



DEPARTMENT OF THE NAVY

PROGRAM EXECUTIVE OFFICE
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IN REPLY REFER TO

PEOTSCINST 3058.1
TSC-TA

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PEO TSC INSTRUCTION 3058.1

Subj: RISK MANAGEMENT

Ref: (a) DOD 5000.1, 15 Mar 96
(b) DOD 5000.2R Change 3, 23 Mar 98
(c) Risk Management Guide for DOD Acquisitions, Second Edition, Defense Systems Management College Press, May 99

Encl: (1) PEO TSC Risk Management Process Description,
.3 Apr 00
(2) ASN(RDA) Risk Reporting Guidance (RRG)
(3) Risk Likelihood of Occurrence Template
(4) Consequences of Risk Template

1. Purpose. To provide guidance, policy and definition for a common Risk Management Process (RMP) within PEO TSC which enables: (a) the management of individuals program risk by Program Managers (PM); and (b) the management of interdependencies of risks among programs by PEO TSC management.

2. Scope. Applies to all PEO TSC programs.

3. Background. References (a) and (b) mandate that PM and other acquisition managers continuously assess program risks to ensure that risks are well understood and that approaches are developed in a timely fashion to manage risks. To this end, PEO TSC has always directed and attempted to incentivize a strong RMP with programs. Due to the complexity and degree of interdependence of PEO TSC programs, there exists a need to strengthen the PEO TSC RMP. This need is strong both within as well as among Programs. Most of PEO TSC's attention heretofore has been on the former. More attention is needed on both, but particularly the latter, i.e., the interactions among programs. This is primarily due to growing interdependencies of systems and components and to the expanded scope of warfare area missions. This increased focus on system and program relationships requires a standard and more consistent RMP within individual programs.

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This standardization and commonality will enable the necessary balance between intra and inter-program risk. PEO TSC Management's responsibilities in Risk Management (RM) include defining a RMP, ensuring that all PMs adhere to the process, and maintaining consistency and focus on the importance of RM within the PEO. It is the intent of PEO TSC to encourage an open dialogue of intra and inter program risk within a disciplined process.

4. Definitions.

a. Risk. A measure of the potential inability to achieve overall program objectives within defined cost, schedule, and technical constraints. It has two components: (1) the probability (or likelihood) of occurrence of an event causing some impact to the program; and (2) the consequences (or impact) of the occurrence: failing to achieve a desired outcome. Reference (c) refers. These uncertainties arise from a fleet introduction, and operation of systems. These complexities take the form of technological, resource availability, process maturity (e.g., system engineering), programmatic, and financial issues.

b. Risk Management. The act or practice of dealing with risks. The goal of risk management is to gain a proper understanding of the future effects of today's decisions, thus allowing managers to apply precious resources towards and approach that reduces or mitigates risk.

c. PEO TSC Risk Management Program. Enclosure (1) is a description of the PEO TSC RMP. It is based on the dual framework of process management and product management as shown in figure 1 of enclosure (1). Process management is associated with the problems that fall out or occur within the system engineering process and manifest themselves adversely in a cost, schedule, or performance tracking system. Problems are risk whose time has come. Because this has become familiar terminology, however, the term "risk" as used herein also includes those that have become "problems." The PEO TSC RMP process has three foundations:

- (1) A common set of four activities;
- (2) A common toolset; and
- (3) A common reporting format.

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The four activities are:

- (1) Risk Identification
- (2) Risk Characterization and Assessment
- (3) Risk Analysis and Mitigation, and
- (4) Risk Tracking and Reporting.

The common toolset is Technical Risk Identification and Mitigation System (TRIMS) and Risk Radar (RR), unless a special exception is granted. TRIMS is a technical RM system that may be tailored to the user's needs. It identifies and ranks those program areas with the highest risk levels, providing the ability to conduct continuous risk assessments for preemptive corrective actions and to track key project documentation from concept through production. RR is a RM database to help project managers identify, prioritize, and communicate in a flexible and easy-to-use form. RR provides standard data base functions to add and delete risks, as well as specialized functions for prioritizing and retiring project risks. Each risk can have a user defined management plan and a log of historical events. Due to the extended use of the Risk Register Tool, especially within the missile community, Risk Register is approved for use as a standard exception to the common toolset. The common reporting formats are those associated with the common toolset and that described in enclosure (2).

d. Risk Identification. The activity within the PEO TSC RMP used to find, label, and describe uncertainties or events that may hinder achieving the program plan and may adversely affect cost, schedule, and/or performance. Likelihood and consequence descriptions shall be in accordance with enclosure (2), summarized in subparagraph "h" and "i" below.

e. Risk Characterization and Assessment. The activity within the PEO TSC RMP used to further characterize identified risks, and assesses their likelihood of occurrence, consequences of occurrence, the anticipated timeframes of occurrence, and relationships to other program risks. Likelihood and consequence descriptions shall be in accordance with enclosure (2), summarized in subparagraph "h" and "i" below.

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f. Risk Analysis and Mitigation. The activity within the PEO TSC RMP used to analyze the source(s) and contributor(s) to selected risks in order to develop a sound strategy to mitigate the risk. The mitigation strategy is intended to reduce the likelihood and/or consequences of a risk. Plans will typically include cost, schedule, and/or performance trades in order to reduce risk.

g. Risk Tracking and Reporting. The activity within the PEO TSC RMP used to characterize, display, and communicate risks and their associated mitigation strategies, plans, and impacts. All reporting and communications shall be in accordance with the formats associated with the common toolset and that described in enclosure (2). All risks shall be entered into the appropriate common toolset database and prioritized. Risk Ownership is initially assigned to the RM, who in conjunction with the PM, will assign ownership responsibility for each identified risk.

h. Likelihood of Occurrence. "Likelihood" is an estimate of the probability of occurrence of an event causing some impact to the program. As part of the standardization of PEO TSC lexicon regarding RM,

A "Likelihood" that is	Is labeled	means that
Negligible	1	One can reasonably assume no occurrence (<10%)
Unlikely	2	Occurrence possible, but less than "likely" (10%-40%)
Likely	3	Significant chance of occurrence (>40%-65%)
Highly Probable	4	Very high chance of occurrence (>65%-90%)
Near Certainty	5	Assume and anticipate occurrence (>90%)

The likelihood of occurrence is, largely, based on subjective judgement derived from experience and analysis. To better enable the PEO to examine and understand inter-system as well as intra-system risks, expanded definitions of likelihood of occurrence are provided in enclosure (3) in the form of a template.

i. Consequences of Risk. "Consequence" is the possible negative outcome associated with a risk. As part of the standardization of PEO TSC lexicon regarding RM,

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A "Consequence" that is	is labeled	means that
Marginal	1	Remedy will cause disruption to the program
Significant	2	Shorts a significant mission need
Serious	3	Shorts a critical mission need, but expect no breach
Very Serious	4	Potentially fails a KPP or OPEVAL
Catastrophic	5	Jeopardizes an exit criterion of current phase

The consequences of risk are largely, based on subjective judgment, derived from experience and analysis. To better enable the PEO to examine and understand inter-system as well as intra-system risks, expanded definitions of the consequences of risk are provided in enclosure (4) in the form of a template.

j. Product Programs. Programs which address an element, or a system of elements or components mostly, if not totally, under the management of the PM. These include: AEGIS, Ship Self Defense System (SSDS), Advanced Combat Direction System (ACDS), Cooperative Engagement Capability (CEC), Common Command and Decision (CC&D), Surface Launchers, STANDARD Missile, Area Air Defense Commander, (AADC), and Advanced Integrated Electronic Warfare System (AIEWS). Cruiser Conversion, Destroyer Shipbuilding, Fleet Introduction, and NFM Acquisition are also included in this category.

k. Mission Programs. Programs which address or carry out an activity associated with a system whose elements are mostly, if not totally, under the management of other Program Managers, within or external to PEO TSC. These include: Navy Theater Wide (NTW), Area Theater Ballistic Missile Defense (TBMD), and Surface Combatant Land Attack Mission Area Coordinator.

5. Policy.

a. Risk Management Process. All PMs shall use the RMP defined in paragraph 4. The four activities associated with this process shall be the common lexicon among programs in plans, activities, and communications both within and external to PEO TSC.

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b. Product and Mission Program Managers. PM's of Product Programs, as defined in paragraph 4.j, will manage risk in accordance with the PEO TSC RMP defined in paragraph 4.c and enclosure (1). They will report progress and results to PEO TSC Management, to other Product Managers, and to Mission Program Managers, in accordance with the procedures described in paragraph 6. PMs of Mission Programs, as defined in paragraph 4.k, will manage risk in accordance with the PEO TSC RMP defined in paragraph 4.c. and enclosure (1), using the RM results from the Product Managers as their foundation and will incorporate additional assessments at the mission level. They will report results to PEO TSC management, to other Mission Managers, and to Product Managers, in accordance with the procedures described in paragraph 6. PMs shall designate an individual within the Program as a Risk Manager (RM). He/she will be charged with the responsibility of managing the PEO TSC RMP described herein within the Program.

c. Risk Advisory Board (RAB). All programs will have a RAB, with members appointed by the PM, in accordance with guidance provided by ASN(RDA). The purpose of the RAB is, at a minimum, to review major risks and their associated mitigation plans, and to provide advice relative to the adequacy of the Risk Characterization and Assessment, the effectiveness of the Risk Mitigation approach, and the overall RM strategy of the program. PMs may expand the purpose of their RAB beyond this purpose as required to meet their needs.

d. Risk Level Convention. The numerical level or adjective description for a likelihood or consequence of risk shall be at least the level of the highest (i.e., most severe) contributing risk factor. Labeling the likelihood or consequences at a higher level than this minimum is left to the PM.

e. Risk Level Definition. PMs shall use the templates provided in enclosures(3) and (4) in making their assessments of the likelihood of occurrence and the consequences of risk.

6. Procedures.

a. Reporting. Mission Program Managers (MPM) and Product Program Managers (PPM) will report their risk tracking and reporting activity on a monthly basis to TSC-B. Since MPM and some PPM will be using information from the Product Programs in their RM, their reports will be based on Product Program Risk

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Management information from the preceding month. MPM will report their Risk Identification, Risk Characterization and Assessment, and Risk Analysis and Mitigation status quarterly to TSC-B.

b. Risk Advisory Board Membership. The board shall include at least one government member outside the program office, a representative from ASN(RDA), Chief Engineer (CHENG), and optimally a representative from Defense Systems Management College (DSMC).

7. Responsibilities. The PM is responsible for ensuring the Risk Management Policy and Procedures described herein are carried out within his/her program. Additionally, the PM will be pro-active in putting in place processes within his/her program that provide a connection and relationship to other programs in terms of RM.

8. Review Responsibilities. TSC-TA is responsible for the review and update of this instruction on an annual basis.

W.W. Cobb Jr
W. W. COBB, JR.

Distribution:

TSC, B, T, TA, TD, TAA, BI, TPAO, EA, COS, LA, CM, CS, E, F, TI, PA, PMS 400B, 400C, 400D, 400G, 410, 422, 451, 452, 456, 461, 465, 467, 468, 473

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PEOTSC
RISK MANAGEMENT PROCESS

1. Background.

a. Definition. The PEO TSC RMP is one that enables PEO TSC Management to gain a proper understanding of the future effects of today's decisions, thereby allowing managers to apply resources appropriately. The process will provide insights into risks that both affect an individual system or program as well as those that affect other systems or programs via interfaces, interlocking schedules or costs. Risk Management, as defined and used within PEO TSC, embraces the following elements:

- (1) Anticipating the future effects of today's decisions, i.e. Process Management
- (2) Addressing programmatic, technological and product related issues affecting program success, i.e. Product Management
- (3) The management, tracking, and reporting of actions to mitigate these process and product issues; and
- (4) A standardized four-activity process to guide PM's as they carry out (1) - (3) above.

2. Introduction. Traditionally "risk" is a term applied to:

(1) uncertainties associated with the development of new capabilities for next generation systems or to upgrades for existing systems; and to (2) technical issues that arise in the systems engineering process at the "wrong" time, i.e. too late, and may manifest themselves as adverse indicators in a cost/schedule tracking system. In the latter case, by the time the indicators occur, these issues are not risks, but are problems (a risk whose time has come). This situation does not foster RM but problem management, which often becomes crisis management. The key to sound RM is adherence to a rigorous system engineering process that includes a comprehensive task activity network. The task activity network defines the interactions and dependencies for all program activities, promotes understanding as to what is critical to the program, and describes both inter-program and intra-program relationships. This approach facilitates early identification and assessment of risks, and thus allows risk mitigation actions to take place before risks become performance, schedule, or cost problems. The RMP within PEO TSC has multiple purposes. At the individual program level, it provides insights to allow the PM to make timely decisions. At the PEO TSC level, it provides

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oversight of individual programs as well as insight into cross program issues that affect systems via interfaces interlocking schedules or resources. The depth and detail required for conducting and reporting the RMP depends on the intended purpose and is the responsibility of the PM. The PMs shall carry out the PEO TSC RMP described herein. The process includes standardized activities applied to both process and product issues along with a standardized toolset and reports. This standardization is necessary to enable PEO TSC to address inter-program issues as well as to relate Risk Management Actions within each program to each other. The PM is free to use other processes and tools within his/her industrial and government communities in addition to or supplementary to those prescribed herein. Use of other processes and tools in lieu of those prescribed, however, is permitted only by exception sought and approved. When reporting and communicating with PEO TSC, the process and tools specified herein are required. The use of common tools and processes will permit PEO TSC easier integration with the Earned Value Management System. It will enable PEO TSC to better assess the risk associated with individual programs and their intersections with complimentary programs. Additionally, these multi-program intersections, which are not always evident from an individual program perspective, can be more readily assessed and risks more easily mitigated from PEO TSCs multi-program viewpoint.

3. Policy.

Figure 1 schematically describes the PEO TSC RMP.

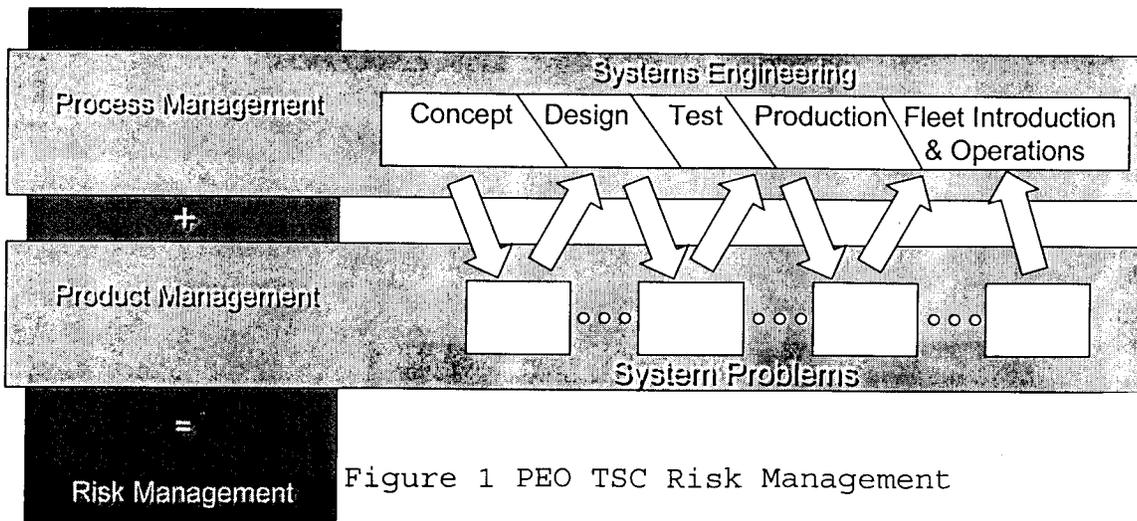


Figure 1 PEO TSC Risk Management

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Note that RM encompasses both Process Management as well as Product Management. Issues associated with each shall be addressed and managed using the TRIMS and RR tools,

unless an exception is sought and approved. This includes use of the lexicon and terminology and definitions within these tools. Note that Risk Register, a widely used standard tool in the missile community, is an approved exception. Issues shall be managed in accordance with the following four standardized activities. Reporting and other communications with PEO TSC shall be within the framework of Figure 1 and these four activities:

- (1) Risk Identification
- (2) Risk Characterization and Assessment
- (3) Risk Analysis and Mitigation
- (4) Risk Tracking and Reporting

4. Framework.

PEO TSC has adopted a four-activity process to deal with RM within PEO TSC. These activities are:

- Risk Identification
- Risk Characterization and Assessment
- Risk Analysis and Mitigation
- Risk Tracking and Reporting

The purposes of each activity, inputs, actions, and outputs are described below:

Activity 1: Risk Identification

a. Purpose. To identify and categorize in accordance with prescribed criteria all known risks within a program.

b. Inputs. Programmatic information (cost, schedule, technical) knowledge base of what constitutes risk; using a facilitated process with representatives from both the government and contractor teams and the judgment of the PM and staff.

c. Actions. Through a combination of judgment and use of TRIMS and RR tools, risks are described, labeled, and numbered in accordance with the TRIMS and RR databases. Specifically identifies which risks within a program are caused by or

Enclosure (1)

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influenced by one or more risks in another program, whether internal or external to PEO TSC.

d. Outputs. A list of risks classified and displayed in accordance with formats prescribed by PEO TSC instruction.

Activity 2: Risk Characterization and Assessment

a. Purpose. To determine the level of both PM and Product Management risks and their implications.

b. Input. Lists of risks from Activity I output a knowledge base of program requirements in terms of cost, schedule, and performance (technical).

c. Actions. Use of system analysis methodology, expert opinion, and the use of TRIMS and RR tools to characterize and assess process and product risks. Risks are characterized by impact and probability of occurrence descriptions in accordance with formats prescribed by PEO TSC Instruction.

d. Output. The output will consist of active risks characterized by impact and probability of occurrence descriptions in accordance with formats prescribed by PEO TSC Instruction.

Activity 3: Risk Analysis and Mitigation

a. Purpose. To understand the sources of each risk listed in Activity 2, to identify alternatives, and to communicate the plan to eliminate the risk or to reduce to an acceptable level.

b. Input. Assessed risks from Activity 2 a knowledge base of program requirements (as in Activity 2) and experience with similar circumstances.

c. Actions. Analyze risks and develop mitigation plans using a Risk Advisory Board(RAB) or equivalent, per guidance from ASN(RDA) Use of TRIMS and RR. Use of the program's Work Breakdown Structure and Task Activities Network as the framework for this set of actions.

d. Output. In accordance with formats prescribed by PEO TSC Instruction, alternative strategies with associated actions to address each significant issue as identified by the PM in

Enclosure (1)

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Activity 2. Priority, with rationale, for option(s) pursued revised task activity network.

Activity 4: Risk Tracking and Reporting

a. Purpose. To summarize, display, and communicate the status of issues in Activities 1,2,3 in order to provide continuous monitoring of events.

b. Input. Outputs of Activities 1,2,3.

c. Actions. Summarize in accordance with the TRIMS and RR tools at level appropriate for PEO TSC insight into risks to program and interaction/risks with other programs.

d. Output. Risk tracking and reporting results shall be displayed and shared with PFO TSC Management and other PM on a frequency and in formats prescribed by PEO TSC Instruction.

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ASN (RDA) RISK REPORTING GUIDANCE

Each issue which might affect the success of the program (technical, schedule, fiscal, etc) needs to be identified and assessed as to likelihood and consequences (performance or financial) of occurrence. The following is a rough key to scoring:

Likelihood

- (1) Negligible - One can reasonably assume no occurrence (<10%)
- (2) Unlikely - Occurrence possible but less than likely (10 - 40%)
- (3) Likely - Significant chance of occurrence (40 - 65%)
- (4) Highly Probable - Very high changes of occurrence (65 - 90%)
- (5) Near Certainty - Assume and anticipate occurrence (>90%)

Consequences

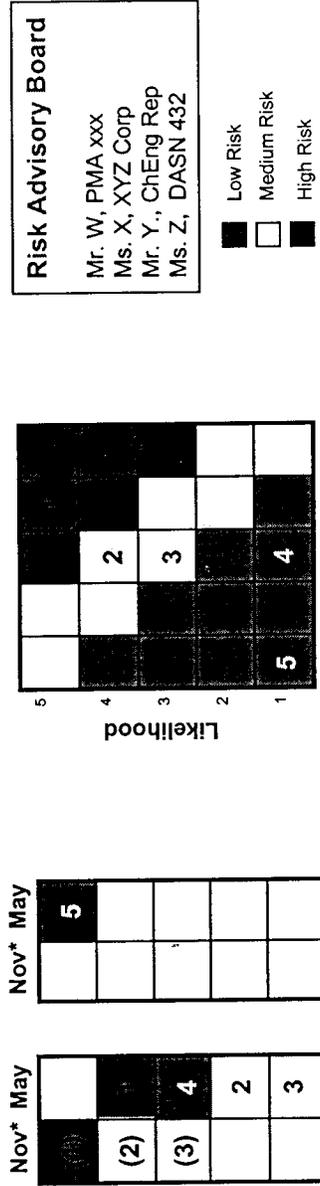
- (1) Marginal - Remedy will cause disruption to the program
- (2) Significant - Shorts a significant mission need
- (3) Serious - Shorts a critical mission need but expect no breach
- (4) Very Serious - Potentially fails a KPP or OPEVAL
- (5) Catastrophic - Jeopardizes an exit criterion of current Phase

If the assessment is done formally by a standing advisory board (good program management) then please list the members and their affiliations. Each issue box should contain a brief statement of intended approach. Presenter should be prepared for more detailed discussion on these issues and alternative courses of action.

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ASN(RDA) RISK REPORTING GUIDANCE

PEO TSC	Program Risk Assessment CAPT J. Doe, PMS-499 Date of Review: 05 MAY 00	Program Acronym ACAT XX
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*Refer to NotesPage

	Nov* May					
Risk #1: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.	Risk #2: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.	Risk #3: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.	Risk #4: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.	Risk #5: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.	Risk #6: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.	Risk #7: • Brief description of issue and rationale for its rating. • Approach to remedy/mitigation. • Risk mitigation funding.

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Data As Of: YMMDD

Numerical Rating	Adjective Rating	Indicators
1	Negligible : One can reasonably assume no occurrence (<10%)	<ul style="list-style-type: none"> - Current approach and processes are well understood and documented system: (a) Integrated system has been successfully demonstrated; (b) activities are independent of separate programs, subcontractors, or customers. - System: (a) integrated system has been successfully demonstrated; (b) activities are independent of separate programs, subcontractors, or customers. - Computer Programs: (a) Insignificant complexities in new computer programs and/or changes to validated computer programs and/or lines of code; (b) all modules tested by simulation, but not in system configuration. - Equipment: (a) straightforward design and/or existing equipment; (b) components tested in system configuration. - Manufacturing Process: Validating process and/or off the shelf.
2	Unlikely: Occurrence possible but less than likely (10%-40%)	<ul style="list-style-type: none"> - Current approach and processes are well understood and documented. - System: (a) system components successfully demonstrated but not integrated; (b) some dependency on program activity beyond program span of control; (c) most system technology validated. - Computer Programs: (a) minor complexity in new computer programs and/or changes to validated computer programs and/or lines of code; (b) all modules tested by simulation, but not in system configuration. - Equipment: (a) some components require minor redesign, modification, or validation efforts; (b) minor complexity of existing design and technology. - Manufacturing Process: Minor modification of existing process.

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Numerical Rating	Adjective Rating	Indicators
3	<p>Likely: Significant chance of occurrence (>40%-65%)</p>	<ul style="list-style-type: none"> - Current approach and processes are partially documented. System: (a) Unvalidated technology, shown to be feasible by analogy, test, or analogy, test, or analysis, but a risk likelihood > 3 that is beyond program span of control. - <u>Computer Programs:</u> (a) Moderate complexity in new computer programs and/or changes to existing computer programs and/or code; (b) modules tested individually. - <u>Equipment:</u> (a) Moderate complexity of changes to existing design and technology; (b) components tested individually. - <u>Manufacturing Process:</u> Moderate change to validated, complex process.
4	<p>Highly Probable: Very high chance of occurrence (>65%-90%)</p>	<ul style="list-style-type: none"> - Current approach and processes not well documented. - <u>System:</u> (a) Technology available but not validated; (b) success dependent on activity with a risk likelihood > that is beyond program span of control. - <u>Computer Programs:</u> (a) Significant complexity in new computer programs and/or modifications to existing computer programs and/or lines of code; (b) redesigned complex computer programs have not yet been tested. - <u>Equipment:</u> (a) Significant complexity of changes to existing design and technologies; (b) modified complex design has not been tested. - <u>Manufacturing Process:</u> Significant change to complex processes.
5	<p>Near Certainty: Assume and anticipate occurrence (>90%)</p>	<ul style="list-style-type: none"> - Current approach and processes cannot mitigate this risk. - <u>System:</u> (a) State of the art technology; (b) very complex system; (c) success highly dependent upon activity with a risk likelihood of 5 that is beyond program span of control; (d) issue not well understood. - <u>Computer Programs:</u> (a) Highly complex new computer program and/or modifications to existing computer programs and or large number of lines of code; (b) new algorithms or new applications; (c) untested. - <u>Equipment:</u> (a) Extremely complex design using unproven technology; (b) untested. - <u>Manufacturing Process:</u> Never been done, but feasible.

CONSEQUENCES OF RISK
-TEMPLATE-

Numerical Rating	Adjective Rating	Technical	Cost	Schedule
1	Marginal: Remedy will cause disruption to the program	Performance goals met; no impact on program success	Program budget not dependent on the issue; no impact on program success; development or production cost goals not exceeded or dependent on this issue	Schedule no dependent on this issue; no impact on program success; development schedule goals not exceeded or not dependent on the issue
2	Significant: Shorts a significant mission need	Performance below goal but within acceptable limits; no changes required; acceptable alternatives exist; minor impact on program success	Program budget impacted by <1%; minor impact on program success; development or production cost goals exceeded by 1-5%; program management reserves (schedule, cost) do not need to be used to implement workarounds	Non-critical path activities late; workarounds would avoid impact on key and non-key program milestones; minor impact on program success; development schedule goals exceeded by 1-5%
3	Serious: Shorts a critical mission need but expect no breach	Performance below goal; moderate changes required; alternatives would provide acceptable system performance; limited impact on program success	Program budget impacted by 1-5% limited impact on program success; development or production cost goals exceeded by 5-15%; program management reserves (schedule, cost) do not need to be used to implement workarounds	Non-critical path activities one month late; workarounds would avoid impact on critical path; limited impact on program success; development schedule goals exceeded by 5-15%
4	Very serious: Potentially fails Key Performance Parameter (KPP) or OPEVAL	Performance unacceptable; significant changes required; possible alternatives may exist; program success in doubt	Program budget impacted by 5-10%; program success in doubt; development or production goals exceeded by 15-25%; program management reserves (schedule, cost) must be used to implement workarounds	Critical path activities one month late; workarounds would not meet program milestones; program success in doubt; development schedule goals exceeded by 15-25%
5	Catastrophic: Jeopardizes an exit criterion of current acquisition phase	Performance unacceptable; no viable alternatives exist; program success jeopardized	Program budget impacted by 10%; program success jeopardized; development or production cost goals exceeded by 25%	Key program milestone would be late by more than 2 months; program success jeopardized; development schedule goals exceeded b 25%