



**ARMSTRONG FLIGHT
POLICY
DIRECTIVE (AFPD)**

**AFPD-8040.1-001, Revision B
Effective Date: December 29, 2021
Expiration Date: December 29, 2026**

COMPLIANCE IS MANDATORY.

SUBJECT: Configuration Management

RESPONSIBLE OFFICE: Programs and Projects Directorate

1. POLICY

a. Configuration Management (CM) is the process of identifying and defining the configuration items (CI) in a system, recording and reporting the status of CIs and requests for change, and verifying the completeness and correctness of CIs. This process helps ensure that the Armstrong Flight Research Center's (AFRC, hereafter referred to as "the Center") in Edwards, California, and Palmdale, California, products meet customer requirements and establish and maintain consistency between products and product requirements. Center organizations apply appropriate CM practices to ensure products and activities conform to customer requirements through configuration identification, control, status accounting, and audits.

b. The CM systems consist of the storage media, the processes and procedures, the tools used for accessing configuration information, and the documentation for recording and managing changes to a configuration. It is Center policy for organizations to establish and maintain the configurations of institutional and support systems, facilities, and project and activity work products, using documented CM systems.

2. APPLICABILITY

a. This directive is applicable to the CM processes for all Center projects that require a level of CM to maintain consistency between product requirements and products delivered to customers or that support customers, including, but not limited to, applied research, advanced technology development, flight systems, ground support systems, and institutional systems. Listed below are the criteria for determining when a project will be managed under a CM system as defined in this directive:

(1) Projects that generate/maintain a product/process that affects the safety of people or possible loss of assets.

(2) Projects that generate/maintain a product/process that affects an institutional system (e.g., network infrastructure, electrical infrastructure, etc.) where changes may impact a service that is expected to be available without interruption.

(3) Projects that are developed/maintained through the collaboration of two or more organizations where changes to a product/process by one organization may impact another organization.

(4) If a project does not fall under one of the categories listed above (e.g., a project that impacts only one customer), the level of CM will be specified in a documented agreement between the project manager and the customer.

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b. This directive applies to the Center onsite support contractors, grant recipients, National Aeronautics and Space Administration (NASA's) Jet Propulsion Laboratory (JPL) in Southern California, and other partners to the extent specified in their contracts or agreements.

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

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

3. AUTHORITY

a. NPR 7120.5 NASA Space Flight Program and Project Management Requirements

b. NPR 7900.3 Aircraft Operations Management

c. NPR 8820.2 Facility Project Requirements

4. APPLICABLE DOCUMENTS AND FORMS

None

5. RESPONSIBILITY

a. Directors and Office Chiefs shall:

(1) Ensure that CM processes and procedures are developed, followed, and improved as deficiencies are identified.

(2) Ensure appropriate projects that meet the criteria for determining when a project will be managed under a CM system are identified.

b. CM Process Owners shall:

(1) Ensure that project work products, facilities, institutions, and support systems are managed and controlled using a CM system that meets the requirements established in this directive.

(2) Ensure that CM systems are managed and maintained.

c. Project Managers, Support System Managers, and Facility Managers shall:

(1) Ensure that baselined project documents are maintained under CM.

(2) Ensure that the hierarchy of requirements, from system to sub-system to components, and the resulting end-item specifications for software, hardware, and operations, are maintained under CM and that modifications to requirements/specifications are documented and traceable through project CM mechanisms.

(3) Maintain CM on all drawings, design specifications, part selections, and other means of documenting aspects of the design.

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- (4) Ensure that final versions of design documentation reflect the "as-built", "as-delivered", or "as-deployed" configuration of the system/asset.
- (5) Ensure the project flight/mission record system (e.g. system for tracking mission/flight information) captures the specific flight/mission configuration as documented in the CM system.

6. DELEGATION OF AUTHORITY

None.

7. MEASUREMENT/VERIFICATION

Nonconformances and/or observations obtained during audits relating to this directive will be used to determine ways to improve the various processes and if related to assess the effectiveness of this directive.

8. CANCELLATION

AFPD-8040.1-001, Revision A, Configuration Management, dated April 12, 2021.

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/s/ Center Director

Attachment A, Definitions

Baseline. A set of CIs formally designated and fixed at a specific time during a CI life cycle. A baseline defines the state of a configuration at a specified time with the status and version/variant of each item. Baselines are frequently linked to the end of key project stages or new releases of products and may be frozen to provide a known reference point of configuration definition to which changes or proposed changes may be related.

CM Process Owner. An organization or office responsible for the creation and maintenance of a CM process

Configuration. The functional and/or physical characteristics of a product as set forth in the technical documentation and achieved in the product.

Configuration Audit. The process for determining to what extent the actual configuration reflects the required physical and functional characteristics.

Configuration Control. The process of requesting, evaluating, approving, or disapproving configuration changes.

Configuration Identification. The process of identifying, naming, describing and documenting physical and functional characteristics of systems, components of systems, documentation and data to be controlled for a project.

Configuration Item (CI). An aggregation of hardware, software, and/or documentation which satisfies and end use function.

Configuration Status. The actual configuration of a CI at a given time in relation to the baseline and all approved changes.

Configuration Status Accounting. The recording and reporting of the information that is needed to manage the configuration effectively, including a listing of the approved configuration identification, the status of proposed changes to the configuration, and the implementation status of approved changes.

Projects. In the context of this directive refers to work performed in programs, projects, management systems, institutional systems and other activities.

Support System Manager. A manager of a system that is not directly related to the Center's core business of flight research, but the system provides the tools or infrastructure necessary to conduct core business. An Information Technology system is an example of a support system.

Attachment B, Acronyms

AFPD	Armstrong Flight Policy Directive
AFRC	Armstrong Flight Research Center
CI	Configuration item
CM	Configuration management
JPL	Jet Propulsion Laboratory
NASA	National Aeronautics and Space Administration
NPR	NASA Procedural Requirements

Attachment C, Requirement Verification Matrix

PARAGRAPH	REQUIREMENT	COMPLIANT	NON-COMPLIANT
5.a.(1)	Directors and Office Chiefs shall: Ensure that CM processes and procedures are developed, followed, and improved as deficiencies are identified.	<input type="checkbox"/>	<input type="checkbox"/>
5.a.(2)	Directors and Office Chiefs shall: Ensure appropriate projects that meet the criteria for determining when a project will be managed under a CM system are identified.	<input type="checkbox"/>	<input type="checkbox"/>
5.b.(1)	CM Process Owners shall: Ensure that project work products, facilities, institutions, and support systems are managed and controlled using a CM system that meets the requirements established in this directive.	<input type="checkbox"/>	<input type="checkbox"/>
5.b.(2)	CM Process Owners shall: Ensure that configuration management systems are managed and maintained.	<input type="checkbox"/>	<input type="checkbox"/>
5.c.(1)	Project Managers, Support System Managers, Facility Managers shall: Ensure that baselined project documents are maintained under CM.	<input type="checkbox"/>	<input type="checkbox"/>
5.c.(2)	Project Managers, Support System Managers, Facility Managers shall: Ensure that the hierarchy of requirements, from system to sub-system to components, and the resulting end-item specifications for software, hardware, and operations, are maintained under CM and that modifications to requirements/specifications are documented and traceable through project CM mechanisms.	<input type="checkbox"/>	<input type="checkbox"/>
5.c.(3)	Project Managers, Support System Managers, Facility Managers shall: Maintain CM on all drawings, design specifications, part selections, and other	<input type="checkbox"/>	<input type="checkbox"/>

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	means of documenting aspects of the design.		
5.c.(4)	Project Managers, Support System Managers, Facility Managers shall: Ensure that final versions of design documentation reflect the "as-built", "as-delivered", or "as-deployed" configuration of the system/asset.	<input type="checkbox"/>	<input type="checkbox"/>
5.c.(5)	Project Managers, Support System Managers, Facility Managers shall: Ensure the project flight/mission record system (e.g. system for tracking mission/flight information) captures the specific flight/mission configuration as documented in the CM system.	<input type="checkbox"/>	<input type="checkbox"/>

DISTRIBUTION: Approved for released via the Document Library.

Change Log

Baseline Effective Date: 03/10/2006

Baseline-1, Admin Change, 07/23/2009

- Added serial number to document name. Name changed from DPD-8040.1 to DPD-8040.1-001.

Baseline-2, Admin Change, 08/02/2010

- Formatted to comply with Agency standards.

Baseline-3, 10/20/2010

- Revalidated

Baseline-4, 12/10/2015

- Revalidated

Baseline-5, 07/18/2017

- Admin update
- Updated Baseline-4 to Baseline-5
- DPD-8040.1-001 renumbered in accordance with Center instruction

Baseline-6, Admin Change, 06/05/2018

- Admin update
- Deleted first statement of Section 7: "Measurements associated with this directive are included and implemented in the procedures that document the various configuration management systems."

Baseline-7, Admin Change, 06/12/2018

- Admin update
- Deleted "In addition," from Section 7

Baseline-8, Admin Change, 11/24/2020

- Expiration date extended from 12/10/2020 to 6/10/2021.

Revision A, 04/13/2021

- Added Attachment B, Definitions.
- Added Attachment C, Requirement Verification Matrix.
- Updated Section 2 to Applicability, removing Scope.

Revision B, 1/10/22

- The following changes answers Audit finding #355-10-18
 - Removed 5b(3) and associated verification in appendix C
 - Removed Attachment D
- Changed responsible organization to Programs and Project Directorate