Goddard Procedures and Guidelines

DIRECTIVE NO.	GPG 1410.2A	**APPROVED BY Signature:**	*Original Signed by*
EFFECTIVE DATE:	October 8, 2002	**NAME:**	A. V. Diaz
EXPIRATION DATE:	October 8, 2007	**TITLE:**	Director

Responsible Office: 403/Flight Programs and Projects Resources Office

Title: Configuration Management

PREFACE

P.1 PURPOSE

This procedure establishes configuration control requirements for documents, data, and products that are subject to the Quality Management System (QMS) at the Goddard Space Flight Center (GSFC).

P.2 APPLICABILITY

This procedure applies to all Goddard Space Flight Center organizations that are subject to the scope of the GSFC QMS. It applies to the development of all products and processes within the scope of the QMS.

This procedure applies to controlled documents issued or revised after the effective date of this document, as well as to documents of external origin that are used or referenced in the conduct of work that is subject to the QMS. The term “document” as used herein applies to paper and electronic documents, forms, and data. Documents issued or revised before the effective date of this document need not be updated to incorporate the changes herein.

Directives as described in GPG 1410.1 and records as described in GPG 1440.7 are not part of the QMS system and are exempt from this requirement. At this time, the responsibility for identifying, numbering and changing drawings that are subject to the QMS belongs to Code 500 and are currently covered under their Procedures and Guidelines (PGs).

P.3 AUTHORITY

NPD 8730.3, NASA Quality Management System Policy (ISO 9000)

P.4 REFERENCES

a. GPG 1410.1, Directives Management
b. GPG 1440.7, Records Control
c. GPG 8700.2, Design Development
d. NPG 1441.1, NASA Records Retention Schedules
e. GSFC Form 4-35, Configuration Change/Release Request

P.5 CANCELLATION

None

P.6 SAFETY

None

P.7 TRAINING

None

P.8 RECORDS

Record Title	Record Custodian	Retention
Completed Configuration Change/Approval Requests	Performing Organization	*NRRS 8/9A & B Configuration Control Board (CCB) Records. Retire to Federal Records Center when 2 years old. Destroy when 30 years old. Earlier destruction authorized upon receipt of specific approval from Program Manager.

**NRRS – NASA Record Retention Schedules (NPG 1441.1)*

P.9 METRICS

None

P.10 DEFINITIONS

a. Configuration Audits – an audit of the effectiveness of an organization's configuration management processes, either internally or of its contractor(s).

b. Configuration Baseline – configuration of a product or service, formally established at a specific point in time, which serves as a reference for further activities.

c. Configuration Change/Approval Request (CCR) – a documented request to issue, change, revise, or delete a controlled document. A generic CCR form (GSFC 4-35) meeting minimum requirements is available on the Goddard Directives Management System (GDMS). See Section 1.4.

d. Configuration Control – the element of Configuration Management concerning the systematic proposal, justification, evaluation, coordination, and disposition of approved baselines and changes, and

the implementation of approved changes to baselined documentation and products (Configuration Items).

e. Configuration Control Board (CCB) – a board composed of designated individuals who review and recommend approval or disapproval of proposed baseline Configuration Items and changes, revisions, or cancellation thereto.

f. Configuration Documents – documents that define requirements, design, build/production, validation, and interfaces of a product or service.

g. Configuration Item – designation applied to the product that has been determined to be subject to CM requirements. Products include hardware, software, processed materials, services, or any discrete portions thereof treated as a single entity in the configuration management process.

h. Configuration Management – a system for controlling and documenting changes to selected baseline documents, hardware and software. Configuration management systems contain the following elements:

-- Identification of controlled documents and configured items
-- Configuration control
-- Configuration status accounting

i. Controlled Document – a document that requires change control action by the responsible organization (see definition below) before the document can be issued or altered in any way. Controlled documents are subject to the requirements of this GPG and to the requirements described in the responsible organization's configuration control procedures.

j. Controlled Documents List (CDL) – an organization's list of their controlled documents, as described in the organizations' configuration control procedures (see paragraph 1.2). An organization may have multiple CDLs, e.g., separate listings for drawings of a given system or subsystem.

k. Data –electronic or written information.

l. Directive - A policy, procedure and guideline, or instruction that has been approved and published by the appropriate authority. The GDMS addresses four types of directives, each of which serves a specific purpose:

(1) Goddard Policy Directive (GPD) - A policy statement that describes what is required by GSFC management for achieving NASA's vision and mission.

(2) Goddard Procedures and Guidelines (GPG) - A statement of specific, detailed procedures for implementing NASA and Goddard policies.

(3) Procedures and Guidelines (PG) – A documented description of how a Goddard organization will perform its own activities.

(4) Work Instruction (WI) – A document developed by an individual or group that delineates detailed activities to be carried out by that individual or group to accomplish a specific task or set of closely related tasks.

m. Effective Date – Unless otherwise specified, it is the date the document is approved (see Release Date below).

n. External Document – a document, such as a plan, specification, or standard that comes from an external source and is implemented by an organization as part of the QMS. Examples include military specifications and industry standards.

o. Organization Head – the head of any organization needing to establish configuration management procedures. Examples include project managers, project scientists, branch heads, Directors Of, etc.

p. Product – systems, hardware, software, data, documentation, services and/or processed material resulting from work activities at GSFC that have been defined to be in-scope to the QMS.

q. Responsible Organization – the organization responsible for maintaining the accuracy and currency of the document/data from baseline release through all follow-on actions.

r. Release Date – the date a document is approved.

PROCEDURES

1. DOCUMENT CONFIGURATION MANAGEMENT FOR IN-SCOPE DOCUMENTS

This section addresses configuration management requirements for documents. Additional requirements for configuration control of product are discussed in Section 2.

1.1 Responsibilities

Organization heads are responsible for ensuring that all documents are controlled as defined herein to meet the requirements of the GSFC QMS, and shall designate an individual to be responsible for oversight and coordination of the document control activities described herein.

Documents will be controlled by means of document control procedures appropriate to the organization. The organization head shall define the process, including CCB processes. The CCB may range in size from a single individual to a group that includes all affected personnel, organizations, or systems, as the organization head determines to be appropriate.

1.1.1 The Organization head is responsible for:

a. designating reviewers and approvers for controlled documents and changes.

b. appointing the chairperson of the CCB.

c. appointing permanent and ad-hoc members to the CCB, as required.

d. continuously evaluating the effectiveness of the process.

e. ensuring that affected organizations participate in the issue/change process.

f. providing customer notification and obtaining approval. The customer must be able to participate in any CCB action affecting the final deliverable product.

g. ensuring the effective management and flow of data through the CCB.

h. ensuring that records of the process are maintained, including identification of reviewers and approvers.

i. ensuring document and data changes are verified in affected systems or elements thereof.

j. defining requirements for periodic Configuration Audits, to be conducted as required, to verify that configuration management procedures meet specified requirements.

1.1.2 The CCB has the following responsibilities and authorities:

a. formally evaluating, dispositioning, and documenting its actions on proposed new documents and changes.

b. ensuring that thorough consideration is given to the impact of each proposed change to documents in terms of effect on product, its processing, and intended use.

c. ensuring that applicable Controlled Document Lists or equivalent control methods are current and maintained in sufficient detail to clearly identify the revision status and effective dates of all controlled documents.

1.1.3 The organization that is responsible for designated Center-wide functions is also responsible for maintaining the governing procedures as controlled documents.

1.2 Configuration Control Procedure Requirements

Organizations shall control documents in accordance with an approved procedure that addresses document control. The Directorate shall determine the organizational level (e.g., Directorate, Division, Branch, Project) at which configuration control procedures are required.

1.2.1 All configuration control procedures issued or revised after the effective date of this GPG shall address and describe the following configuration management processes, at a minimum:

a. Configuration Control Board (CCB) membership, and change approval authorities.

b. Selection and identification of items that require configuration control, described by type (e.g., test plans and procedures, Systems Review Plans, Project Plans, external documents or forms, etc.).

c. Description of issuance and change processes, and the configuration management processes used, including new or existing CCB processes, if required. This also includes describing differences in processing procedures for Emergency, Urgent, or Routine priority CCR's.

d. Review and approval processes, including identification or review responsibilities and/or CCBs.

e. Description of Controlled Documents List or equivalent control method that identifies the document number and title, revision status, effective date, and name of responsible organization and expiration date.

f. Identification of persons or positions responsible for controlling documents and the Controlled Documents List (or equivalent).

g. Identification (e.g., numbering system) conventions to be applied to configuration items and associated documents

h. Description or identification of the organization's CCR form, where to get it, and what CCR numbering system is used.

i. Handling of cancelled documents to ensure that:

(1) relevant versions of documents are available where needed.
(2) obsolete documents are identified as such and removed or assured against unintended use.
(3) document users are notified, when appropriate.

j. Specific requirements applicable to product configuration management, described in Section 2.

1.2.2 Configuration control procedures may be issued either as a directive or as a controlled document by the issuing organization according to the following conventions:

1.2.2.1 A document which applies only to a single Primary Organization or lower-level organization within a Primary Organization may be issued either as a controlled document by the issuing organization, or as a directive (see GPG 1410.1).

1.2.2.2 If the procedure applies to more than one lower-level organization, it shall be a directive and will be subject to the requirements of GPG 1410.1.

1.2.2.3 Process control documents that meet the criteria for Work Instructions (see GPG 1410.1) should be issued as directives and controlled through the GDMS.

1.2.2.4 Plans, lists, and other documents subject to frequent revision should normally not be issued as directives.

1.2.3 Configuration control procedures are required to be in place and approved within 60 days of approval of a new organization.
Configuration

1.3 Requirements for Controlled Documents

1.3.1 Draft documents will be clearly identified as drafts. Outdated documents will be identified as such and kept on file but shall be removed from points of issue or otherwise assured from unintended use. Electronic listings will show that documents are obsolete but documents will remain on line.

1.3.2 Controlled documents and associated records shall be legible and readily identifiable.

1.3.3 Controlled documents will be retained and disposed of in accordance with NPG 1441.1.

1.3.4 Controlled documents must be reviewed for accuracy at least every 5 years and reissued in a timely manner. All controlled documents will have a validity period of not more than 5 years after release. In the event of noncompliance with the requirement to reissue a document prior to its expiration, the policies, practices and procedures authorized by the document may continue to be followed, except to the extent the document, or separate written determination by the head of the responsible office for the document, or higher level supervisor thereof, provides for discontinuance of any policy, practice or procedure.

a. If changes are made, the document will be reissued as a revision.

b. If no changes are made, the new release date and expiration date will be placed on the cover, and the change record will describe the action.

c. For controlled documents issued prior to this requirement without an expiration date, the expiration date will be 5 years after the release date.

1.3.5 All controlled documents require clear document identification. The first page (cover page) of all controlled documents will contain, as a minimum, the following items of information:

a. unique document number
b. revision level of the correct version
c. document title
d. name and organizational code of Responsible Organization
e. effective date
f. expiration date

For all documents subject to revision, a footer shall be placed on the cover indicating where to confirm the proper revision status. Where practical this footer should be repeated on every page. Examples are:

CHECK THE HST TECHNICAL MANAGEMENT INFORMATION SYSTEM (TMIS) AT
http://tmisx21.hst.nasa.gov/ TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

or

CHECK THE CODE 400 MASTER DOCUMENTATION LIST PRIOR TO USE TO VERIFY THAT THIS ISTHE CORRECT VERSION

1.4 Configuration Change/Approval Requests (CCR)

Requests for new document release are normally initiated by a CCR, but this requirement may be waived if an alternative process is described in the organization's configuration management procedures.

All document changes are initiated by a CCR. Document change/approval requests will include, as a minimum, the following information:

a. initiator name, organization code, and E-mail address
b. date submitted
c. title of document
d. document number
e. revision/change (letter and/or number) of document to be changed
f. description of action requested
g. reason for action requested
h. other documents affected, with explanation

Once the CCR is received by the responsible organization, it will be assigned a priority and processed by predefined procedures (see 1.2). If the CCR is approved, it is signed by the CCB Chairperson or designee, implemented, and closed. If it is disapproved, it is simply closed. After closure, it is filed as a record. The originator is notified of the final disposition of the CCR.

GSFC Form 4-35 is available from the GDMS Forms Master List, and meets the requirements for configuration control. Organizations may tailor this form to their own requirements or use their own forms, as long as they meet the minimum requirements defined above.

1.5 External Documents

The latest versions of external documents should be used. When a GSFC organization needs to utilize an obsolete version, the obsolete version should be identified on the organization's Controlled Document List. This use this shall be considered a configuration change, and shall require approval in accordance with the organization's configuration control procedures.

1.6 GSFC Centralized Configuration Management System

A database is available for organizations to use in managing configuration records. It allows record-keeping functions similar to the GDMS, and allows documents to be stored on-line similar to the way GDMS stores and displays documents. The URL is http://gdms.gsfc.nasa.gov/gdms/plsql/frontdoor. Pick Online Applications Main Menu, and select Centralized Configuration Management System.

Use of this system is optional, but it provides an effective system that meets the requirements for a Controlled Documents List as described in this GPG. It is available at no cost to users.

2. PRODUCT CONFIGURATION MANAGEMENT

Configuration control procedures, for organizations responsible for configuration control of product, subject to the QMS, shall address additional configuration management requirements described below. These are in addition to the document configuration control requirements described in Section 1:

a. Selection and identification of items requiring configuration control (configuration items), including the criteria for determining such selection.

b. Identification (e.g., numbering) conventions to be applied to configuration items.

c. Establishment of configuration baselines.

d. Identification, documentation, and evaluation of change requests, including identification of change requests requiring customer approval and evaluation of the effect of changes on constituent parts and products already delivered.

e. Documentation of change approvals, including effectivity considerations. If "red-line" change approval capability is desired, associated documentation, authorities, and limitations shall be addressed.

f. Verification that changes have been implemented.

g. Configuration management procedures for subcontractor designs.

The Product Design Team ensures that design changes are controlled and documented in accordance with applicable configuration control procedures. Whenever the design fails to meet requirements, the Product Design Lead recommends and implements design changes in accordance with the applicable configuration management procedures. See GPG 8700.2 for details of this requirement.

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	01/24/00	Initial release
A	10/08/02	- Changed responsible organization from 401 to 403. - Changed GPG template to conform to GPG 1410.1D, renumbering paragraphs accordingly. - Added Form 4-35 to P4. - Corrected record retention requirements in P8 - Changed all quality records references to “Records.” - Clarified definitions of Controlled Documents, Effective Date, and Release Date. - In P1Changed 1.1 to make designation of a Configuration Manager mandatory and make organization head responsible for designating CCB members. - Updated 1.2.1 to apply to future releases of configuration management procedures. In 1.2.1.c, changed CCR priorities to Emergency, Urgent, and Routine - In 1.3, added retention requirements of NPG 1441.1, legibility requirements, and requirements for periodic review and updating of controlled documents. - Changed 1.3.5 to add Effective Date and Expiration Date. - In 1.4, clarified processing requirements before closure. Added requirement to notify CCR originators of CCR disposition. - Rewrote 1.5 to address requirements for control of external documents. - Added requirement in 2.d for evaluation of the effect of changes on constituent parts and product already delivered.