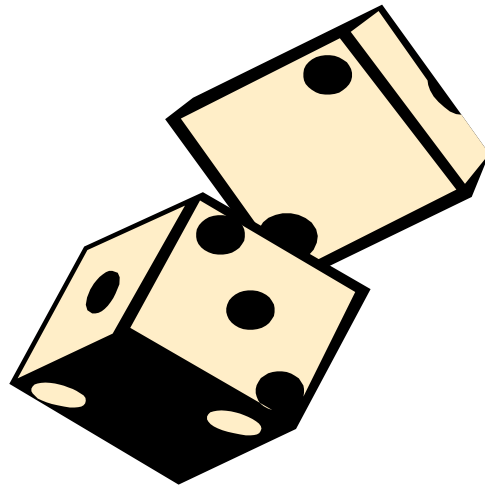


OPERATIONAL RISK MANAGEMENT (ORM)

COMDTINST 3500.3



OPERATIONAL RISK MANAGEMENT (ORM)

TABLE OF CONTENTS

Operational Risk Management COMDTINST 3500.3

1. Purpose	1
2. Action	1
3. Directives Affected	1
4. Background	1
5. Scope	2
6. Philosophy	3
7. Risk Terminology	3
8. Concept	5
9. Principles	5
10. Process	5
11. Required ORM Competencies	6
12. Implementation	7
13. Management Roles and Responsibilities	8
14. Program Responsibilities	9
Enclosure (1) Operational Risk Management (ORM) Process Steps	
I. Operational Risk Management (ORM) Process Steps	1
II. Using the ORM Process	1
III. Levels of Risk Management	9
IV. Example of Applying a Deliberate Level of ORM	10
ORM Integration Job Aid	
ORM Integration Process Model	1-1
12 Strategies for Program Integration	2-1
Basic ORM Integration Methods	3-1
The GARSPE Model	
USCG Afloat Risk Assessment	
USCG Aviation Risk Assessment	
Evaluation Matrix	



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COMMANDANT INSTRUCTION 3500.3

Subj: OPERATIONAL RISK MANAGEMENT

Ref: (a) Team Coordination Training, COMDTINST 1541.1

1. PURPOSE. This Instruction standardizes the Coast Guard's Operational Risk Management (ORM) policy and outlines procedures and responsibilities to implement it.
2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, commanding officers of headquarters units, assistant commandants for directorates, Chief Counsel, and special staff offices at Headquarters shall ensure this Instruction is distributed to the widest extent possible and all personnel comply with its provisions.
3. DIRECTIVES AFFECTED. None.
4. BACKGROUND. Human error causes a significant number of mishaps that have resulted in the loss of personnel, cutters, boats, aircraft, and equipment. Many times faulty risk decisions have placed our personnel at greater risk than necessary. After four major marine mishaps between 1991 and 1993, including the capsizing and sinking of the F/V SEA KING, the National Transportation Safety Board issued two recommendations documenting the need for Coast Guard risk assessment training. Reference (a) formalizes the Team Coordination Training (TCT) program to combat human error by focusing on improved team performance to prevent mishaps. This curriculum and other similar programs, such as Crew Resource Management (CRM), contain risk management principles that outline a systematic process to continuously assess and manage risks: the ORM process.
 - a. Risk Management Workshop. In the Fall of 1996, the Coast Guard held a multi-dimensional workshop whose participants included afloat, aviation, marine safety, Auxiliary, Research and Development, Quality and Performance Consulting, and training

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B	40	8	11	2	6	1	1	1	1	1	1	4	1	12	2	1	1	2	1	1	2	1	1	1	1	1
C	4	4	1	2	2	1	1		2	1	2	2	2	4		1	1	1	2	1	1	1	1	1	1	2
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commands representing the aids to navigation, search and rescue, maritime law enforcement, and small boat communities. Despite differences in individual missions and approaches toward risk management, each community shared the basic philosophy of minimizing risks without sacrificing mission success. They also shared the same concern for developing a common risk management process the Coast Guard could apply universally to improve communication among various operational communities during joint efforts for more effective decision-making. After sharing individual ideas, all programs reached consensus on a simple, common, effective process. These results formed the framework for this standard ORM process.

- b. TCT and CRM Programs. The TCT and CRM programs already provide the delivery vehicles to adequately train active duty, reserve, and Auxiliary operational personnel in risk management principles and processes. Initiatives are under way to train MLC personnel as TCT facilitators to lead other Coast Guard personnel, including civilians, through the concepts of risk management, during normal safety and compliance visits. A TCT correspondence course, especially helpful to those not required to attend formal TCT or CRM programs, also is available to anyone desiring to learn risk management principles. Having advocated these basic principles for many years, the TCT and CRM programs have taken a “bottom to top” approach toward developing a formal universal risk management plan. Measuring mishap rates involving boats’ and cutters’ mobility and navigation shows these principles are effective and the tools used are valid. Since the earliest implementation of TCT in 1992, boats’ and cutters’ mishap rates per 100,000 operating hours have declined steadily:

Decrease in Mishap Rates per 100,000 Operating Hours (Compared to 1987-1992 Average Baseline Rates)		
Fiscal Year	Boats	Cutters
1994	40%	78%
1996	66%	89%
1998	71%	75%

This Instruction expands a flourishing acceptance of these principles at the operational unit level to all organizational levels in the Coast Guard, and clearly reinforces the Commandant’s direction for improved decision-making for superior performance.

- c. Other Service Programs. While compatible with other armed forces’ efforts, the Coast Guard’s standard risk management plan is specifically tailored for our organization’s unique size and multi-mission nature.
5. SCOPE. The application of ORM basic concepts is not limited to unit or mission operations as the Coast Guard usually defines them. All Coast Guard missions and daily activities, both

on- and off-duty, require decisions managing risk. In ORM “operational” refers not solely to a rated person or operator, but includes any military or civilian Team Coast Guard member who contributes to the overall goal of increasing unit effectiveness. All organizational levels contribute either directly or indirectly to operational mission successes. From an Integrated Support Command or Naval Engineering Support Unit technician swapping out a 41-foot utility boat’s engine, to an electronics technician maintaining a group high-site antenna, to an acquisition officer purchasing new equipment or services, to a marine safety officer selecting and deploying pollution response resources, to an area staff planning a major operation or exercise, to a motor lifeboat coxswain working a challenging SAR case, every command level and every person is responsible for identifying potential risks and adjusting or compensating accordingly. Therefore, ORM’s target audience includes all those involved in operations, maintenance, and support activities. While risk assessment and risk management concepts generally apply to all Coast Guard activities and decision-making, some areas require additional tools and techniques. Regulatory and/or rule-making requirements need a more quantitative, in-depth analysis than the techniques presented here. The Coast Guard Marine Safety and Environmental Protection Program has made significant progress in that regard through the development of specific Risk-based Decision-Making Guidelines. However, this Instruction’s procedures do apply to the marine safety and environmental protection community in managing Coast Guard members’ safety and related issues and thus supplement rather than supplant the Marine Safety decision-making guidelines.

6. **PHILOSOPHY.** Traditional risk management practices assert risk is “bad.” In reality that may not be so. Taking *calculated* risks is essential for an organization to grow and capitalize on its capabilities. The Coast Guard’s aim is to increase mission success while reducing the risk to personnel, resources, and the environment to a level acceptable to a particular unit for a given situation. Units should identify risk using the same disciplined, organized, logical thought processes that govern all other aspects of military endeavors. ORM provides the framework to minimize risk, show concern for colleagues, and maximize the unit’s mission capabilities, helping to achieve the Commandant’s direction, “Perform all operations flawlessly.” This process’s additional benefits include safeguarding our members’ health and welfare and conserving vital resources and support equipment. As the Coast Guard continues to operate in a streamlined environment, preventing mishaps and reducing losses become even more important to maintain mission readiness. To accomplish these goals, the Coast Guard must change its business focus from a compliance-based to a risk-based philosophy. No longer can the Coast Guard afford to simply audit its units to ensure compliance with various requirements and regulations. ORM focuses on units’ missions, the risks involved, and the safeguards in place to ensure mission success. Beyond reducing losses, risk management provides a logical process to identify and exploit opportunities producing the greatest return on our investment of time, dollars, and personnel.
7. **RISK TERMINOLOGY.** Team members need to understand ORM terms clearly and communicate risk effectively in order to use the ORM process. Understandably, each facility and activity will differ in how it interprets risk assessment and risk management results in its own community due to unique mission differences and its members’ varying degrees of

knowledge, skill, experience, and maturity. All personnel shall use these common key terms when communicating risk across program and activity lines.

- a. Operational Risk Management (ORM): A continuous, systematic process of identifying and controlling risks in all activities according to a set of pre-conceived parameters by applying appropriate management policies and procedures. This process includes detecting hazards, assessing risks, and implementing and monitoring risk controls to support effective, risk-based decision-making.
- b. Risk: The chance of personal injury or property damage or loss, determined by combining the results of individual evaluations of specific elements that contribute to the majority of risk concerns. Risk generally is a function of severity and probability. The models in this Instruction, however, single out exposure as a third risk factor.
- c. Severity: An event's potential consequences in terms of degree of damage, injury, or impact on a mission.
- d. Probability: The likelihood an individual event will occur.
- e. Exposure: The amount of time, number of cycles, number of people involved, and/or amount of equipment involved in a given event, expressed in time, proximity, volume, or repetition.
- f. Mishap: An unplanned single or series of events causing death, injury, occupational illness, or damage to or loss of equipment or property.
- g. Hazard: Any real or potential condition that can endanger a mission; cause personal injury, illness, or death; or damage equipment or property.
- h. Risk Assessment: The systematic process of evaluating various risk levels for specific hazards identified with a particular task or operation. Various models are available to complete this step in the ORM process.
- i. Risk Rating Scale: A scale of specific risk degrees, determined during the ORM process's risk assessment step. Various Coast Guard communities and activities should use the safety industry's standard terms low, medium, and high when discussing risk across program lines. However, each community will define low, medium, and high risk in terms meaningful to its own personnel.

8. CONCEPT. The ORM process:

- a. Is a decision making tool people at all levels use to increase operational effectiveness by anticipating hazards and reducing the potential for loss, thereby increasing the probability of a successful mission.
- b. Advocates harnessing feedback and input from all organizational levels to make the most informed decisions possible.
- c. Exists on three levels: time-critical, deliberate and strategic. Risk decisions must be made at levels of responsibility that correspond to the degree of risk, considering the mission significance and the timeliness of the required decision. Enclosure (1) discusses these three levels of risk management application in more detail.

9. PRINCIPLES. Apply these basic decision-making principles before executing any anticipated job, action or mission. As an operation progresses and evolves, personnel should continuously employ risk management principles during the decision-making process.

- a. Accept No Unnecessary Risk: All Coast Guard operations and daily routines entail risk. *Unnecessary* risk conveys no commensurate benefit to safety of a mission. The most logical courses of action for accomplishing a mission are those meeting all mission requirements while exposing personnel and resources to the lowest possible risk. ORM provides tools to determine which risk or what degree of risk is unnecessary.
- b. Accept Necessary Risk When Benefits Outweigh Costs: Compare all identified benefits to all identified costs. The process of weighing risks against opportunities and benefits helps to maximize unit capability. Even high-risk endeavors may be undertaken when decision-makers clearly acknowledge the sum of the benefits exceeds the sum of the costs. Balancing costs and benefits may be a subjective process open to interpretation. Ultimately, the appropriate decision authority may have to determine the balance.
- c. Make Risk Decisions at the Appropriate Level: Depending on the situation, anyone can make a risk decision. However, the appropriate level to make those decisions is that which most effectively allocates the resources to reduce the risk, eliminate the hazard, and implement controls. Commanders at all levels must ensure subordinates are aware of their own limitations and when subordinates must refer a decision to a higher level.
- d. ORM is Just as Critical in Executing as in Planning All Activities: While ORM is critically important in an operation's planning stages, risk can change dramatically during an actual mission. Therefore, supervisors and senior leadership should remain flexible and integrate ORM in executing tasks as much as in planning for them.

10. PROCESS. Figure 1 illustrates the Coast Guard's seven-step ORM process. Enclosure (1) thoroughly describes each process step, provides some useful models for risk assessment, and

outlines the elements of launching and recovering small boats as an example of a deliberate application of the ORM process.

SEVEN-STEP ORM PROCESS

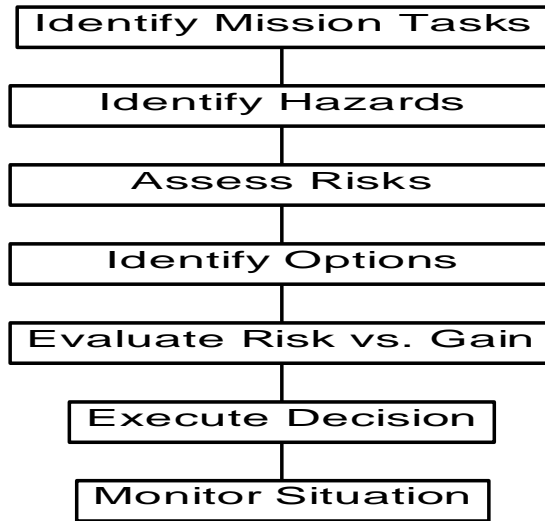


Figure 1

11. **REQUIRED ORM COMPETENCIES:** Table 1 suggests the expected ORM proficiency for the active duty, reserve, Auxiliary and civilian forces at the entry, intermediate, and senior work levels. Specific circumstances may warrant flexibility in determining specific ranks for certain categories corresponding to a person's position and expected extent of responsibility in an organization. TCT and CRM are current delivery programs already in place to train intermediate and senior supervisory personnel to achieve these competencies. A member's first exposure to ORM fundamentals should occur in a formal training setting when practical. Therefore, entry-level training curricula should incorporate the basic elements of communications and describe the ORM process to achieve an overall awareness.

ORM COMPETENCIES		
Job Level	Rank	Proficiency Criteria
Entry	Recruits Officer Candidates Cadets Direct Commission Officers Civilian Employees (through GS-7)	<ol style="list-style-type: none"> 1. Describe the ORM process steps. 2. Learn standard ORM terms and be able to explain basic actions required for each step. 3. Bring information under their control to the decision-maker. 4. Expected responsibility in monitoring situations and executing risk decisions.
Intermediate	Petty Officers Junior Officers Civilian Employees (GS-8 through GS-12)	<ol style="list-style-type: none"> 1. Apply ORM techniques in mission-oriented environments. 2. Demonstrate team coordination behaviors that promote risk management. 3. Demonstrate risk management in planning and executing tasks.
Senior	Chief Petty Officers Chief Warrant Officers Senior Officers Civilian Employees (GS-13 and up)	<ol style="list-style-type: none"> 1. Advocate and support risk management. 2. Apply ORM concepts in initially developing and reviewing plans, directives, and other written guidance.

Table 1

12. **IMPLEMENTATION.** A key objective is to implement the ORM process as an integrated aspect of daily activities and operations. Successfully implementing ORM will create an environment in which every Coast Guard member is motivated to personally manage risk in all they do. Due to resource limitations, smaller units are not expected to use these implementation methods as frequently or thoroughly as larger units having more resources.

How do I implement ORM? Implementation efforts should correspond to the complexity of the processes and procedures of the various activities targeted. In other words, devise simple implementation plans for simple processes. Integration plans should target processes, procedures, and guidance affecting daily activities, such as checklists, drill sheets, operations manuals, standard operating procedures (SOP), training doctrines, pre- and post-deployment briefings, stress-related issues, orientation and indoctrination programs for new personnel, plans for dockside availabilities or yard periods, construction plans, refueling and/or maintenance procedures, hazardous materials procedures, recreational activities, fiscal management, acquisition, and accountability procedures, among others. A person or team in a command's existing leadership structure, or those specially designated to monitor ORM integration initiatives, will select and prioritize those processes. Each individual command ORM integration plan should include responsibilities, milestones, and performance measures

for specific actions. Commanders, commanding officers or officers-in-charge, and upper management should monitor the progress of implementation efforts.

The Atlantic Area Training Team is a good, real-world example of integrating risk management concepts into daily processes. The Training Team has effectively embedded TCT and risk management elements into its cutter Special Emergency Operations Procedures (SEOPS) evaluation program through drill sheets, training doctrine, and briefings.

13. MANAGEMENT ROLES AND RESPONSIBILITIES.

a. **Commanders, commanding officers, and officers-in-charge shall:**

- (1) Manage risk effectively.
- (2) Select from risk reduction options developed.
- (3) Accept or reject risk based on the benefit derived.
- (4) Motivate leaders to use ORM and advocate supporting training opportunities.

b. **Staff elements, department heads, and division officers shall:**

- (1) Assess risks, develop risk reduction options, and implement additional safeguards as needed.
- (2) Eliminate ineffective safeguards.
- (3) Ensure those writing doctrine or planning orders apply ORM concepts.
- (4) Eliminate barriers to taking acceptable risks.

c. **Supervisors shall:**

- (1) Apply the ORM process to operations and tasks and encourage its use off duty.
- (2) Elevate risk issues to higher authority for resolution when appropriate.

d. **Individuals shall:**

- (1) Understand, accept, and implement risk management processes.
- (2) Maintain situational awareness of the changing risks associated with an operation or task and assertively notify supervisors when appropriate.

14. PROGRAM RESPONSIBILITIES.

a. **Commandant:**

- (1) Assistant commandants for directorates and special staff offices at Headquarters shall:
 - (a) Integrate the ORM process and concepts into appropriate doctrinal publications and manuals for all Coast Guard missions and activities;
 - (b) Incorporate ORM principles into appropriate personal qualification standards publications; and
 - (c) Require program managers to review programs periodically to help field units identify areas and processes for ORM implementation.
- (2) Commandant (G-WT) shall:
 - (a) Validate including basic ORM principles and terms into initial (entry-level) or qualification indoctrination and training programs (including basic military training for recruits, officer candidates, and Academy cadets; direct commission programs; professional military education; and applicable class “A” schools) through the Training Coordination Council;
 - (b) Incorporate ORM concepts into military requirements for advancement; and
 - (c) Integrate ORM concepts into professional development and leadership courses at the Leadership Development Center.
- (3) After validation by the Training Coordination Council, applicable training program managers shall integrate ORM concepts into pertinent curricula at Training Center, Petaluma; Reserve Training Center, Yorktown; Aviation Training Center, Mobile; and Aviation Technical Training Center, Elizabeth City.
- (4) Commandant (G-WK) shall:
 - (a) Serve as technical advisor on ORM issues; and
 - (b) When practical, incorporate ORM lessons learned into regular safety messages promulgated to the field.
- (5) Commandant (G-OCX) shall develop detailed implementation guidance for the Auxiliary.

b. Area and district commanders shall:

- (1) Ensure SOPs and/or OPLANs apply the ORM process and ORM concepts in coordinating missions, in the course of normal reviews;
- (2) Integrate ORM process and supporting concepts into Afloat Training Group tactical cutter training and readiness evaluations, and ensuring that training requirements specified in reference (a) are included in readiness evaluation checklists;
- (3) Ensure all exercises and planning efforts address the ORM process; and
- (4) Incorporate ORM into unit readiness evaluations, e.g., SEOPS and Ready-for-Sea programs.

c. Section, activity, group, and unit commanders and marine safety offices shall:

- (1) Incorporate ORM concepts into daily operational, maintenance, and support activities, using appropriate guidance provided by applicable program managers, e.g., daily preventive maintenance and operating checklists for small boats and shipboard systems; pre-underway and entering port checklists; port security waterfront and passenger terminal monitoring activities to deter potential terrorist attacks; boat and aircraft search and rescue and law enforcement patrol planning and execution; pre- and post-flight engineering maintenance and aircrew system checks; facilities engineering departments performing scheduled maintenance or conducting minor repairs, e.g., to a damaged boiler; integrated support commands' welding and carpentry or hazardous materials handling; civil engineering units evaluating the environmental impacts of a proposed new park or base golf course; and facility design and construction centers designing new roads or buildings;
- (2) Include ORM process information in all operational briefs, e.g., pre- and post-flight mission briefs; cutter port briefs; and damage control, navigation, and seamanship training team exercises and briefs;
- (3) Include ORM process information in appropriate written, operational notices and plans during the course of normal updates, e.g., cutter organization manuals, Commanding Officer's Standing Orders, AMIO, helicopter operations, law enforcement, and other operational bills; pulsed counter-narcotics and fisheries enforcement operation planning and execution; and maritime defense zone exercises; and
- (4) Integrate ORM process concepts into group inspections and Ready-for-Operations procedures.

d. Maintenance and logistics commands shall:

- (1) Incorporate ORM concepts into the unit safety and environmental health program;
and
- (2) Instruct units in ORM concepts during normal safety and compliance visits.



**T. W. JOSIAH
CHIEF OF STAFF**

Encl: (1) Operational Risk Management Process Steps

OPERATIONAL RISK MANAGEMENT

I. Operational Risk Management Process (ORM) Steps

Figure 1 illustrates the Coast Guard's "seven-step" ORM process.

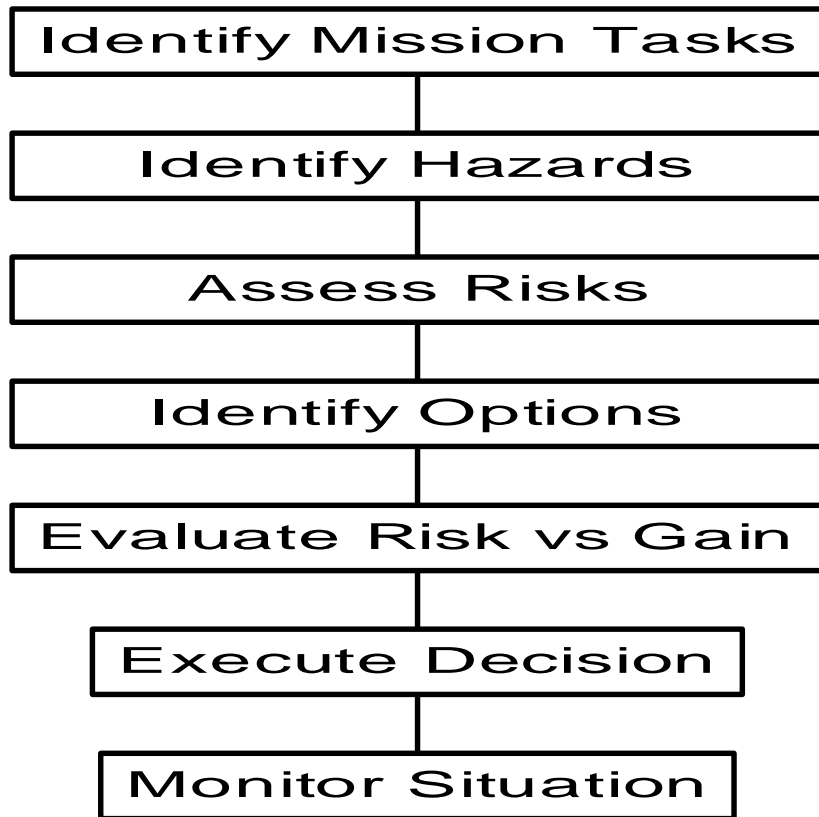


Figure 1

II. Using the ORM Process

Figure 2 expands and assigns more specific actions to each ORM process step. Subsequent pages briefly describe each step and provide useful models to help assess risk.

C O M M U N I C A T I O N S & S I T U A T I O N A L A W A R E N E S S	1. Define Mission and/or Task	<ul style="list-style-type: none"> • What does the task entail? • What do we have to do? • Are there other ways to do this?
	2. Identify Hazards <u>P</u> lanning <u>E</u> vent Complexity <u>A</u> sset Selection <u>C</u> ommunications (and Supervision) <u>E</u> nvironmental Conditions	<ul style="list-style-type: none"> • What can go wrong? → Equipment → Personnel → Environment • How is risk defined for us? • What safeguards exist? How effective are they?
	3. Assess Risks <i>Low</i> <i>Medium</i> <i>High</i>	<ul style="list-style-type: none"> • What are the effects? – Severity • Can this happen to us? – Probability • What is the event frequency or degree of involvement? – Exposure
	4. Identify Options <u>S</u> pread out <u>T</u> ransfer <u>A</u> void <u>A</u> cept <u>R</u> educe	<ul style="list-style-type: none"> • Are risks acceptable or unacceptable? → What options can eliminate <i>unacceptable</i> risk (that which does not contribute to accomplishing the mission safely)? → What options reduce undesirable risk? • Can we modify mission to reduce risk? • Are any safeguards missing? • What new options should we consider?
	5. Evaluate Risk vs. Gain Double-check the mission or task Verify the objective is still valid	<ul style="list-style-type: none"> • Did someone with authority validate the potential risks resulting from the options considered are worth the gain? • This risk decision must be made at the lowest appropriate level, considering experience and maturity.
	6. Execute decision	<ul style="list-style-type: none"> • Implement the best options. • Have we allocated the necessary resources? • Have we initiated risk management procedures? • Does everyone know why we are doing this and the expected outcome?
	7. Monitor situation	<ul style="list-style-type: none"> • Are the safeguards working? • Are participants accomplishing the mission or task objective? • Has the situation changed?

Team coordination skills vital to the process

Figure 2

Step 1:

Define the Mission or Task: To accomplish this step review current and planned operations, describing the mission at hand. The commander defines what is required to accomplish the tasks and the conditions under which to conduct them. To assist with this step, construct a list or chart depicting the operation's major phases or steps in the job process, normally in time sequence. Break down the operation into "bite-size" chunks.

Step 2:

Identify Hazards: Using the list or chart formulated in Step 1, list the hazards associated with each phase of the operation or step in the job process. Potential failures, i.e., things that could go wrong, encompass equipment or operational problems both internal and external to the unit. Looking at each element of the "PEACE" model (Planning, Event complexity, Asset selection, Communications, and Environmental conditions) will ensure effective hazard identification in each of these three main categories:

- **Equipment:** Is the equipment functioning properly and will it do so throughout the planned evolution?
- **Environment:** How will weather, geographic influences, physical barriers, workplace climate, and available light effect the event?
- **Personnel:** Are personnel properly trained and capable of handling the mission's demands? Are they fatigued, complacent, or suffering from physical or mental stress?

The key to successfully analyzing risk is to carefully define the hazards and identify and evaluate safeguards. In brainstorming sessions, asking the question "What if?" is an excellent tool to help identify all potential hazards. Specific hazard identification is important, since it leads to assessing risk more accurately and subsequently developing risk control options or safeguards more thoroughly. When identifying a hazard, state what it is, and further, describe the cause of potential exposure to that hazard, since that will help identify risk controls or safeguards later in the process.

Step 3:

Assess the Risks: Consider risk applicable to the unit and the mission. Determine individual risk levels for each hazard identified. Assess risk by evaluating specific elements or factors, that, when combined, define risk. Two models that assess risk for these hazards are the Severity, Probability, and Exposure (SPE) and the Green, Amber, and Red (GAR) models. They differ in how they look at the hazards identified in Step 2 of the ORM process.

SPE RISK ASSESSMENT MODEL

The SPE model assesses risks for specific hazards, such as those involved in launching or recovering a small boat or aircraft, by determining risk as a function of severity, probability, and exposure; i.e., $Risk = f(S,P,E)$. This model uses this formula:

$$\text{Risk} = \text{Severity} \times \text{Probability} \times \text{Exposure}$$

Severity: Severity is an event's potential consequences measured in terms of degree of damage, injury, or impact on a mission. Should something go wrong, the results are likely to occur in one of these areas:

- Injury or Death
- Equipment Damage
- Mission Degradation
- Reduced Morale
- Adverse Publicity
- Administrative and/or Disciplinary Actions.

Severity can vary from 1 to 5:

1	=	None or slight
2	=	Minimal
3	=	Significant
4	=	Major
5	=	Catastrophic

Probability: Probability is the likelihood that the potential consequences will occur.

Probability can vary from 1 to 5:

1	=	Impossible or remote under any conditions
2	=	Unlikely under normal conditions
3	=	About 50-50
4	=	Greater than 50%
5	=	Very likely to happen

Exposure: Exposure is the amount of time, number of occurrences, number of people, and/or amount of equipment involved in an event, expressed in time, proximity, volume, or repetition.

Exposure can vary from 1 to 4:

1	=	None or below average
2	=	Average
3	=	Above average
4	=	Great

By computing the level of risk, we can evaluate its potential impact on mission effectiveness and execution. After computing the risk values using the formula **Risk = S x P x E**, we need to control substantial to very high values:

Values	Degree of Risk	Guidance
80-100	Very High	Discontinue, Stop
60-79	High	Correct Immediately
40-59	Substantial	Correction Required
20-39	Possible	Attention Needed
1-19	Slight	Possibly Acceptable

After computing the risk levels for each hazard identified, we can order hazards from the highest to the lowest risk to focus first on the areas of most concern in conditions of limited resources.

GAR RISK ASSESSMENT MODEL

We can address more general risk concerns, involving planning operations or reassessing risks as we reach milestones within our plans, by using the GAR model. A survey of cutter commanding officers identified these elements as contributing to the majority of risk in their cutter operations: supervision, planning, crew selection, crew fitness, environment, and event or evolution complexity. The GAR model incorporates these elements, further defined below:

Supervision: Supervisory control should consider how qualified a supervisor is and whether he or she actually is supervising. Even if a person is qualified to perform a task, supervision, even as simple as verifying the correctness of a task, further minimizes risk. The higher the risk, the more a supervisor needs to focus on observing and checking. A supervisor actively involved in a task (doing something) can be distracted easily and probably is not an effective safety observer in moderate to high-risk conditions.

Planning: Preparation and planning should consider how much information is available, how clear it is, and how much time is available to plan the evolution or evaluate the situation.

Crew and Watchstander Selection: Crew and watchstander selection should consider the experience of the persons performing the specific event or evolution. If individuals are replaced during the event or evolution, assess the new team members' experience.

Crew and Watchstander Fitness: Crew and watchstander fitness should judge the team members' physical and mental state, generally a function of how much rest they have had. Quality of rest should consider how a platform rides and its habitability, potential sleep length, and any interruptions. Fatigue normally becomes a factor after 18 hours without rest; however, lack of quality sleep builds a deficit that worsens the effects of fatigue.

Environment: Environment should consider all factors affecting personnel, unit, or resource performance, including time of day, lighting, atmospheric and oceanic conditions, chemical

hazards, and proximity to other external and geographic hazards and barriers, among other factors.

Event or Evolution Complexity: Event or evolution complexity considers both the time and resources required to conduct an evolution. Generally, the longer the exposure to a hazard, the greater the risks involved. However, each circumstance is unique. For example, more iterations of an evolution can increase the opportunity for a loss to occur, but on the positive side, may improve the proficiency of the team conducting the evolution, depending on the team's experience, thus possibly decreasing the chance of error. Other factors to consider in this element include how long the environmental conditions will remain stable and the precision and level of coordination needed to conduct the evolution.

Calculating Risk: To compute the total degree of risk for each hazard previously identified, assign a risk code of 0 for no risk through 10 for maximum risk to each of the six elements to obtain a personal estimate of the risk. Add the risk scores to come up with a total risk score for each hazard. Figure 3 is suitable for this process:

Risk Calculation Worksheet	
	Risk Score
Supervision	
Planning	
Crew Selection	
Crew Fitness	
Environment	
Event/Evolution Complexity	
TOTAL SCORE	

Figure 3

GAR Evaluation Scale for Color-Coding the Degree of Risk					
0	23	24	44	45	60
10	20	30	40	50	
GREEN (Low risk)		AMBER (Caution)		RED (High risk)	

If the total risk value falls in the green zone (1-23), the risk is rated low. A value in the amber zone (24-44) indicates moderate risk; consider adopting procedures to minimize it. If the total value falls in the red zone (45-60), implement measures to reduce the risk before starting the event or evolution.

The GAR model is good to assess an operation or mission generally. If the degree of risk appears unduly high in one or more of the elements above, perform a second assessment using the SPE model for each element of concern, since the SPE model is more specific. As with the SPE model, rank-order all hazards assessed in the GAR model from the highest to the lowest risk to target areas of greatest concern first.

Risk Ratings: The ability to assign numerical values or color codes to risk elements in either the SPE or GAR model is not the most important part of risk assessment. What is critical in this ORM step is team discussion to understand the risks and how the team will manage them. Different Coast Guard operational communities have adopted the GAR model, but may interpret green, amber, and red differently for their own missions and operators. For example, law enforcement personnel may define a "green" risk level a bit higher than personnel involved in recreational boating safety. Understanding these differences will improve communications among communities. However, a low/medium/high scale is generally understood throughout the Coast Guard and is the safety industry's widely used standard. Therefore, discussions of risk among various Coast Guard activities will use the terms low, medium, and high, but each operational community will define those terms meaningfully for its own operators.

Step 4:

Identify the Options: Starting with the highest risk hazards assessed in Step 3, identify as many risk control options or safeguards as possible for all hazards exceeding an acceptable degree of risk. Determine each option's impact on mission and unit goals and select the

perceived best alternative or combination of alternatives. Mission priority and time criticality often drive option choice. Risk control options include: **Spread out, Transfer, Avoid, Acept, and Reduce (STAAR).**

Spread Out: Risk commonly is spread out by increasing either the exposure distance or the time between exposures.

Transfer: Transferring risk does not change probability or severity but rather shifts possible losses or costs to another entity.

Avoid: Avoiding risk altogether requires canceling or delaying the job, mission, or operation, but this option is rarely exercised due to mission importance. However, it may be possible to avoid specific risks, e.g., avoid risks associated with a night operation by planning the operation for daytime.

Accept: Accept risk when the benefits clearly outweigh the costs, but only as much as necessary to accomplish the mission or task.

Reduce: Risk can be reduced. The overall goal of risk management is to plan missions or design systems that do not contain hazards. However, the nature of most complex operations and systems makes it impossible or impractical to design them completely hazard-free. As we analyze hazards, we will identify those requiring resolution. To be effective, risk management strategies must address risk's components: severity, probability, and exposure.

- Using protective devices, engineering controls, and personal protective equipment usually helps control *severity*.
- Training, situational awareness, attitude change, rest, and stress reduction usually help control *probability*.
- Reducing the number of people involved or the number of events, cycles, or evolutions usually helps control *exposure*.

Step 5:

Evaluate Risk vs. Gain: Analyze the operation's degree of risk with the proposed controls in place. Determine whether the operation's benefits now exceed the degree of risk the operation presents. Be sure to consider the cumulative risk of all identified hazards and the decision's long-term consequences. This step also serves as a reality check to verify the objective still is valid.

- If the risk's costs outweigh the benefits, re-examine the control options to learn whether any new or modified controls are available. If not, inform the next level in the chain of command the mission's risk, based on the evaluation, exceeds the benefits and should be modified.

- If the mission's benefits outweigh the risks, with controls in place determine if the current level in the chain of command can implement all the controls. If not, find assistance from the next level in the chain of command.
- When notified of a situation whose risk outweighs benefit, the next level in the chain of command should assist with implementing required controls, modify or cancel the mission, or accept the identified risks.

The equation **Risk = Severity x Probability x Exposure** defines what is called the expected value of the loss. However, individuals can value the same loss differently because the loss may affect their overall satisfaction (their needs, issues, and concerns) differently. It is easy to overlook the issue of perceived value in typical risk management theories, but it may determine the kinds of actions decision-makers take in weighing risk vs. gain. Personnel should be aware the acceptability of risk can vary from person to person because the perceived risk, affected by different values placed on the expected loss, also varies. Therefore, while taking this "reality check" step in the risk management process, it is wise to consider a loss's perceived as well as expected value to avoid potential controversy when making risk decisions.

Step 6:

Execute the Decision: Once the risk control decision is made, assets must be made available to implement the specific controls. Part of implementing control measures is informing the personnel in the system of the risk management process results and subsequent decisions. If personnel disagree, the decision-makers should explain the decision rationally. Carefully documenting the decision and all steps in the process, usually done only for deliberate or strategic ORM applications, facilitates communications and clarifies the rational process behind risk management decisions.

Step 7:

Monitor the Situation: Monitor the situation to ensure the controls are effective and remain in place. Identify changes requiring further risk management and act on them. Take action when necessary to correct ineffective risk controls and reinstate the risk management steps in response to new hazards. It is important to remember **RISK MANAGEMENT IS A CONTINUOUS PROCESS**. Failure to respond to changes in the situation can become a link in a chain of errors that lead to a mishap.

III. Levels of Risk Management

The risk management process exists on three levels. While it may be desirable to apply risk management in depth to every mission or task, time and resources may not always be available. One objective of risk management training is to develop sufficient proficiency in applying the process so risk management becomes an automatic part of the decision-making methodology on and off duty. Leaders must employ the risk management process to make sound, timely decisions. The three levels of risk management are:

- **Time-Critical**: Time-critical risk management is an “on the run” mental or verbal review of the situation using the basic risk management process without recording the information. Personnel employ the time-critical process to consider risk when making decisions in a time-compressed situation. This level of risk management is used during both the execution phase of training or operations and in planning and executing crisis responses. It also is the most easily applied level of risk management in off-duty situations. It is particularly helpful in choosing the appropriate course of action when an unplanned event occurs while executing a planned operation or daily routine.
- **Deliberate**: Deliberate risk management applies the complete process. Each step is documented in some manner, at the discretion and for the benefit of the process owner. It primarily uses experience and brainstorming to identify hazards and develop controls and therefore is most effective when done in a group. Examples of deliberate applications include planning upcoming operations; reviewing standard operating, maintenance, or training procedures; and planning damage control or disaster response.
- **Strategic**: The Strategic process identifies hazards and assesses risk more thoroughly than the Deliberative process by researching available data, using diagramming and analysis tools, testing formally, and tracking hazards associated with the system or operation over the long term. An independent contractor equipped with the necessary tools and expertise to perform an ORM strategic application is likely to be needed to perform this task. Strategic applications study complex operations’ or systems’ hazards and associated risks, or those whose hazards are not well understood. Examples of strategic applications may include long-term, complex operational planning and introductions of new equipment, materials, missions, and major replacement assets.

IV. Example of Applying a Deliberate Level of ORM

To prepare for transferring personnel or equipment, a Deck Watch Officer (DWO) might use ORM to plan to launch and recover small boats.

Step 1:

Define the Mission or Task: The operational commander has identified these requirements:

- The transfer must occur within the next four hours; its maximum duration is 30 minutes
- The event involves transferring 200 pounds of boxed electronic testing gear and one Electronics Technician to another medium endurance cutter at sea
- The small boat is the best option due to the proximity to the receiving cutter, the number of personnel, and amount of equipment involved

These are the primary tasks (not an all-inclusive list) for launching and recovering a small boat:

- a. Muster and brief appropriate deck personnel

- b. Personnel staff their stations and prepare to lower and recover the small boat
- c. Deck Watch Officer (DWO) ensures appropriate launch and recovery equipment are energized
- d. Conning Officer steers a proper launch and recovery course
- e. For launching:
 - Bring small boat to the rail or lower boat alongside, as appropriate, to load personnel and equipment
 - Boat is away; retrieve sea painter and stow lines
- f. For recovery:
 - Pass sea painter to small boat as it approaches alongside
 - Secure small boat alongside, or engage forward then aft falls, and bring to the rail to unload personnel or equipment, as appropriate
 - Cradle small boat and secure for sea
- g. Launch and recovery equipment are de-energized
- h. Deck debrief; ship returns to base course

Step 2:

Identify Hazards: Many different hazards could be associated with each operational phase identified in Step 1. Here are a few, possible causes for exposure, and simple safeguards to limit exposure to those hazards.

Hazard	Cause	Safeguard in Place
Personnel slip, fall, are pinched or trapped	Wet deck, gear adrift, fatigue, boat overload, high sea state, inadequate training, complacency, inadequate supervision	Non-skid boat deck
Lose control of boat in water or on deck with potential for death, serious injury, equipment damage, mission failure	Material casualty, e.g., davit, line, or cable failure; hydraulic leak; high sea state; improper procedures (winch davit operation or coxswain); improper positioning (boat or boat-lowering detail)	Crew weight-tests cables annually and replaces them as needed
Fire or explosion	Material casualty, hydraulics, boat overload, improperly stowing flammables; improper electrical load	Electrical cut-off switch

Step 3:

Assess the Risks: Using the SPE model and the rating and descriptions for each risk factor as explained, determine the risk level for each hazard above and rank-order from highest to lowest risk.

- **Personnel slip, fall, are pinched or trapped:** Severity = 4, Probability = 2, Exposure = 3; Risk = $S \times P \times E = 24$ (possible risk; attention needed)
- **Lose control of boat:** Severity = 4, Probability = 2, Exposure = 2; Risk = **16** (slight risk; possibly acceptable)
- **Fires or explosion:** Severity = 5, Probability = 1, Exposure = 2; Risk = **10** (slight risk; possibly acceptable)

Step 4:

Identify the Options: Identify and evaluate risk control options according to their impact on mission and unit goals, using each STAAR technique element for guidance. Some of the risk control options available for the “Personnel slip, fall, are pinched or trapped” hazard are:

- Avoid some risk by delaying transferring the personnel or equipment until conditions are optimal (favorable sea state, daytime vice nighttime, etc.), if possible.
- Reduce the risk by ensuring adequate supervision is available or increasing supervision in suspect areas.
- Reduce risk by ensuring the personnel involved are not overly fatigued from previous or multiple evolutions.
- Reduce risk by using personal protective equipment and engineering controls effectively to reduce the severity of possible mishaps.
- Reduce risk by thoroughly inspecting the deck and small boat space to ensure proper housekeeping and eliminate tripping hazards.
- Hold a dry run if necessary to ensure all personnel, especially those recently qualified, thoroughly understand their duties and positions.

Step 5:

Evaluate Risk vs. Gain: With all the controls in place, the DWO determined the cumulative risk of all the hazards was acceptable. The gain in this case far outweighed the risk, especially since the unit needing the electronics equipment and technical support would lose mission readiness and effectiveness and possibly could have to pull into port for repairs if immediate support were not available. Therefore, a reality check verified the task’s objective was still valid.

Step 6:

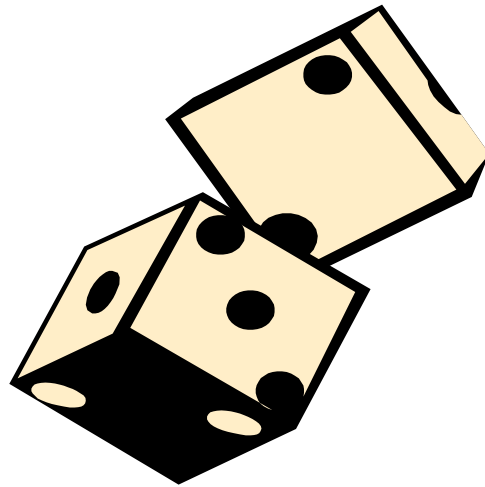
Execute the Decision: Based on the DWO's ORM analysis, the commanding officer decides to launch the small boat to conduct the transfer before nightfall, clarifies supervisory roles, and communicates all potential risk factors to personnel involved in the evolution during the pre-launch brief.

Step 7:

Monitor the Situation: The DWO closely monitors the weather and sea state for any significant changes that could affect the small boat launch and especially considers the material readiness of the small boat-lowering equipment. The Executive Officer monitors the boatswains mates' walk-through boat deck inspections for thoroughness to ensure tripping hazards are eliminated. The crew immediately reports any significant changes in these factors so the CO can reassess the decision to launch. A post-event debriefing identifies which controls were effective and the command takes measures to implement them in future evolutions.

OPERATIONAL RISK MANAGEMENT (ORM)

INTEGRATION JOB AID



ORM INTEGRATION JOB AID

TABLE OF CONTENTS

<u>SUBJECT</u>	<u>PAGE</u>
ORM Integration Process Model	1-1
• Leadership Techniques for Reinforcing Integration	1-6
12 Strategies for Program Integration	2-1
Basic ORM Integration Methods	3-1

ORM INTEGRATION PROCESS MODEL

Figure 1 below illustrates a five-step process that effectively integrates risk management principles into an organization.

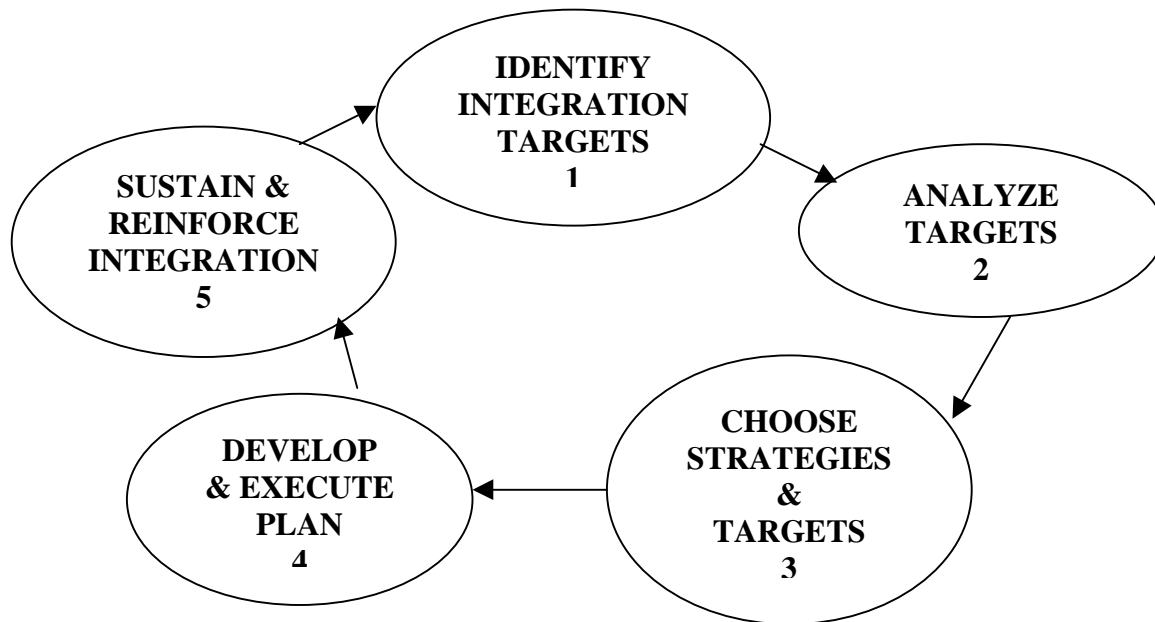


Figure 1

Step 1:

Identify Integration Targets: This first step develops various potential ORM integration targets, such as recreation activities, accident-reporting procedures, hazardous material handling and storage, and ergonomics programs, for evaluation. It is important to maximize the involvement of appropriate personnel while developing possible targets to create a sense of ownership in the process. Consider these factors in developing these targets:

- To what extent has the unit already integrated ORM? Has the organization conducted risk assessments for its major missions?
- Are all aspects of risk (security, fiscal, mission, safety, environmental, etc.) evaluated on an integrated basis rather than as independent variables?
- How successful have integration efforts been? Why or why not?
- Does the organization have an effective overall long-term strategy to integrate ORM, led by senior leaders and supported by effective tactics and techniques? Does that long-term strategy consider future changes in requirements for personnel, training, tasks and missions, equipment, or environmental conditions?

- Can the integration process be measured? The organization must determine a baseline from which to measure progress.

Step 2:

Analyze Targets: After identifying targets, use these procedures to evaluate them separately to prioritize the best among them:

- Define and select the desired selection criteria to prioritize each target area chosen in Step One. Examples of some criteria and their definitions include these:
 - (1) Real Risk Threat. Does the target area pose a well-understood threat to the organization's mission success? Does it pose a personal threat in the form of adverse publicity, civil or criminal legal action, or other forms of accountability with potential adverse consequences to the welfare of those in leadership positions?
 - (2) Easy to Integrate. Will it be easy to integrate ORM procedures permanently into this target?
 - (3) Hot Topic. Is the target area of special interest to the organization's leadership and most personnel? Is it likely to stay a hot topic for a sustained period of time?
 - (4) Broad Application. Does the target area affect on a relatively broad spectrum of the organization's personnel and therefore interest more of them in the risk management integration effort?
 - (5) Short-Term Benefits. Is there potential for quick, relatively easy return on investment (low-hanging fruit) that will contribute momentum to the target area?
 - (6) Good Resource Availability. Are resources accessible to support ORM action in this area?
 - (7) Involves Military and Civilian Personnel. Will this target area involve both military and civilian personnel in positive ways?
- Using a simple matrix, evaluate each target area against each selection criterion, weighted if desired, to indicate relative importance and assigning point values of 1 (low) to 10 (high).
- Total the points for each target area. Generally, the options scoring the highest are the most attractive options. Figure 2 shows a sample matrix.

Sample Options Evaluation Matrix

Rate from 1 (Low) to 10 (High) (selection criteria not weighted)

	Claims	Hazmat	Stress	Sports/Rec	Ergo	Force Protection
Easy to Integrate	7	10	8	3	5	7
Hot Topic	5	7	8	4	3	7
Real Risk Threat	3	8	7	2	4	6
Short-Term Benefits	6	8	6	7	7	7
Good Resource Availability	9	10	7	3	8	10
Involves Military & Civilians	0	10	10	3	5	10
Broad Application	7	10	6	5	8	9
TOTAL SCORES	37	63	52	27	40	56

THIS USER HAS IDENTIFIED
6 INTEGRATION TARGETS (TOP) AND
SELECTED 7 SELECTION
CRITERIA (LEFT)

Figure 2

Step 3:

Choose Strategies and Targets:

- Study the 12 integration strategies described in chapter two of this job aid. Consider their potential application to the top three or five target areas identified in Step Two. It may be helpful to list the strategies that seem best suited to each target area, then consider which single or combined strategy(ies) will most effectively integrate ORM in a given target area.

- Refine the best strategy options for the strongest target areas by outlining the specific actions required to proceed with the chosen strategies. Think through the issues of who will need to do what, when they will need to do it, and where the resources will come from to accomplish it. Be sure the personnel who actually have to do the work are not only involved in this process but actually control it to the maximum extent possible.
- After carefully evaluating the best target areas and various strategies that might apply to each and including your assessment of the organization's current and future status, resource issues, etc., decide which target areas and associated strategies to use.
- After determining integration strategies, select an effective method to implement and manage ORM integration. Consider these five management and staff options:
 - (1) **Integrate Various Loss Control Functions.** Accomplish this by actually incorporating loss control communities (safety, fire and environmental protection, physical security, occupational medicine, etc.) into the organizational structure, a pattern increasingly common in leading-edge organizations. This method may be less effective at field units, which have less flexibility in reorganizing limited resources.
 - (2) **Designate a Risk Control "Czar".** This position, often at the vice-presidential level in the private sector, integrates all risk management activities whether or not the loss control functions have been integrated. A major role is to assure full exploitation of the "opportunity" dimension of ORM. More often than not czars are chosen for their general management expertise rather than their loss control background. Technical experts in loss control functional areas provide the necessary expertise.
 - (3) **The Safety Function Leads ORM.** ORM in its present context originated within the safety community, which in most cases is best prepared to guide its implementation in any existing function. If selecting this option take special care to assure ORM encompasses all issues and the safety staff thinks well outside its traditional realm.
 - (4) **Create Cross-Functional Steering Committees and Working Groups.** Their membership can come from across the loss control community or more desirably across all major staff functions. Ideally, these groups' chairs are experienced senior managers capable of advancing ORM integration and cross-functional applications.
 - (5) **Use the Existing Leadership Structure.** In this option, each functional area implements ORM within the scope of its activities. No one element leads or coordinates. This option places a heavy burden on senior commanders to assure the ORM effort progresses effectively.

Step 4:

Develop and Execute Integration Plan: Based on the target areas selected, their associated strategies, and appropriate integration management option, develop an actual integration plan. The simpler it is, the more personnel will use it, and the easier it will be to maintain its continuity. However, the plan most likely will create long-term changes, since it

may involve a culture change, requiring personnel to change firmly entrenched beliefs, attitudes, and behaviors. The plan's goal should be to re-engineer processes to expand from merely complying with standards to performing excellently in all activities. Focus on changing processes to include one or more of the seven ORM process steps discussed in the ORM COMDTINST. Building key ORM tasks into mainstream supervisor responsibilities will help ensure its success. Suggested elements, not all-inclusive, to choose from in developing this plan are:

- **Preparation**
 - (1) Target areas
 - (2) Scope of application
 - (3) Timing and marketing considerations
 - (4) Planning team composition and command's role

- **Planning Timeline**
 - (1) Key actions
 - (2) Responsibilities
 - (3) Milestones

- **Performance Measures**
 - (1) Effectiveness measures, e.g., loss reductions, operational enhancements, sustainability of integration
 - (2) Efficiency measures, e.g., adherence to timeline and budget
 - (3) Perception measures, e.g., leader and operator perceptions

Step 5:

Sustain and Reinforce Integration: To successfully sustain ORM integration, use an effective combination of incentives, leadership advocacy, and performance measures.

- Focusing on rewarding those who excel in ORM is more effective than dwelling on losses' negative consequences.
- Use a variety of performance measures, such as those below, built into the ORM integration plan to monitor progress:
 - (1) Percentage of key integration plan milestones met
 - (2) Percentage of safe behaviors displayed (measure changed behaviors by sampling observations or similar procedures)
 - (3) Percentage of positive replies to perception survey questions (perceptions change as integration process changes the organization's culture)
 - (4) Mishap rates, after a few years of ORM integration (ORM benefits should become apparent when compared to pre-integration baseline mishap rates)

- Use these 12 ORM leadership techniques, designed to induce an organization to accept and eventually embrace ORM. Some leaders, especially in a military context, may react to these proposals by asking, “What’s the problem? I’ll issue the necessary orders and that’s it.” The problem is personnel who attempt to *do* ORM without understanding and embodying its philosophy almost certainly will *create* unnecessary risk, not reduce it. For example, ORM advocates a fairly radical decentralization of decision-making authority. Directing this change before personnel really have assimilated ORM knowledge and attitudinal perspectives probably will result in confusion and performance will deteriorate. Also, as the Coast Guard and other military organizations around the world have downsized extensively, mission demands have not fallen proportionally and operations tempos are very demanding. Rapidly forcing ORM practice on already overworked and often over-stressed personnel may cause only more harm than good. Accordingly, these techniques’ premise is leadership will induce ORM rather than simply sledgehammer it into the organization. These techniques provide ideas for this more subtle leadership process.

- (1) **Commit to Breakthrough Improvement.** Put risk performance improvement on a competitive par with other important mission concerns.

LEVEL: This technique can be applied at any level but is most effective when initiated at the highest level of leadership. While junior leaders can make this commitment for their work group, it will be difficult unless it is part of an overall organization commitment.

PURPOSE: The commitment to breakthrough improvement has two objectives. The first is to create the awareness that the organization is not all that it can be or needs to be presently in the area of risk management. Most individuals in an organization are not particularly aware of the risk status of an organization and few if any are aware of just how good it is possible to be. The process of commitment to a real breakthrough should correct both these knowledge gaps. The second objective is to publicly express the top leaders commitment to outstanding risk management performance. This commitment becomes an important part of the justification of the changes that will be necessary to achieve ORM success. The rationale is simply that what we have done to date has not produced the performance we need, therefore we need to try new things. An important caveat is to make it very clear that breakthroughs will be achieved in fully mission supportive ways. The commitment to breakthroughs is not an unqualified commitment to unlimited resources for risk management. It will be achieved by more effective, efficient, and intelligent risk management processes, not through inappropriate investment of money or work.

PROCEDURES: The commitment to breakthroughs should involve the following steps:

- ✓ Step 1. Carefully determine the possibilities for breakthroughs by evaluating the performance of leading edge organizations in various fields, examining the best levels of performance within the organization itself as goals for all of it, and careful evaluation of the potential of the organization based on the values that ORM can be expected to produce. Generally in an organization that has not been

using systematic ORM procedures, a breakthrough should target at least 50% better than present performance, with a 90% improvement normally a practical long term objective.

- ✓ Step 2. Present the possibilities to the organization. Stimulate discussion of the potential to reach these objectives. Stress the success of external organizations when data is available. The success of leading edge civilian organizations can be cited as the basis of goals for USCG activities that perform similar functions, whether they are performed by civilians or military personnel. The case can be made that there are no insurmountable barriers (i.e. no obstacles that cannot be overcome by cost effective, mission supportive actions) in the USCG to replicating the breakthrough results achieved in the best of the private sector. The direct challenge here is to ask “Do our personnel deserve anything less than world class performance when it comes to protecting their lives and welfare? Does the national defense mission deserve anything less than world class risk management performance? Other organizations achieve it in pursuit of the production of potato chips; can a military organization do anything less for its vital missions?”
- ✓ Step 3. Incorporate the ORM breakthrough goals within the mainstream goals of the organization and develop the measures and accountability procedures characteristic of other important organizational goals.

(2) **Set Goals and Objectives.** Establish periodic ORM performance and programmatic goals.

LEVEL: This technique can be applied at any level, but the goals and objectives at lower levels of command should be fully integrated with and compatible with those developed at higher levels of leadership. Junior leaders should be encouraged to tailor higher level objectives to their specific needs and to develop unique objectives based on their missions.

PURPOSE: Goals and objectives turn the relatively intangible commitment to breakthrough into measurable targets. These targets can be parceled out to each level of leadership. Objectives also force consideration of the realities of what can be accomplished given the tempo of operations, workload, and cultural barriers.

PROCEDURES: The establishment of goals and objectives should involve the following steps:

- ✓ Step 1. Decide on the scope of application of the goals and objectives. Application can be as narrow as one element of the loss control community - safety for example, the entire loss control community, or functional elements completely outside the traditional scope of loss control (fiscal risk management, schedule risk management, etc.).
- ✓ Step 2. Establish the objectives. These should be as ambitious as possible given the realities of the organization environment. They should reflect the possibilities

inherent in ORM and should if accomplished, result in the achievement of the breakthrough type results to which the organization has committed in a reasonable length of time.

- ✓ Step 3. Cascade the objectives. Induce each subordinate level of leadership to develop sub-objectives that are directly connected to accomplishment of the overall organization objectives. The use of direct measures of risk as the basis of objectives, rather than mishap rates and numbers, will be important at lower organizational levels below wing level where most mishap rates and numbers have little or no statistical validity.
- ✓ Step 4. Incorporate the objectives into mainstream command reviews and process assessments. Assure periodic reviews and clear + or - status assessments. Assure accountability and emphasize the application of positive incentives for even small successes as opposed to negative sanctions for shortcomings.

(3) **Set a Personal Example.** Assure ORM process credibility through appropriate personal behavior.

LEVEL: This technique must be applied at all levels of leadership. It is especially critical for first level leaders because they set the day-to-day standard more by what they do than what they say. Nevertheless, senior leaders can seriously damage their credibility and perceived commitment with a thoughtless moment of non-compliance with a safety or environmental requirement.

PURPOSE: Employees understand that leaders are required by their positions to express supportive opinions about many things that they actually couldn't care less about. To understand what is really important they closely monitor patterns of behavior to see what the leader does, not simply what he or she says. By personally living the commitment to risk management excellence in everything from scrupulous compliance with risk control rules and guidelines to informal expressions reflecting consistent commitment, leaders signal their serious intent.

PROCEDURES: For lower level leaders there is simply no substitute for careful attention to detail every day in every way. For example, failure to wear required personal protective equipment will be overlooked by subordinates if it is very rare. Any frequent pattern of violations will be detected and will strongly signal lack of commitment. Further, it will quickly lead to a deterioration of standards compliance. At more senior level of leadership, this is very much a staff responsibility. Senior leaders visit such diverse work places and are so busy that it is not practical for them to personally maintain awareness of all of the standards that may apply everywhere they go. The staff, especially personal aides, must assure the senior leader is in full compliance. Sometimes in an effort to be deferential to a senior leader, a subordinate will waive risk controls. To the observing operators, this is often simply interpreted as a signal that risk control is unimportant.

- (4) **Build an Aggressive Opportunity Mindset Within the Organization.** Create an awareness of the potential gains in developing and capitalizing on an organization's capabilities through ORM as well as the more obvious risk reduction benefits.

LEVEL: This technique can be applied at all levels of leadership. As in many areas of ORM it will only be fully effective in a context in which the senior leaders have set the tone. In the absence of the right signal from the top, junior leaders will be very hesitant to explore the possibilities of the opportunity dimension of ORM.

PURPOSE: This technique is directly targeted at getting all personnel to begin thinking about the opportunity dimension of risk. **Most personnel have developed the perception promoted by traditional risk management practices that all risk is "bad". In fact, not all risk is bad; it is essential if an organization is to fully develop and capitalize on its capabilities.** Leaders must develop the understanding among every individual in the organization that the right risks must be taken and that not taking them is wrong. Obviously there is significant potential for personnel to confuse good risks that should be taken with unnecessary risks that should not be taken. The role of the leader is to assure that personnel can make the distinction and are motivated to take risks when in the overall interest of the organization.

PROCEDURES: Leaders can take the following actions to develop an aggressive organizational attitude toward good risk-taking.

- ✓ Incorporate the opportunity mindset in your own perspectives on risk. Intellectually accept the concept that good risks must be taken or the organization will suffer.
- ✓ Use the power of the question (see technique 10) to assure that subordinates are conscious of and applying effort to the identification of and acceptance of necessary risk.
- ✓ Cause the organization to have a target list of areas where risk barriers and the opportunities they present for mission enhancement are identified. Challenge personnel to suggest ways to overcome these barriers. Energetically reward those that come forward with effective ideas.
- ✓ Ensure that the organization is effectively monitoring risk management developments in other organizations with special focus on the opportunities of ORM. Where are they doing something our organization can't do or can't do as well, and how are they doing it?
- ✓ Assure that your accountability processes respect the distinction between taking necessary risks and failing, and taking unnecessary risks and failing. In the first case, no personal adverse consequences should result for those involved.

- (5) **Induce Loss Control Community Functional Integration.** Increase cooperation among different loss control community factions.

LEVEL: This technique applies at levels of leadership at which loss control staffs (safety, fire protection, occupational health and medicine, environment, and security) are provided.

PURPOSE: Risk management is inherently integrative in character and process. It is poor ORM practice to manage risk narrowly within functional stovepipes because that approach precludes the proper prioritization of risk across the overall organization. Further, attempts to manage risk within stovepipes reduces the ability of the organization to take advantage of the fact that risk is generally cross-functional in nature with the same root causes producing several different types of risk. For example, weaknesses in hazardous materials (HAZMAT) training can produce injuries, fires, environmental damage, health problems, and even important security issues. Attempting to manage these risk issues separately among the elements of the loss control community is ineffective and ultimately costly in many ways. The role of the leader is to assure a suitable degree of integration of risk management activities.

PROCEDURES: On the surface, the simple solution is to combine these various functions in a single office. This course of action is becoming the standard in leading edge organizations in one form or another. There are several alternatives:

- ✓ Retain the traditional organizational structure but designate a risk management czar with the power to integrate, coordinate, and align the actions of the various loss control components. In the private sector these czars are typically at vice presidential level.
- ✓ Create cross-functional management councils that have the power to review significant initiatives from any part of the loss control community. The role of the council is to assure cross-functional integration, represent the interests of first level commanders/leaders and managers, and see that loss control requirements placed on the line structure are in balance with total job demands. These councils should be composed of both loss control representatives and line leaders with a relatively senior line management chairman.
- ✓ In organizations in which risk is a very important aspect of operations, the commander can effectively play the role of integrating authority. This is a demanding task and expenditure of significant command time on this process is only warranted when risk issues are extraordinarily important.

- (6) **Establish an ORM Management Structure.** Provide the necessary leadership and staff resources to adequately guide the ORM process.

LEVEL: This technique applies at levels of leadership at which loss control staffs (safety, fire protection, occupational health and medicine, environment, and security) are provided.

PURPOSE: Finding the right management structure to pursue ORM objectives is an important leader responsibility. The issues involved in cross-functional integration of risk control initiatives were discussed in technique #5. However, there are other issues related to the process of actually integrating ORM into mainstream operational processes to consider. Technique #6 offers some alternatives for this process.

PROCEDURES: Alternative approaches to managing ORM integration are as follows:

- ✓ Integration of various loss control functions. This aspect is covered in technique #5.
 - ✓ Designation of a risk control “czar”. In addition to the role of integrator as described in technique #5, the czar may have other ORM responsibilities. The czar is responsible for the integration of all risk management activities whether or not the loss control functions have been integrated. A major role is to assure full exploitation of the “opportunity” dimension of ORM. Often czars are chosen for their general management and operational expertise rather than their loss control background. The technical expertise comes from the technical experts in the loss control functional areas.
 - ✓ The safety function leads ORM. ORM in its present context originated within the safety community and in most cases the safety function is best prepared to guide its implementation. If this option is selected, special care must be directed at assuring that ORM is not confined to safety issues and that the safety staff possesses the ability to think well outside the limits of traditional safety issues. ORM is a mission enhancer that provides the added benefits of mishap prevention.
 - ✓ Create cross-functional steering committees and working groups. These can be across the loss control community or more desirably across all major staff functions. Ideally, the chairs of these groups are experienced senior managers capable of advancing the integration and cross-functional application of ORM.
 - ✓ Use the existing leadership structure. In this option, each functional area is responsible for ORM within the scope of its activities. No one element leads or coordinates. This option places a heavy burden on senior commanders and other line leaders to assure the effective integration and progress of the ORM effort.
- (7) **Fund ORM Activities.** Allocate resources to ORM at a level it can competitively justify.

LEVEL: This technique applies at all levels of leadership with special emphasis on those that control budgets and manpower allocations.

PURPOSE: The purpose of this technique is to assure that investments are made in risk management performance at a level consistent with the maximum mission benefit to the organization. The key word here is “investment”. The ORM concept envisions commitment of resources to risk controls only when those controls will produce a positive mission return

on the investment. Additionally, ORM proposals that will produce a positive return on investment must also compete successfully against all other mission supportive alternative uses of the funds. Resources are always limited and not every good idea can be resourced. One of the basic principles of ORM is that risk-related expenditures should and can compete against all other alternative uses of resources on a level playing field. Only when risk management becomes a fully competitive part of the resource allocation process does it achieve its maximum value to the organization.

PROCEDURES: Leaders should take the following actions to assure the proper allocation of resources to ORM needs.

- ✓ Whenever there are significant resources involved and time permits, require proponents of risk management initiatives to provide at least a basic cost-benefit assessment as part of their proposal. In this context the word “cost” is not simply dollars, it is cost in the full dimension of the word (dollars, mission impact, manpower, opstempo, etc.).
- ✓ Become fully conscious of the full impact of mishaps and incidents. Careful research has established that the average mishap produces at least \$4 in indirect loss for every direct \$1 recorded on the mishap report. Other adverse impacts of mishaps extend well beyond their dollar impact.
- ✓ Induce proponents of risk controls to refine the targeting of their proposals. Traditional risk management often involved the application of blanket risk controls targeting entire populations. ORM demands precision targeting to reduce the cost of risk controls and enhance their impact.
- ✓ Allow risk control proposals to compete freely and fairly in resource allocation processes such as budget reviews. When required to be competitive, properly designed risk controls can be competitive and the result will be better overall mission performance.

(8) **Shield Subordinates.** Protect those who take prudent, mission-supportive risks from negative consequences associated with losses.

LEVEL: This technique applies at all levels of leadership. As in most areas, more senior leaders will establish the precedent for junior leaders.

PURPOSE: The purpose of this technique is to assure that individuals who exhibit bold, but appropriate, risk-taking behavior do not receive any adverse consequences as a result of their actions. Traditional risk management was not always as careful as it should have been to protect prudent, mission supportive risk takers from some form of adverse consequences when the risk results in a loss. The system tended to require a scapegoat regardless of the facts of the case. The well-established dictum “The commander is responsible for all that does or does not happen in his command” seemed to dictate adverse action of some sort following a serious mishap. “We had a mishap, mishaps are bad, CAPT Jones was in

command, CAPT Jones must have done something wrong.” is the traditional attitude. ORM says NO. Military organizations must accept risks to maintain readiness. Accepting risk means periodically accepting losses. While every practical effort is made to minimize these losses, there will still be losses. Assuming the risk taken was a mission supportive risk (ORM enables us to know this), then the occasional (indeed predictable) loss should not produce adverse consequences for the leaders that happened to be involved at the particular point in time when it occurs. Of course this assumes that they were following the established risk controls.

PROCEDURES: Leaders should take the following actions to assure the proper “shielding” of subordinates.

- ✓ Provide subordinate leaders with the training and guidance necessary to allow them to make sound risk decisions according to ORM principles.
- ✓ Hold leaders as accountable for not taking needed risks as you do for taking unnecessary risks.
- ✓ Accept the moral responsibility to act on occasion as a shield. When the media pack is attacking, when the Congressionals are piling up, and grief-stricken parents and spouses are demanding that someone pay, it is not pleasant duty to protect a vulnerable subordinate who was simply taking a necessary risk. How much easier to step aside and let the heat descend as it will. The effective leader will not step aside and will not allow adverse action against the subordinate. Further, unless the mishap investigation changes the risk equation, the effective leader will authorize resumption of the activity that led to the loss. Failure to do so will degrade mission capabilities and simply create greater future risk to the force and the national security.

(9) **Detect and Correct Gambling.** Develop an organization that deters risk “gambling” even when the gambler “wins.”

LEVEL: This technique applies at all levels of leadership. As in most areas, more senior leaders will establish the precedent for junior leaders.

PURPOSE: The purpose of this technique is to assure that individuals who exhibit unjustified and inappropriate risk-taking behavior are not rewarded when they are successful. In fact, they are guided to avoid future similar behavior. In the past individuals would sometime take a risk that objectively was inappropriate and not mission supportive, but when they were successful they were rewarded in one way or another. Such decisions were reached without the application of reasonable risk management processes. Such unsupported and mission negative decisions are called “gambling”. By definition gambling is bad. But gamblers often win in the short term. The result appears to be mission excellence because something was done faster, longer, harder, etc. Is the gambler then rewarded? If so, gambling behavior is reinforced and others encourage similar behavior. The end result is deteriorating risk standards and eventually mission destructive losses.

PROCEDURES: Leaders should take the following actions to deter gambling.

- ✓ Provide subordinate leaders with the training and guidance necessary to allow them to make sound risk decisions according to ORM principles. Make sure they understand exactly what gambling is and why it is bad.
- ✓ Hold leaders accountable for taking unsupported, mission-negative risks even when they apparently succeed.

(10) **Use the Power of Question.** Use specific ORM questions and terms to induce ORM activity and culture change.

LEVEL: This technique applies at all levels of leadership.

PURPOSE: The purpose of this technique is to use the leader's power and right to ask questions to build the ORM understanding and technical competency of subordinates. The idea is to probe the extent and quality of ORM embedded in a wide range of operational proposals developed by subordinates. The expectation of being confronted by these probing questions in turn quickly induces subordinates to inject the desired ORM processes into all relevant activities.

PROCEDURES: Leaders should ask several general risk-based questions as often as necessary to develop subordinates who come prepared to answer them. These questions should be used in formal briefings, staff meetings, informal contacts, when giving initial direction, and in most other leadership situations.

(11) **Regularly Monitor ORM Processes.** Periodically assess specified measures that monitor an organization's ORM status.

LEVEL: This technique applies at all levels of leadership.

PURPOSE: The purpose of this technique is to accomplish the leader's responsibility to know what is happening; in this case to know the risk status of his or her organization. In traditional risk management applications this has been virtually impossible in smaller organizations because the number of mishaps or incidents is not large enough to give a statistically valid picture of what was happening. Even in larger organizations, where it is possible to obtain valid data, the size of the variations in this data needed to have statistically significant changes precluded anything close to real time assessment of risk management performance. ORM offers the new tool of direct measures of risk. Using this tool, even the smallest unit leader can maintain close-to-real-time awareness of the success of risk management initiatives.

PROCEDURES: Leaders should take the following actions to maintain reliable understanding of their organization's risk management status.

- ✓ Determine the validity of mishap numbers and rates as measures of performance. Most current indicators cannot be reliably applied below flag level. Use these indicators when they are valid.
- ✓ Even if mishap data is valid, and particularly if it is not, select an essential number of direct measures of risk. These can be measures of critical behaviors, knowledge, attitudes, conditions, or program parameters.
- ✓ Regularly use the direct measures of risk to assess status. Pinpoint areas of progress and shortfall. Take action as necessary to reinforce success and remedy shortcomings. Use the measurement data to guide these actions.

(12) **Exploit the ORM Value of Major Mishap Reviews.** Consistently discuss mishaps' ORM implications.

LEVEL: This technique applies at all levels of leadership.

PURPOSE: The purpose of this technique is to use the hard-learned lessons of the post-mishap experience to improve ORM processes. A mishap is an opportunity to learn. What went wrong, if anything? Could this mishap have been prevented? Should it have been prevented? These are questions that are at the heart of the mishap investigation, reporting, and review process. ORM processes are designed to minimize the occurrence of mishaps. When a mishap occurs it is completely appropriate to ask if improved ORM processes could reduce the probability or severity of another similar mishap.

PROCEDURES: Leaders should use mishap reviews as an opportunity to enhance and refine ORM processes. The following may be useful.

- ✓ Direct those responsible for mishap investigations to include an assessment of the ORM process in effect at the time of the mishap. This inquiry can proceed as an integrated aspect of the standard investigation process without interfering in any way with that process.
- ✓ Direct investigators to report ORM process weaknesses as mishap causation factors if they are found and direct development of ORM process enhancements as mishap corrective actions and recommendations.
- ✓ Use the power of the question to drive the process of considering ORM issues into the mishap investigation and reporting process.
- ✓ Direct inclusion of ORM weaknesses into mishap analytical databases so trends and hotspots can be determined.

THE 12 STRATEGIES FOR PROGRAM INTEGRATION

- Accountability
- Teaming
- Partnership
- Integrate in Training
- Risk Decision Points
- Organization and Policy Structure
- Employee Activities
- Process Integration
- Direct Change
- Gain a Champion
- Integrate in Strategic Planning
- Integrate into Measurement

THE 12 INTEGRATION STRATEGIES

Consider applying one or more of these strategies during Step 3 of the ORM Integration Process Model to each of the target areas chosen.

1. Accountability. This strategy identifies key tasks in the integration target area and then defines objectives for these tasks' various performance levels (satisfactory, good, excellent), with the personnel performing the tasks participating fully in this process. Then leaders periodically evaluate the responsible persons' actual performance of these tasks and rewards good performance, while personnel correct substandard performance. If the organization already has an effective accountability program, then leaders should integrate the risk accountability aspects into it.
2. Teaming. This strategy coordinates various functional elements in a particular risk-related area. The coordination must be cross-functional to effect true change. The objective is twofold: to rationally define all kinds of risk issues across the entire organization and coordinate risk management processes. In a fully mature teaming process, the organization sees the risk management process as seamless.
3. Partnership. Partnership forms cooperative arrangements with other organizations to accelerate ORM effectiveness and efficiency. Several potential partnership modes exist: one is partnership among Chief Petty Officer messes as sub-groups of unit commands; another is between safety offices and other loss control functions belonging to different organizations. In these partnerships, personnel develop joint work plans in areas of common interest, allocate work on individual projects to various partners, and share the outputs among them. A partnership with four elements can accomplish literally four times the work in one-quarter of the time of any one partner working alone.
4. Integrate Training. This strategy identifies all training the organization accomplishes and then prioritizes this training based on its risk implications. Next, personnel analyze the

higher-risk training task by task to identify points in the training at which to insert ORM-related content, often in the same amount of training time and retaining current training on other topics. For example, officer candidates' and Academy cadets' decision-making training can focus on risk decisions while maintaining current training objectives.

5. Risk Decision Points. This strategy reviews the processes involved in an integration target area. If possible, personnel identify various established points in the process at which decision-makers must periodically make decisions, for example, budget reallocation decisions or timetable revisions. Personnel propose a plan to assure relevant risk decisions are considered at these points. The materiel acquisition function has such a process. Personnel could establish similar risk decision points in high-risk training, in developing new maintenance lifecycles, or developing industrial processes or construction projects.
6. Organizational and Policy Structure. This strategy recognizes adopting an ORM approach may require reorganizing loss control staff offices' internal processes and structure. Similarly, it may be appropriate to revise published safety and other loss control policies, not to develop several new stand-alone ORM instructions, but to integrate standard ORM principles into pre-existing, relevant functional policy.
7. Employee Activities. This strategy identifies and implements employees' risk management activities to the processes of the target area. For example, professionals train employees in an effective ergonomics process and then leaders challenge them to take charge of their workplaces. This process "democratizes" involvement in risk management processes that eventually transforms the organization's culture right down to the individual employee and service member. The benefits of this expanded workplace "ownership" produce value well beyond accident and injury reductions.
8. Process Integration. This strategy develops a fairly detailed description of the process(es) used in the target area, often using a flow diagram. Then personnel review each step of the process to assess risk implications leaders prioritize those processes involving significant risk to integrate enhanced risk controls. The hazardous materials and waste process is an excellent example. Leaders consider all risk dimensions at each stage of the hazardous materials process and identify specific risk controls.
9. Direct Change. This strategy promotes direct action to change organizational attitudes and perceptions about ORM initiatives. Addressing the issue of change across the entire organization rather than selecting integration targets is bold and aggressive but also high-risk and likely to fail. The models here are Dr. Dan Petersen's "Challenge of Change" approach and the National Safety Council's "Agenda 2000" program. These well-tested approaches offer the best chance of success for this speedy but very risky approach to achieving high ORM performance.
10. Gain a Champion. Given a selected target area, this strategy identifies key leaders who might be potential "champions", i.e., those willing to play a leading role in ORM initiatives. Often champions offer themselves for the role by signaling their special interest in ORM. In other cases, supervisors may create a champion by carefully cultivating a target person and

essentially convincing him or her to support the ORM effort. Once found, leaders use the champion's power to the maximum practical extent to advance the ORM process. Leaders provides feedback to the champion about program successes to motivate continuing involvement.

11. Integrate in Strategic Planning. In this strategy, the ORM staff monitors the creation of all plans, mission statement revisions, vision statements, and similar initiatives for their ORM implications to integrate the overall ORM effort or appropriate risk management aspects into these documents. Often a single sentence, paragraph, or even a phrase will suffice. The object is to ensure the personnel involved in the document will at least briefly consider ORM elements in the context of their larger overall plan. Over time these ORM "wedges" contribute significantly to building the organization's ORM culture and support resource requests, training programs, and many other ORM initiatives.
12. Integrate Measurements. Most modern organizations strongly emphasize developing mission-connected performance measures that reveal various processes' health or "sickness." The measurement development process is an excellent opportunity to create an awareness of risk management's role in all processes. By requiring the development of risk-related measures in those processes in which risk is a significant issue, we ensure the organization will define ORM performance metrically, measure, and track it, which in turn will place ORM in the management mainstream.

BASIC ORM INTEGRATION METHODS

Not all risk situations require using the formal integration model to incorporate ORM principles into an organization's culture. Even small organizations experience several risk situations affecting personnel, equipment, environmental, and other, more time-critical factors. A formal integration method for many of these situations would be neither feasible nor appropriate, yet some method of embedding risk management concepts into an organization is necessary for effective performance. Below are three basic methods. While they may not cover every ORM process step described in Enclosure (1), they do achieve the primary goal of getting people to use risk management concepts daily.

- **Simple Risk Assessment Questions Technique.** This technique employs five simple questions anyone anywhere can ask. It requires no documentation and can be applied very quickly and easily, with very little training. It is an exceptional tool for all employees to effectively address common, everyday risk situations. Some individuals may dismiss this process as overly simple and purely "common sense," yet the unfortunate truth is common sense is an uncommon virtue. The natural human tendency is to *just do it*, rather than stop for a moment to think about the risks associated with a certain activity or task. These questions are:

- (1) **Why** am I doing this task?
- (2) **What** could go wrong?
- (3) **How** could it affect me or others?
- (4) **How** likely is it to happen?
- (5) **What** can I do about it?

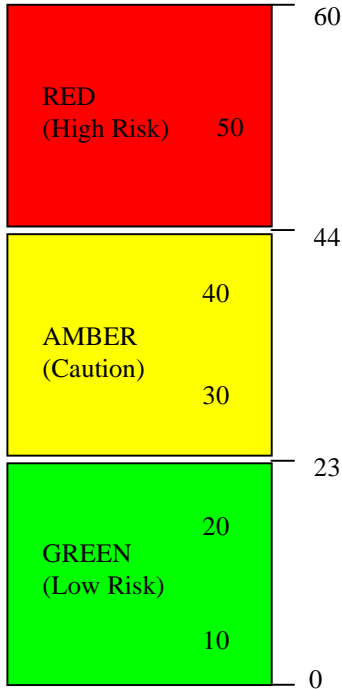
A simple way to promote this program and encourage all employees' awareness of these issues is to distribute tags containing these five fundamental questions to everyone in the workplace. The tags could be pocket-size, durable, and readily attachable to other identification tags employees are required to wear. They conspicuously remind everyone of the never-ending importance of continually asking simple risk questions while performing all daily work activities.

- **Job Planning Process Technique.** When the simple risk assessment question technique requires a more structured environment, the job-planning process offers a suitable alternative. Work teams can use this method when assigned to complete unusual or infrequent tasks or common tasks that must be completed in unusual circumstances, e.g., foul weather, heights, etc. The primary difference between this and the five simple questions technique is the job planning process requires basic documentation of risk levels (low, medium, high) for all people, equipment, materials, and environmental issues specific tasks entail. Each medium- or high-risk area also lists risk controls, and personnel determine and document the residual

risk after the specific risk control is implemented. Supervisors can generate a simple form to document this information and insert an employee communication and sign-off record to ensure workers have properly communicated hazards and controls.

- **Neil George System.** Although designed as a safety philosophy, the Neil George System uses an approach to changing an organization's culture that could function as a simple method of integrating risk management into daily activities. Easily adaptable to any particular work activity, its main premise is to emphasize safety must be a state of mind in which employees constantly are aware of the possibilities of injury. Upper management encourages supervisors to continually promote safety awareness by using a five-point checklist, methodically focusing on each step. The five steps are:
 - (1) **Check the Workplace Entrance.** Concentrate on what you see as you travel to the workplace. Keep your mind on what is required and see it is done promptly.
 - (2) **Are Workplaces and Equipment in Good Order?** As in the first step, focus on only one thing, this time where employees work. Having corrected any discrepancies noted in the work entrance, workers could give full attention to the equipment and general order within the work place.
 - (3) **Are Employees Working Properly?** Focus here on the way employees work, such as how they handle tools and equipment and discover and correct unsafe working habits. Are employees organized or do they complete a task haphazardly? Resolving this issue is the function of all employees, particularly of leadership.
 - (4) **Do a Safety Act.** This is a tool for building all supervisors' and employees' safety consciousness. The act should be a short statement or act on the cause or prevention of certain kinds of accidents. The act should not be a general caution, but a substantive fact that interests and impresses listeners. Examples of safety acts include citing a recent mishap emphasizing the importance of wearing personal protective equipment or making an on-the-spot safety correction.
 - (5) **Can and Will Employees Continue to Work Properly?** This requires both carefully considering individual employees' circumstances and closely monitoring the results of changing work conditions and possible consequences if an accident happens.

Calculating Risk



GAR EVALUATION SCALE

SUPERVISION	
PLANNING	
CREW SELECTION	
CREW FITNESS	
ENVIRONMENT	
EVENT/EVOLUTION COMPLEXITY	

To compute the total level of risk for the six elements, assign a risk code of 0 (For No Risk) through 10 (For Maximum Risk) to each element. This is your personal estimate of the risk. Add the risk scores to come up with a total risk score. The mission risk can be visualized using the colors of a traffic light. If the total falls in the green zone, risk is at a minimum. If the total falls in the amber zone, risk is moderate and you should consider adopting procedures to minimize risk. IF THE TOTAL FALLS IN THE RED ZONE, YOU NEED TO IMPLEMENT MEASURES TO REDUCE THE RISK PRIOR TO STARTING THE EVENT/EVOLUTION.

TEAM DISCUSSION TO UNDERSTAND THE RISKS AND HOW THEY WILL BE MANAGED IS WHAT IS IMPORTANT; NOT THE ABILITY TO ASSIGN NUMERICAL VALUES OR COLORS TO RISK ELEMENTS.

Supervision Supervisory Control should consider how qualified the supervisor is and is supervision taking place. Even if a team member is qualified to perform a task, supervision acts as a control to further minimize risk. This may simply be someone checking what is being done to ensure it is correct. The higher the risk, the more the supervisor needs to be focused on observing and checking. A supervisor who is actively involved in a task (doing something), can be easily distracted and should not be considered an effective safety observer in moderate to high risk situations.

Planning Planning and preparation should consider how much information you have, how clear it is, and how much time you have to plan the evolution or evaluate the situation

Crew Selection Crew Selection should consider the qualifications and experience level of the individuals used for the specific event/evolution. Individuals may need to be replaced during the event/evolution. The same concerns apply to the reliefs.

Crew Fitness Crew Fitness should consider the physical and mental state of the crew. This is a function of the amount and quality of rest a crew member has had. Quality of rest should consider how the ship rides, its habitability, potential sleep length, and any interruptions. Fatigue normally becomes a factor after 18 hours without rest; however, lack of quality sleep builds a deficit that worsens the affects of fatigue.

Environment Environment should consider factors affecting personnel performance and factors affecting the performance of the ship and its boats or attached aircraft. This includes, but is not limited to, time of day, temperature, humidity, precipitation, wind and sea conditions, proximity to aerial/navigation hazards and other exposures (e.g. oxygen deficiency, toxic chemicals, and/or injury from falls and sharp objects).

Event/Evolution Complexity Event/Evolution complexity should consider both the required time and the situation. The longer exposed to a hazard, the greater the risks. The situation includes considering how long the environmental conditions will remain stable and the complexity of the work.

TOTAL _____

The GAR model can address more general risk concerns, which involve planning operations, or reassessing risks as we reach milestones within our plans.

Specific Hazard : _____

Risk = S x P x E = _____

Circle Resultant Risk Level:

Severity (S) : Describes potential loss or consequences of a mishap (I.e. extent of injury, illness, equip damage, mission degradation).

0 = No Potential For Loss
 1 = Slight
 2 = Minimal
 3 = Significant
 4 = Major
 5 = Catastrophic

Risk Controls Used: PPE, Engineering Controls, protective devices.

Probability (P) : Likelihood that consequences will occur.

0 = Impossible
 1 = Remote under any conditions
 2 = Unlikely under normal conditions
 3 = About 50-50
 4 = Greater than 50%
 5 = Very Likely to Happen

Risk Controls Used: Training, Awareness, Attitude Change

Exposure (E) : Amount of time, number of people involved, number of repetitions.

0 = No Exposure

1 = Below average
 2 = Average
 3 = Above average
 4 = Great

Risk Controls Used: Reducing the number of people involved, the number of events, cycles, evolutions, etc.

Values	Risk Level	Action
80-100	Very High	Discontinue, Stop
60-79	High	Immediate Correction
40-59	Substantial	Correction Required
20-39	Possible	Attention Needed
1-19	Slight	Possibly Acceptable
0	None	None

Definitive action required for risk levels rated from substantial to very high.

TEAM DISCUSSION, THE UNDERSTANDING OF THE RISKS INVOLVED AND HOW RISK IS TO BE MANAGED, IS WHAT IS IMPORTANT; NOT THE ABILITY TO ASSIGN NUMERICAL VALUES TO RISK!

The SPE model can address specific hazards, such as those involved in launching or recovering a small boat or the meeting of two vessels in a congested waterway.

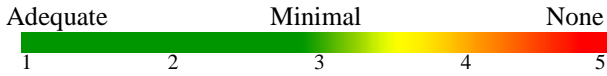
U. S. C. G. Afloat Risk Assessment

Date: _____ Mission: _____

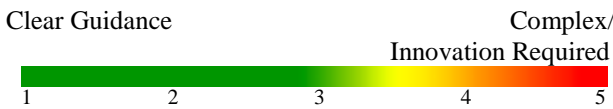
Step 1. Risk Assessment

Review questions and circle the score according to currently available information. Score items according to the examples given and instincts. Absence of data automatically sets the score to maximum point value.

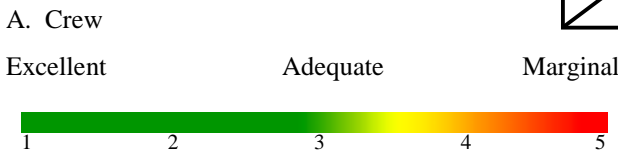
Planning: Thoroughness of pre-mission planning. Factors which increase risk: B-0 response assets, diversion of asset.



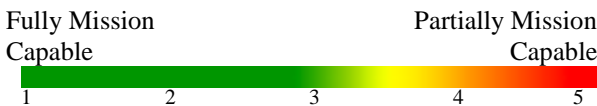
Event: Refers to mission complexity and guidance or doctrine available. Factors which may increase risk: sketchy details or non-standard mission profile.



Asset: Selection of appropriate resources. Factors that effect risk: time at unit, unfamiliar w/OP area, fatigue, u/w time, crew rest, crew selection, adequate supervision.



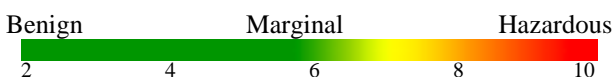
B. Cutter/Boat Resources



Communications: Ability to maintain comms throughout mission. Factors: internal w/command and external w/customer.



Environment: External condition surrounding mission: weather, night/day, sea state, water temp, air temp, visibility.



Add the values for each Risk Assessment and plot the final Risk Assessment on graph below (include re-assessment from Step 2).

Step 2. Risk Management

Risk Management is the decision to control or reduce hazards. Below are *Control Options* to assist in risk control or reduction. Review the options and reassess the risks as appropriate.

Spread-out – Disperse the risk by increasing the time between events or using additional assets.

Transfer – If practical, locate a better-suited asset to conduct the mission (i.e. different type of asset or crew).

Avoid – Circumvent hazard: Wait for risk to subside (i.e. wait until daylight or weather passes).

Accept – In some cases the benefit might justify the assumption of risk. In these cases a decision to accept risk may be made with the stipulation that risk is reevaluated as the mission progress. (No adjustment to Risk Assessment)

Reduce – Reduce or limit risk exposure, use of PPE, additional training or rest, stress reduction.

Re-assess Step 1 Values

Step 3 Risk vs. Gain

Low Gain – Situation with intangible benefits or a low probability for providing concrete results. Examples include passenger transport, non-critical logistics missions, public affairs demonstrations.

Medium Gain – Situation that provides immediate, tangible benefits. Examples include saving property, protecting the environment, deterring illegal operations.

High Gain – Situation that provides immediate, tangible benefits that if ignored could result in loss of life. Examples include Urgent SAR and MEDEVACs.

Given the mission description above, what is the “Gain” for this mission?

Vs.

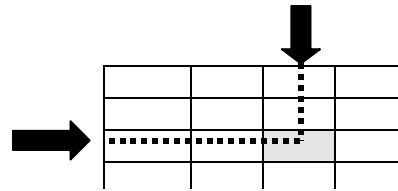
Risk Assessment
(Hi/Med/Lo)

Gain
(Hi/Med/Lo)

Use the Risk vs. Gain Chart on the next page for a recommendation on how to proceed with the mission.



How to use this Chart:



	High Gain	Medium Gain	Low Gain
Low Risk	Accept the Mission. Continue to monitor Risk Factors, if conditions or mission changes.	Accept the Mission. Continue to monitor Risk Factors, if conditions or mission changes.	Accept the Mission. Re-evaluate Risk vs. Gain, should Risk Factors change.
Medium Risk	Accept the Mission. Continue to monitor Risk Factors and employ Control Options when available.	Accept the Mission. Continue to monitor Risk Factors and employ Control Options when available.	Accept the Mission. Continue to monitor Risk Factors and actively pursue Control Options to reduce Risk.
High Risk	Accept the Mission only with Command endorsement. Communicate Risk vs. Gain to Chain of Command. Actively pursue Control Options to reduce Risk.	Accept the Mission only with Command endorsement. Communicate Risk vs. Gain to Chain of Command. Actively pursue Control Options to reduce Risk.	Do not Accept the Mission. Communicate to Chain of Command. Wait until Risk Factors change or Control Options warrant.

Instructions

1. Complete Step 1, Risk Assessment. Review each of the risk factors and assign a numerical score as indicated. Place the score in the upper left-hand portion of the boxes.

Note: The relative scale provided is a guide to determine how much risk is associate with each factor. If you know or have information not specifically addressed in the example you may want to reference the scale at the bottom of the page. Example: If you feel that the wrong *asset* is being sent on the case, that should be considered in the appropriate risk factor score. Use your best judgment as YOU see the information developing.

Add the values of the boxes together for a total risk score and compare it to the risk scale at the bottom of the page to determine an overall risk level. *Note: The environmental risk factor scale values are weighted.*

2. Compete Step 2, Risk Management. If risk assessment is determined to be excessive, review the control options and determine if the risks can be reduced or controlled. Re-assess each risk factor and enter a new value in the lower right hand portion of the box provided. Re-total the values of the boxes and again compare to the risk scale at the bottom of the page to determine an overall risk level.
3. Complete Step 3, Determine Potential Gain. Determine the gain by reviewing the assigned mission and comparing it to the definitions as appropriate.
4. Utilize the matrix above to receive a recommendation on whether, or how to proceed with the mission.
5. Communicate the findings to the Chain-of-Command. Continue to reevaluate risk assessment vs. risk management throughout all phases of the mission. This process should be an endless loop and continue until the safe completion of the mission.

U. S. C. G. Aviation Risk Assessment

Date: _____ Mission: _____

Step 1. Risk Assessment

Review questions and circle the score according to currently available information. Score items according to the examples given and instincts. Absence of data automatically sets the score to maximum point value.

Planning: Thoroughness of pre-mission planning. Factors which increase risk, B-0 response assets, in-flight divert of asset.

Adequate Minimal None
1 2 3 4 5

Event: Refers to mission complexity and guidance or doctrine available. Factors which may increase risk: sketchy details or non-standard mission profile.

Clear Guidance Complex/
Innovation Required
1 2 3 4 5

Asset: Selection of appropriate resources. Factors that effect risk: time at unit, unfamiliar w/OP area, fatigue, flight time (total time & time in type), crew rest, 5181's, requestor's knowledge of asset capabilities.

A. Pilots

Excellent Adequate Marginal
1 2 3 4 5

B. Aircrew

Excellent Adequate Marginal
1 2 3 4 5

C. Airframe/Resources

Fully Mission Capable Partially Mission Capable
1 2 3 4 5

Communications: Ability to maintain comms throughout mission. Factors: internal w/command and external w/customer.

Adequate Marginal None
1 2 3 4 5

Environment: External condition surrounding mission: Weather, night, illumination, mountainous seastate, terrain, cutter based, alternate airfields, water temp, on-scene cover.

Benign Marginal Hazardous
2 4 6 8 10

Add the values for each Risk Assessment and plot the final Risk Assessment on graph below (include re-assessment from Step 2).

Step 2. Risk Management

Risk Management is the decision to control or reduce hazards. Below are *Control Options* to assist in risk control or reduction. Review the options and reassess the risks as appropriate.

Spread-out – Disperse the risk by launching additional air/surface assets.

Transfer – If practical, locate a better suited asset to conduct the mission i.e. different airframe, surface asset, or crew.

Avoid – Circumvent hazard: Wait for risk to subside i.e. wait until daylight or weather passes.

Accept – In some cases the benefit might justify the assumption of risk. In these cases a decision to accept risk may be made with the stipulation that risk is reevaluated as the mission progress. (No adjustment to Risk Assessment)

Reduce – Reduce or limit risk exposure: Additional PRECOM/EXCOM, bring in fresh or more experienced crew.

Re-assess Step 1 Values

Step 3 Risk vs. Gain

Low Gain – Situation with intangible benefits or a low probability for providing concrete results. Examples include passenger transport, non-critical logistics missions, PAO demonstration flight, etc.

Medium Gain – Situation that provides immediate, tangible benefits. Examples include saving property, protecting the environment, deterring illegal operations.

High Gain – Situation that provides immediate, tangible benefits that if ignored could result in loss of life. Examples include Urgent SAR and MEDEVACs.

Given the mission description above, what is the "Gain" for this mission?

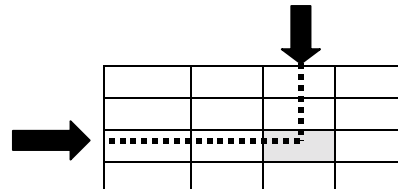
Vs.

Risk Assessment (Hi/Med/Lo) **Gain** (Hi/Med/Lo)

Use the Risk vs. Gain Chart on the next page for a recommendation on how to proceed with the mission.



How to use this Chart:



	High Gain	Medium Gain	Low Gain
Low Risk	Accept the Mission. Continue to monitor Risk Factors, if conditions or mission changes.	Accept the Mission. Continue to monitor Risk Factors, if conditions or mission changes.	Accept the Mission. Re-evaluate Risk vs. Gain, should Risk Factors change.
Medium Risk	Accept the Mission. Continue to monitor Risk Factors and employ Control Options when available.	Accept the Mission. Continue to monitor Risk Factors and employ Control Options when available.	Accept the Mission. Continue to monitor Risk Factors and actively pursue Control Options to reduce Risk.
High Risk	Accept the Mission only with Command endorsement. Communicate Risk vs. Gain to Chain of Command. Actively pursue Control Options to reduce Risk.	Accept the Mission only with Command endorsement. Communicate Risk vs. Gain to Chain of Command. Actively pursue Control Options to reduce Risk.	Do not Accept the Mission. Communicate to Chain of Command. Wait until Risk Factors change or Control Options warrant.

Instructions

1. Complete Step 1, Risk Assessment. Review each of the Risk Factors and assign a numerical score as indicated. Place the score in the upper left-hand portion of the boxes.

Note: The relative scale provided is a guide to determine how much risk is associate with each factor. If you know or have information not specifically addressed in the example you may want to reference the scale at the bottom of the page. Example: If you feel that the wrong *Asset* is being sent on the case, an HU-25 to execute a 3 NM VS search, you may want to score that factor as high risk due to an inappropriate dispatch of an asset. Use your best judgement as YOU see the information developing.

Add the values of the boxes together. Use this score to determine the Risk, by applying it to the Risk Scale at the bottom of the page. *Note: The Environmental Risk Factor has a weighted value.*

2. Complete Step 2, Risk Management. If Risk Assessment is determined to be excessive, review the control options and determine if the risks can be reduced or controlled. Re-assess each risk factor and enter new value in the lower right hand portion of the box provided. Re-total the values of the boxes and again compare to the Risk Scale at the bottom of the page.
3. Complete Step 3, Determine Potential Gain. Determine the gain by reviewing the assigned mission, apply the definitions as appropriate.
4. Utilize the matrix above to receive a recommendation on whether or how, to proceed with the mission.
5. Communicate the findings to the Chain-of-Command. Continue to reevaluate Risk Assessment vs. Risk Management throughout all phases of the mission. This process should be an endless loop and continue until the safe completion of the mission.

EVALUATION MATRIX

Rate from 1 (Low) to 10 (High) (selection criteria not weighted)

TOTAL					

Operational Risk Management (ORM)

Implementation Examples and “*Success Stories*”

References: A. Operational Risk Management, COMDTINST 3500.3
B. Team Coordination Training, COMDTINST 1541.1
C. COMDT (G-W) Flag Voice 97 of 17 Jul 00

Purpose. The Coast Guard formalized its ORM program in Nov 99 with the release of reference (a), as supported by the Team Coordination Training (TCT) program described in reference (b). Since then, many units in the field, training communities, and supporting staff have embraced the principles of ORM and committed to integrate them into their daily activities and processes. **The purpose of this document is to advertise how some units have accomplished ORM integration.** As you can see from the examples below, ORM integration does not have to be a complicated or time-consuming process. It should be commensurate to your own needs and your own situation, whether it is time-critical (“I only have minutes or seconds to act!”), deliberate (“I have a few hours or days to plan this activity”), or strategic (“I have several weeks or months to plan this operation”). Applying even only one or two steps from the ORM process into a daily process or activity can get you onto the page of *ORM Success Stories!*

Field Examples:

1. Activities/Air Station San Diego command center personnel identified multi-unit coordination as a primary target area for ORM integration. A key action in that activity is managing multiple search and rescue units during SAR cases. They have added a line item to appropriate Quick Response Sheets (QRS) to ensure designated On Scene Commanders are aware of the risks and challenges associated with maintaining safe separation of air and surface assets in a confined search area. They also added applicable risk assessment tools to the QRS binder for general use with any QRS.
2. USCGC EDISTO, USCGC TYBEE and USCGC LONG ISLAND identified boat launch & recovery as a key target activity for ORM integration. As an aid in the safety brief, they decided to include a risk assessment tool (e.g. green/amber/red (GAR) or severity/probability/exposure (SPE) models from TCT) as an enclosure to the CO’s Standing Orders for boat operations that fall outside normal parameters. They also decided to modify the CO’s Standing Orders to require risk assessments for such evolutions while emphasizing the availability of these tools for Officers of the Deck and coxswains.
3. Port Security Unit 311 personnel focused on tactical maneuvering as a primary ORM target area. To improve communications, they have included contingencies for primary communications failures (e.g. visual signals, etc.) in unit mission briefs. They also document mission debriefs with a standard outline based on guidance provided in the TCT program text

material. Finally, they decided to modify their mission-briefing checklist to incorporate an appropriate risk assessment tool (e.g. GAR and/or SPE).

4. Station San Diego personnel identified helicopter operations as a primary target for ORM integration. To improve the boat equipment checklists, they decided to add an appropriate risk assessment tool to the check-off binder to ensure that hazards were assessed. They also added a line item to their boat mission report to ensure that mission briefs and debriefs are conducted. By doing this, they established accountability and ensured that ORM was applied as a part of that activity.

5. Personnel from PACAREA TACLET focused on the area of law enforcement training for ORM integration. To help their training board functions, they decided to apply a decision matrix, with specific selection criteria, to prioritize training programs for selection (an example of this matrix and a description of how it is used is explained in detail in the ORM Integration Job Aid, found on the Afloat and Marine Safety's ORM web site). TACLET also decided to modify their unit-level Personnel Qualification Standards to include demonstrating the use of appropriate risk assessment tools in pre-briefs and checklists for various Law Enforcement Detachment evolutions.

6. Air Station Miami has tailored a unit specific risk/gain matrix for preflight use. This matrix, derived from the generic aviation risk/gain model developed at the 2000 Flight Safety Officers workshop, is completed and filed before each flight. Missions with inordinate risk for the calculated gain trigger pre-launch command cadre notification.

Training Community Examples:

1. The Utility Boat Systems Center and National Motor Life Boat School have embedded extensive amounts of TCT and ORM principles into their coxswain school curricula. These principles are reinforced through case studies and practical underway scenarios to test decision-making. They also have incorporated elements of TCT and ORM directly into their Standardization Team exercise drill sheets. This enables them to measure the extent of application of these skills.

2. The National Aids to Navigation School has incorporated risk assessment information into the Buoy Deck Supervisor course, primarily in the areas of pre-evolution and navigation briefs. They have also integrated ORM principles into the CO/XO Advanced Aids to Navigation Officer courses.

3. The National Search and Rescue School has a risk management lab section within their search planning text, using the F/V SEA KING case study to emphasize ORM principles. They also review/advocate the use of the "peace" and "STAAR" models (as discussed in the text of TCT) while discussing all of the ORM process steps in the surface SAR resource section of their text.

4. Many marine safety-related schools at TRACEN Yorktown have integrated ORM into several different curricula. All core marine safety courses incorporate risk management information to some degree, averaging 1.5 to 2 hours per course. The Port Operations course has a risk management module that defines ORM terminology and reviews basic ORM principles. A similar curriculum also applies to Inspector and Investigator courses. The Contingency Preparation School reviews the ORM process and the SPE and GAR risk assessment models, while making a clear distinction between ORM (primarily internal risks arising from unit operations) and the risk-based decision making guidelines (primarily external risks associated with the Maritime Industry).
5. The Maritime Law Enforcement School discusses risk assessment principles and identifies GAR and SPE models during the pre-boarding, boarding, and Initial Safety Inspection portions of their course. They also employ various case studies to reinforce these principles.
6. The Aviation Training Center (ATC) has integrated ORM to expand and formalize the “risk assessment/risk management” portion of Crew Resource Management (CRM). An ORM case study is employed during CRM refresher training at ATC Mobile.
7. Both Area training teams have incorporated about four hours of ORM/TCT material into their Special and Emergency Operations (SEOPS) courses. The PACAREA Training Team has incorporated a similar amount of TCT into the training provided by the Station Training Groups. More important than the hours dedicated to the curricula, however, is the reinforcement of ORM principles during practical exercises and drills. Their integration efforts are significant enough to satisfy Unit-level TCT requirements, per reference (b), for SEOPS-trained cutters.
8. Many programs at the Coast Guard Academy have incorporated elements of TCT and ORM into their curricula. The Command and Operations School has inserted several hours of these principles into their PCO/PXO and International Maritime Officer courses, as well as two full days of TCT into their Prospective Operations Officer course. They also directly support the TCT program by conducting three resident TCT Cutter Operations and two resident TCT Group Operations Officer courses per year. Cadet curricula have also included ORM principles, such as the Mathematics Department’s Decisions Models course and the Coastal Navigation course.

Staff Examples:

1. Both Area operations staffs have implemented the Risk Assessment Matrix (RAM) to institutionalize the use of systematic, risk-based processes for improved decision-making. To supplement the RAM’s tactical benefits for the units to codify risk assessment processes already in place, Area staffs can use the RAM on a strategic level to track and quantify fleet-wide concerns and present them as data to support personnel, scheduling, and budget decisions.
2. ORM is also being integrated at the program manager level. The Office of Boat Forces has integrated TCT/ORM principles into boat training and qualification manuals. The Leadership and Career Development Division has included ORM terminology and process info into a

revision of MRNs for E3-E9. The Human Element and Ship Design Division has incorporated ORM as one option in their risk-based decision making guidelines.

Conclusion:

These are just a few examples of how ORM can be integrated over a wide spectrum of activities and programs. Many others may not be readily apparent, perhaps hidden under the guise of what many consider “normal operations.” Some people say that ORM is simply “common sense,” and that the Coast Guard has been doing it for years. But what is “common sense?” Does it mean the same thing for a seasoned craftsman that it does for a younger apprentice? Of course not, there is a difference, and ORM helps to reduce that “gap.” ORM provides the Coast Guard with a process to ensure that risks are analyzed and managed, not just by chance or by relying on “common sense,” but through systematic integration of risk management principles into daily activities.

ORM does not apply only to on-duty situations. As discussed by RADM Ames in reference (c) entitled “Don’t Let Your Guard Down – The Risk Management Habit”, ORM is just as important in avoiding injuries and property damage in our personal lives as well.

Other areas of this web site contain various tools and job aids to help ORM implementation efforts. A headquarters/MLCPAC ORM “tiger team” facilitated the development of some of the unit-specific ORM implementation plans described above. The Afloat and Marine Safety Division can accommodate requests for similar efforts pending availability of funds, and continues to be interested in collecting and sharing any risk assessment tools developed or any ***ORM success stories.***