



Ames Procedural Requirements

APR 7120.5

Effective Date: May 21, 2018

Expiration Date: May 21, 2023

COMPLIANCE IS MANDATORY

Subject: Project Management for Space Flight Systems

Responsible Office: D/Office of the Chief Engineer

DOCUMENT CHANGE LOG

Status [Baseline /Revision /Cancelled]	Document Revision	Date of Change	Description
Baseline	0	5/26/2009	Baseline release
Minor corrections, no revision change	0	10/29/2009	Added Revision History and changed document ownership
Revision	1	5/21/2018	The existing APR 7120.5 is based on superseded NPRs. This revision rewrites the APR for compliance with NPR 7120.5E, streamlines using authority and applicable documents, and provides requirements for Category 3/Class D projects.

TABLE OF CONTENTS

PREFACE

- P.1 Purpose
- P.2 Applicability
- P.3 Authority
- P.4 Applicable Documents and Forms
- P.5 Measurement/Verification
- P.6 Cancellation

CHAPTER 1 Responsibilities

- 1.1 Categories 1, 2, and 3/Classes A, B, And C, Space Flight Projects
- 1.2 Category 3/Class D, Space Flight Projects (LCC \$150 M and Smaller)
- 1.3 Approvals
- 1.4 Approvals for Categories 1, 2, And 3/Classes A, B, and C, Space Flight Projects
- 1.5 Approvals For Category 3/Class D, Space Flight Projects (LCC \$150 M and Smaller)

CHAPTER 2 Modified Requirements FOR CATEGORY 3/CLASS D PROJECTS (LCC \$150M AND SMALLER)

- 2.1 Life-Cycle Reviews
- 2.2 Independent Reviews
- 2.3 Earned Value Management (EVM)
- 2.4 Joint Confidence Level (JCL) and External Cost and Schedule Commitment
- 2.5 Cost Analysis Data
- 2.6 Project Products

CHAPTER 3 TAILORING

APPENDIX A. ACRONYMS

PREFACE

P.1 PURPOSE

a. This Ames Procedural Requirement (APR) defines the project management requirements that are derived from NPR 7120.5, Space Flight Program and Project Management Requirements, and from authority and applicable documents.

P.2 APPLICABILITY

a. This APR applies to all current and future space flight projects, including subsystems and software, that are led by Ames Research Center (ARC). Space flight projects include spacecraft, instruments and experiment payloads, designated technology developments to be incorporated by space flight projects, critical technical facilities specifically developed or significantly modified for space flight systems, and ground systems that are in direct support of space flight operations. This APR is also applicable to the development operation of sub-orbital missions and International Space Station (ISS) experiments and facilities. As deemed necessary by the management of existing projects, the requirements of this document are applicable to the project's extant phase as of the effective date of this APR and to phases yet to be completed.

b. For those space flight activities where ARC is responsible for a task within a project led by an organization outside of ARC, procedural requirements are jointly negotiated by the cognizant Decision Authorities (DAs) and delineated in the statement of work or customer agreement for the task. That agreement establishes the hierarchy and reconciliation of the procedural requirements to be applied.

c. This APR applies to all ARC employees and contractors (to the extent specified in their contract with NASA) who support the above described activities, as a member of a technical team or in any other capacity.

d. Provisions of this APR may be applied to other ARC activities at the discretion of the responsible manager or by direction of Center management. In this directive, all document citations are assumed to be the latest version unless otherwise noted, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall," and "may" denotes discretionary privilege or permission.

e. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms: "may" or "can" denote discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are/is" denotes descriptive material.

f. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

P.3 AUTHORITY

- a. The National Aeronautics and Space Act, as amended, 51 U.S.C. § 20113(a)
- b. NPD 1000.0, NASA Governance and Strategic Management Handbook
- c. NPD 1001.0, NASA Strategic Plan
- d. NPD 1000.3E, The NASA Organization

- e. NPD 1000.5B, Policy for NASA Acquisition
- f. NPD 1200.1E, NASA Internal Control
- g. NPD 1210.2, NASA Surveys, Audits, and Reviews Policy
- h. NPD 1440.6I, NASA Records Management
- i. NPD 2200.1, Management of NASA Scientific and Technical Information
- j. NPD 2800.1 NASA Information Security Policy
- k. NPD 7120.4D NASA Engineering and Program/Project Management Policy
- l. NPD 8020.7 Biological Contamination Control for Outbound and Inbound Planetary Spacecraft
- m. NPD 8710.3 NASA Policy for Limiting Orbital Debris Generation
- n. NPD 8700.1E NASA Policy for Safety and Mission Success
- o. NPR 7120.5 NASA Space Flight Program and Project Management Requirements

P.4 APPLICABLE DOCUMENTS AND FORMS

- a. NPR 1441.1 NASA Records Management Program Requirements
- b. NPR 2190.1 Export Control Program
- c. NPR 2200.2 Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information
- d. NPR 2810.1 Security of Information Technology
- e. NPR 7120.10, Technical Standards for NASA Programs and Projects.
- f. NPR 7120.5 NASA Space Flight Program and Project Management Requirements
- g. NPR 7123.1 NASA Systems Engineering Processes and Requirements
- h. NPR 7150.2, NASA Software Engineering Requirements
- i. NPR 8000.4 Agency Risk Management Procedural Requirements
- j. NPR 8020.12 Planetary Protection Provisions for Robotic Extraterrestrial Missions
- k. NPR 8580.1 NASA National Environmental Policy Act Management Requirements
- l. NPR 8705.4, Risk Classification for NASA Payloads
- m. NPR 8715.3, NASA General Safety Program Requirements
- n. APR 1440.1 Records Management Procedural Requirements
- o. APD 2190.1 Ames Research Center Export Compliance Program
- p. APR 5100.1, Procurement Initiator's Guide
- q. APR 7120.51 Program/Project Reviews for Space Flight
- r. APR 7120.7 Program/Project Cost Estimating for Space Flight Systems
- s. APR 7123.1 Systems Engineering Process Requirements Implementation
- t. APR 7150.2 Ames Software Engineering Requirements
- u. APR 8000.4 Risk Management Process Requirements
- v. APD 8040.1 Configuration Management
- w. APR 8705.1 System Safety and Mission Assurance
- x. APR 8735.2 Waiver Process
- y. APR 8800.4 Ames Environmental Management Handbook
- z. Guidance for Tailoring 7120.5 requirements for small Cat 3/Class D Projects:
http://nodis3.gsfc.nasa.gov/OCE_docs/OCE_25.pdf

- aa. NFS Subpart 1824.2 – Earned Value Management System, Subpart 1834.201 Policy

P.5 MEASUREMENT/VERIFICATION

- a. Verification of compliance is measured through the internal audit process and management review and those results. Measuring effectiveness will at a minimum use customer satisfaction data.

P.6 CANCELLATION

- a. The previous revision of APR 7120.5 is cancelled with the publication of this document.
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/S/

Eugene Tu
Director

DISTRIBUTION STATEMENT:

NODIS

CHAPTER 1 Responsibilities

Project managers developing and implementing projects (including system, subsystems, and software) should utilize the documents cited in sections P.3 and P.4. When it is necessary to tailor, customize, or waive requirements, the rationale shall be documented in the applicable plan(s). Requirements follow for the categories of projects, depending on Life Cycle Cost (LCC):

1.1 Categories 1, 2, and 3/Classes A, B, And C, Space Flight Projects

Requirements for space flight projects in Categories 1, 2, and 3/Classes A, B, and C shall be as defined in NPR 7120.5 and NPR 8705.4, respectively, except for approved tailoring, customizing, and waivers.

1.2 Category 3/Class D, Space Flight Projects (LCC \$150 M and Smaller)

Requirements for space flight projects that are Category 3/Class D (LCC \$150 M and smaller) shall be as specified in NPR 7120.5 as modified by approved tailoring, customizing, and waivers.

Modified requirements are specified in the Chapter 2.

1.3 Approvals

Project Managers shall obtain approvals for the project (including system, subsystems, and software) by the DA as required in NPR 7120.5 or as modified by tailoring, customizing, or waivers.

1.4 Approvals for Categories 1, 2, And 3/Classes A, B, and C, Space Flight Projects

Approval requirements shall be as specified in NPR 7120.5.

1.5 Approvals For Category 3/Class D, Space Flight Projects (LCC \$150 M and Smaller)

Approval requirements specified in NPR 7120.5 may be modified by tailoring, customizing, and waivers as necessary to align project requirements with project resources. Initial approval is required by both the Decision Authority (DA) and Ames Chief Engineer. Additional approvals are negotiated with the Program Office and Headquarters.

CHAPTER 2 Modified Requirements FOR CATEGORY 3/CLASS D PROJECTS (LCC \$150M AND SMALLER)

Project management requirements in NPR 7120.5 for Category 3/Class D projects with LCC less than \$150 M) may be tailored. Additional ways to align requirements for the compliance matrix and for

earned value management are given in *Guidance for Tailoring 7120.5 requirements for small Cat 3/Class D Projects* http://nodis3.gsfc.nasa.gov/OCE_docs/OCE_25.pdf.

2.1 Life-Cycle Reviews

Projects may propose a tailored life-cycle review plan and obtain approval from the DA to implement. The review plan may include combining, omitting, or applying agile approach to the reviews, as approved by the DA.

2.2 Independent Reviews

Projects may plan for independent assessments by an Independent Review Board (IRB) instead of a Standing Review Board (SRB). The IRB process and requirements are documented in APR 7120.51.

2.3 Earned Value Management (EVM)

For projects with development costs over \$20 M, EVM shall be based on the principles given in the *“Guidance for Tailoring 7120.5 requirements for small Cat 3/Class D Projects”* document. Additional requirements are in NSF Subpart 1834.2 – Earned Value Management System, Subpart 1834.201 Policy.

2.4 Joint Confidence Level (JCL) and External Cost and Schedule Commitment

As in the above *“Guidance for Tailoring 7120.5 requirements for small Cat 3/Class D Projects”* document, the JCL and External Cost and Schedule Commitments (external Agency Baseline Commitment (ABC)) are not applicable to projects, but projects shall develop a NASA Internal Cost and Schedule Commitment (Internal ABC).

2.5 Cost Analysis Data

As in the above *“Guidance for Tailoring 7120.5 requirements for small Cat 3/Class D Projects”* document, Cost Analysis Data Requirement (CADRe) is not mandatory, but data collection for smaller projects is critical for future estimating capabilities and is strongly encouraged.

2.6 Project Products

As in the above *“Guidance for Tailoring 7120.5 requirements for small Cat 3/Class D Projects”* document, most of the small Category 3/Class D project products, as applicable and tailored to the project, may be included as sections on the Project Plan, or may be a different format other than a separate document. This may include configuration controlled presentation slides, spread sheets, or similar. It should be the documentation the project uses to do its work and is sufficient for review by the Independent Review Board.

CHAPTER 3 TAILORING

NPR 7120.5 project requirements may be tailored using by the DA and the Ames Chief Engineer. As a requirement, the project's chosen tailoring shall be delivered together with the project plan.

APPENDIX A. ACRONYMS

ABC	Agency Baseline Commitment
APR	Ames Procedural Requirements
ARC	Ames Research Center
CADRe	Cost Analysis Data Requirement
DA	Decision Authority
EVM	Earned Value Management
IRB	Independent Review Board
LCC	Life Cycle Cost
SRB	Standing Review Board