



# Goddard Procedures and Guidelines

DIRECTIVE NO. GPG 5340.2H

EFFECTIVE DATE: July 30, 2003

EXPIRATION DATE: July 30, 2008

APPROVED BY Signature: Original Signed by

NAME: A. V. Diaz

TITLE: Director

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**Responsible Office:** 300/Office of Systems Safety and Mission Assurance

**Title:** Control of Nonconformances

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## PREFACE

### P.1 PURPOSE

This procedure establishes the process for documentation and disposition of nonconformances.

### P.2 APPLICABILITY

This procedure applies to customer complaints, to internal and supplier audit nonconformances, and to products and processes covered by the scope of the Quality Management System (QMS), which are received at the Goddard Space Flight Center (GSFC) or are otherwise within the control of GSFC. This procedure does not apply to GSFC product that is being developed by GSFC suppliers and is not directly controlled by GSFC, with the exception of product that is the subject of a supplier audit.

### P.3 AUTHORITY

[NPD 1280.1](#), NASA Management System Policy

### P.4 REFERENCES

- a. [GPG 1060.1](#), Management Responsibility
- b. [GPG 1060.2](#), Management Review and Reporting for Programs and Projects
- c. [GPG 1310.1](#), Customer Commitments and Review
- d. [GPG 1710.1](#), Corrective and Preventive Action
- e. [GPG 4520.2](#), Receiving Inspection and Test
- f. [GPG 5100.4](#), Supplier Quality Audits
- g. [GPG 5330.1](#), Product Processing, Inspection and Test
- h. [GPG 5900.1](#), Control of Customer-Supplied Product
- i. [GPG 9980.1](#), Internal Audit System
- j. [GSFC 4-33](#), Nonconforming Product Red Tag

### P.5 CANCELLATION

GPG 5340.2G, Control of Nonconformances

**P.6 SAFETY**

Not applicable.

**P.7 TRAINING**

Training in the use of the Nonconformance Report/Corrective Action System (NCR/CAS) database and the Problem Report/Problem Failure Report (PR/PFR) database can be obtained from the Systems Management Office, Code 306.

**P.8 RECORDS**

Record Title	Record Custodian	Retention
NCR/CAS and PR/PFR databases	Code 306, Systems Management Office	*NRRS 5/30B -- Close file at end of survey/audit at end of FY. Destroy when 9 years old.
Reports to and responses from customer for concurrence of use-as-is or repair dispositions which violate specified requirements	Applicable Contracting Officer or GSFC sponsor of Customer (when there is no Contracting Officer)	*NRRS 5/30B
Reports to and responses from customer for disposition instructions on customer-supplied product which is lost, damaged or otherwise unsuitable for use	Applicable Contracting Officer or GSFC sponsor of Customer (when there is no Contracting Officer)	*NRRS 5/30B

*\*NASA Records Retention Schedules ([NPG 1441.1](#))*

**P.9 METRICS**

Directorates report on NCR and PR/PFR status in accordance with GPG 1060.2. Overall Center nonconformance reporting metrics are reported as part of QMS management reviews per GPG 1060.1.

**P.10 DEFINITIONS**

- a. Anomaly - An anomaly is an unexpected event, hardware or software damage, a departure from established procedures or performance, or a deviation of hardware or software performance outside certified design/performance specification limits. Anomalies include sense of problem and failure. This includes unexpected power glitches, single event upsets, unexpected degradation and autonomous resets.
- b. Corrective Action – Action taken to determine and correct the root cause of a nonconformance and the follow-up action undertaken to assess the effectiveness of the root cause correction.
- c. Customer - The recipient of a product or service provided by GSFC. For purposes of the QMS, the customer is assumed to be external to NASA.

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- d. Disposition – Planned action to be taken on a product or mission operations nonconformance to correct, accept, or otherwise mitigate the nonconforming condition.
- e. NCR/CAS Database - An inter-active on-line database, accessed via the GSFC QMS web site, used to document and track the status and corrective action of customer complaints; findings resulting from internal, supplier or third party audits; process nonconformances; and systemic problems identified through nonconformance data analysis.
- f. Nonconformance – Non-fulfillment of a specified requirement. This includes on-orbit anomalies.
- g. Nonconformance Lead (NCL) - An individual identified within the NCR/CAS database who has the authority to process project/organization nonconformance reports (NCRs), including any required corrective action approval and follow-up.
- h. Product Design Lead (PDL) - The manager or leader with overall responsibility for managing the design activity, managing the technical and organizational interfaces identified during design planning, and where required, forming and leading the Product Design Team (PDT). The term refers to flight project managers, mission managers, instrument managers, subsystem technical managers, integrated product development team leaders, lead engineers, etc.
- i. PR/PFR Database - An inter-active on-line database, accessed via the GSFC QMS web site, used to document and track the status of product nonconformances and associated dispositions.
- j. Spacecraft On-Orbit Anomaly Reporting System (SOARS) - An inter-active on-line database, accessed via the GSFC QMS web site, used to document and track the status of mission operations anomalies and associated dispositions.

## **PROCEDURE**

The figure 1 flowchart depicts the procedure defined below for product nonconformance control.

### **1. Nonconformance Identification**

Nonconforming product shall be tagged with a Nonconformance Tag, GSFC 4-33 by responsible personnel identified in the project document(s) addressing nonconforming product control (see section 4.1 below). Separate tags for each nonconformance are not necessary. If product tagging is impractical or potentially detrimental to the product, the tag shall be prominently displayed in the accompanying product inspection and test status documentation (see GPG 5330.1 and GPG 4520.2). The tag shall remain on/with the nonconforming product or documentation until product disposition has been made and documented on all identified nonconformances. If Nonconformance Tags are not available, facsimiles should be employed until Nonconformance Tags are obtained.

## 2. Nonconformance Documentation

Product nonconformance reporting shall begin once the product configuration has been base-lined or in accordance with project/organization document(s) addressing product nonconformance control (see section 4.1), whichever is sooner.

Pre-launch product nonconformances shall be documented in the PR/PFR system. PR/PFR numbers shall be cross-referenced on the applicable Work Order Authorization (WOA) in accordance with GPG 5330.1 and GPG 4520.2. Until such time as software is integrated with hardware, software nonconformances may be documented in controlled local systems.

Mission operations anomalies, including sounding rocket and balloon failures, shall be documented in SOARS.

Customer complaints, audit nonconformances, process nonconformances, and systemic problems identified from QMS data analysis shall be documented in the NCR/CAS database. Nonconformances documented as a result of internal audit shall be handled in accordance with GPG 9980.1. Nonconformances documented as a result of a supplier audit shall be handled in accordance with GPG 5100.4.

## 3. Nonconforming Product Segregation

Except for incoming product released for urgent production purposes prior to product verification (see GPG 4520.2), tangible nonconforming product shall be physically segregated from conforming product in such a way as to prevent accidental use of the nonconforming product until appropriate disposition is determined and implemented. If physical segregation is impractical (e.g., due to size, environmental concerns, etc.), nonconforming product shall be separated from normal process flow to the extent possible.

## 4. Nonconformance Evaluation and Disposition

**4.1** Each GSFC Project shall document nonconforming product disposition via the PR/PFR system. Project document(s) shall address the following, as a minimum, for control of nonconforming product:

- a. Personnel responsible for tagging and segregating nonconforming hardware;
- b. Identification and operation of segregation area(s)/facility(s);
- c. Identification of product nonconformance scenarios requiring customer approval.

Similar procedures/instructions shall also be established by non-project organizations that are responsible for receiving, storing, or stocking product that has no specific project designation.

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**4.2** Nonconformances documented against procured or stock product that has no specific project designation shall be evaluated and dispositioned by the organization that initiated the procurement. Product dispositions shall be made and documented as soon as practical but, in all cases, prior to any processing event that will cause the nonconformance to be inaccessible for evaluation without disassembly.

Customer complaints entered into the NCR/CAS database against product developed by a project/organization that is no longer in existence shall be processed by the project/organization's Directorate Office.

**4.3** Nonconforming product disposition shall be one of the following:

- a. Rework - Action taken on nonconforming product so that it will fulfill the specified requirements. This disposition includes software "upgrades." This disposition requires generation or augmentation of a WOA (or equivalent for software products [see GPG 5330.1]) for the rework and reinspection/retest.
- b. Repair - Action taken on nonconforming product so that it will fulfill the intended usage requirements although it does not conform to the originally specified requirements. This disposition requires generation or augmentation of a WOA (or software product equivalent [see GPG 5330.1]) for the repair and reinspection/retest.
- c. Use-As-Is - Approving the use of nonconforming product without resort to rework or repair. For software, this may necessitate generation of operational notes describing ways to avoid effects of the nonconformance during operation.
- d. Reclassify - Action taken to revise the classification status of nonconforming product for alternate use (e.g., reclassify from "Space Flight Hardware" to "Not for Space Flight Use"). Product reclassification status must be indicated on the applicable WOA (or software product equivalent).
- e. Return to Vendor - Action taken to return nonconforming product to the vendor in accordance with contract provisions.
- f. Scrap - Action taken on nonconforming product to make it unusable and to remove it from the QMS. This disposition shall specify how the product will be scrapped.

After documentation of product disposition the product may be released for disposition processing.

**4.4** The PDL shall take action appropriate to the effect, or potential effects, of nonconforming product detected after delivery to the customer or after the product has been put to use. Such detection may occur as a result of internal verification and validation of undelivered product, receipt of a customer complaint, or other means.

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## **5. Notification of Nonconforming Product**

**5.1** When required by customer requirements (see GPG 1310.1), or as indicated in the project/organization document(s) addressing product nonconformance control (see section 4.1), nonconformances resulting in repair or use-as-is dispositions shall be reported by the PDL to the customer for approval prior to disposition implementation. The description of the nonconformance that has been accepted, and of repairs, shall be recorded to denote the actual condition.

**5.2** Nonconformances resulting in “Return to Vendor” disposition and nonconformances documented against product during incoming inspection and test (see GPG 4520.2) shall be forwarded by the PDL, through the appropriate Contracting Officer or GSFC sponsor of the customer (when there is no Contracting Officer), to the vendor for information and/or product correction.

**5.3** Customer supplied product (see GPG 5900.1) which is lost, damaged, or otherwise unsuitable for use shall be documented in the PR/PFR database and reported by the PDL to the customer, through the Contracting Officer or the GSFC sponsor of the customer (when there is no Contracting Officer). The PDL shall await disposition instructions or concurrence from the customer.

## **6. Customer Complaints**

Customer complaints shall be documented as an NCR in the NCR/CAS database by the individual (or the organization's designee) receiving the complaint and forwarded to the applicable Project Office or the cognizant Directorate Office, if the project/organization no longer exists, for disposition and corrective action.

## **7. Closing Nonconformance Reports**

PR/PFRs shall be closed when product disposition (refer to section 4.3) and any associated product nonconformance correction has been verified.

Nonconformances documented in the NCR/CAS database shall be closed when corrective action has been determined, documented and found effective by follow-up action in accordance with GPG 1710.1.

Control of Product Nonconformances

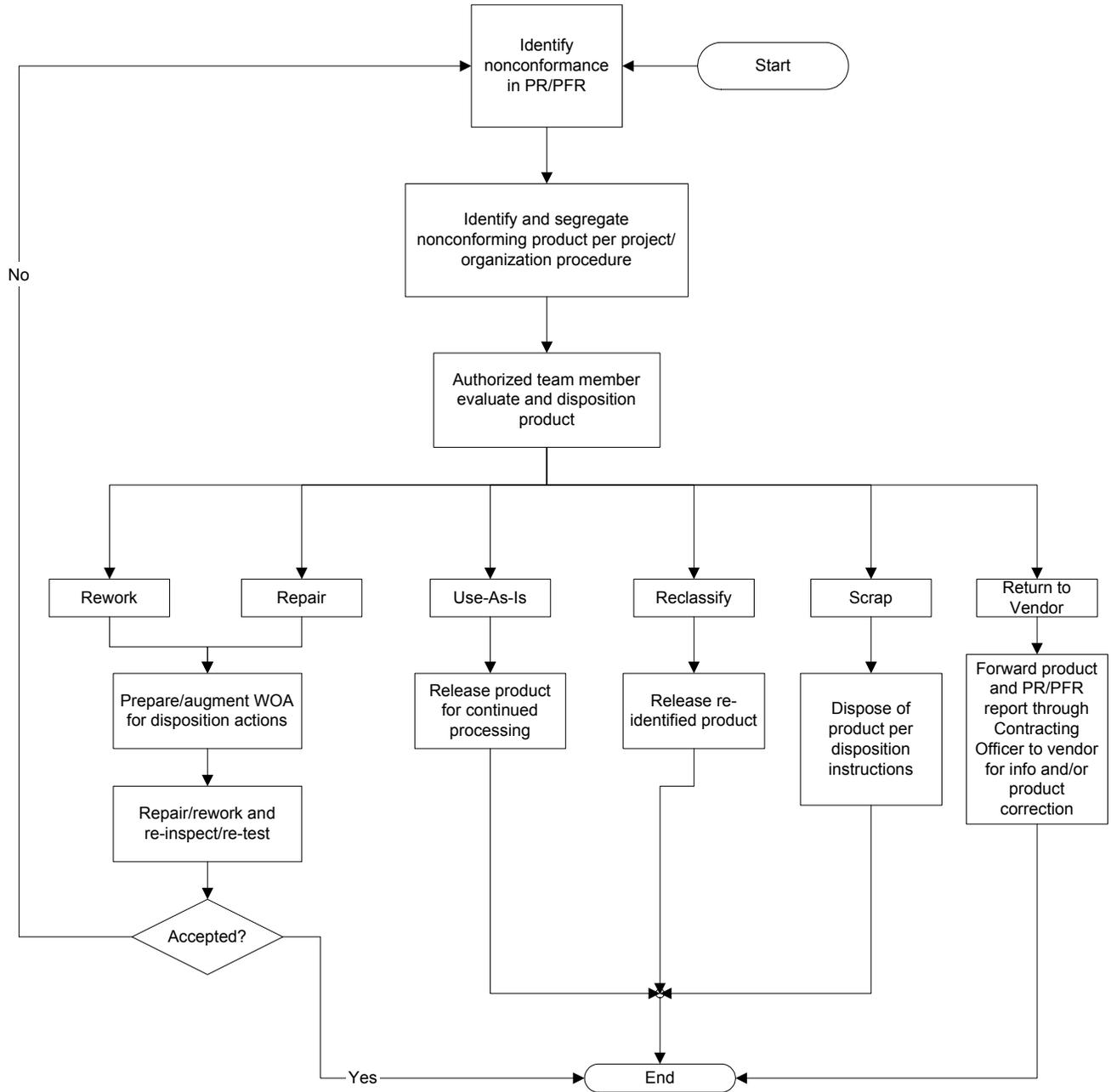


Figure 1

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### CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	08/12/98	
A	02/26/99	Header and footer format changes. Expanded P2 for clarity. First sentence of 2.2 revised to remove "processes" and highlight inclusion of audit NCR's in on-line system. Modified 2.4.1(a) and (b) to accommodate established NCR/CA roles. Revised 2.4.2 to address non-project associated nonconformances. Added Note to 2.4.2. Added 2.4.3(d) WOA instructions and 2.4.3(g). Revised 2.6 for clarity. Identified quality records maintenance responsibility. Form 4-31 revised to reflect design of NCR/CA database.
B	04/21/99	Updated references to new/revised GPG's. Moved and expanded records section to P6. Added NCL definition. Rewrite of 2.4.1 to remove project MRB requirements in favor of NCR/CA system use. 2.5.1 expanded to address ISO requirement. 2.5.5 added to address ISO requirement. References to "MRB" changed to either "NCL" or "NCR/CA system" as appropriate. NCR Form instruction 1 revised. Added GSFC sponsor as alternate to Contracting Officer where no CO exists (Records table 2.4.1, 2.5.1, 2.5.2, 2.5.5).
C	06/23/99	<ul style="list-style-type: none"> <li>- Added P4(f) and modified 2.5.4.</li> <li>- Incorporated changes to accommodate minor and major nonconformance handling distinctions:</li> <li>- P6 second row added; expanded 1(a);</li> <li>- revised 1(e);</li> <li>- 2.1 modified to allow temporary use of facsimile nonconformance tags;</li> <li>- revised 2.2 for minor nonconformances;</li> <li>- 2.3 - "tangible" added before "nonconforming product" to exclude non-tangible products from mandatory segregation;</li> <li>- 2.4.1 expanded to include general definition of major product nonconformance and requiring procedure/instruction for local nonconforming product control processes; where warranted changed "NCR" throughout GPG to more generic terms not associated strictly with the NCR/CA database;</li> <li>- removed NCR form attachment in favor of reference to its accessibility via GDMS (2.2)</li> </ul>
D	08/17/99	<ul style="list-style-type: none"> <li>- Definition of Major nonconformance (1.a) amended to replace the word "anomalies" with "failures" in the first sentence.</li> <li>- 2.4.1 modified to make clear that local procedures are necessary for application of both the NCR/CA system and any local alternate process for minor nonconformances.</li> </ul>

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**CHANGE HISTORY LOG *Continued***

<b>Revision</b>	<b>Effective Date</b>	<b>Description of Changes</b>
E	03/02/00	Definition of Major nonconformance (1.a) modified to address personnel and system safety and bring definition in line with GPG 1710.1.
F	05/16/00	<ul style="list-style-type: none"> <li>- Deleted allowance for local documentation (vs. NCR/CA system) of minor nonconformances. This change affected P6, 2.2, and 2.4.1.</li> <li>- P4 - Deleted references to GPG's 5100.1, 5100.2 and 7120.2</li> <li>- P6 - Changed title to QUALITY RECORDS</li> <li>- 2.1 - Inserted GSFC Form number for red tag.</li> <li>- 2.4.1 - Second sentence: Replaced "Project procedure(s) and/or work instruction(s)" with "Project document(s)".</li> <li>- 2.6 - Inserted "(or the organization's designee)"</li> </ul>
G	01/17/03	<ul style="list-style-type: none"> <li>- Reformatted using latest GPG template to comply with GPG 1410.1.</li> <li>- P.4 - Added FAR Part 46 reference.</li> <li>- P.8 - "Quality" removed from section title</li> <li>- P.10a.1 - Revised definition of major nonconformance.</li> <li>- P.10c - Individual disposition definitions removed. Text expanded in 4.3.</li> <li>- 2 - First sentence revised to include an exception for minor software nonconformance documentation.</li> <li>- 4.1d - Control plan contents requirements reworded.</li> <li>- 4.3.a through f – Elaboration of nonconforming product dispositions</li> <li>- 4.4 - New section added to address ISO 9001:2000 requirement.</li> <li>- 5.1 - Deleted Contracting Officer and/or customer sponsor involvement in customer disposition approval requests.</li> <li>- 7 - Rewritten.</li> <li>- Flowchart updated consistent with text changes.</li> </ul>

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**CHANGE HISTORY LOG *Continued***

<b>Revision</b>	<b>Effective Date</b>	<b>Description of Changes</b>
H	07/30/03	<p>Procedure re-written to address deployment of PR/PFR database, distinguishing product problems from systemic issues. Substantive changes:</p> <ul style="list-style-type: none"> <li>- All references to “NCR/CA” changed to “NCR/CAS”.</li> <li>- P.3 - Authority document updated.</li> <li>- P.4 - References j (GSFC 4-31) and l (FAR Part 46) deleted.</li> <li>- P.7 - Training source updated.</li> <li>- P.8 – First record custodian updated.</li> <li>- P.10 – Definitions added for “Anomaly”, “Corrective Action”, “Disposition”, “PDL”, “PR/PFR database”, and “SOARS”. Nonconformance definition revised to remove “major” and “minor” distinctions.</li> <li>- Section 2. – Added first paragraph. Incorporated 5.3 and 5.4 of Rev. G into last paragraph. Rest of section re-written to incorporate PR/PFR and SOARS documentation.</li> <li>- 4.1 – Replaced NCR/CA with PR/PFR.</li> <li>- 4.3 – Last sentence revised to remove reference to root cause analysis and correction for major nonconformances.</li> <li>- 4.4 – Second sentence added.</li> <li>- 5.3 – Previous NCL responsibility assigned to PDL.</li> <li>- 7. – Re-written to address PR/PFR closure and to remove reference to major nonconformance reports.</li> </ul>