



DEPARTMENT OF THE NAVY  
NAVAL AIR SYSTEMS COMMAND  
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IN REPLY REFER TO

NAVAIRINST 5000.21  
AIR-1.0  
25 Jun 03

NAVAIR INSTRUCTION 5000.21

From: Commander, Naval Air Systems Command

Subj: PROGRAM/PROJECT RISK MANAGEMENT

Ref: (a) DoD Directive 5000.1  
(b) DoD Instruction 5000.2  
(c) DoD 5000.4-M  
(d) NAVAIRINST 5100.11  
(e) DSMC Risk Management Guide for DoD Acquisition  
(f) NAVAIRINST 4355.19B

Encl: (1) NAVAIR Acquisition Program Risk Reporting Matrix  
(2) AIR-4.0 System Safety Risk Analysis Matrix

1. Purpose. To establish policy and assign responsibilities for a standardized Program/Project Risk Management process across Naval Air Systems Command (NAVAIR) programs.

2. Scope. This instruction applies to all personnel and agencies of NAVAIR and the associated Program Executive Offices (PEOs) involved with the design, development, acquisition, in-service support, and disposal of naval aviation weapon systems and equipment.

3. Discussion

a. Risk is the potential for variation in the cost, schedule, or performance of a program or its products. While such variation can include positive opportunities, risk is more generally considered to be the potential for a negative future reality.

(1) A risk description should be in future terms that help identify both possible future effects and the root cause(s).

(2) Risk assessments are not to be confused with program performance assessments. If a risk is described in past tense, the likelihood of occurrence is 100 percent; it has happened, and it is an issue. The important difference between an issue and a risk is that issue management is focused toward mitigating current effects, while risk management seeks to mitigate future effects and root causes. An issue and a risk are not necessarily independent or easily distinguished; the review of an issue might reveal a continuing risk from the unresolved root cause of the issue.

b. Risk management is an organized method for continuously identifying and measuring risk; developing mitigation options; and selecting, planning, and implementing the appropriate risk mitigations. Risk management is a process that evaluates the likelihood, or probability, of an undesirable event occurring; assesses the consequences, or severity, of the event should it occur; evaluates the sources or root causes of the risk; and identifies the available risk mitigations. Effective risk management depends on early identification and analyses of risks; risk management planning; early implementation of corrective actions; continuous tracking and reassessment; and communication, documentation, and coordination.

(1) Program risk management efforts shall include a complete review of all areas required to support the life cycle of a given system. These risk areas or sources can include requirements, design, development, software, interfaces, systems engineering, production transition, Test and Evaluation (T&E), system safety, funding, logistics elements, engineering support, readiness, contracts, management, staffing work years, process, and other global issues.

(2) As a program matures through its acquisition life cycle, the type and character of risks will change. References (a) through (c) describe management principles and policies applicable to all Department of Defense (DoD) acquisition programs, and require Program Managers (PMs) and other acquisition managers to continually assess and reduce program risks.

(a) References (a) through (c) also define the DoD acquisition process for all programs, including those that are software-intensive. These references require that systems engineering principles permeate the design, manufacture, T&E, and product support of DoD acquisition programs. In a systems engineering environment, risk management is an essential and integral part of technical program management throughout the acquisition life cycle.

(b) As a program transitions through developmental and operational testing and then to fleet use, program risk management plans need to be structured to identify, assess, and mitigate risks (in particular system safety hazard risks) that have a risk impact on the overall program's cost, schedule, and/or performance. Program risk management plans need to define the overall program approach to capture and manage system safety hazard risks in accordance with reference (d).

#### 4. Policy

a. To ensure compliance with the risk management requirements of references (a) and (b), all ACAT-designated, NAVAIR/PEO-managed aviation acquisition and in-service support programs shall establish, maintain and utilize an integrated risk management process. Risk management should also be applied to Abbreviated Acquisition Programs (AAPs) and other non-ACAT programs as determined and tailored by the cognizant PEO and/or program/project manager. A formal Risk Management Board (RMB) and a Risk Management Plan (RMP) are required components of the risk management process.

b. NAVAIR risk reporting shall present standard likelihood and consequence screening criteria, as well as the standard risk matrix presented as enclosure (1). The plotted position in

the standard matrix should show the PM's current assessment of the risk's probability of occurrence, and the estimated severity of its effect on the program if mitigation fails. As risk mitigation succeeds in a program, a *yellow* or *red* risk position on the risk matrix will migrate in successive assessments from its current location toward the green. Each risk description should include three key elements:

- (1) a brief description of the risk;
- (2) a brief description of the root causal factor(s) for the risk, and
- (3) the proposed/planned mitigations that address the risk source(s) and effect(s).

c. The NAVAIR Risk Management Handbook is a supplemental publication that provides guidance and procedures for conducting program risk assessments. This document is accessible in the NAVAIR Microsoft Outlook Public Folders, under AIR-4.1G.

5. Action. The following responsibilities are assigned relative to the program risk management process.

a. PEOs and the Deputy Commander for Acquisition and Operations (AIR-1.0) shall:

(1) ensure program acquisition plans and strategies provide for risk management and that identified risks are considered in milestone decisions; and

(2) in conjunction with the NAVAIR Assistant Commander for Contracts (AIR-2.0), ensure program contract(s) Statements of Work (SOWs) and Contract Deliverable Requirements Lists (CDRLs) include provisions to support a defined program risk management plan and process.

b. Program Managers, Air (PMAs) shall:

(1) establish, use, and maintain an integrated risk management process. PMAs shall ensure their integrated risk management process includes all disciplines required to support the life-cycle of their system (e.g. systems safety, logistics, systems engineering, producibility, in-service support);

(2) ensure each program has a defined RMP, and that risk assessments are conducted per that plan. Ensure the program RMP defines the required relationships with other risk related directives, such as the Research and Engineering Technical Review of Risk processes and procedures established by reference (d). The Defense Systems Management College (DSMC) Risk Management Guide for DoD Acquisition, reference (e), is a useful tool for developing RMPs;

(3) form a program RMB to include the PM/Integrated Program Team (IPT) Leader, Program Risk Management Coordinator, Assistant Program Manager for Systems and Engineering (APMSE), Assistant Program Manager for Logistics (APML), Budget and Financial Manager (BFM), Prime Contractor PM/Lead System Engineer, and other members relevant to the program strategy, phase, and risks.

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(4) report risks as follows:

(a) use the NAVAIR standard likelihood and consequence matrix at enclosure (1) to report program risks; and

(b) use the AIR-4.0 System Safety Risk Analysis Matrix, reference (d) shown as enclosure (2) to report in-service system safety hazard risks;

(5) report risk assessments to the Independent Logistics Assessment (ILA) and Initial Operational Capability Supportability Review (IOCSR) teams per reference (c). This will address supportability risk impact on the program equally with other technical, cost and schedule risk consequences.

c. IPTs shall:

(1) implement the RMP, and support the program RMB as required;

(2) assess risks using the NAVAIR Risk Management Handbook for guidance. An ongoing/continual risk assessment is highly recommended, and is useful during all phases of a program's life cycle. A tailored program risk assessment shall be conducted for each of the Systems Engineering Technical Reviews (SETRs) described in reference (f), and for each key program decision point; and

(3) Report risks as follows:

(a) use the NAVAIR standard likelihood and consequence matrix at enclosure (1) to report program risks; and

(b) use the AIR-4.0 System Safety Risk Analysis Matrix (reference (d)) shown as enclosure (2) to report in-service system safety hazard risks.

(4) Recommend appropriate risk mitigation strategies for each identified moderate and high risk, and estimate funding requirements to implement risk mitigation plans. Be prepared to request required risk mitigation support. Implement risk mitigation in accordance with program guidance from the RMB per the program RMP.

d. RMBs shall:

(1) conduct risk assessments per the RMP.

(2) continually assess programs for new risks, address the status of existing risks, and manage risk mitigation activities. The risks to be identified and analyzed are those that jeopardize the achievement of significant program requirements, thresholds, or objectives. Like IPT composition, the RMB is made up of government program management, industry/contractor, and appropriate competency personnel.

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(3) develop appropriate risk mitigation strategies for each identified moderate and high risk, and estimate funding requirements to implement risk mitigation plans. Be prepared to request required risk mitigation support. Implement risk mitigation in accordance with program guidance from the RMB per the program RMP.

(4) report risks as follows:

(a) use the NAVAIR standard likelihood and consequence matrix at enclosure (1) to report program risks.

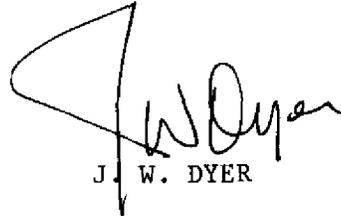
(b) use the AIR-4.0 System Safety Risk Analysis Matrix (reference (d)) shown as enclosure (2) to report in-service system safety hazard risks.

e. Competencies shall:

(1) provide the people, processes, and training to support program risk management activities; and

(2) designate subject matter experts (SMEs), and make them available to assist with risk assessments. Upon request of PMAs or higher authority, competencies shall provide personnel to conduct independent risk assessments on specific programs.

5. Review. AIR-1.0 shall review this instruction annually, coordinating and implementing updates and changes as appropriate.



J. W. DYER

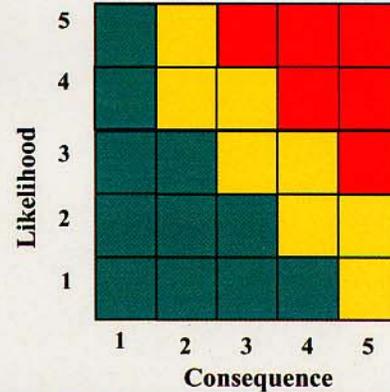
NAVAIRHQs Directive Web Address: <https://directives.navair.navy.mil> or <https://wingspan.navair.navy.mil>



## NAVAIR Acquisition Program Risk Reporting Matrix

1. Each undesirable event that might affect the success of the program (technical, schedule, and cost) will be identified and assessed as to likelihood and consequence of occurrence.
2. A standard format for evaluation and reporting of program risk assessment findings will facilitate common understanding of program risks at all levels of the organization. The matrix below will be used to determine the level of risks identified within a program. The level of risk will be reported as low, moderate and high represented in the matrix with the colors green-low, yellow-moderate and red-high.

Level	Likelihood	Probability of Occurrence
1	Not Likely	~10%
2	Low Likelihood	~30%
3	Likely	~50%
4	Highly Likely	~70%
5	Near Certainty	~90%



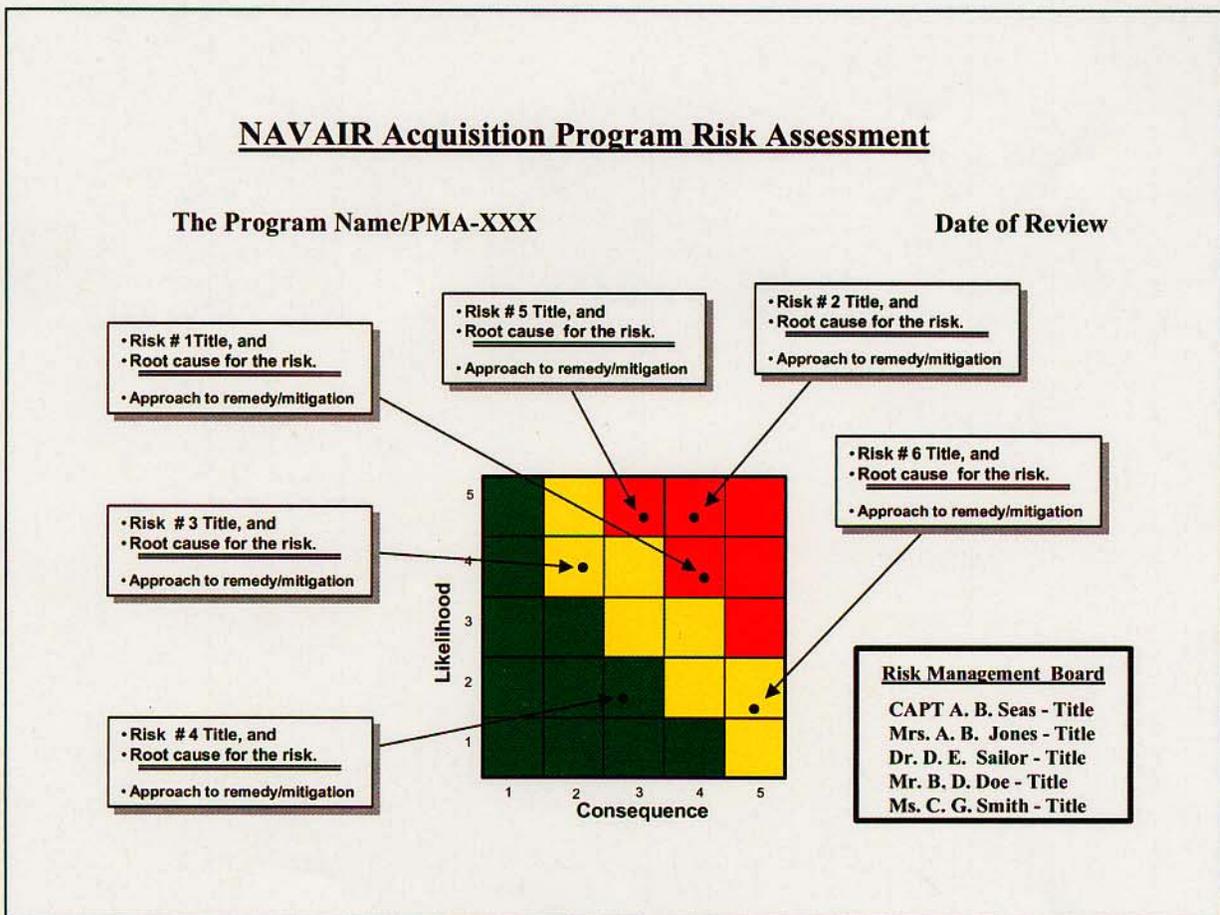
Level	Technical Performance	Schedule	Cost
1	Minimal or no consequence to technical performance	Minimal or no impact	Minimal or no impact
2	Minor reduction in technical performance or supportability, can be tolerated with little or no impact on program; same approach retained	Additional activities required, able to meet key dates. <b>Slip &lt; * month(s)</b>	Budget increase or unit production cost increases < <b>** (1% of Budget)</b>
3	Moderate reduction in technical performance or supportability with limited impact on program objectives; workarounds available	Minor schedule slip, no impact to key milestones. <b>Slip &lt; * month(s) of critical path.</b> <b>Sub-system slip &gt; * month(s).</b>	Budget increase or unit production cost increase < <b>** (5% of Budget)</b>
4	Significant degradation in technical performance or major shortfall in supportability; may jeopardize program success; workarounds may not be available or may have negative consequences	Program critical path affected, all schedule float associated with key milestone exhausted <b>Slip &lt; * months</b>	Budget increase or unit production cost increase < <b>** (10% of Budget)</b>
5	Severe degradation in technical performance; Cannot meet KPP or Key technical/supportability threshold; will jeopardize program success; no workarounds available	Cannot meet key program milestones <b>Slip &gt; * months</b>	Exceeds APBA threshold <b>&gt; ** (10% of Budget)</b>

\* - Tailor for program in month(s)  
 \*\* - Tailor for program in whole dollars

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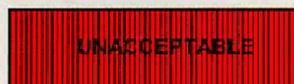
## Briefing Format

1. Below is an example of the format that will be used when reporting the results of a risk assessment.
2. Presenter should be prepared for more detailed discussions on these issues and alternative mitigation plans.
3. If the assessment is done formally by a standing advisory board, then list the members and their affiliation.
4. The color scheme of the 5x5 matrix should remain common with this enclosure unless otherwise authorized by the cognizant PEO.



## AIR-4.0 SYSTEM SAFETY RISK ANALYSIS MATRIX

HAZARD CATEGORIZATION		SEVERITY			
		CATASTROPHIC (1)	CRITICAL (2)	MARGINAL (3)	NEGLIGIBLE (4)
FREQUENCY	<b>FREQUENT (A)</b> = or > 100/100K flt hrs	1	3	7	13
	<b>PROBABLE (B)</b> 10-99/100K flt hrs	2	5	9	16
	<b>OCCASIONAL (C)</b> 1.0-9.9/100K flt hrs	4	6	11	18
	<b>REMOTE (D)</b> 0.1-0.99/100K flt hrs	8	10	14	19
	<b>IMPROBABLE (E)</b> = or < 0.1/100K flt hrs	12	15	17	20



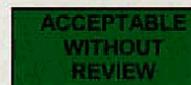
CNO / TYCOM / Fleet  
Acceptance  
1-5 HIGH SAFETY RISK



PMA Acceptance  
11-17 LOW SAFETY RISK



PEO / AIR-1.0 Acceptance  
6-10 MEDIUM SAFETY RISK



IPT / FST / SSWG Acceptance  
18-20 VERY LOW SAFETY RISK

**Severity** is the worst credible consequence of a hazard in terms of degree of injury, property damage or effect on mission defined below:

**Catastrophic** - Class A ( damage > \$1M / fatality / permanent total disability)

**Critical** - Class B (\$200K < damage < \$1M / permanent partial disability / hospitalization of 5 or more personnel)

**Marginal** - Class C (\$10K < damage < \$200K / injury results in 1 or more lost workdays)

**Negligible** - All other injury/damage less than Class C

**Probability** of occurrence for discreet events may replace **Frequency** based upon the chart below:

