CHAPTER 4

OPERATIONAL RISK MANAGEMENT PROGRAM

CHAPTER 4

OPERATIONAL RISK MANAGEMENT PROGRAM

4000. PURPOSE. To establish Operational Risk Management (ORM) practices in accordance with references (v) and (w) as a method to manage risk during maintenance, training, planning, and execution. ORM will be implemented and practiced at all levels in order to protect personnel and preserve warfighting assets. The overall goal of ORM is to enhance squadron readiness by controlling risk to ensure warfighters and warfighting assets are ready for combat.

4001. OBJECTIVE. The objective of the VMFA-212 ORM Program is to apply the following fundamentals during any maintenance action, ground training, aviation, or recreational activity in order to reduce and/or eliminate incidents and mishaps from occurring.

1. Fundamental ORM Principles

   a. Accept risk when benefits outweigh the cost

   b. Accept no unnecessary risk

   c. Anticipate and manage risk by planning

   d. Make risk decisions at the right level

4002. BACKGROUND. With the current requirement to fly F/A-18C aircraft through 2010 and beyond, and with the increasing challenges of supporting a legacy airframe, VMFA-212 has embraced the concept that an effective ORM program will enhance mission readiness. The Commanding Officer has implemented training requirements and provided appropriate training to all levels of the Command to accomplish the stated objective of the ORM Program. The ORM training guidelines outlined in this chapter will ensure our Marines are educated in the principles of ORM, taught how to apply ORM fundamentals at all times, and ensure the legacy of our current ORM knowledge is passed down to all Marines that join our ranks as Lancers.

4003. DISCUSSION. The USMC College of Continuing Education is an online course located at website: https://www.marinenet.usmc.mil/portal/ Marinenet offers four ORM courses that will provide the baseline knowledge required to execute our mission safely and protect our assets.

4004. ACTION. All personnel will accomplish the initial ORM training prior to execution of any duties in their respective maintenance division, or prior to any flight in the squadron. The first three courses will typically be complete within the first five work days after arriving at the squadron. The fourth course (if applicable) will normally be complete within 10 work days of arrival to squadron. During squadron deployments, computer resource challenges or other unforeseen issues prevent compliance with this timeline, inform squadron DSS to ensure challenges are addressed at the appropriate level of command. Semi-annual ORM training will be conducted by an ORMI and include an ORM review and a case study.

1. Initial ORM training

a. E-1 through E-5: Courses 1-3

b. E-5 through E-9: Courses 1-4

c. O-1 through O-5: Courses 1-4

2. Semi-annual ORM training. The semi-annual training will usually occur during the Back In the Saddle (BITS) safety standdown, and at one additional time during the CY. The intent of this training is to review and refresh the ORM knowledge learned during the online training at the USMC College of Continuing Education and discussing the squadron ORM program.

a. Maintenance Marines: Maintenance ORM Program refresher lecture

b. All Pilots: Aviation specific ORM refresher lecture

c. Non-Maintenance Marines: Either a general ORM brief refresher lecture, or the Maintenance ORM Program refresher lecture will suffice.

4005. DIRECTOR OF SAFETY AND STANDARDIZATION RESPONSIBILITIES

1. Provide ORM training to squadron personnel on a semi-annual basis that encompasses both occupational and recreational areas.

2. Monitor squadron ORMI qualified personnel and ensure a qualified ORMI is present and available for ORM training.

3. Conduct a risk assessment report for all squadron deployments and as directed by the Commanding Officer. Forward all risk assessment reports to Operations Officer, Executive Officer and Commanding Officer for review. Make risk assessment reports available to all personnel involved in deployment/risk activity. Give specific council to personnel implementing risk control measures.

4. Track squadron personnel to ensure ORM training is being accomplished in accordance with this order.

5. While all ORM process levels will be considered and practiced at all times, the DSS will be the subject matter expert on “In-Depth” ORM analyses.

4006. OPERATIONS OFFICER RESPONSIBILITIES

1. Provide training opportunities to enable Marines to comply with Semi-annual ORM training.

2. Provide an operational assessment of the flight schedule 12 hours prior to its execution per the Risk Assessment Worksheet (RAW) at the end of this chapter.

3. Incorporate the ORM process into the planning of exercises, operations, and deployments.

4. Ensure the ORM process/recommendations are documented in the PowerPoint slide presentations of all confirmation briefs forwarded to higher commands and in LOIs used at this command.

5. While all ORM process levels will be considered and practiced at all times, the OPSO will primarily be focused on the “Deliberate” process of ORM analyses.

4007. AVIATION MAINTENANCE OFFICER RESPONSIBILITIES

1. You are charged with implementing and managing the Maintenance ORM Program. This is not an attempt to “re-invent the wheel” during maintenance procedures but rather to serve as a checklist of reminders to help us remain consistent in our train of thought before and while performing scheduled maintenance. By incorporating ORM into the daily routine, we will reduce errors and mishaps associated with performing aircraft maintenance through a practical and common sense approach. Lancer maintenance will incorporate Operational Risk

Management into all maintenance procedures. The Maintenance ORM Program is outlined below:

a. CDI RESPONSIBILITIES

(1) The CDI in charge will be responsible for briefing each planned maintenance action in accordance with this chapter and with the Maintenance ORM Card in paragraph 4007. He will also be responsible for ensuring the five steps of ORM are followed.

(2) It is impossible to know in advance which maintenance actions will be required during launch evolutions. Reactive maintenance shall be managed and monitored by the CDI and QARs assigned to the launch evolution and will be in accordance with the five steps of ORM.

b. Prior to commencing planned maintenance, the following eight steps shall be taken into consideration by all personnel involved in the maintenance action. The entire maintenance evolution is ultimately the CDI’s responsibility.

(1) Communication. Inform Maintenance Control that maintenance is about to be performed; that a MAF has been issued for that maintenance and ensure the MAF is "in work" status. Inform your crew of the task to be performed as well as all cautions and warnings associated with the maintenance evolution.

(2) Qualifications. Ensure that you and all the members of the crew have the proper qualifications to perform the planned maintenance. If not, stop and get the proper qualified individuals.

(3) Climate. Ensure that you have adequate personal and time to complete the job free from external distractions. Take the time to do the job correctly the first time. Check the weather, proper lighting, etc. to ensure that the maintenance can safely be performed.

(4) Tools. Check out and properly ATAF the tools required for the job. Ensure that the proper tools, IMRL, and GSE are properly inspected and are serviceable.

(5) PPE / HAZMAT. Brief which hazardous materials are involved in the maintenance procedure. Ensure all crew members have the proper PPE and are wearing it correctly. Brief a plan of action if there is a HAZMAT spill or emergency. Know and

brief all crew members on where the spill response kits and emergency eye wash stations are located.

(6) Publications. Ensure that the proper publications are on hand and completely adhered to while performing the maintenance action.

(7) Aircraft Safe. Understand the requirements of the maintenance action and ensure the aircraft explosive devices have all been removed or appropriately “Safed.” For example are all safety pins installed when working on the seat? Are all cartridges removed from the bomb racks before applying power? Is electrical or hydraulic power going to be applied to the aircraft? If the aircraft is being jacked is adequate space available for the evolution? Ask your crew about all the “what if” scenarios to identify potential hazards. Then take the required steps to safe the aircraft.

(8) Supervision. Monitor the evolution for any changes, which might present new hazards. Ensure appropriate supervisors enforce established procedures and take corrective action when warranted.

c. All Marines in maintenance shall be issued a Maintenance ORM Checklist, in order to easily incorporate the procedures in this chapter into their daily maintenance practices.

d. An example of the Maintenance ORM Card follows:

Maintenance ORM Card:

VMFA-212 LANCERS
MAINTENANCE ORM
CHECKLIST

Safety is the key to our success. We will keep the Beasts of the East ready to strike when called upon with a continued focus on maintenance excellence.

VMFA-212
MAINTENANCE ORM
CHECKLIST

1. COMMUNICATION- Have you informed Maintenance Control?
2. QUALIFICATIONS- Are you qualified to do the job?
3. CLIMATE- Do you have enough time? Are there distractions?
4. TOOLS- Do you have the right tools?

(FOLD)

5. PPE/HAZMAT- Do you have protective gear? How will you handle a spill?
6. PUBLICATIONS- Do you have the pub? Do you have the checklists?
7. AIRCRAFT SAFED- Is the seat safe? Are the CADS removed?
8. SUPERVISION- CDI/QAR required? Stay alert, look for changes

4008. DEPARTMENT HEAD RESPONSIBILITIES

1. Review all evolutions using the ORM process

2. Coordinate with the DSS to ensure all Marines receive appropriate ORM training.

a. Monitor new personnel checking into squadron and ensure their training is complete prior to commencing work in MOS.

b. Forward ORM completion certificates to DSS to allow accurate tracking of squadron personnel.

c. Ensure that risk decisions are being made at the appropriate level.

(1) All Risk Assessment Code (RAC) 1 or 2 situations will be forwarded to the Commanding Officer for guidance.

(2) All missions that result in RAW codes of Med or higher shall be forwarded to the CO for guidance.

4009. SHOP SUPERVISOR RESPONSIBILITIES

1. Ensure Marines checking aboard VMFA-212 are afforded the opportunity to complete the initial ORM training directed by this order.

a. Provide a computer in an environment that allows the Marines to concentrate and learn the required course material. Various options are available if your shop has inadequate computer resources, or distractions that would prohibit learning. Alternate computer resources are located at:

(1) Station Library, Bldg# 411 Ph# 253-3078

(2) Northside computer lab, Bldg 1400 Ph# 253-3518

(3) Southside computer lab, Bldg 360 Ph# 253-3510

(4) Pilot’s computers are often available when briefing/flying/debriefing- coordinate with them.

2. While all ORM process levels will be considered when necessary, the primary level in which risk will be controlled will be the “Time-critical” ORM process.

3. When executing duties as Shop Supervisor, utilize “time-critical” ORM process to monitor daily operations, maintenance evolutions, movement of aircraft and equipment, personnel, and changing environmental conditions in execution of duties.

4. Monitor maintenance Marines to ensure compliance with the Maintenance ORM program, paragraph 4007 of this order.

4010. EVERY MARINE’S RESPONSIBILITIES

1. Complete ORM training in accordance with this order.

2. Use the ORM process on and off-duty.

3. Maintain the highest standards of professionalism in all duties.

4011. RISK ASSESSMENT WORKSHEET

Schedule Writer's Section

Date: ____________________ Flight Lead: ____________________

Event: ____________________

	LOW	MEDIUM	HIGH
PILOT FACTORS			
PREREQUISITES MET	YES		NO
FLIGHT CURRENCY MET			
BASIC	YES	NO	
ACM CURRENT	YES		NO
AIR TO GROUND	YES	NO	
LAT	YES		NO
NVG	YES	NO	
AERIAL REFUELING	YES	NO	
PLANNED FLT DURATION			
NVG MISSION	< 3 Hrs	> 3 Hrs	
PLANNED BRIEF TIME	0500-2400	2400-0500	
CREW REST	> 8 hrs	<8 Hrs	<6 Hrs
DEMO/FLY-BY/PHOTO EX	NO		YES
AERIAL REFUELING	(Low if N/A)		
DAY	YES		
NIGHT		YES	
LOW ALTITUDE			YES
AIR TO GROUND	(Low if N/A)		
FAMILIAR RANGE	YES	NO	
NIGHT SYSTEMS	(Low if N/A)		
NSI IN FLT (IF REQ'D)	YES		NO (EXTREME)
LAT	(Low if N/A)		
LATI IN FLT (IF REQ'D)	YES		NO
LAT APPRV'D AIRSPACE	YES		NO
EAF OPERATIONS	(Low if N/A)		
LSO ON STATION	YES		NO
OVERALL RISK:	LOW	MEDIUM	HIGH

Schedule Writer Signature: ____________________

CO's Signature (if req'd): ____________________

VMFA-212 Lancer's Risk Assessment Worksheet

Operations Duty Officer: Review the schedule writer's section to identify any increases in risk that require the COs (or higher) approval.

Has this event changed from the schedule? (other than range space)	
NO	YES
LOW	MEDIUM

Flight Lead Section	LOW	MEDIUM	HIGH	EXTREME
Weather				
Launch / Recovery	> Mins	< Mins		
Icing	NONE	LIGHT	MODERATE	SEVERE
Turbulence	NONE/LIGHT / MOD	SEVERE		
Tstorms	NONE/LIGHT / MOD		SEVERE	
Water temp <50 Deg	Anti-Exposure Suit worn	Anti-Exposure Suit NOT-worn		
WX / Maint delay	< 4 hrs	> 4 hrs		
Prerequisites met	YES	NO		
Winds	< 30 Kts	> 30 Kts		

Risk:	Control Measure:

Overall Risk:	LOW	MEDIUM	HIGH	EXTREME

* Rish Level Medium (M) requires CO approval.
* Risk Level High (H) requires Group CO approval.
* Risk Level Extreme (EX) requires 1stMAW CG approval.

* ORM was covered in the brief, and any increase in risk level is noted above.
The identified control measures have been put in place to reduce the risk(s) noted.

Flight Lead Signature: ____________________

ODO Signature: ____________________

CO's Approval (if req'd): ____________________

4012. OPERATIONAL RISK MANAGEMENT CONCEPTS

1. Concept. The ORM process:

a. Is a decision making tool used by personnel at all levels to increase operational effectiveness by identifying, assessing, and managing risks. Reducing the potential for loss increases the probability of a successful mission.

b. Increases our ability to make informed decisions by providing a formal risk management process.

c. Minimizes risk to acceptable levels commensurate with mission accomplishment. The amount of risk we will accept in war is much greater than that we should accept in peace, but the process is the same. Correct application of the ORM process will reduce mishaps and associated costs.

2. Terms. ORM terms:

a. Hazard. Any issue, real or potential, that can cause personal injury, death, property damage, mission degradation or damage to environment.

b. Hazard Severity. An assessment of the expected consequence, defined by degree of injury, occupational illness, property damage, or equipment loss that could occur from exposure to a hazard.

c. Mishap Probability. An assessment of the likelihood that, given exposure to a hazard, a mishap will result.

d. Risk. Chance of adverse outcome or bad consequences; such as injury, illness, or loss. Risk level is expressed in terms of hazard probability or severity.

e. Risk Assessment. A structured process to identify and assess hazards. An expression of potential harm, described in terms of hazard severity, mishap probability, and exposure to hazards.

f. Residual Risk. Risk remaining after controls have been identified and selected.

g. Operational Risk Management (ORM). The process of dealing with risk associated with military operations, including

risk assessment, risk decision making and implementation of effective risk controls.

h. Risk Assessment Code (RAC). An expression of risk associated with a hazard that combines the hazard severity and mishap probability into a single Arabic numeral.

3. Process. The five-step ORM process includes:

a. Identify Hazards (Step 1). Begin with an outline or chart of the major steps in the operation (operational analysis). Next, conduct a preliminary hazard analysis by listing all of the hazards associated with each step in the operational analysis along with possible causes for those hazards.

b. Assess Hazards (Step 2). For each hazard identified, determine the associated degree of risk in terms of probability and severity. Although not required, the use of a matrix described in paragraph 6c of this enclosure may be helpful in assessing hazards.

c. Make Risk Decisions (Step 3). First, develop risk control options. Start with the most serious risk and select controls that will reduce the risk to a minimum consistent with mission accomplishment. With selected controls in place, decide if the residual risk is acceptable and the benefit of the operation outweighs the risk. If risk outweighs benefit or if assistance is required to implement controls, communicate with higher authority in the chain of command.

d. Implement Controls (Step 4). The following measures can be used to eliminate hazards or reduce the degree of risk. These are listed by order of preference:

(1) Engineering Controls. Controls that use engineering methods to reduce risks by design, material selection, or substitution.

(2) Administrative Controls. Controls that reduce risks through specific administrative actions, such as:

(a) Providing suitable warnings, markings, placards, signs, and notices.

(b) Establishing written policies, programs, instructions and standard operating procedures.

(c) Training personnel to recognize hazards and take appropriate precautionary measures.

(d) Limiting the exposure to a hazard (either by reducing the number of assets or personnel exposed, or the duration of exposure).

(3) Personal Protective Equipment (PPE). Serves as a barrier between personnel and a hazard. PPE should be used when other controls do not reduce the hazard to an acceptable level.

e. Supervise (Step 5). Conduct follow-up evaluations of the controls to ensure they remain in place and have the desired effect. Monitor for changes, which may require further ORM. Take corrective action when necessary.

4. ORM Process Levels. The ORM process exists on three levels. Decide which of three levels to use based upon the situation, proficiency level of personnel, and the amount of time and assets available. While it is preferable to perform a deliberate or in-depth operational risk management process for all evolutions, the time and resources to do so will not always be available. One of the objectives of ORM training is to develop sufficient proficiency in applying the process so ORM becomes an automatic or intuitive part of our decision-making methodology. In the operational environment, leaders should be able to employ this time-critical process to make sound and timely decisions that generate tempo and facilitate decisive results. The three levels are as follows:

a. Time-Critical. An “on the run” mental or oral review of the situation using the five-step process without recording the information on paper is often all that time will allow. The time-critical level of ORM is employed by experienced personnel to consider risk while making decisions in a time-compressed situation. It is the normal level of ORM used during the execution phase of training or operations, as well as in planning during crisis response scenarios. It is particularly helpful in choosing the appropriate course of action when an unplanned event occurs during the execution of a planned operation or daily routine.

b. Deliberate. Application of the complete five-step process will aid in planning an operation or evaluating procedures. This level uses primarily experience and brain-storming to identify hazards and develop controls; and is

therefore, most effective when done in a group. Examples of deliberate applications include planning of upcoming operations, review of standard operating, maintenance or training procedures, damage control, and disaster response planning.

c. In-depth. A process involving a very thorough risk assessment (first two of the five steps). Research of available data, use of diagram and analysis tools, formal testing, or long term tracking of the hazards associated with the operation (sometimes with assistance from technical experts) are used to identify and access the hazards. The in-depth level of ORM is used to more thoroughly study the hazards and associated risk in a complex operation or system, or one in which the hazards are not well understood. Examples of in-depth applications include long-term planning of complex operations, introduction of new equipment, materials and missions, development of tactics and training curricula, and major system overhaul or repair.

5. Principles of ORM. ORM incorporates the following four principles:

a. Accept Risk When Benefits Outweigh The Cost. Naval Doctrine Publication 1 and Fleet Marine Force Manual I (WARFIGHTING) state, “Risk is inherent in war and is involved in every mission. Risk is also related to gain; normally greater potential gain requires greater risk.” Our Marine Corps tradition is built upon principles of seizing the initiative and taking decisive action. The goal of ORM is not to eliminate risk, but to manage the risk so the mission can be accomplished with the minimum amount of loss.

b. Accept No Unnecessary Risk. Fleet Marine Force Manual I states, “We should clearly understand that the acceptance of risk does not equate to the imprudent willingness to gamble. Take only risks that are necessary to accomplish the mission.”

c. Anticipate And Manage Risk By Planning. Risks are more easily controlled when they are identified early in the planning process.

d. Make Risk Decisions At The Right Level. ORM decisions are made by the leader directly responsible for the operation. Prudence, experience, judgment, intuition, and situational awareness of leaders directly involved in the planning and execution of the mission are the critical elements in making effective ORM decisions. When the leaders responsible for executing a mission determine the risk associated with that

Mission cannot be controlled at the unit level, or goes beyond the commander's stated intent, they shall elevate the decision to their chain of command.

6. Risk Assessment Matrix. A matrix can be used to accomplish the second step of the ORM process. Using a matrix to quantify and prioritize the risk(s) does not lessen the inherently subjective nature of risk assessment. However, a matrix does provide a consistent framework for evaluating risk. Although different matrices may be used for various applications, any risk assessment tool should include the elements of hazard severity and mishap probability. The Risk Assessment Code defined in the matrix represents the degree of risk associated with a hazard considering these two elements. While the degree of risk is subjective in nature, the RAC does accurately reflect the relative amount of perceived risk between various hazards. The example matrix described below is used in naval occupational safety and health assessments. Using the matrix, the RAC is derived as follows:

a. Hazard Severity. An assessment of the worst credible consequence that can occur as a result of a hazard. Severity is defined by potential degree of injury, illness, property damage, loss of assets, or effect on mission. The combination of two or more hazards may increase the overall level of risk. Hazard severity categories are assigned as Roman numerals according to the following criteria:

(1) Category I. The hazard may cause death, loss of facility/asset, or result in grave damage to national interests.

(2) Category II. The hazard may cause severe injury, illness, property damage, damage to national or service interests, or degradation to efficient use of assets.

(3) Category III. The hazard may cause minor injury, illness, property damage, damage to national, service, or command interests, or degradation to efficient use of assets.

(4) Category IV. The hazard presents a minimal threat to personnel safety or health property, national, service, or command interests or efficient use of assets.

b. Mishap Probability. The probability that a hazard will result in a mishap or loss, based on an assessment of such factors as location exposure (cycles or hours of operation), affected populations, experience, or previously established

statistical information. Mishap probability will be assigned a letter according to the following criteria:

(1) Subcategory A. Likely to occur immediately or within a short period of time. Expected to occur frequently to an individual item or person or continuously to a fleet, inventory, or group.

(2) Subcategory B. Probably will occur in time. Expected to occur several times to an individual item or person or frequently to a fleet, inventory, or group.

(3) Subcategory C. May occur in time. Can reasonably be expected to occur some time to an individual item or person or several times to a fleet, inventory, or group.

(4) Subcategory D. Unlikely to occur.

c. RAC. The RAC is an expression of risk that combines the elements of hazard severity and mishap probability. Using the matrix (figure 1), the RAC is expressed as a single Arabic number that can be used to help determine hazard abatement priorities.

Risk Matrix
RAC Definitions:
1 - Critical risk
2 – Serious risk
3 – Moderate risk
4 – Minor risk
5 – Negligible risk

Risk Matrix

Severity	PROBABILITY A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

Note 1. In some cases, the worst credible consequence of a hazard may not correspond to the highest RAC for that hazard. For example, one hazard may have two potential consequences. The severity of the worst consequence (I) may be unlikely (D), resulting in a RAC of 3. The severity of the lesser consequence (II) may be probable (B), resulting in a RAC of 2. Therefore, it is also important to consider less severe consequences of a hazard if they are more likely than the worst credible consequence, since this combination may actually present a greater overall risk.

Note 2. The ORM process provides an additional tool for commanders to use in reducing risks inherent in military operations. It is not a complete change in the way we approach the operational risk management problem, but rather provides a

specific methodology for personnel to anticipate hazards and evaluate risk. Just as we have trained our personnel to focus on the mission, we can train our personnel to evaluate risk as part of the decision making process. As personnel are trained in and use the process, ORM will become intuitive, and applied automatically as a means to aid in quickly developing an effective course of action to accomplish the mission.