM 90-803, *Risk Management (RM) Guidelines and Tools* for additional risk management guidance. This publication applies to AMC, the Air Force Reserve (AFR) and Air National Guard (ANG) aircraft and personnel when performing airlift and/or air refueling missions tasked by the 618th Air Operations Center (618 AOC). 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 AFI 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. Refer recommended changes and questions about this publication to the office of primary responsibility (OPR) using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but

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SUMMARY OF CHANGES

This document has been revised and must be completely reviewed. Changes include updating of office symbols and reflection of software updates.

SUMMARY OF CORRECTIVE ACTION

A corrective action has been applied to this publication to fix the published date in the header on each page.

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Chapter 1

BACKGROUND

1.1. General. Risk is the probability and severity of loss or adverse impact from exposure to various hazards. All Air Force operations involve risk. Risk Management (RM) is the systematic process of identifying hazards, assessing risk, making control decisions, implementing control decisions, and supervising and reviewing the activity for effectiveness. AMC's AvORM program provides a process to identify operational hazards that require mitigation. This process reduces risk to personnel and equipment while successfully accomplishing the mission.

1.2. Approach. AMC's AvORM provides a formal decision making system that identifies risks and encourages mitigation strategies. The appropriate level of supervision balances risk and benefits. The AvORM web application tool resides in the Global Decision Support System (GDSS). Users must have a current/active GDSS account to access the AvORM web application.

1.3. Scope. AvORM identifies risks and encourages mitigation at the lowest appropriate level. AvORM neither replaces sound judgment nor restricts safety-of-flight decisions by the aircraft commander or leadership. In situations where accomplishing the provisions of this AMCI is impractical, final mission acceptance authority remains with the aircraft commander. In unique situations, units may authorize process variations that meet the intent of this AMCI.

1.4. Links. See [Table 1.1](#).

Table 1.1. AvORM Links.

AvORM Application [GDSS Mission Mgmt]	https://gdss.maf.ustranscom.mil Note: User requires active GDSS account.
AvORM Training [GDSS Training]	https://gdss-org-training.maf.ustranscom.mil Note: User requires active GDSS account.
Current AvORM Documents	https://www.my.af.mil/gcss-af/USAF/content/currentavorm
AvORM Application [Electronic Flight Bag (EFB)]	Note: User requires current EFB.
Command and Control Support Services (C2SS) Functional Help Desk	Commercial: (618) 256-4949 option 2, 2 DSN: (312) 576-4949 option 2, 2 Email: AFLCMC.OL2.GDSS-FHD@us.af.mil

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Command and Control (C2). AMCI 11-208, *Mobility Air Forces Management*, details authorities delegated to C2 organizations. AvORM applies to all flight operations conducted under the tasking of the 618th Air Operations Center (618 AOC).

2.2. AvORM Program. AMC wings will establish an AvORM program that meets the requirements of this instruction to address wing-planned missions and (as applicable) missions tasked by the Joint Operational Support Airlift Center (JOSAC) or the Headquarters Air Force Special Air Missions Division (HAF/A3M CVAM). **(T-2)** AMC units are encouraged to use the AvORM web application and manual products for all missions, eliminating the requirement to develop and maintain local products and analysis. See [paragraph 4.6](#) for unit worksheets.

2.3. AvORM Administrator. The AvORM Administrator, AMC Flight Safety (AMC/SEF), oversees the AvORM Program, manages program priorities, acts as a catalyst to resolve project problems/conflicts, and escalates concerns when necessary. The AvORM Administrator assesses strengths and weaknesses of program capabilities, and serves as the overall AMC expert. The Administrator analyzes feedback received from wing Chiefs of Safety, 618 AOC directorate members, and other stakeholders.

2.4. Aeromedical Evacuation Standardization/Evaluation Branch (AMC/A3VM). These personnel establish the requirements for the aeromedical evacuation crewmember (AECM) AvORM worksheet and write procedures for its use.

2.5. Operations Risk Assessment and Management System Branch (Ops RAMS) (AMC/A3TO). These personnel gather inputs from Airman Safety Action Program (ASAP), Military Flight Operations Quality Assurance (MFOQA) and other divisions in AMC/A3 to recommend improvements to AvORM and relate risk management to other personnel as described in DAFI 91-225_AMCSUP, *Aviation Safety Programs*.

2.6. AMC Surgeon General, Aerospace Medicine Division (AMC/SGP). These personnel provide necessary subject matter expertise for the science of fatigue.

2.7. AMC Support Flyer Training Branch (AMC/A3TH). These personnel provide necessary subject matter expertise for other physiological aviation-related concerns affecting aircrew members.

2.8. Flight Safety, Air Force Reserve Command (AFRC/SEF) and Air National Guard (NGB/SEF). These personnel coordinate on AvORM matters affecting AFRC and NGB aircrews. Other major commands (MAJCOMs) using AvORM for their Mobility Air Forces RM programs may also coordinate through their flight safety division.

2.9. Command and Control (C2) Systems Branch (AMC/A3CS). These personnel create and validate formal requirements, assign priorities, make inputs into the GDSS change management library and track actions to completion.

2.10. GDSS System Project Branch (AFLCMC/HBMSA). These personnel take validated requirements, implement software changes, and maintain software function and security.

2.11. AvORM Requirements Working Group (RWG). This group consists of the AvORM Administrator and personnel from AMC/A3CS, AFLCMC/HBMSA, and 618 AOC. The AvORM Administrator works with the RWG to implement changes to AvORM software. See [paragraph A3.2.4](#).

Chapter 3

AVORM WORKSHEET OVERVIEW

3.1. General. The AvORM and AECM ORM worksheets standardize AMC risk management tools for risk identification, evaluation, scoring, and acceptance. The AvORM Administrator maintains currency of the AvORM worksheet. AMC/A3VM personnel maintain currency of the AECM risk management worksheet (see [Chapter 5](#) for AECM procedures). The AvORM process does not absolve the aircraft commander's responsibility for the safety and welfare of crew and aircraft.

3.2. Web Application. All aircrews performing 618 AOC-planned missions use the web application when computer access and operational situations permit. If mission changes occur in the planning phase or during the duty period, units and/or aircrew must re-evaluate mission risk and update the web application (if available) if risk factors change. **(T-3)** In the event the web application is unavailable, aircrew as a minimum will complete one manual worksheet per flight duty period (FDP), scoring the Aircrew column, and notify the 618 AOC of any risks that require approval or use the AvORM application on the EFB. **(T-2)**

3.3. Functional Scoring. AvORM includes five scoring functions: Initial Planner, Current Operations, Squadron, Aircrew, and C2, which 618 AOC uses. The process moves from the broad perspective of mission complexity at initial tasking to detailed assessment at execution. Evaluate mission type, mission timeline, environment, crew experience and qualifications, and aircraft status. Take appropriate abatement actions as the risk score elevates. Examples of risk abatement include: adding a more experienced crew, manning the mission with crewmembers experienced at a particular airfield, or scheduling the mission to land during daylight hours. As a minimum, the aircrew will accomplish the aircrew portion of the AvORM web application or manual worksheet for each FDP. **(T-3) Note:** 618 AOC personnel will have a C2 scoring function to make inputs as needed across the other functions.

3.3.1. Initial Planner. Initial Planners assess all known risks at mission planning time. Initial Planners include 618 AOC planners (may include 618 AOC Mobility Operations Division [618 AOC/MOD] personnel), wing planners, theater air operations center, mission ops planners and aircrews for crew-planned sorties. Consider mission complexity and take appropriate mitigation actions when required.

3.3.2. Current Operations/Stage Managers. Current operations planners/stage managers will review all missions tasked to the unit, complete a risk assessment to account for local constraints. **(T-3)** For risk abatement, coordinate mission changes with the Initial Planner or 618 AOC/MOD personnel (if mission is in execution). Deployed current operations or stage managers could also fulfill this role.

3.3.3. Squadron. Squadron level supervisors will review missions and assess the risk based on crew experience, difficulty of mission, operational environment and waivers (e.g., checkride, altitude chamber, survival escape recovery training). **(T-3)** Squadron supervision includes commanders, operations officers or assistants, supervisors of flying, en route stage leadership, or anyone designated by the squadron commander.

3.3.4. Aircrew. The aircraft commander will perform a risk assessment based on the complexity of the mission, weather, crew experience and qualifications, duty time, cumulative

fatigue, and the operational environment. **(T-3)** Aircrew will notify C2 if any items have elevated above previous sign off. **(T-3)** For example: If the aircrew feels airfield complexity is high vs moderate and adjusts to high, they will notify C2 of the change and risk acceptance if appropriate. **(T-3)**

3.3.5. C2. If aircrew do not have the means to update risk factor scores in the electronic system, C2 will enter the scores into the AvORM worksheet and either mitigate or approve the risk per **Table 4.1**. **(T-3)** C2 will review AvORM during any mission changes or re-plans, consider mission complexity, and take appropriate mitigation actions when required. **(T-3)**

3.4. Manual Worksheet. See **Figure 3.1** for an example manual worksheet and **Figure 3.2** for an example of the manual Health, Stress, and Fatigue Scorecard.

Figure 3.1. AvORM Manual Worksheet – Example.

MAF MISSION AVIATION ORM WORKSHEET (Complete Once For Each Crew Duty Day)									
AvORM Web Application: https://gds.maf.af.mil									
Mission Number		ITINERARY			Risk Factor Functional Scoring				
Risk Factors		Risk Factor Point Scale				Initial Planner	Current Ops	Squadron	Aircraft
		0 (LOW) Green	1 (MODERATE) Yellow	2 (HIGH) Orange	3 (SEVERE) Red				
USER/CUSTOMER									
1	CJCS Priority	1B1 and Lower	1A1-1A4						
2	Participating Forces	US Military	Any Foreign						
3	AE/Passengers	Routine	Difficult	Challenging	Severe				
4	Mission Planning	Standard	Nonstandard	High Fatigue	Severe Fatigue				
TYPE									
5	Airport	Routine	Difficult	Challenging	Severe				
6	Aerial Refueling - Tanker	Routine	Difficult	Challenging	Severe				
7	Aerial Refueling - Receiver	Routine	Difficult	Challenging	Severe				
8	Airport	Routine	Difficult	Challenging	Severe				
9	Required Tactical Events	2 or less (OSAVIP=0)	3 to 8 or TTS (OSAVIP=TTS or 1-2 RW)	Greater than 8 (OSAVIP >=3 RW)					
TIMELINE									
10	Home Station Show Time	0530-1400L	1401-2000L	2001-0529L					
11	Consecutive Days w/in 2 hrs of Max FDP	2 or less	3	Greater than 3					
12	Scheduled Work Hours vs Max FDP	<75%	75-90%	90-95%	>95%				
13	Number of Legs in FDP	2 or less	3-4	5+ (or waiver reqd)					
ENVIRONMENT									
14	Perceived Threat	Low	Medium	High	Extreme				
15	En Route Location(s) Mission Support	Meets requirements	Below requirements		None				
16	Operating Environment Language Difficulties	None	Minor	Major					
17	Airfield Complexity (Runways, Taxiways, Hazards, etc.)	Routine	Difficult	Challenging	Hazardous				
18	Departure, En Route & Arrival WX (Worst Case)	AFI compliant	Multiple hazards (Low Vis, X-wind, Rain, Ice, etc.)		Waiver required				
19	Night Departures/Arrivals	2 or less	3 to 6	Greater than 6					
20	Bird/Wildlife Hazard	Low	Moderate		Severe				
21	Arrival Approach/Departure Procedures/Terrain	No hazards	Minor hazard	Major hazard	Multiple major hazards				
22	En Route Complexity (ATC, Rules, Routing, CG, AF, Terrain etc.)	Routine	Difficult	Challenging					
23	En Route Terrain/Geography	No hazards	Minor hazard	Major hazard	Multiple major hazards				
24	CBRN Operations or Other Risk Factors	None	Minor	Major	Hazardous				
25	Mission Impacting Waivers (Personal, Equipment and Operational)	0	1-2	3-4	More than 4				
CREW/AIRCRAFT									
26	Hrs (spent Legal for Alert (N/A for Charter)	0-6 & 24-30hrs	6-12 & 30-36 hrs	12-24 & 36-48 hrs					
27	Alert Resets (Since Last Flight)	0	1-2	3 or more					
28	Mission Changes Requiring Crew Action	None	Minor	Major					
29	Crew/Mission Match	Ideal	Suitable	Minimally acceptable					
30	Crew Qualification	Fully qualified	Upgrade training, in-unit reqd, non current crewmember						
31	Act Cmdr PIC Time in Type	>= 500 hrs (OSAVIP >= 100hrs) or IP on board	< 500 hrs (OSAVIP < 100 hrs)						
32	All Other Crewmembers Time in Type	>= 500 hrs	250 - 499 hrs	< 250 hrs					
33	Act Cmdr Last 30 Day Time in Type	>= 20 hrs (OSAVIP >= 10 hrs)	1 - 19 hrs (OSAVIP 1 - 9 hrs)	Less than 1 hr					
34	All Other Crewmembers Last 30 Day Time in Type	>= 20 hrs	1 - 19 hrs	Less than 1 hr					
35	Act Cmdr Last Accomplish Highest Risk Event	<= 90 days	> 90 days						
36	All Other Crewmembers Last Accomplish Highest Risk Event	<= 90 days	> 90 days						
37	Combined Pilot Experience Time in Type	>= 1000 hrs (OSAVIP >= 600 hrs) or IP on board	< 1000 hrs (OSAVIP < 600 hrs)						
38	Act Cmdr PIC/Total Time-Hrs (All AC)	>= 500/1000 hrs (OSAVIP >= 50/100 hrs)	< 500/1000 hrs (OSAVIP < 50/100 hrs)						
39	Aircraft MX Status	Mission capable	Negative mission impact	One-time flight (Waiver Required)					
HUMAN FACTORS (ENTER THE HIGHEST RISK FACTOR CREWMEMBER SCORE USING THE HEALTH, STRESS AND FATIGUE SCORECARD)									
40	Health and Stress Score	Minor	Elevated	Serious					
41	Fatigue Score	Low	Moderate	High	Severe				
TOTALS (The Tier 4 column total is the worksheet total)									
APPROVAL AUTHORITY		RISK LEVEL (Total Worksheet Score)			NAME/INITIALS, RANK, OFFICE SYMBOL & DATE				
Aircraft Commander		LOW (0-10 Moderate Points)							
SQDO or Designated Rep or 818 AOC Planner/DO		MODERATE (11-25 Moderate Points)							
SQOC or Designated Rep or 818 AOC DOO/Division Chief or Designated Representative		HIGH (≥ 1 High Event(s), or 26-40 Points)							
Operations Group Commander or 818 AOC Senior Planning Director/AVCC		SEVERE (≥ 1 Severe Event(s), or ≥ 41 Points)							

Figure 3.2. Health, Stress, and Fatigue Scorecard – Example.

FUNCTIONAL SCORING			
Initial Planner	Current Operations	Squadron	Aircrew
Initial planners assess all known risks at mission planning time. Initial Planners include 618 AOC planners (may include Mobility Operations Division (MOC) personnel), wing planners, theater air operations center, mission ops planners and aircrews for crew-planned sorties. Consider mission complexity and take appropriate mitigation actions when required.	Current operations planners will review all missions tasked to the unit and complete a risk assessment to account for local constraints and otherwise concur with the risk assessment. Deployed current operations or stage managers could also fulfil this role.	Squadron level supervisors will review missions and assess the risk based on crew experience, difficulty of mission, operational environment and waivers (e.g. Checkride, Altitude Chamber, Survival Escape Recovery Training). Squadron supervision includes commanders, operations officers or specialists, supervisors of flying, en-route stage leadership, or anyone designated by the squadron commander.	The aircraft commander will perform a risk assessment based on the complexity of the mission, weather, crew experience and qualifications, duty time, cumulative fatigue, and the operational environment.

HEALTH, STRESS, AND FATIGUE SCORECARD

4.3.1.6. Prior to the start of each flight duty period, every aircrew member uses the Health, Stress, and Fatigue Scorecard on the back of the AvORM worksheet to self-evaluate his/her current health/stress and fatigue risk level. The aircraft commander will query the results, take the highest health/stress and fatigue score and enter it into the health/stress and fatigue worksheet section of the web application. If the aircrew is using the manual worksheet, the aircraft commander will enter the health/stress and fatigue results in the Aircrew column of the worksheet.

HEALTH & STRESS RISK FACTORS	LOW GREEN 0 Points	MODERATE YELLOW 1 Point Ea	HIGH ORANGE 2 Points Ea	POINTS	HEALTH & STRESS SCORE:
Personal Health Factors (Hydration, Nutrition, Stress/Injury, etc)	Minor	Elevated	Serious		Any factor HIGH: overall score HIGH
Personal/Family Stress (Health, Finances, Relationship, etc)	Minor	Elevated	Serious		Total of all four factors: 3 or more: overall score HIGH
Work/Career Stress	Minor	Elevated	Serious		1-2: overall score MODERATE
Perceived Mission Pressure (External & Internal)	Minor	Elevated	Serious		0: overall score LOW
TOTAL OF ALL FOUR FACTORS:				0	

Minor: Having little significance, influence or effect
Elevated: Greater than is normal or reasonable
Serious: Needing or deserving complete attention

Input to Item 40

FATIGUE RISK FACTORS	LOW GREEN 2 Points	MODERATE YELLOW 1 Point Ea	HIGH ORANGE 2 Points Ea	POINTS	FATIGUE SCORE:
16+ hr Work/Duty Days (Past 7 days)	2	3	4		Any factor HIGH: overall score HIGH
Combined Prior Sleep (Past 3 Days)	21 hours or more	16-21 hours	Less than 16 hours		Total of all six factors: 7 or more: overall score SEVERE
Combined Sleep Quality (Past 3 Days)	Excellent	Fair	Poor		4-6: overall score HIGH
Prior Sleep (Past Day)	7 hours or more	6-7 hours	Less than 6 hours		1-3: overall score MODERATE
Sleep Quality (Past Day)	Excellent	Fair	Poor		0: overall score LOW
Night Time Zone Crossings (Last Duty Day (Jet Lag))	5 or less	6 or more			
TOTAL OF ALL SIX FACTORS:				0	

Excellent: Extremely good
Fair: Of a moderate quality, quantity or standard
Poor: Not good, being of a very LOW quality, quantity or standard

Input to Item 41

AMCI 90-903 (August 2022)

Table 4.1. Approval/Signatures Required for Assessed Risk Levels.

Risk Levels	Wing-planned Missions	618 AOC-planned Missions
LOW	Aircraft Commander	Aircraft Commander
MODERATE	Operations Officer or Designated Representative (One Sign-Off Per Mission)	618 AOC Planner or Duty Officer, if not already approved by TACC Branch Chief (One Sign-Off Per Mission)
HIGH	Squadron Commander or Designated Representative	618 AOC DDO/Division Chief
SEVERE	Operations Group Commander or Designated Representative	618 AOC Senior, Planning Director, CV or CC

Note: Wing-planned Missions include wing-planned exercises, tanker/receiver air refueling training, and training missions with external users such as cargo load training, joint airborne/air transportability training and off-station trainers.

4.4.1.4.1. In the event the AvORM mission risk level has increased above the previously approved level and the aircraft commander cannot contact 618 AOC or the home unit, he/she will carefully consider and evaluate the risk before continuing or delaying the mission.

4.4.1.4.2. For 618 AOC-planned missions, or wing current operations planned missions, the aircraft commander is the only approval necessary to operate an entire mission in the LOW risk category. A one-time signature on the crew orders by the flight order-authenticating official for wing-planned missions or 618 AOC planner for 618 AOC-planned missions is the only approval necessary to operate an entire mission in the MODERATE risk category. If at any time during a mission an individual risk factor or total score as directed on the worksheet, reaches the HIGH or SEVERE category, additional approval will comply with Table 4.1. Note: If a unit alteration drove the risk factor score to HIGH or SEVERE, use the Wing-planned Missions column for approval authority.

4.4.2. Signature Blocks. The aircraft commander will make every effort to access the web application, or if not available, sign and date the manual worksheet (include the duty day mission numbers) signature block for every flight duty period (FDP). Any time the mission risk level exceeds LOW, the aircraft commander will enter the approval authority's last name (or initials), rank, office symbol and date of approval in the appropriate signature block at the bottom of the manual worksheet. For the web application, one-time entry will be required for the risk factor(s) requiring approval.

Chapter 4

AVORM WORKSHEET USE, TRACKING, AND ARCHIVING

4.1. General. The AvORM worksheet begins with the planning function, then moves to the supervisory chain, and to the aircrew for final evaluation. Squadron leadership, to include the flight authorization authenticating official, will make and/or review inputs. **(T-3)** The aircraft commander will ensure completion of the web application or manual worksheet prior to flight. **(T-3)** The event scores entered into the Initial Planner, Current Ops, and Squadron columns will be validated from column to column and conclude with the Aircrew column. **(T-3)** The aircraft commander will complete the Aircrew column and validate scores as conditions dictate. **(T-3)** Examples of all scored items can be found in the “definitions” document at the Current AvORM Documents link (see [Table 1.1](#)).

4.2. Safety-of-Flight. An accepted level of risk waiver does not preclude the aircraft commander from declaring safety-of-flight anytime during mission execution. As determined by the aircrew, a safety-of-flight declaration is the aircraft commander’s avenue when a mission meets an acceptable level of risk or an acceptable level of approved risk but the aircrew is not capable of safely accomplishing the mission.

4.2.1. Prior to a safety-of-flight declaration, the aircrew and 618 AOC personnel can explore mutually acceptable avenues, such as crew enhancement crew rest or delayed alerts. Sometimes, however, user and mission requirements will preclude the 618 AOC from the flexibility to accommodate changes in the mission, necessitating a safety-of-flight declaration.

4.2.2. Upon declaration of safety-of-flight and prior to entering crew rest, the aircraft commander will collect required details of the events leading to the safety-of-flight condition, and will relay the information to the appropriate C2 authority. **(T-2)** The 618 AOC will execute the Safety-of-Flight Quick Reaction Checklist. **(T-2)** 618 AOC Safety uses safety-of-flight details to track trends and improve processes. The aircrew may be contacted for follow-up questions as part of the safety-of-flight process.

4.3. Worksheet Flow.

4.3.1. All reviewers will use the AvORM web application (when available) and click the GRAPH button (see examples in [Figure 4.1](#), [Figure 4.2](#), and [Figure 4.3](#)) to review the Sleep/Work Mission Effectiveness Model (ME Graph), following guidance in [paragraph 4.4.3](#) For 618 AOC-planned missions, all reviewers should complete risk assessment at least 24 hours prior to initial departure; 48 hours preferred for fatigue considerations. At all levels, if residual risk remains after mitigation, consult [Table 4.1](#) to determine the appropriate risk acceptance authority. **(T-2)** **Note:** If the web application is unavailable, the manual worksheet is located at the Current AvORM Documents link (see [Table 1.1](#))

4.3.2. If the planner identifies a risk factor with an elevated risk score, the planner should first take action to mitigate the risk. If unable to mitigate the risk due to operational constraints, the planner should seek approval for a higher accepted risk.

4.3.3. Current Operations/Stage Managers will review 618 AOC planner or unit planner AvORM scores in the “Initial Planner” column of the AvORM worksheet and score the mission in the “Current Ops” column. **(T-3)** If risk abatement actions are required, the current

operations planner should coordinate mission changes with the Initial Planner or 618 AOC/MOD personnel (if the mission is in execution).

4.3.4. Squadron leadership will review Initial Planner and Current Operations risk assessments and complete a risk assessment in the “Squadron” column of the worksheet. **(T-3)** The squadron will consider aircrew experience, waivers, and requirements and make appropriate crew changes or sign-off the risk at the appropriate level. **(T-3)** For risk abatement other than crew complement, coordinate mission changes with the Initial Planner and Current Operations or 618 AOC/MOD personnel (if the mission is in execution).

4.3.5. The aircraft commander will review the AvORM worksheet via the web application, Electronic Flight Bag (EFB) application, or manual worksheet. **(T-3)** Carry the Initial Planner, Current Operations, and Squadron scores into the Aircrew column, evaluate the risks, and make adjustments, as necessary. If risk abatement actions are required, the aircraft commander will coordinate mission changes at the squadron level and/or obtain appropriate approval per **Table 4.1 (T-3)** The aircraft commander will add a record and close the web application or sign the completed manual AvORM worksheet and leave a copy with the squadron or nearest C2 agency. **(T-3)** If crew is unable to physically leave an AvORM worksheet with the squadron or nearest command and control element, an attempt to relay score via voice, text, C2 platforms or other means will be considered AvORM complete.

4.3.6. For 618 AOC-planned missions, all reviewers should complete risk assessment at least 24 hours prior to initial departure.

4.3.7. Prior to the start of each FDP where crew rest occurred, regardless of location and including each FDP, every aircrew member will self-evaluate his/her current health/stress and fatigue risk level. The Health, Stress, and Fatigue Scorecard on the back of the AvORM worksheet is provided as a guide. If the aircrew is using the manual worksheet, the aircraft commander will enter the health/stress and fatigue results in the Aircrew column of the worksheet. **(T-3)** You can find the scorecard at the Current AvORM Documents link (see **Table 1.1**). The aircrew will notify C2 if the health and stress and/or fatigue risk factor scores have elevated past a previously authorized level. **(T-3)**

4.3.8. Mission Changes.

4.3.8.1. 618 AOC/MOD, execution agency or wing planner will evaluate mission changes, update the AvORM risk assessment, ensure no individual risk factors or overall score has elevated above the prior approved level, and mitigate risk factors (if able) before crew show. **(T-2)** For AvORM web application, click the “GRAPH” button to review the Sleep/Work Mission Effectiveness Model (ME Graph) and follow guidance in **paragraph 4.4.3** Upon crew show, the aircraft commander will review the mission recut, re-evaluate risk factors, and obtain any required approval for risk acceptance per **Table 4.1 (T-3)** The aircraft commander should review the ME Graph, when available, for appropriate crew work/rest management. **(T-3)**

4.3.8.2. In System Select/New Mission. At times, 618 AOC/MOD personnel will act as planners and the execution authority due to short notice requirements. 618 AOC/MOD personnel will follow the steps previously outlined for planners. **(T-2)**

4.4. Worksheet Approval. Each functional level will evaluate applicable individual events and the total score for every mission. **(T-2)** Determine if risk abatement actions are required or obtain

appropriate approval per **Table 4.1 Note**: Wing-planned missions include wing-tasked exercises, tanker/receiver air refueling training, and training missions with external users, such as cargo load training, JA/ATTs, and off-station trainers.

Table 4.1. Acknowledgement/Approval Signatures Required for Assessed Risk Levels.

Risk Levels	Wing-Planned Missions	618 AOC-Planned Missions
LOW	Aircraft Commander	Aircraft Commander
MODERATE	Operations Officer or Designated Representative (one sign-off per mission)	618 AOC Planner or Duty Officer, if not already approved by 618 AOC Branch Chief (one sign-off per mission)
HIGH	Squadron Commander or Designated Representative	618 AOC DDO/Division Chief or Designated Representative
SEVERE	Operations Group Commander or Designated Representative	618 AOC Senior, Planning Director, CV or CC

4.4.1. Acknowledgement/Approval Signature Requirements.

4.4.1.1. Based on the mission, use **Table 4.1** for the required signature.

4.4.1.2. In the event the AvORM mission risk level has increased above the previously approved level and the aircraft commander cannot contact 618 AOC or the home unit, he/she will carefully consider and evaluate the risk before continuing or delaying the mission.

4.4.1.3. For 618 AOC-planned missions, or wing current operations planned missions, the aircraft commander is the only approval necessary to operate an entire mission in the LOW risk category. A one-time signature on the crew orders by the flight authorization authenticating official (for wing-planned missions or 618 AOC planner for 618 AOC-planned missions) is the only approval necessary to operate an entire mission in the MODERATE risk category. If at any time during a mission an individual risk factor or total score (as directed on the worksheet) reaches the HIGH or SEVERE category, additional approval will comply with **Table 4.1 (T-2) Note**: if a unit alteration drove the risk factor score to HIGH or SEVERE, use the Wing-planned Missions column for approval authority.

4.4.2. Signature Blocks. The aircraft commander will make every effort to access the web application, or if not available, sign and date the manual worksheet (include the duty day mission numbers) signature block for every FDP. **(T-3)** Any time the mission risk level exceeds LOW, the aircraft commander will enter the approval authority's last name (or initials), rank, office symbol and date of approval in the appropriate signature block at the bottom of the manual worksheet. **(T-3)** For the web application, a one-time entry will be required for the risk factor(s) requiring approval.

4.4.3. Sleep/Work Mission Effectiveness Model (ME Graph). The AvORM ME Graph serves as an important tool for planners and aircrew alike, graphically depicting a mission chronology against a cognitive effectiveness reference scale. The planner, current operations, squadron, and aircrew should review the critical phases of flight on the AvORM ME Graph (Takeoff,

Landing, Air Refueling and Airdrop) by selecting the GRAPH button on the electronic worksheet or the EFB App. **(T-2) Warning:** Sleep/Work Mission Effectiveness Model (ME Graph) does not accurately reflect aircrew work/crew rest cycle. Button may reflect “Low” Fatigue, but with inaccurate premise data, the aircrew fatigue may actually be high or severe. Button may reflect “High” / “Severe” Fatigue, but with inaccurate premise data, the aircrew fatigue may actually be low.

4.4.3.1. During mission planning, planners should observe the graph. **(T-2)** The graph displays a round graphic to show critical transition phases where ME is about to reach a lower effectiveness level. Mitigating risks at these points may significantly improve the mission success. The planner should attempt to mitigate if the graph displays a round graphic to indicate a mission passing into a fatigue score of 77% or 70%. If the planner is unable to mitigate the risk by altering the itinerary, the planner should follow guidance in [paragraph 4.4.3.4.3](#). **(T-3) Note:** If unable to assess the risk because of graph errors, please annotate in the Mission Planning Factor: Graph errors/unable to assess risk.

4.4.3.2. During execution, the C2 execution authority should assess mission risks, when prompted, for existing and potential negative effects. 618 AOC/MOD personnel should follow [paragraph 4.4.3.1](#) if the mission itinerary has changed or a new mission has been planned. If 618 AOC/MOD personnel are unable to mitigate the risk by altering the itinerary, follow guidance in [paragraph 4.4.3.4.4](#).

4.4.3.3. Mission Linking. Missions linked in GDSS automatically link in AvORM. AvORM users can use the “LINK” button (refer to [Figure A2.2](#)) to combine ME graphs from separate missions into one graph. Assuming the same mission design series (MDS), linking can be accomplished when the ICAO location of the end of one mission coincides with the location at the beginning of another mission. Mission linking improves accuracy for aircrews who complete one mission and then accept another subsequent mission. The LINK button changes color from red to green when a mission contains a link to another mission. [Figure A2.3](#) demonstrates an example of mission linking.

4.4.3.4. Graph Button. “GRAPH” button normally displays green with black letters (see [Figure 4.1](#)). Blue button means auto-scoring has not yet processed the mission.

4.4.3.4.1. Orange Button. For a GDSS mission (augmented line for augmented mission in GDSS), if the graph line passes below 70% effectiveness (“orange zone”) once or twice during the mission, the button will turn orange with red letters. This should correspond to at least a fatigue risk factor score of HIGH for the affected FDP(s). See [Figure 4.2](#).

4.4.3.4.2. Red Button. For a GDSS mission (augmented line for augmented mission in GDSS), if the graph line passes below 70% effectiveness (“orange zone”) three times or more during the mission, the button will turn red with black letters. This should correspond to at least a fatigue risk factor score of SEVERE for the affected FDP(s). See [Figure 4.3](#).

4.4.3.4.3. Graph Button and Mission Planning. The planner should observe the graph and attempt to mitigate the sections where the graph depicts a round graphic (indicating effectiveness dropping into either 77.5% or 70%). After mitigation attempts, take these actions if the GRAPH button displays as in [Figure 4.2](#) (HIGH) or [Figure 4.3](#)

(SEVERE). For the Mission Planning risk factor under the timeline section, select “High Fatigue” or “Severe Fatigue” and have the risk factor signed off per [Table 4.1 \(T-3\)](#) **Note:** If unable to assess the risk because of graph errors, please annotate in the Mission Planning Factor: Graph errors/unable to assess risk.

4.4.3.4.4. Graph Button and C2. During execution, the C2 execution authority should monitor mission risks for existing and potential negative effects. Take these actions if the GRAPH button displays as in [Figure 4.2](#) (HIGH) or [Figure 4.3](#) (SEVERE). These indicate a fatigue risk factor score not already signed off in planning. 618 AOC/MOD personnel will select the appropriate risk factor level score (place holder), mark affected FDP, annotate a remark in the comments section, and have the risk factor signed off per [Table 4.1 \(T-3\)](#) **Note:** If unable to assess the risk because of graph errors, please annotate in the Mission Planning Factor: Graph errors/unable to assess risk.

Figure 4.1. Graph Button Example – ME Low/Moderate Fatigue Risk.



Figure 4.2. Graph Button Example – ME High Fatigue Risk.



Figure 4.3. Graph Button Example – ME Severe Fatigue Risk.



4.4.3.5. Electronic Flight Bag (EFB) Application. The AvORM app on the EFB provides users a stand-alone tool to plan and anticipate risk factors on flight missions. “Itinerary” requires manual input of mission name, aircraft, crew composition (basic or augmented), airports (by ICAO designation), drop zones or air refueling as applicable, and departure/landing times. The app does not calculate en route times. The app mimics capability of the AvORM online worksheet in GDSS. “Help” within the app provides further instructions. See icon in [Figure 4.4](#) **Note:** When EFB app software permits communication with the GDSS web application, aircrews should update risk factor scores for each FDP, especially health/stress and fatigue risk factors. This will enable more accurate tracking of mission/crewmember conditions.

Figure 4.4. Electronic Flight Bag (EFB) AvORM Icon.



4.5. Post-Mission Actions. For mishap prevention and/or investigations, after mission is concluded, units will collect all hard copy AvORM worksheets (regardless of score) and maintain a hard copy of the worksheet for a period of at least 90 days after mission completion (T-3). Units should consider development of a trend analysis program from AvORM inputs. Trend analysis

may include RM assessment scores, mission element scores, and a review of risk acceptance value thresholds.

4.6. Unit Worksheets. Units may develop worksheets for wing-planned missions. Operations Group Commander (or equivalent) must approve worksheets before use. **(T-3)** Send a copy to the AvORM Administrator at orm.amc.se@us.af.mil for posting on the Current AvORM Documents page **(T-3)**. The AvORM Administrator may review worksheets if a copy is provided in advance of the mission. For air reserve component units, coordinate with the appropriate MAJCOM flight safety division. Consider the following guidelines:

4.6.1. Units will establish threshold criteria for various overall assessed risk levels. **(T-3)**

4.6.2. For flights assessed at an elevated risk level, a supervisory authority other than the aircraft commander will review prior to execution of that sortie. **(T-3)** Use **Table 4.1** as a model.

4.6.3. In the case of elevated risk assessments, the aircraft commander will brief the appropriate supervisory authority so they 1) understand and concur with the level of risk the pilot/aircrew is accepting and 2) have adequately mitigated known risks to the mission. **(T-3)** The supervisory authority may elect to make changes to the profile or ultimately cancel the sortie.

4.6.4. Aircrew will continually assess and update RM decisions to account for developing risks such as maintenance delays/conflicts, real world taskings, flight profile changes, etc. **(T-3)** This continual update will allow appropriate real-time decisions for sortie modification/continuation.

4.6.5. Unit worksheets should be quantitative (apply a numerical value) and capture applicable risks.

4.6.6. Consider incorporating unit worksheets into the trend program per **paragraph 4.5**.

Chapter 5

AEROMEDICAL EVACUATION CREW MEMBER (AECM) RISK MANAGEMENT (RM) WORKSHEET

5.1. General. Squadron commanders shall form aircrews based on fragmentation order and mission directive, Crew Duty Time (CDT) and Flight Duty Period (FDP) requirements, aircrew member qualifications, and other constraints to safely accomplish the mission tasking. **(T-3)** The AECM risk management worksheet is located at the Current AvORM Documents link (see [Table 1.1](#)).

5.2. Worksheet Use, Events, Scoring, and Archive. Use the following guidance.

5.2.1. MSN #. AE Mission number as it appears in GDSS.

5.2.2. MDS. Aircraft MDS scheduled to perform the mission.

5.2.3. Itinerary. Enter all ICAO designations for the planned mission.

5.2.4. Mission Factors. The Chief Nurse (CN) or designee will complete the applicable portions of the AECM RM Worksheet prior to crew entry into crew rest for scheduled missions by determining the most appropriate score for each item and annotating the score (0, 1, 2 or 3) in the points (PTS) column. **(T-3)** This will be accomplished as soon as the mission is established for In-System-Select (ISS)/Alert missions. **(T-3)** They will determine the most appropriate score for each item and annotate the score (0, 1, 2 or 3) in the points (PTS) column. **Note:** On missions with scheduled FDP longer than 16 hours, the squadron commander or designee shall augment the aircrew to provide members adequate time to rest en route. **(T-3)**

5.2.5. Aircrew Factors. The CN or designee will complete the applicable portions of the AECM RM Worksheet prior to crew alert by determining the most appropriate score for each item and annotating the score (0, 1, 2 or 3) in the points (PTS) column. **(T-3)**

5.2.6. Patient Factors. The CN or designee will complete the applicable portions of the AECM RM Worksheet prior to crew alert by determining the most appropriate score for each item and annotating the score (0, 1, 2 or 3) in the points (PTS) column, and tallying the points for section one, two and three. **(T-3)** **Note:** "Patients" include total simulated for training, as well as known live patients for operational missions.

5.2.7. Mission Approval Authority. If mission RM calculates to a LOW risk level, the Medical Crew Director (MCD) will verify and sign at crew briefing. **(T-3)** When mission AECM RM calculates to a MODERATE or higher level, the CN will determine the appropriate crew complement to reduce the risk level. **(T-3)** If the AECM RM score calculates to a MODERATE or a higher level after crew complement revisions, the CN/MCD will route the RM Worksheet to the appropriate level for approval. **(T-3)** If 618 AOC approval is needed, a verbal confirmation is given to the AEOT with the Senior's name and an annotation in the Senior log.

5.2.8. Human Factors. The MCD will complete the applicable portions of the AECM RM Worksheet while accomplishing administrative duties during the crew brief. **(T-3)** Each AECM will complete a self-assessment and circle their individual scores using page 2 of the AECM RM Worksheet. **(T-3)** The MCD will annotate the highest crew member risk factor score in section 4, HUMAN FACTORS. An AECM has the option to request removal from a

mission due to elevated risk factors. An AECM may also be removed by the MCD due to elevated risk factors. If an AECM is removed from the mission, the MCD will consult with the CN to determine the revised crew complement. **(T-3)** The 618 AOC will be contacted and notified of actions taken. **(T-2)**

5.2.9. AE Approval Authority.

5.2.9.1. Overall score in the LOW range – MCD signature required.

5.2.9.2. Overall score in the MODERATE range – one-time approval and signature required by CN or designated representative.

5.2.9.3. Overall score or highest individual event in the HIGH range – approval and signature required by squadron commander or designated representative.

5.2.9.4. Overall score or highest individual event in the SEVERE range – approval and signature required by operations group commander or designated representative or 618 AOC.

5.2.10. Completion of Worksheet. After completion of the AECM RM worksheet, the MCD will retain the original and leave a copy with the squadron/flight prior to mission launch. **(T-3)** **Note:** If Mission, Aircrew, or Patient factors change after crew show, recalculate the appropriate areas.

5.3. Post Mission Actions. For mishap prevention and/or investigations, after mission is concluded, units will collect all hard copy AvORM worksheets (regardless of score) and maintain a hard copy of the worksheet for a period of at least 90 days after mission completion **(T-3)**. Units should consider development of a trend analysis program from AvORM inputs. Trend analysis may include individual or overall RM assessment scores, mission element scores, and a review of risk acceptance values to ensure thresholds meet mission requirements.

5.4. AECM RM Worksheet. See [Figure 5.1](#) for an example AECM RM Worksheet. See [Table 1.1](#) for link to Current AvORM Documents to find the most current AECM RM Worksheet.

Figure 5.1. AECM RM Worksheet – Example (Page 1).

AECM RISK MANAGEMENT WORKSHEET						
MSN#	MDS	ITINERARY				
#	RISK FACTORS	0 (LOW) Green	1 (MODERATE) Yellow	2 (HIGH) Orange	3 (SEVERE) Red	CN PTS
1. MISSION FACTORS: (CN or Designee completes prior to entry into crew rest) Time (Zulu) entered into crew rest:						
1	Type of Mission	Routine Operational/Trainer	Intertheater/Combat Support	Contingency/Combat		
2	Enroute Location(s) Mission Support	Meets Requirements	Below Requirements	None		
3	Configuration (litter requirement)	≤ 10 Litters or if ground support configured aircraft	11-25 Litters	26-50 Litters	> 50 Litters	
4	Time Allotted to Configure Aircraft	≥ 2 Hours or if ground support configured aircraft	1-2 Hours	< 1 Hour		
5	Mission Information	Patients manifested	Patients not manifested			
6	Scheduled Flight Time (with patients onboard)	0-5 Hours	> 5 – 10 Hours	> 10 – 15 Hours	> 15 Hours	
7	Number of Legs in FDP	≤ 2	3-4	≥ 5		
8	Scheduled FDP Divided by Max FDP X 100	< 75%	75-95%	> 95%		
9	Departure, Enroute and Arrival Weather (worst location)	40-85F	Inclement Weather &/or < 40F or > 85F			
2. AIRCREW FACTORS: (CN or Designee will complete prior to crew alert) Time (Zulu) Legal for Alert:						
10	Hours Spent Legal for Alert (N/A "Charlie")	0-6 or 24-30 Hours	6-12 or 30-36 Hours	12-24 or 36-48+ Hours		
11	Alert Resets (since last flight)	0	1-2	> 3		
12	Home Station Show Time	0631-1400L	0531-0630L/1401-2000L	2001-0530L		
13	Consecutive Days w/in 2 Hours of Max FDP	≤ 2	3	> 3		
14	Crew Qualification	Fully Qualified	Upgrade Training, In-unit Requal, Non-current AECM			
15	Mission Experience (unsupervised AECMs only)	≥ 60% have experience with mission	< 60% have experience with mission			
16	Clinical Experience	≥ 60% AECMs have ≥ 6 years' experience	< 60% AECMs have > 6 years' experience			
17	Aircraft Experience (within 12 months)	> 60% have flown in this MDS	< 60% have flown in this MDS			
18	Flying Experience	≥ 10 years combined	< 10 years combined			
3. PATIENT FACTORS: (CN or Designee will complete prior to crew alert) Time (Zulu) Actual Alert:						
19	Number of Patients+	0 – 15 patients KC-135: 1-3 litter pts	16 -30 patients KC-135: 4-6 litter pts	31-50 patients KC-135: 7-9 litter pts	> 50 patients KC-135: 10-15 litter pts	
20	Patient Complexity	Routine/Stable or ≤ 3 Priority AE Readiness Mission	> 3 Priority, 1 Urgent or < 5 Psych pts	2-4 Urgent or 5-9 Psych pts	> 4 Urgent, > 9 Psych pts or Highly contagious pts w/o Biocontainment Unit (BCU)	
21	Special Medical Equipment	< 5 PCA pumps or Amps: ≤ 20	6-10 PCA pumps, NTS, waived equip or Amps: > 20	> 10 PCA Pumps or BCU (e.g., NPC, NPCL or other approved high capacity unit)		
+ Standards for number of patients assumes basic AE crew, risk can be lowered for augmented crew					Total PTS 1, 2 & 3	
Mission Approval Authority		Risk Level			Signature, Name, Rank, Office Symbol & Date	
MCD		LOW (0-6 Moderate Points)				
CN or Designated Representative		MODERATE (7-13 Moderate Points)				
Sq/CC or Designated Representative		HIGH (> 1 High event(s), or 14-20 points)				
* OG/CC or Designated Representative or TACC		SEVERE (≥ 1 Severe event(s), or ≥ 21 Points)				

NOTE: If Mission, Aircrew, or Patient factors change after crew show, MCD will recalculate appropriate areas.

Annotating a single HIGH or SEVERE item would drive a signature from the appropriate designee, not just the total score. Example: Every area is graded LOW with the exception of #3 Configuration, which was scored in the HIGH category. This would require a Sq/CC or designee signature under the HIGH risk level signature block even though the overall score is only two.

*NOTE: For TACC tasked operational missions, a "SEVERE" risk level requires a verbal confirmation and electronic message from the 618th AOC (TACC) Senior, Planning Director, CV or CC.

Communication is paramount. The MCD must inform the PIC of any areas marked HIGH or SEVERE.

Figure 5.2. AECM RM Worksheet – Example (Page 2).

HEALTH & STRESS RISK FACTORS	LOW GREEN 0 POINTS	MODERATE YELLOW 1 POINT EA	HIGH ORANGE 2 POINTS EA	FATIGUE RISK FACTORS	LOW GREEN 0 POINTS	MODERATE YELLOW 1 POINT EA	HIGH ORANGE 2 POINTS EA
Personal Health Factors (hydration, nutrition, illness/injury, etc.)	Minor	Elevated	Serious	16+ hour Work/Duty Days (past 7 days)	2	3	≥ 4
Personal Family Stress (health, finance, relationship, etc.)	Minor	Elevated	Serious	Combined Prior Sleep (past 3 days)	> 21 Hours	18-21 Hours	< 18 Hours
Work/Career Stress	Minor	Elevated	Serious	Combined Sleep Quality (past 3 days)	Excellent	Fair	Poor
Perceived Mission Pressure (external & internal)	Minor	Elevated	Serious	Prior Sleep (past day)	> 7 Hours	6-7 Hours	< 6 Hours
Score*				Sleep Quality (past day)	Excellent	Fair	Poor
				Net Time Zone Crossings Last Duty Day (jet lag)	≤ 5	> 5	
				Score**			

* Health and Stress Scoring: Any factor HIGH: overall score HIGH
 - Total of all four factors 3 or more: overall score HIGH
 - Total of all four factors 1-2: over score MODERATE
 - Total of all four factors 0: overall score LOW

** Fatigue Scoring: Total of all factors 7 or more: overall score SEVERE
 - Any factor HIGH: overall score HIGH
 - Total of all factors 4 to 6: overall score HIGH
 - Total of all factors 1 to 3: overall score MODERATE
 - Total of all factors 0: overall score LOW

CREW POSITION	SCORE	CREW POSITION	SCORE
MCD	LOW / MODERATE / HIGH	MCD	LOW / MODERATE / HIGH / SEVERE
2 FN	LOW / MODERATE / HIGH	2 FN	LOW / MODERATE / HIGH / SEVERE
CMT	LOW / MODERATE / HIGH	CMT	LOW / MODERATE / HIGH / SEVERE
2AET	LOW / MODERATE / HIGH	2AET	LOW / MODERATE / HIGH / SEVERE
3AET	LOW / MODERATE / HIGH	3 AET	LOW / MODERATE / HIGH / SEVERE
MCC	LOW / MODERATE / HIGH	MCC	LOW / MODERATE / HIGH / SEVERE
Additional AECM	LOW / MODERATE / HIGH	Additional AECM	LOW / MODERATE / HIGH / SEVERE
Additional AECM	LOW / MODERATE / HIGH	Additional AECM	LOW / MODERATE / HIGH / SEVERE
Instructor/Examiner	LOW / MODERATE / HIGH	Instructor/Examiner	LOW / MODERATE / HIGH / SEVERE
Instructor/Examiner	LOW / MODERATE / HIGH	Instructor/Examiner	LOW / MODERATE / HIGH / SEVERE

Each AECM (include FIFE) completes self-assessment. MCD annotates the highest risk factor crewmember score.

4. HUMAN FACTORS	(LOW) Green	(MODERATE) Yellow	(HIGH) Orange	(SEVERE) Red
Health and Stress Score	Low	Moderate	High	
Fatigue Score	Low	Moderate	High	Severe
				Highest Overall Risk Factor Score

AE Approval Authority	Risk Level	Signature, Name, Rank, Office Symbol & Date
MCD	LOW	
CN or Designated Representative	MODERATE	
Sq/CC or Designated Representative	HIGH	
*OG/CC or Designated Representative or TACC	SEVERE	

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5.2.9. AE Approval Authority.

- 5.2.9.1. Overall score in the LOW range – MCD signature required.
 - 5.2.9.2. Overall score in the MODERATE range – one time approval and signature required by CN or squadron flight order authenticating official or equivalent.
 - 5.2.9.3. Overall score or highest individual event in the HIGH range – approval and signature required by squadron commander.
 - 5.2.9.4. Overall score or highest individual event in the SEVERE range – approval and signature required by operations group commander or equivalent.
- 5.2.10. Completion of Worksheet. After completion of risk management worksheet, MCD will retain the original and leave a copy with the squadron/flight prior to mission launch. Note: If Mission, Aircrew, or Patient factors change after crew show, recalculate appropriate areas.

DAVID R. MILLER, GS-14, DAFC
 Deputy Director of Safety

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

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

AFI 90-802, *Risk Management*, 1 April 2019

AFPD 90-8, *Environment, Safety & Occupational Health Management and Risk Management*, 23 December 2019

DAFI 91-225_AMCSUP, *Aviation Safety Programs*, 8 April 2022

U.S. Department of Transportation, Federal Railroad Administration Final Report, “*Analysis of the Relationship between Operator Effectiveness Measures and Economic Impacts of Rail Accidents*”, May 2011

Prescribed Forms

AMC Form 901, *Aviation ORM Feedback*, 1 July 2014

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AE—Aeromedical Evacuation

AECM—Aeromedical Evacuation Crew Member

AF—Air Force

AFI—Air Force Instruction

AFMAN—Air Force Manual

A-FMP—Aviation Fatigue Management Program

A-FMWG—Aviation Fatigue Management Working Group

AFPAM—Air Force Pamphlet

AMC—Air Mobility Command

AMCI—Air Mobility Command Instruction

AOOC—Air and Space Operations Center

ARM—Aeromedical Readiness Missions

AvORM—Aviation Operational Risk Management

C2—Command and Control

CN—Chief Nurse

CR—Change Request

DDO—Deputy Director of Operations

DoD—Department of Defense

EFB—Electronic Flight Bag

ETD—Estimated Time of Departure

FDP—Flight Duty Period

FN—Flight Nurses

GDSS—Global Decision Support System

HQ—Headquarters

ICAO—International Civil Aviation Organization

I.E.—id est (that is to say)

ISS—In-System-Select

MAF—Mobility Air Forces

MCD—Medical Crew Director

ME—Mission Effectiveness

ORM—Operational Risk Management

PTS—Points

RDS—Records Disposition Schedule

RM—Risk Management

RWG—Requirements Working Group

Office Symbols

618 AOC—618th Air Operations Center

618 AOC/MOD—618th Air Operations Center Mobility Operations Division

AFLCMC/HBMSA—Global Decision Support System, System Project Branch

AFRC/SEF—Air Force Reserve Command Flight Safety

AFTRANS—Air Force Transportation Component

AMC—Air Mobility Command

AMC/A3CS—Air Mobility Command, Command and Control Systems Branch

AMC/A3T—Air Mobility Command Training Division

AMC/A3TH—Air Mobility Command Support Flyer Training Branch

AMC/A3TO—Air Mobility Command Operations Risk Assessment and Management System Branch

AMC/A3V—Air Mobility Command Standardization/Evaluation Division

AMC/A3VM—Air Mobility Command Aeromedical Evacuation Standardization/Evaluation Branch

AMC/CC—Air Mobility Command Commander

AMC/SEF—Air Mobility Command Flight Safety

AMC/SGP—Air Mobility Command Surgeon General, Aerospace Medicine Division

FAA—Federal Aviation Administration

HAF/A3M CVAM—Headquarters Air Force Special Air Missions Division

JOSAC—Joint Operational Support Airlift Center

NGB/SEF—Air National Guard Flight Safety

USTRANSCOM—United States Transportation Command

Terms

Aviation Fatigue Management Program—Organizational processes that assess fatigue impacts on MAF operations and risk mitigation strategies.

Aviation Operational Risk Management—A process to identify operational hazards that require mitigation.

Risk Assessment—The process of detecting hazards and their causes, and systematically assessing the associated risks.

Risk Management—The systematic process of identifying hazards, assessing risk, making control decisions, implementing control decisions, and supervising and reviewing the activity for effectiveness.

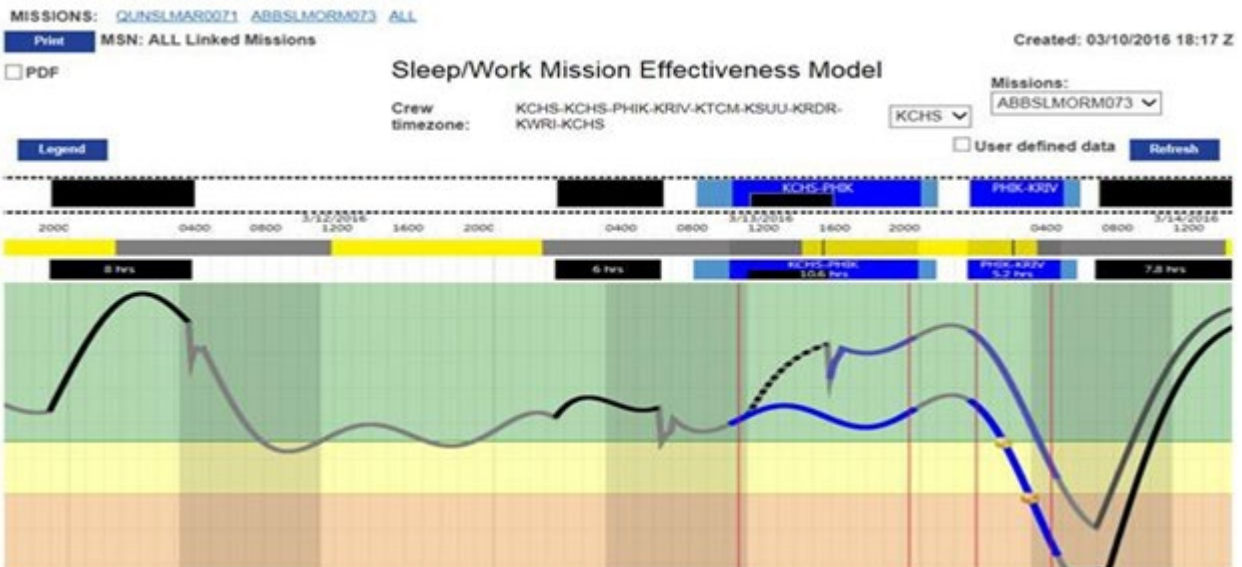
Attachment 2

SLEEP/WORK MISSION EFFECTIVENESS MODEL (ME GRAPH)

A2.1. Sleep/Work Mission Effectiveness Model (ME Graph).

A2.1.1. **Purpose.** This attachment describes the AvORM Sleep/Work Mission Effectiveness Model (ME Graph), a situational awareness and fatigue countermeasure tool. See [Figure A2.1](#). The AvORM web application provides access to the graph for all GDSS account holders involved in AMC mission operations, to include mission planners, managers, unit supervisors and aircrews.

Figure A2.1. Sleep/Work Mission Effectiveness Model (ME Graph).



A2.1.2. **General.** AMC developed an AvORM tool for mishap prevention, with an increased focus on Human Factor awareness. On-going efforts throughout the Department of Defense (DoD) resulted in a fatigue countermeasures (CM) modeling tool that supports fatigue awareness and risk mitigation strategies in daily aviation operations. The CM tool displays chronological points along a mission timeline where fatigue “crunch points” (ME low points) could pose a human performance risk when combined with the other AvORM risk factors. Current fatigue research does not support it as a stand-alone Go/No-Go decision making tool, but it is a vital component of a multidimensional, comprehensive risk management process.

A2.1.3. **Functionality.** AvORM includes a sleep/work mission effectiveness fatigue model as a reference tool to supplement the AvORM Worksheet and can be useful to all aircrew regardless of position. This model utilizes real-time Global Decision Support System (GDSS) data to dynamically evaluate sleep/work cycles and aircrew circadian rhythm, in correlation to critical flight phases within a FDP. It accounts for circadian shifts due to trans-meridian crossings and provides a representation of local day/night based on geographic location. Specifically developed for AvORM, the ME Graph tool recognizes crew augmentation per GDSS data and automatically accounts for predicted in-flight crew rest within each augmented FDP.

A2.1.3.1. Scope. The ME Graph is not a stand-alone Go/No-Go decision making tool. The effectiveness line displayed represents an aggregated effectiveness of the primary crew (basic or augmented) – it does NOT reflect individual cognitive effectiveness. Individual effectiveness will vary based on individual workloads, in-flight rest periods and sleep cycles. Individual effectiveness will vary based on a variety of individual factors ranging from influences on state like workload, in-flight rest periods and sleep cycles, to individual traits like sleep need, susceptibility to sleep loss, and chronotype (i.e., morningness/eveningness). The model reflects an optimal suggested sleep schedule. Obtaining less sleep than recommended in the model may create fatigue levels higher than reflected in the model.

A2.1.3.2. ME Graph Data Inputs. The graph uses current GDSS-associated mission data to calculate its display. The graph updates based on the latest GDSS data each time it is opened. Mission schedule changes such as takeoff delays, etc. reflect automatically the next time the graph is opened for viewing. Based on available GDSS data, the graph displays critical phases of flight (takeoff, aerial events such as an airdrop or air refueling, and landing) to increase mission awareness for all users throughout the mission planning and execution timelines.

A2.1.3.3. Effectiveness Thresholds. AvORM uses the reference effectiveness thresholds on the web application graph (77.5% and 70% effectiveness) to estimate individual effectiveness thresholds. Although established as an individual's cognitive effectiveness, these thresholds provide awareness as a reference to the aggregated aircrew line, whether a primary crew of a C-21 or C-37, or a much larger C-5 crew. The graph is designed to identify specific areas (crunch points) for planning/staff agencies to concentrate preemptive fatigue mitigation strategies such as mission timing adjustment, aircrew augmentation, etc. It also allows the aircrew to assess and apply appropriate strategies (inflight naps, caffeine use, etc.) for continued fatigue mitigation.

A2.1.3.3.1. U.S. Department of Transportation Federal Railroad Administration (FRA) research studies established the 77.5% effectiveness line (separation between green and yellow zones. An accident's cost was nearly five times higher if below this line, and four times lower when effectiveness was greater than 90%. The accident probability increased by 42% when effectiveness was below this threshold; compared to a 30% decrease when above 90%. However, as mentioned in [paragraph A2.1.3.1](#), individual effectiveness will vary based on individual workloads, in-flight rest periods and sleep cycles.

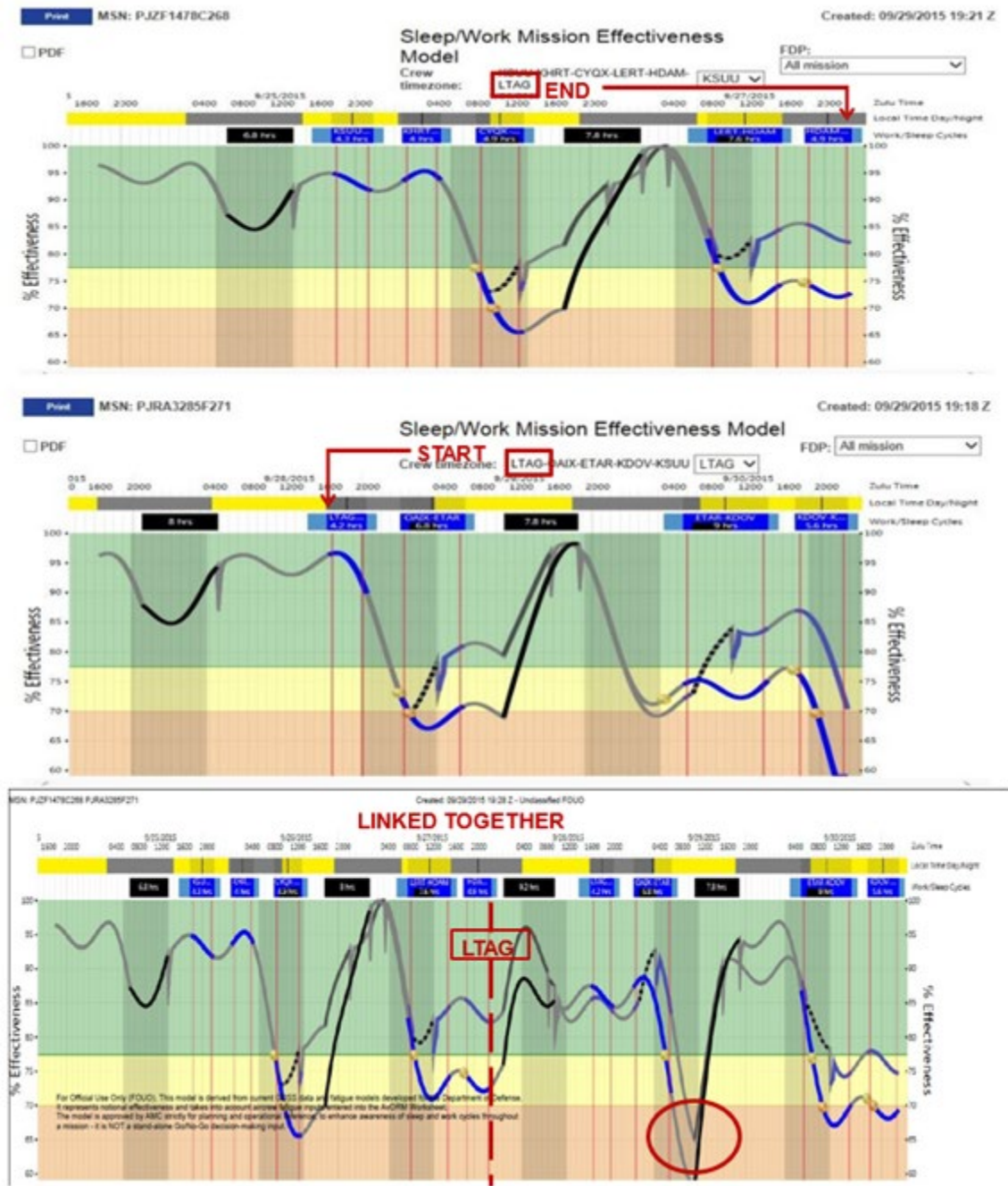
A2.1.3.3.2. The 70% effectiveness line is considered by the FRA to be the "action line" for regulatory purposes, below which fatigue risks should be mitigated. Below the 70.0% effectiveness line (transition from yellow to orange zone), the accident probability increased by 62% and the cost was four times higher because subjects had a notable decreased ability to engage in logical decision making and were more susceptible to missing caution and warning cues. Additionally, subjects showed an increase in attention lapses and involuntary micro-sleep episodes. Again, as stated in [paragraph A2.1.3.1](#), individual effectiveness will vary based on individual workloads, in-flight rest periods and sleep cycles.

A2.1.4. Mission Linking. Reference [paragraph 4.4.3.3](#), see [Figure A2.2](#) and [Figure A2.3](#) for examples.

Figure A2.2. Link Button Example.



Figure A2.3. Mission Linking Example.



A2.1.5. Mission Planning and Execution. The AvORM ME Graph serves as an important tool for planners and aircrew alike, graphically depicting a mission chronology against a cognitive effectiveness reference scale.

A2.1.5.1. Mission planners and unit schedulers. The AvORM ME Graph provides a visual predictive display for the selected mission and its associated flight duty periods (FDPs). The display uses an aircrew’s current circadian rhythm alignment (or as selected), planned FDP duration and mission flight and ground times (with a scheduled, estimated or actual

order of precedence) as key factors in the ME graph's modeling calculations to help align the schedule as much as possible with the aircrew's circadian rhythm.

A2.1.5.2. Mission managers and supervisors. During mission execution, scheduling changes in GDSS due to user, maintenance, weather, etc., reflect nearly instantaneously on the ME graph, including an alert functionality if fatigue is forecasted to be a significant factor (high or severe) to overall risk scores for a particular FDP. Additionally, mission managers have supporting modeling information about follow-on mission fatigue when considering changes to a crew's previously scheduled ground and crew rest periods.

A2.1.5.3. Aircraft Commanders. Per AFMAN 11-2MDS Volume 3, Chapter 2, aircraft commanders are vested with the authority to accomplish the assigned mission and are responsible for the welfare of aircrew members and the safe accomplishment of the mission. The ME graph is specifically designed to indicate mission flight time, critical phases of flight and ground times over the course of a given Flight Duty Period with respect to the assigned crew's circadian rhythm and modeled effectiveness. This display provides a new standard of human performance situational awareness for aircraft commanders to use in directing their crew's work/rest cycles to best mitigate the impact of fatigue and safely accomplish the assigned mission.

Attachment 3

CHANGE MANAGEMENT

A3.1. Introduction.

A3.1.1. Background. The AMC Aviation Operational Risk Management (AvORM) Program establishes a command-wide standardized process to quickly and simply assess the risk of our flying missions; provide a common language between aircrew, execution and planning and provide leadership with the right visibility to assume, mitigate or reject risk in operating our missions. The overall AvORM goal is successful mission accomplishment while eliminating unnecessary risks. This document outlines the AvORM change management process to identify, review, analyze, prioritize, and approve necessary changes and revisions of the AvORM Program.

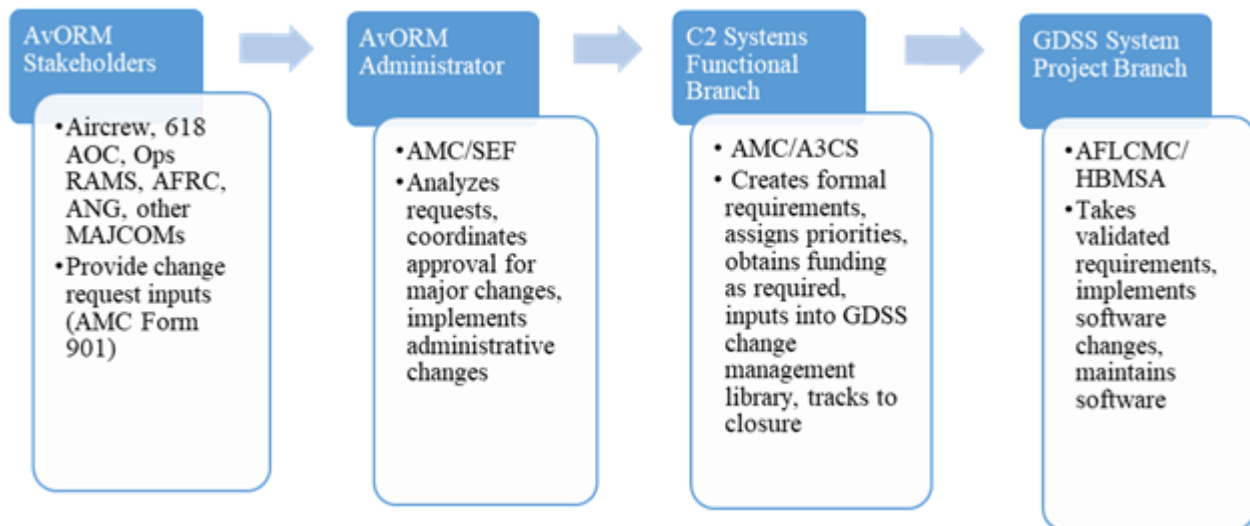
A3.1.2. Stakeholders. See [Chapter 2](#).

A3.1.3. Objective. Change management provides a forum and process to periodically review, validate and modify the AvORM Program capabilities and prioritize solutions to meet capability shortfalls.

A3.1.4. GDSS Functional Help Desk. Refer AvORM issues concerning performance of the current edition of the software to the GDSS Functional Help Desk (see [Table 1.1](#)).

A3.2. Change Management Process. See [Figure A3.1](#).

Figure A3.1. Change Management Process.



A3.2.1. Origin of Change Requests. All stakeholders provide feedback on the application of the AvORM worksheet and the AvORM program. Submit feedback on AMC Form 901, *AMC Aviation ORM Feedback*, to e-mail: orm.amc.se@us.af.mil.

A3.2.2. Justification of Change Requests. The AvORM Administrator reviews change requests that address AvORM issues such as process, policies, procedures, regulations, tool applications, human resources, environment, and/or communication flow.

A3.2.3. AvORM Administrator. The AvORM Administrator analyzes requests, coordinates approval for major changes, implements administrative changes and maintains the Current AvORM Documents link (see [Table 1.1](#)). Currently, the AvORM Administrator can update the following items without a software change:

A3.2.3.1. Manual worksheet.

A3.2.3.2. Risk factors, visible text, alt text [comments in manual worksheet]. **Note:** AvORM Administrator coordinates with stakeholders to ensure risk factors and comments meet the needs of the mobility air forces.

A3.2.3.3. Total score approval ranges (i.e. points required for overall low/moderate/high/severe rating) and fatigue graph enable/disable.

A3.2.3.4. Aircraft show time/debrief settings (show time, airdrop mission offset, debrief time, ground time, max FDP for basic crew, max FDP for augmented crew, crew recover rate, default alert time). **Note:** AvORM Administrator coordinates with Standardization/Evaluation Division personnel (AMC/A3V) to ensure times conform to applicable directives.

A3.2.3.5. Perceived threat prefixes (generally airport regions, defined by first two letters of ICAO designation, generating an increased risk factor rating when included in an itinerary)

A3.2.3.6. En route complexity (specific airports by ICAO designation that generate an increased risk factor rating when included in an itinerary). **Note:** AvORM Administrator coordinates with Ops RAMS (AMC/A3TO) to validate perceived threat and en route complexity ratings.

A3.2.3.7. Displayed application version of the software.

A3.2.3.8. Fatigue effectiveness percentages. When aircrew enters an increased rating on the fatigue risk factor for a FDP, the recovery period for that FDP is reduced on the ME graph, compared to the 100% setting for low risk: moderate 90%, high 80%, severe 70%. **Note:** AvORM Administrator coordinates with AMC Support Flyer Training Branch (AMC/A3TH) and/or AMC Surgeon General, Aerospace Medicine Division (AMC/SGP) to ensure percentages remain current with respect to information on the science of fatigue and other physiological effects of aviation on aircrew members.

A3.2.3.9. Admin remarks. Any remarks required for all users.

A3.2.3.10. Alerts. Certain airports (by ICAO designation) require an automatic elevated risk factor by MDS due to inputs gleaned from MFOQA data or other sources. **Note:** AvORM Administrator coordinates with Ops RAMS (AMC/A3TO) to validate alert requirements.

A3.2.4. AvORM Requirements Working Group (RWG). For requests requiring software changes, the AvORM Administrator works with personnel from C2 Systems Functional Branch (AMC/A3CS) who validate and create formal requirements, assign priorities, obtain funding from U. S. Transportation Command when required, input them into the GDSS change management library and track the requirements to closure. GDSS System Project Branch personnel (AFLCMC/HBMSA) take validated requirements, implement software changes

from them and maintain the software to meet security and compatibility requirements. 618 AOC personnel provide expertise in operating GDSS and electronic AvORM.

A3.2.5. Stakeholders. Stakeholders can monitor status of change requests within GDSS from the “Change Mgmt” menu. To review change requests specific to AvORM, filter the change request summary by App Name “AvORM”. Stakeholders, upon notification from the C2 Systems Functional Branch (AMC/A3CS), may participate in customer testing sessions to validate software changes in the test environment before release.

A3.3. Mobility Air Forces (MAF) Aviation Fatigue Management Program (A-FMP).

A3.3.1. Purpose and Goal. The MAF A-FMP defines organizational processes that assess fatigue impacts on MAF operations and risk mitigation strategies. A-FMP collects MAF fatigue policies that help reduce incidents and validate training. A-FMP seeks to relieve fatigue effects and reduce fatigue-related incidents in MAF operations. A-FMP augments existing fatigue countermeasures by incorporating legacy and emerging data sources into a structure of regular review. Reviews adjust policy and guidance, education and training, and fatigue countermeasures to meet the dynamic nature of modern MAF aviation.

A3.3.2. Background. A-FMP mirrors Federal Aviation Administration (FAA) guidelines for civil air carriers in their establishment of a Fatigue Risk Management System (FRMS), as outlined in FAA Advisory Circular 120-103, published 3 August 2010. FRMS grew from FAA efforts to mitigate the growing risk fatigue presents to civil aviation operations worldwide. A FRMS is a data-driven and scientifically based process that allows for continuous monitoring and management of safety risks associated with fatigue-related error. It is part of a repeating performance improvement process. This process leads to continuous safety enhancements by identifying and addressing fatigue factors across time and changing physiological and operational circumstances. Structurally, a FRMS is composed of processes and procedures for measuring, modeling, managing, mitigating, and reassessing fatigue risk in a specific operational setting. A-FMP standardizes a scientific process to identify adverse trends, assess fatigue-associated risk contributing to those trends, and adjust fatigue countermeasures policy, training, and/or implementation to mitigate identified risk. A-FMP provides leadership with improved visibility of the factors contributing to fatigue risk by analyzing multiple sources to identify trends and take appropriate corrective actions.

A3.3.3. Approach. Two basic assumptions underpin A-FMP: first, fatigue is not an independent risk factor – it intensifies all other operational risks, affecting MAF missions across a broad spectrum that exponentially multiplies other risks as they increase individually. Second, despite a robust A-FMP, all fatigue risk can never be eliminated; it can only be reduced to an operationally acceptable level. A-FMP provides a science-based methodology to address the effects of fatigue across the operational spectrum. It then offers proactive fatigue mitigation strategies previously only used ‘after the fact’ in aviation mishap investigations.

A3.3.4. Roles and Responsibilities.

A3.3.4.1. AMC Commander (CC). AMC/CC provides overall guidance for A-FMP, through the AMC Director of Safety (AMC/SE).

A3.3.4.2. AMC Flight Safety (SEF). AMC/SEF chairs the Aviation Fatigue Management Working Group (A-FMWG).

A3.3.4.3. AMC Standardization/Evaluation Division (A3V). AMC/A3V oversees necessary actions to ensure compliance with the program.

A3.3.4.4. AMC Training Division (A3T). AMC/A3T oversees necessary actions to update and improve aircrew training.

A3.3.4.5. AMC Support Flyer Training Branch (AMC/A3TH). AMC/A3TH provides necessary aerospace physiology expertise for A-FMP stakeholders.

A3.3.4.6. AMC Surgeon General, Aerospace Medicine Division (AMC/SGP). AMC/SGP provide necessary medical expertise for the science of fatigue.

A3.3.4.7. Members. Other offices provide subject matter expertise as needed to facilitate policy development.

A3.3.5. Program Concept. FAA guidelines, established in the Notice of Proposed Rulemaking (NPRM) dated September 2010, describing a well-developed FRMP include six key components to collect, analyze and mitigate fatigue risks; Fatigue Risk Management Policy, Education and Awareness Training Program, Monitoring Fatigue in Flight and Cabin Crew, Fatigue Analysis and Reporting System, Incident Reporting Process, and Performance Evaluation. A-FMP mirrors the intent of these components, with slight modifications to accommodate the war-fighting nature of our mobility operations. Components:

A3.3.5.1. Fatigue Management Policy and Guidance.

A3.3.5.2. Education and Awareness Training Program.

A3.3.5.3. Fatigue Analysis/Assessment and Reporting System.

A3.3.5.4. Fatigue Countermeasures Development and Implementation.

A3.3.5.5. Mission Planning and Execution.

A3.3.6. Aviation Fatigue Management Working Group (A-FMWG). The A-FMWG provides command-wide expertise in development and execution of A-FMP, and reports the results of their efforts to the Ops RAMS through the Safety Working Group. The A-FMWG meets to review new trends and corrective actions.