



FPD-FD24.001  
BASIC  
September 2002

# **PRESSURIZED CARRIERS/MPLM PROJECT**

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## **Multi Purpose Logistics Module**

### **Risk Management Plan**



Prepared by:  
Flight Projects Directorate  
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Pressurized Carriers/MPLM Project		
Multi Purpose Logistics Module Pressurized Carriers Risk Management Plan	FPD-FD24.001	Revision: Basic
	Date: 10/17/2002	Page 2

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Multi Purpose Logistics Module Pressurized Carriers Risk Management Plan	FPD-FD24.001	Revision: Basic
	Date: 10/18/2002	Page 3

**DOCUMENT HISTORY LOG**

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Multi Purpose Logistics Module Pressurized Carriers Risk Management Plan	FPD-FD24.001	Revision: Basic
	Date: 10/18/2002	Page 4

**Table of Contents**

1.0 SCOPE/PURPOSE ..... 5

2.0 APPLICABILITY..... 5

3.0 APPLICABLE DOCUMENTS..... 5

4.0 REFERENCES ..... 5

5.0 DEFINITIONS ..... 6

    5.1 RISK ..... 6

    5.2 RISK MANAGEMENT..... 6

6.0 INSTRUCTIONS ..... 7

    6.1 RISK MANAGEMENT PROCESS ..... 7

    6.2 ROLES AND RESPONSIBILITIES ..... 7

    6.3 SCHEDULE ..... 9

7.0 REPORTS/RECORDS ..... 9

8.0 PERSONNEL TRAINING AND CERTIFICATION..... 9

Pressurized Carriers/MPLM Project		
Multi Purpose Logistics Module Pressurized Carriers Risk Management Plan	FPD-FD24.001	Revision: Basic
	Date: 10/18/2002	Page 5

## 1.0 SCOPE/PURPOSE

This Document establishes the basic processes and requirements necessary for the satisfactory accomplishment of RISK MANAGEMENT as required by NPG 7120.5A, NASA Program and Project Management Processes and Requirements, as implemented at MSFC by Marshall Work Instruction, MWI 7120.6, Program/Project Risk Management. Each program/project, hereafter referred to as project, shall follow a continuous risk management process as defined in NPG 7120.5A; this process will be iterated throughout the life cycle of the project. The methods and tools may be 'tailored' (paragraph 5.3) to match the complexity of the project, but the functional areas of Risk Identification, Analysis, Risk Mitigation planning, Tracking and Control as described in paragraph 6.0 shall be addressed on a continuous basis throughout the life cycle of the project.

The risk management plan for each project establishes methods of identification, mitigation, tracking, and project controls for mission success under the established budget and schedule constraints. The plan for this effort will be included in the project plan or, when justified, will be a separate document.

## 2.0 APPLICABILITY

This document applies to all MSFC-managed projects, and facilities under the control of the Pressurized Carriers Group (PCG).

## 3.0 APPLICABLE DOCUMENTS

MWI 7120.6, Marshall Work Instruction, QS 01, Program/Project Risk Management

NPG 7120.5A, NASA Program Guide, NASA Program and Project Management Processes and Requirements

MPG 1280.8, Marshall Procedures & Guidelines, DA01, Customer Satisfaction

## 4.0 REFERENCES

Dorofee, Audrey J., et al., Continuous Risk Management Guidebook. Carnegie Mellon University, 1996.

Multi Purpose Logistics Module Pressurized Carriers Risk Management Plan	FPD-FD24.001	Revision: Basic
	Date: 10/18/2002	Page 6

## 5.0 DEFINITIONS

### 5.1 RISK

Risk is the combination of:

1. probability (qualitative or quantitative) that a project will experience an undesired event such as cost overrun, schedule slippage, safety mishap, or failure to achieve a needed technological breakthrough; and
2. consequences, impact, or severity of the undesired event were it to occur.

### 5.2 RISK MANAGEMENT

Risk Management is an organized, systematic decision making process that efficiently identifies, analyzes, plans, tracks, controls, communicates, and documents risk to increase the likelihood of achieving project goals. It is a process which involves the continuous evaluation and proactive addressing, tracking, and mitigation of all associated risks.

#### TAILORING:

Tailoring is the process where Project Managers and System Engineers analyze the requirements of performing a formal risk management process as defined in NPG 7120.5A, vs. the size, complexity, and cost of the Project involved and the attendant risk of conducting an abbreviated risk management activity and document their selected approach and rationale in the appropriate Project plan.

The magnitude of the Risk Management process will depend upon the complexity (scope, cost, schedule, technical objectives, etc.) of the Project:

1. It may be as minimal as a paragraph in a Project Plan, which defines the activities being taken to successfully address the avoidance of failures and their impacts on schedule and costs
2. Or it may be as complex as a complete stand alone Risk Management Plan, which documents how the Project shall Identify, Analyze, Plan, Track and Control all of the risks associated with the Project activity, as shown in para. 6.0.

## 6.0 INSTRUCTIONS

### 6.1 RISK MANAGEMENT PROCESS

The Risk Management process begins with risk identification and an assessment of project constraints which will shape the risk policy; e.g., mission success criteria (primary and secondary); development schedule; budget limits; hardware; international partner participation; legal security, or environmental concerns; human space flight safety issues; "fail ops/fail safe" requirements; technology readiness; oversight requirements; and the amount of testing. If an Independent Assessment has been performed, the project shall use the risks identified during the assessment as input. The risk management process continues throughout the life of the Project and as any new risks are identified, they are assessed, analyzed, tracked, and controlled. All risks shall be dispositioned before the delivery to operations or the equivalent for a technology program.

### 6.2 ROLES AND RESPONSIBILITIES

The implementation of a Risk Management Process is the responsibility of the Project Manager, assisted by the Project Lead Systems Engineer. The members of the project team will assist them in this process. Figure 1 illustrates a typical Continuous Risk Management process for a Project.

**Figure 1. Project Risk Management Process and Data Flow**

ALL	Identify, Define Risk Statement, Evaluate and Classify Risk (probability, impact, and exposure)
Lead Systems Engineer	Provide initial acceptance of or screening of proposed risks for tracking, and document these on a risk information sheet or an equivalent worksheet or database. Provide initial risk information with recommendation for assigned responsibilities to the Project Manager
Project Manager	Approve or disapprove risks for formal tracking Approve or change classifications, prioritization, or assigned responsibility
Lead Systems Engineer	Communicate back to risk originator on the risk disposition Enter approved risks and all pertinent data into a Risk Assessment Database (RAD) Facilitate development of action plans or mitigation plans
Assigned Responsible Risk Person	Work with Systems Engineer to develop necessary action item lists or mitigation plans Provide routine status update to the Risk Management Systems Engineer and the Project Manager
Project Manager	Approve funds/action items Ensure team participation
Lead Systems Engineer	Enter status reports into the RAD Re-evaluate risks for changes in classifications with the assigned person Review risk status with the Project Manager Provide reports, tracking metrics, stoplight charts as required by the Project Manager
Project Manager	Approve or recommend risk classification changes or prioritizations Replan, redirect, or close risks as necessary
Systems Engineering	Make update to the RAD System
ALL	Ensure continuation of the process

<b>Pressurized Carriers/MPLM Project</b>		
<b>Multi Purpose Logistics Module Pressurized Carriers Risk Management Plan</b>	<b>FPD-FD24.001</b>	<b>Revision: Basic</b>
	<b>Date: 10/18/2002</b>	<b>Page 9</b>

### **6.3 SCHEDULE**

Risk Management planning shall be developed during the formulation phase, included in the appropriate project documentation, and executed/maintained during the implementation phase.

### **7.0 REPORTS/RECORDS**

The reporting requirements necessary to satisfy the intent of NPG 7120.5 will be documented in either the Project Plan (in the case of tailoring) or in a separate Risk Management Plan. Risk Management information shall be presented utilizing the Risk Summary Card. Information on this is attached.

The Project will maintain the following records if they are produced:

- a) Risk Management Implementation Plan
- b) Risk Analysis/Risk Information Sheets
- c) Risk Mitigation Plans
- d) Risk Area Action Closures
- e) Stoplight Status charts
- f) Tracking Metrics and Trend Analysis charts

Information reported on shall include, but not be limited to, the following metrics:

Project Schedule, Cost, Milestones, Mass Trending, RID Closure (if needed), Closure of Identified Risks, Documentation TBD'S, Test & Verification Plans, Drawing Releases, Requirements Satisfaction, Margins (Hardware, Schedule, Cost, etc.), Software Status.

### **8.0 PERSONNEL TRAINING AND CERTIFICATION**

All civil service and contractor personnel that participate in Risk Management activities shall be trained in the NASA Continuous Risk Management Training or similar NASA approved training provided by the contractor.

Continuous Risk management training for project teams or groups of individuals is available upon request through the Safety and Mission Assurance Office.

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**Risk Definitions**

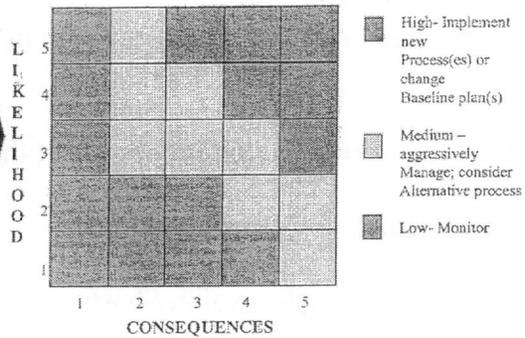
**Risk**  
An FD24 Project Risk is any circumstance or situation that poses a threat to crew or vehicle safety, controlled schedule, or major mission objectives, and for which an acceptable resolution is deemed unlikely without a focused management effort.

**Risk Management:** An organized, systematic process that efficiently identifies risks, assesses or analyzes risks, and effectively reduces or eliminates risks to achieving program goals.

What is the likelihood the situation or circumstance will happen ?

Level	Probability	...or-the current process...
5	Very High	Cannot prevent this event, no alternate approaches or processes are available
4	High	Cannot prevent this event, but a Different approach or process Might.
3	Moderate	May prevent this event, but Additional actions will be required.
2	Low	Is usually sufficient to prevent this type of event.
1	Very Low	Is sufficient to prevent this event.

L I K E L I H O O D



**Risk Consequence Scoring Terms**

- Cost is defined as the dollar amount required to abate the risk, not the cost of the risk if it occurs.
- Schedule definitions: action or mitigation needs to occur within next 3 months/Near, between 4 and 8 months/Mid, after 8 months
- Technical definition includes everything that is not cost and schedule; e.g., safety, operations, programmatic.
- Cost, Schedule and Technical Consequences can exist concurrently and are not mutually exclusive.
- Risk scoring is accomplished by "multiplying" Likelihood X consequence. When Determining

C O N S E Q U E N C E S

What is the consequence(Cost, Schedule or Technical) of this Risk

Level	1	2	3	4	5
Cost	Minimal or No Impact	Team Budget Increase <5%	Team Budget Increase >5%	Team budget Increase >10%	Team budget Increase >15%
Schedule	Minimal or No Impact	Additional Activities Req'd. Able To meet need dates	Key Team Milestone Slip <=1month	Key Team Milestone Slip >1Month, Program Critical Path Impacted	Cannot Achieve Key Team or Major Program Milestone
Technical	Minimal or No Impact	Moderate Reduction, same Approach Retained	Moderate Reduction, But workarounds Available	Major Reduction, But workarounds Available	Unacceptable, No Alternatives Exist

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<input type="checkbox"/> Patent (see MPG 2220.1)	<input checked="" type="checkbox"/> No statutory or institutional restrictions applicable -- material may be electronically distributed to user in the NASA domain
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## V. ORIGINATING ORGANIZATION APPROVAL

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