Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	GPR 7120.3B	**APPROVED BY Signature:**	*Original Signed by*
EFFECTIVE DATE:	December 15, 2004	**NAME:**	Edward J. Weiler
EXPIRATION DATE:	December 15, 2009	**TITLE:**	Director

COMPLIANCE IS MANDATORY

Responsible Office: 400 /Flight Programs and Projects Directorate

Title: Management of Principal Investigator Mode Missions

PREFACE

P.1 PURPOSE

This directive describes the roles and responsibilities of the Principal Investigator (PI), the program office, the implementing organization, and NASA Headquarters (HQ) with respect to the overall management of PI-mode missions at the Goddard Space Flight Center (GSFC). These guidelines are consistent with NPR 7120.5, NASA Program and Project Management Processes and Requirements, which allows for tailoring of requirements according to mission size, complexity, criticality, and risk.

P.2 APPLICABILITY

This directive applies to programs with PI-mode projects/missions at the GSFC. It also applies to all PI-mode projects/missions where GSFC has been selected as a team member by the PI, or has Implementing Organization responsibility.

P.3 AUTHORITY

a. NPD 7120.4, Program/Project Management
b. NPR 7120.5, NASA Program and Project Management Processes and Requirements

P.4 REFERENCES

GPR 8700.4, Integrated Independent Reviews

P.5 CANCELLATION

GPG 7120.3A, Goddard Management of Principal Investigator Mode Missions

P.6 SAFETY

None

P.7 TRAINING

None

P.8 RECORDS

None

P.9 METRICS

Metrics are defined in NPR 7120.5, NASA Program and Project Management Processes and Requirements.

P.10 DEFINITIONS

a. Implementing organization - The organization designated in the PI's proposal and selected under an Announcement of Opportunity, or otherwise designated by the Associate Administrator for Science Missions, to carry out the daily project management and overall system engineering responsibilities of the science investigation. The Implementing organization may be a NASA Center, including Goddard.

b. Principal Investigator (PI) - The scientist who is responsible, either through a Government institution, such as Goddard, or through a non-NASA institution via contract, to conceive, carry out, and report the results of a scientific investigation, to the extent authorized by the Associate Administrator for Science and reflected in the governing instrument. At a minimum, this includes approval of the instrument specification, advice to the project manager in development and fabrication, participation in final calibration, development and support of the operations plan, and analysis and interpretation of data.

c. Principal Investigator Mode (PI-mode) – A mission management approach utilizing a principal investigator with mission responsibility.

d. Program Office – The office that is responsible for the development and implementation of the PI-mode missions that have either been assigned or selected through an Announcement of Opportunity (AO) process. The program office includes the program manager, project/mission manager, and all other program staff.

P.11 ACRONYMS

AO	Announcement of Opportunity
GPG	Goddard Procedures and Guidelines
GPR	Goddard Procedural Requirements
GSFC	Goddard Space Flight Center
HQ	NASA Headquarters
ITA/SMO	Independent Technical Authority and Systems Management Office
NASA	National Aeronautics and Space Administration
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
PI	Principal Investigator
PMC	Program Management Council

PROCEDURES

In this document, a requirement is identified by "shall," a good practice by "should," permission by "may" or "can," expectation by "will," and descriptive material by "is."

1. GENERAL

PI-Mode Mission Management is a form of implementing a scientific mission that directly involves the PI in the daily management of the proposed investigation. It is a strategy intended to increase the cost effectiveness and success of a mission by closely coupling the focused science requirements to daily mission management, reducing team size, and fostering alternative management approaches. The PI shall be responsible for overall mission success as defined in the governing agreement. The Goddard program office shall be responsible for monitoring the PI's progress and maintaining sufficient insight into the development and operational activities to ensure that the cost, schedule, and technical performance of the mission remain within established boundaries.

Every PI mission is unique. Factors that vary from mission to mission include the complexity of the mission itself, the problems encountered, as well as both the experience base and project management skills of the PI team. As a result, the extent of Goddard's involvement varies from mission to mission, and with time for a given mission. The level of involvement should be appropriate to the needs of the PI team while ensuring that the program office can carry out its roles and responsibilities**.** The extent of Goddard's anticipated insight into a particular PI mission shall be documented at the outset of the investigation, either in the contractual agreement for a non-Government PI or in an insight agreement for Government PIs.

2. ROLES AND RESPONSIBILITIES

2.1 The HQ Science Missions Directorate will retain responsibility for:

a. Managing the AO process and ensuring that missions are selected on the basis of both scientific merit and the ability of the PI's team to accomplish the mission within the requirements and constraints defined in the AO;
b. Approving the mission-level requirements, including full and minimum mission success criteria, and controlling those requirements;
c. Conducting Mission Confirmation Reviews;
d. Conducting Mission Termination Reviews (as required);
e. Developing Program Operating Plan budget guidelines and reviewing/approving program budgets;
f. Providing funding to the program office; and
g. Providing interfaces to external organizations, particularly in developing international and inter-agency agreements.

2.2 Goddard shall be responsible for:

a. Providing for program office management;

b. Providing Goddard Program Management Council (PMC) oversight which includes:
   (1) Confirmation Readiness Reviews
   (2) Monthly Status Reviews
   (3) Special reviews, as required
   (4) Mission Readiness Reviews
c. Concurring in the PI's certification (at the Mission Readiness Review) that the mission is ready for launch.

2.3 The program office in the Flight Programs and Projects Directorate shall be responsible for:

a. Supporting HQ during the AO process as requested while ensuring that there is a "communications firewall" between the program office and any GSFC proposers responding to the AO;
b. Ensuring the PI takes the appropriate actions to achieve mission success within committed cost, schedule, and NASA requirements and constraints;
c. Conducting ongoing assessments of the programmatic progress of the mission including management, cost, and risk;
d. Conducting technical and resource management of all contracts, grants, and task orders;
e. Coordinating the provision of all government-furnished services and hardware, such as co-Investigator services, instruments, spacecraft, space communication support, launch services, etc.;
f. Calling for a status review if there is evidence that the mission could violate pre-determined cost and/or schedule constraints or not meet Level 1 requirements; this review would be a precursor to a potential formal Termination Review;
g. Selecting a Contracting Officer's Technical Representative for any GSFC contracts (this would typically be the role of the mission manager during the development phase, and the mission director during the operations phase);
h. Appointing a mission manager who shall:
   (1) Provide specific management functions (e.g., launch vehicle interface) as required;
   (2) Recommend alternative courses of action when technical, cost, or schedule difficulties arise;
   (3) Assure that adequate government resources are applied to the mission as required;
   (4) Lead the GSFC engineering team in providing program office technical oversight/insight throughout the mission life cycle including mission operations;
   (5) Organize and provide for system and subsystem engineering expertise for each mission utilizing the services from the Applied Engineering & Technology Directorate (providing the program office with mission technical insight, engineering support, analysis, test support, peer and system review support, etc.); and
   (6) Organize and provide for mission assurance and safety support from the Office of Systems Safety and Mission Assurance.
i. Appointing a mission director who shall during the operational phase:
   (1) Provide management functions, such as leading anomaly investigations when requested by the PI;
   (2) Act as a member of the PI's project team;
   (3) Obtain government resources such as system and discipline engineering when requested by the PI;
   (4) Maintain insight into all flight operational activities;
   (5) Provide coordination with the Project Science Working Team;

(6) Conduct periodic risk assessment reviews;
(7) Participate in the approval process of major mission operations changes; and
(8) Participate in periodic status reviews.

j. Selecting, in conjunction with the GSFC Science Directorate, a Project Scientist to provide an insight role and support the program manager in addressing science questions, such as the ability to meet science requirements in the event of technical or cost problems;
k. Approving the project plan;
l. Developing a System Review Plan for the approval of the Independent Technical Authority Governance and the Systems Management Office (ITA/SMO) that addresses the organization and conduct of system level reviews (e.g., System Requirements Review, Preliminary Design Review, Critical Design Review, Pre-Environmental Review, Operations Readiness Review, Pre-Ship Review, Launch Readiness Review etc.);
m. Providing recommendations to the ITA/SMO for the selection of an independent, external co-chair **for the standing review panel for system level reviews, per GPR 8700.4;**
n. Presenting an independent assessment of technical status, estimate to complete, schedule, descope plans, and reserves at the Mission Confirmation Readiness Review;
o. Coordinating system and discipline engineering support to the PI as provided for in the governing agreement, whether requested by the PI or deemed necessary by the program manager;
p. Using its resource and business staff to maintain insight and provide recommendations through contract and budget analyses and personal contacts;
q. Providing insight to NASA management through monthly reviews, weekly reporting, timely notification of problems/resolution plans, and involvement in special reviews;
r. Generating with the PI and PI team a Mission Level Requirements Document that is approved by the HQ Science Directorate at Mission Confirmation;
s. Ensuring that the project complies with all applicable government and NASA-specific policies and regulations; and
t. Coordinating the transfer of NASA mission operations responsibility to the appropriate project office following completion of on-orbit checkout.

2.4 The PI shall be responsible for:

a. Ensuring overall mission scientific and programmatic success as defined in the governing instrument;
b. Assembling and leading the science, management and technical team to formulate, implement and operate the mission;
c. Establishing an experienced team with the proper project management and infrastructure in place to manage and implement the mission. (The PI may delegate project management and implementation to an institution other than his/her own.);
d. Generating and adhering to a project plan that meets the requirements of NPR 7120.5;
e. Conducting peer reviews and providing the results at the system level reviews:
(1) The PI shall staff the peer reviews with independent, experienced experts from outside the PI team as well as team members;
(2) Goddard technical experts assigned through the program office shall participate in these reviews;
(3) The program office shall be invited to all reviews;

f. Staying actively involved with all aspects of mission implementation, decision making, and reporting;
g. Reporting technical and programmatic (schedule and schedule slack, cost and cost reserve, manpower) progress and status;
h. Demonstrating readiness to transition from Formulation to Implementation at the Confirmation Readiness Review;
i. Developing and implementing an education and outreach activity consistent with the proposal and the HQ Science Mission Directorate education and outreach strategy;
j. Certifying that the mission is ready for launch at the Mission Readiness Review; and
k. Notifying the GSFC mission manager or mission director in the event of a significant on-orbit anomaly.

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	10/26/01	Initial Release
A	06/15/04	Deleted Lead Center references. Updated GPG template and corrected titles of reference documents.
B	12/15/04	Updated titles of HQ associate administrators. Removed "Goddard" from title. Other changes made to update organization and document references and clarify all requirements to clearly distinguish them from supporting text in accordance with the Center Rules Review.