Goddard Procedures and Guidelines

DIRECTIVE NO.	GPG 5340.2A	**APPROVED BY Signature:**	*Original Signed by*
EFFECTIVE DATE:	February 26, 1999	**NAME:**	A.V. Diaz
EXPIRATION DATE:	February 26, 2004	**TITLE:**	Director

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

Title: CONTROL OF NONCONFORMING PRODUCT

Preface

P1. PURPOSE

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

P2. APPLICABILITY

This procedure applies to customer complaints, to internal and supplier audit nonconformances, and to products covered by the scope of the Quality Management System (QMS) which are received at 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 unless such product is the subject of a supplier audit finding.

P3. AUTHORITY

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

P4. REFERENCES

a. GPG 1310.1, Customer Commitments and Review

b. GPG 1710.1, Corrective and Preventive Action

c. GPG 4520.2, Incoming Inspection and Test

d. GPG 5100.1, Procurement

e. GPG 5100.2, Supplier Performance Records

f. GPG 5330.3, Inspection and Test Status

g. GPG 8730.4, Quality System

h. GPG 9980.1, Internal Audit System

P5. CANCELLATION

GPG 5340.2, Control of Nonconforming Product

Procedure

1. DEFINITIONS

a. Material Review Board (MRB) – Individual(s), identified in applicable product management plans (see GPG 8730.4), authorized to evaluate and disposition nonconforming product and determine corrective action.

b. Nonconformance – Non-fulfillment of a specified requirement.

c. Failure – A product nonconformance identified while the product is mechanically functioning or operating in a powered condition.

d. Disposition – Action taken on a product nonconformance. Possible dispositions are:

1. Rework - Action taken on nonconforming product so that it will fulfill the specified requirements. This disposition includes software "upgrades".

2. 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.

3. 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.

4. 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").

5. Return To Vendor – Action taken to return nonconforming product to the vendor in accordance with contract provisions.

6. Scrap – Action taken on nonconforming product to make it unusable and to remove it from the quality management system.

e. NCR/CA Database – An inter-active on-line database, accessed via the GSFC Quality Management System web-site, used to document and track the status of identified nonconformance reports (NCR's) and associated corrective action (CA).

2. IMPLEMENTATION

2.1 Nonconformance Identification

Nonconforming product shall be tagged with a Nonconformance Tag (see Figure 1) by the MRB designee identified in the project MRB procedure (see 2.4.1). Separate tags for each nonconformance is 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 5330.3). The tag shall remain on/with the nonconforming product or documentation until product disposition has been made and documented on all identified nonconformances.

2.2 Nonconformance Documentation

Product and Quality Management System nonconformances (including internal and supplier audit NCR's) shall be identified in the NCR/CA database. If the on-line system is not accessible due to power or network disruption, nonconformances shall be documented on the GSFC Nonconformance Report (NCR) form 4-31 Rev.A and entered into the NCR/CA database at the earliest opportunity. NCR's associated with product shall be cross-referenced on the applicable Work Order Authorization (WOA), or equivalent (for software product), in accordance with GPG 5330.3.

2.3 Nonconforming Product Segregation

Except for incoming product released for urgent production purposes prior to product verification (see GPG 4520.2), 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.

2.4 Nonconformance Evaluation and Disposition

2.4.1 Each GSFC Project shall document nonconforming product evaluation and disposition procedure(s) as part of Quality Planning documentation required by GPG 8730.4. The procedure(s) shall address the following, as a minimum:

a. Project Material Review Board (MRB) membership, including identification of a chairperson (If not adequately addressed by the protocols and privileges established by the project in the NCR/CA system);

b. MRB operation, including any differences between pre-mission operation and mission operation phases (If not adequately addressed by the protocols and privileges established by the project in the NCR/CA system);

c. Responsibility for tagging and segregating nonconforming product;

d. Identification and operation of segregation area(s)/facility(s);

e. Project interface with the on-line NCR/CA database, including NCR disposition/corrective action roles and authorities and identification of nonconformance scenarios requiring customer approval. Note: Disposition and corrective action determination authority may be unilateral, majority, and/or unanimous under pre-defined circumstances;

2.4.2 Product-oriented NCR's shall be evaluated and dispositioned in accordance with the MRB procedure of the Project identified in the NCR. NCR's generated against procured or stock product that has no specific Project designation shall be evaluated and dispositioned by the Directorate Office 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. If the responsible Project is no longer in existence (e.g., a customer complaint generated after project dissolution), the NCR shall be evaluated and dispositioned by the project's Directorate Office. NCR's shall be evaluated for the need for corrective action by the applicable MRB chairperson (see GPG 1710.1).

Note: In the NCR/CA database, the MRB Chairperson has the role of the project Nonconformance Lead (NCL)

2.4.3 Nonconforming product disposition shall be one of the following:

a. Rework -This disposition requires generation of a Work Order Authorization or equivalent for software products (see GPG 5330.3) for the rework and re-inspection/re-test.

b. Repair - This disposition requires generation of a Work Order Authorization or software product equivalent (see GPG 5330.3) for the repair and re-inspection/re-test.

c. Use-As-Is

d. Re-Classify – Product re-classification status must be indicated on the applicable Work Order Authorization or software product equivalent.

e. Return to Vendor

f. Scrap - This disposition shall specify how the product will be scrapped.

g. Product not available for disposition – This disposition is used when corrective action is required as a result of a customer compliant but the product was not returned for disposition.

After MRB documentation of product disposition and prior to any required root cause analysis, cause correction and remedial action, the product may be released for disposition processing.

2.5 Notification of Nonconforming Product

2.5.1 When required by customer requirements (see GPG 1310.1), or as indicated in the Project procedure (see 2.4.1), NCR's resulting in repair or use-as-is dispositions shall be forwarded by the MRB,

through the appropriate Contracting Officer, to the customer for approval prior to disposition implementation.

2.5.2 "Return to Vendor" NCR's and NCR's generated against product during incoming inspection and test (see GPG 4520.2) shall be forwarded by the MRB, through the appropriate Contracting Officer, to the vendor for information and/or corrective action in accordance with GPG 1710.1. The Contracting Officer shall consider the impact of NCR's generated against supplier performance as part of supplier evaluation in accordance with GPG 5100.2.

2.5.3 NCR's generated as a result of internal audit shall be handled in accordance with GPG 9980.1.

2.5.4 NCR's generated as a result of a supplier audit shall be included as part of the audit report for supplier response and corrective action (see GPG 5100.1).

2.6 Customer Complaints

Customer complaints shall be documented as an NCR by the individual receiving the complaint and forwarded to the applicable Project Office or the cognizant Directorate Office, if the Project no longer exists, for disposition and corrective action.

2.7 Closing NCR's

NCR's shall be closed when either (1) the product has been dispositioned and it is determined that no corrective action is warranted (see GPG 1710.1), or (2) when corrective action is warranted, corrective action has been determined, documented and found effective by follow-up action in accordance with GPG 1710.1.

3. RECORDS

NCR/CA database (Maintained by Code 302, Systems Reliability and Safety Office)

GSFC NONCONFORMANCE REPORT — [1] NCR #

IDENTIFICATION AND DISPOSITION

[2] Found by:
- ☐ a. Internal Audit
- ☐ b. Supplier Audit (enter supplier in 5a)
- ☐ c. Customer Complaint
- ☐ d. Incoming Inspection/Test (enter supplier in 5a)
- ☐ e. In-process/Final Inspection/Test (non-operational)
- ☐ f. Pre-Launch/Pre-Flight Operation
- ☐ g. Mission Operation
- ☐ h. CA follow-up

[3] Initiator/Code/Date

[4] Reference(s)
- ☐ WOA #:
- ☐ WOA Event #:
- ☐ Audit ID #:

[5] Responsible Project/Organization

[5a] Supplier

[6] Item Description

[7a] Lot/Heat #

[7b] Serial # (when applicable)

[7c] Item Configuration #/Rev.

[7d] System Element

[8] Description of Nonconformance

[8a] Defect Code:

[9] Product Disposition (not applicable if block 2a or 2b is checked)
- ☐ Rework ☐ Repair ☐ Scrap ☐ Return to Vendor
- ☐ Use-As-Is ☐ Reclassify ☐ Product not available for disposition

Additional Disposition Instructions:

[10] Disposition Approval/Code/Date

[11] (Check one)
- Customer Approval required and on file? ☐
- Customer Approval not required ☐

CORRECTIVE ACTION

[12] The nonconformance:
- ☐ was identified as a result of internal or supplier audit
- ☐ was identified as a result of customer complaint
- ☐ affects mission or personnel safety
- ☐ is known or suspected to have occurred previously on same or similar product
- ☐ would have posed a significant risk to mission success (performance, schedule, resources) if undetected
- ☐ is a known or suspected result of a design flaw which could affect future product
- ☐ None apply – Close NCR

Complete Corrective Action if one or more blocks (other than "None apply") are checked

[13] Scheduled CA Completion Date

[14a] Cause Code:

[14] Root Cause:

Action Taken to Correct Cause:

Remedial Action:

[15] CA Approval/Code/Date

[16] Scheduled CA Follow-up Date

[17] CA Follow-up

CA Implemented and Effective? ☐ Yes ☐ No

If "NO", new NCR # _____

_____ Name/Code

_____ Date

GSFC Form 4-31 Rev. A

Form Instructions:

1. NCR #
   For product nonconformances: The corresponding WOA# plus a sequentially assigned numeric NCR serial number (e.g., HST5/9/97-1). For NCR's generated as a result of audit,: The audit ID# plus a sequentially assigned numeric NCR serial number. For Customer Complaints: A Directorate/Project assigned unique number.
2. Check one box
3. First and last name of NCR Initiator, his/her org. code number and initiation date
4. Check applicable box and identify WOA and WOA Event number, or Audit ID#
5. Identify Project or organization whose product or implementation is nonconforming

5a. Identify supplier providing product or being audited

6. Name of discrepant product

7a Identify material/part lot/heat number

7b Identify item serial number whenever applicable

7c Identify item configuration. Number (e.g., drawing number) and revision

7d Identify nonconforming quality system element (e.g., Process Control, Training) for QMS or audit nonconformances

8a Describe/reference requirement vs. actual condition

8b Identify defect code from below

9. Check one disposition and define additional instructions as necessary.
10. Authorized MRB/NCL signature, Code, and date of disposition approval.
11. Check applicable box.
12. Check all that apply. If none apply, NCR is closed.
13. Indicate date when corrective action is expected to be complete.
14. Identify all elements of corrective action: Root Cause, Action taken to Correct Cause, and Remedial Action

14a. Identify cause code from below after root cause is identified.

15. Authorized signature (MRB Chair/NCL) and Org. number approving corrective action and follow-up schedule
16. Indicate date when corrective action follow-up investigation is expected to be performed.
17. Check one block. A checked "NO" block requires generation of a new NCR (NCR # = Original # - FU). For example HST5/9/97-1-FU

DEFECT CODES

000	Conformal Coating	130	Leak Test
010	Contamination	140	Performance Test
020	Damage	150	Shock Test
030	Dimensional	160	Thermal Cycle Test
040	Documentation	170	Vibration Test
050	Electronic/Electrical	180	Thermal-Vacuum Test
060	Finish	190	Welding/Welds
070	Identification	200	Wiring
080	Material	210	Continuity/Ground
090	Mechanical	220	Software Code
100	Soldering	230	Quality System Element
110	Acoustic Test	240	Mission Operation
120	EMI/EMC Test	250	Short Shipment

CAUSE CODES

000	Design Deficiency
010	Procedure not available
020	Procedure not implemented
030	Procedure inadequate
040	Inadequate training/certification
050	Equipment malfunction
060	Cause Unknown (After investigation/troubleshooting)

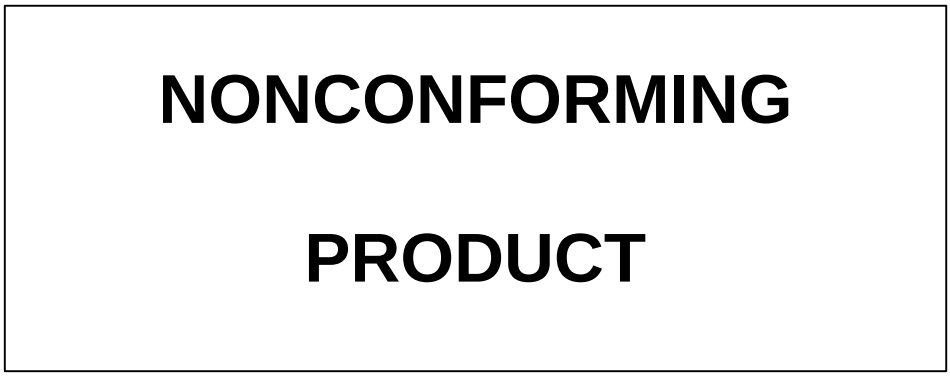
Continuation of Block 14 from front

Root Cause:

Action Taken to Correct Cause:

Remedial Action:

GSFC Form 4-31 Rev. A (reverse)

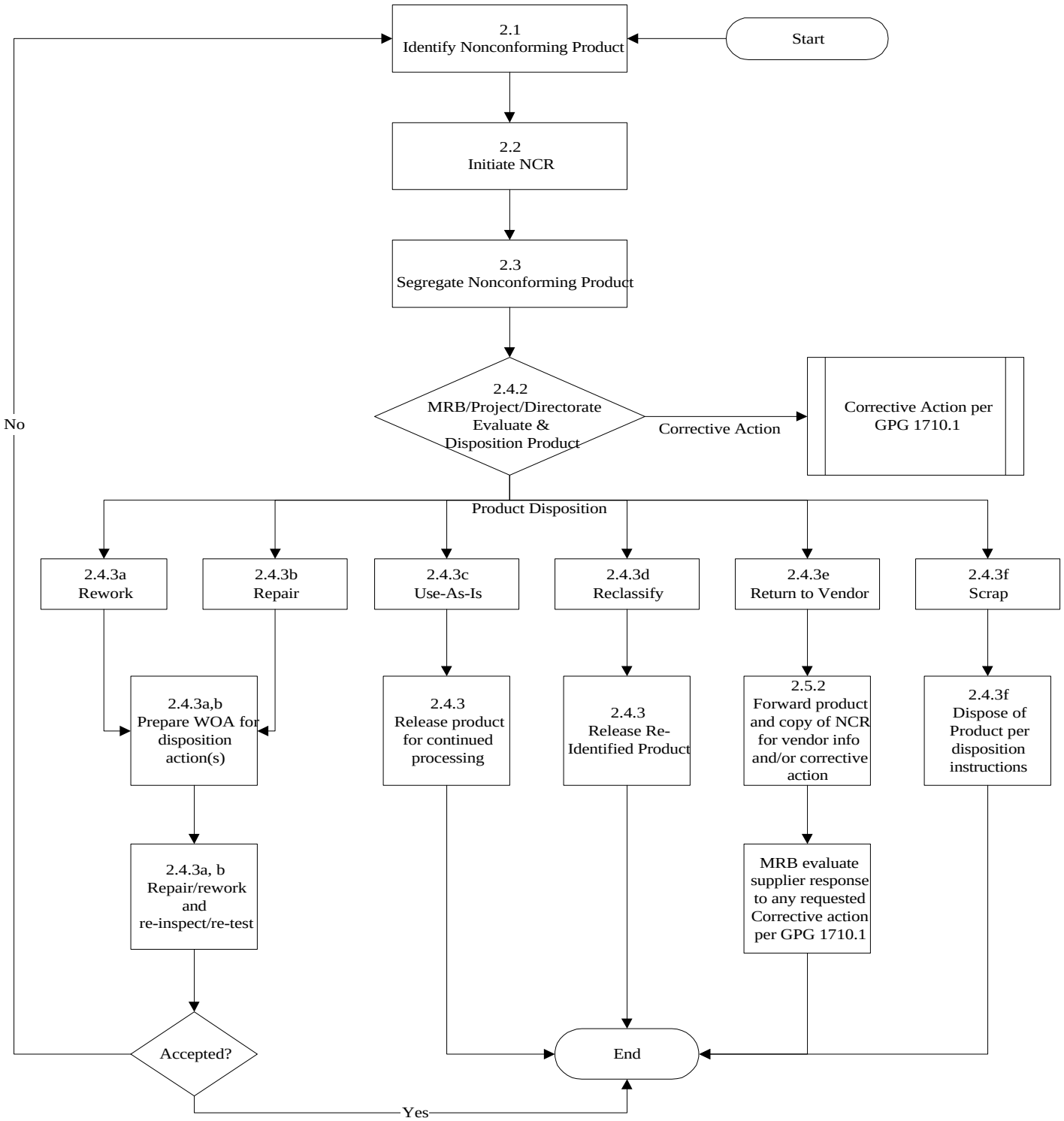


GSFC 4-33

(Red Tag)

Figure 1

Control of Nonconforming Product Flowchart



CHANGE HISTORY LOG

Revision	Date	Description of Changes
Baseline	8/12/98	
A	2/26/99	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.