| REVISION HISTORY | | | |
|---|---|---|---|
| **Rev** | **Description of Change** | **Author** | **Effective Date** |
| 0 | Initial Release | T. Briceno | 5/27/98 |
| 1 | Clarifications based on 7/98 DNV Audit and 6/98 Internal Audit (see DCR 98-012). Major rewrite. | M. Hines | 9/24/98 |
| 2 | Clarifications based on 11/98 DNV Audit (DCR 98-066) | R. Serrano | 12/18/98 |
| 3 | Revised Section 6.2.9 to clarify NCR information (DCR 99-034) | R. Williams | 10/6/99 |
| 4 | Clarifications based on 4/01 NQA Audit (DCR 01-011) | M. Washington | 9/6/01 |
| 5 | Change to Section 6.2.3, obtaining NCR numbers (DCR 02-003) | J. Weller | 4/17/02 |

| REFERENCE DOCUMENTS | |
|---|---|
| **Document Number** | **Document Title** |
| 53.ARC.0000 | Ames Research Center Quality Manual, Section 4.13 |
| 53.ARC.0001 | Management Responsibility and Authority |
| 53.ARC.0013.1 | Work Instruction for Deviation/Waiver |
| 53.ARC.0014 | Corrective and Preventive Action |
| 53.ARC.0016 | Quality Records |

Documents referenced in this procedure are applicable to the extent specified herein.

## 1. Purpose

This procedure defines how nonconforming products and services are controlled in accordance with the Ames Research Center (ARC) Quality Manual.

## 2. Scope

This procedure applies to products and services (see Definitions) that fall within the scope of the ARC Quality System.

Nonconformances may be identified at any point in the life cycle.

Organizations not using the Procedure for Controlling Nonconforming Products and Services (see section 6.2) shall implement an equivalent process meeting the General Requirements specified in section 6.1.

## 3. Definitions and Acronyms

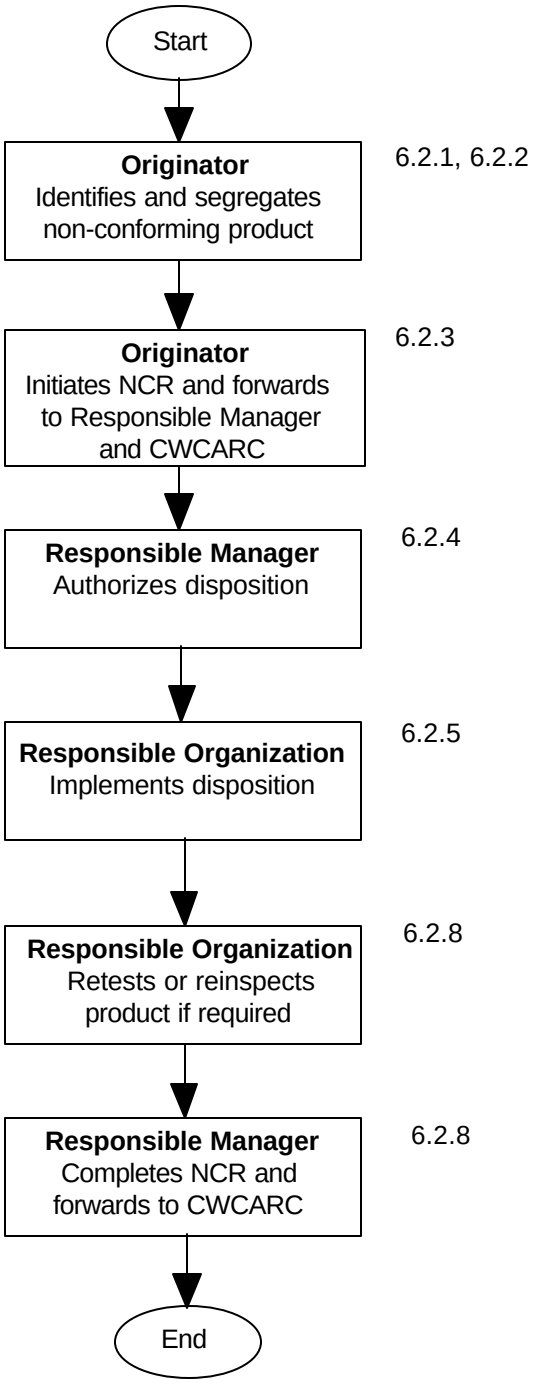
| | | |
|---|---|---|
| 3.1 | Centerwide Corrective Action Request Coordinator (CWCARC) | Centerwide person responsible for processing CARs and administering the corrective and preventive action system |
| 3.2 | Customer | Any organization or individual that enters into a formal agreement with ARC for delivery of ARC products or services |
| 3.3 | Customer Agreement | Space Act Agreement, Interagency Agreement, Memorandum of Agreement, Memorandum of Understanding, Cooperative Agreement, Program or Project Plan, Research Plan/Proposal combined with a documented form of customer acceptance (e.g., customer letter of acceptance, NF 506A "Resources Authority Warrant," Military Inter-departmental Purchase Request (MIPR), etc.), or any other legal commitment entered into by ARC to deliver a product or service |
| 3.4 | Deviation | Request made during the planning, design, or fabrication of an item to depart from a particular performance or design requirement of a specification, drawing, or other document for a specific number of units or for a specific period of time |
| 3.5 | Disposition of Nonconforming Product | Authorization to "use as is," "scrap," "rework," "regrade," "repair," or "return to supplier" |
| 3.6 | NCR Originator | Person who finds a nonconformance and originates an NCR |
| 3.7 | Nonconformance | Nonfulfillment of a specified requirement |
| 3.8 | Nonconformance Report (NCR) | Form used to disposition nonconformances |
| 3.9 | Product | Systems, hardware, software, data (including research results), and/or processed material resulting from ARC activities or processes |

| | | |
|---|---|---|
| 3.10 | Regrade | Use in another application that has less demanding requirements |
| 3.11 | Repair | Extra processing so that an item meets intended usage specifications although it does not conform to original requirements |
| 3.12 | Responsible Manager | Person having the responsibility and authority to accomplish/implement a specific activity or process (includes organizational line managers, project managers, etc. |
| 3.13 | Return to Supplier | Return the nonconforming product to the supplier for replacement, rework, or repair |
| 3.14 | Review Team | Person(s) authorized to review NCRs and disposition the nonconformances |
| 3.15 | Rework | Extra processing to cause an item to meet original requirements |
| 3.16 | Scrap | Nonconforming product that is not usable and cannot be economically reworked or repaired |
| 3.17 | Service | Consulting, physical work, and/or intellectual work |
| 3.18 | Signature/Sign | Handwritten, electronically-written, or electronically-typed name of an individual that indicates an act of approval, disapproval, review, etc. |
| 3.19 | Supplying Organization | Vendor or ARC internal organization supplying item used in an ARC product or service |
| 3.20 | Use As Is | Obtain a waiver or deviation to allow a product that does not meet requirements to be used |
| 3.21 | Waiver | Request to accept an item which during manufacture/test or after having been submitted for inspection or test is found to depart from specified requirements or standards but is considered acceptable for use as is or is acceptable after repair |

## 4. Flowchart

**Centerwide Nonconformance Control Process**

(see Section 6.2)



## 5. Responsibilities

**5.1 Responsible Manager** shall:

- ensure nonconforming products and services are controlled as defined in documented procedures, obtain customer approval of dispositions if required in customer agreements, and authorize closure of NCRs, and
- determine if the magnitude of the nonconformance and its associated risk warrants corrective action in accordance with 53.ARC.0014.
- ensure nonconformance data is analyzed and improvement opportunities are identified.

**5.2 Responsible Manager** and/or **Review Team** shall:

- recommend appropriate dispositions of nonconforming products and services,
- define required rework or repair and re-inspection criteria in the NCR, and
- ensure that Waivers and Deviations are initiated in accordance with 53.ARC.0013.1, when required.

**5.3 NCR Originator** shall:

- initiate an NCR, and
- identify and segregate nonconformances .

**5.4 Centerwide Corrective Action Request Coordinator** (CWCARC) shall:

- administer the centerwide NCR (ARC 758) process
- maintain the center list of Directorate nonconformance control processes

## 6. Procedure

6.1 General Requirements –Organizations not using the Procedure for Controlling Nonconforming Products and Services (see section 6.2) shall implement processes that meet the following minimum requirements.

6.1.1 Nonconformance control processes shall cover all types of products and services defined in the Scope section of this document.

6.1.2 Directorates shall notify the CWCARC of the existence of each nonconformance control process.

6.1.3 Each nonconformance control process must be defined in a documented procedure that shall address the following:

- Methods and responsibilities for tagging, labeling, or otherwise identifying nonconforming products and service,
- Methods and responsibilities for segregation of nonconforming products, when practical, and appropriate storage and environmental control,

- Means for documenting the nonconformance,
- Who is authorized to evaluate nonconforming products and services for functionality, safety, cost, schedule, and other aspects,
- Who is authorized to disposition nonconformances,
- How affected groups will be notified of nonconformances,
- If required by customer agreement, how customers will be notified of nonconformances and how their approval for use or repair will be obtained,
- Who is responsible for verifying that items conform to documented requirements after repair or rework,
- Where required by customer agreement, the proposed use or repair of a product or service which does not conform to specified requirements shall be reported for concession to the customer or customer's representative, and
- Who is responsible to determine if corrective action is warranted to preclude recurrence of similar nonconformances (corrective action per 53.ARC.0014).
- Who is responsible to analyze nonconformance patterns and trends (in accordance with Section 7 – Metrics) and identify improvement opportunities (preventive action per 53.ARC.0014).

6.2 Procedure for Controlling Nonconforming Products and Services

Organizations without documented procedures for controlling nonconforming products and services in accordance with section 6.1 shall use the following procedure.

6.2.1 NCR Originator shall tag, label, log, or otherwise identify nonconformances as soon as possible after the nonconformance is discovered. NCR Originator may use a Nonconformance Tag (GPO 591-413) or equivalent when appropriate.

6.2.2 NCR Originator shall ensure that nonconforming products and services are not inadvertently used or delivered to the customer.

6.2.2.1 If practical, nonconformances shall be segregated to prevent their use. If segregation is impractical, other means must be taken to differentiate conforming and non-conforming products.

6.2.2.2 Care should also be taken to preclude additional damage or deterioration of nonconforming products. Appropriate storage and environmental controls shall be used as required.

6.2.3 NCR Originator obtains a Nonconformance Report (NCR) (ARC 758) from the NCR log at http://dqa.arc.nasa.gov/iso9000 web site. The

originator then obtains a NCR form and, completes fields 1–8, and forwards the NCR to the Responsible Manager and the CWCARC. The CWCARC enters the NCR into the NCR database.

6.2.4 The Responsible Manager may disposition the nonconformance or form a review team to disposition the nonconformance. The Responsible Manager and/or review team shall evaluate the nonconformance for impact on quality. The evaluation may include:

- analysis of design margin
- impact on functionality and personnel safety
- alternative applications
- costs and lead times for rework, repair, or return to supplier

Based on the evaluation, the Responsible Manager and/or review team shall fill out fields 9–17 of the NCR form and send it to the CWCARC for database updating, thereby authorizing one of the following dispositions:

- use as is
- return to supplier
- scrap
- rework
- repair
- regrade

The NCR will include, if applicable:

- definition of required rework or repair
- re-inspection criteria

6.2.5 The responsible organization implements the disposition. For “use as is” or “repair” dispositions, a Deviation or Waiver is required (see 53.ARC.0013.1). Deviations or Waivers shall be approved prior to the next inspection activity or function. If the disposition is “use as is,” the product is then used or integrated into the next phase of the assembly.

6.2.6 The Responsible Manager shall notify affected groups of the nonconformance and disposition. These groups may include:

- supplier and/or customer
- purchasing, design, or operations group
- review teams

6.2.7 When required by customer agreement, the customer-signed Waiver or Deviation shall be controlled as a Quality Record in accordance with 53.ARC.0016.

6.2.8 If the product is reworked or repaired, it shall be re-inspected or re-tested. When the product is acceptable, the Responsible Manager signs field 18 of the NCR and forwards a copy of the NCR to the CWCARC. If the product does not meet requirements, it is returned to the supplying

organization for rework or replacement.

6.2.9 The CWCARC ensures all information is entered into the NCR database.

6.2.10 When warranted, the Responsible Manager shall ensure that corrective action is initiated per 53.ARC.0014 to preclude recurrence of similar nonconformances.

6.2.11 The Responsible Manager shall also ensure that their organization's nonconformance data is analyzed per Section 7 – Metrics. When warranted, the Responsible Manager shall ensure that preventive action is initiated in accordance with 53.ARC.0014.

6.2.12 The CWCARC shall analyze centerwide nonconformance data per Section 7 – Metrics. When warranted, the CWCARC shall initiate preventive action in accordance with 53.ARC.0014.

## 7. Metrics

To assess product quality levels and identify opportunities for improvement, the patterns and trends in nonconformance data shall be analyzed, reported and reviewed by appropriate levels of management.

Analyses could include, but should not be limited to, current performance levels and depictions of trends over time in:

- Nonconformance rate – e.g. nonconformities per unit of output or unit of time.
- Nonconformance type - e.g. percent beyond max. voltage, min. data rate, etc.

## 8. Quality Records

The following Quality Records shall be generated and managed in accordance with 53.ARC.0016.

| Required Record | Custodian |
|---|---|
| Signed Waiver or Deviation when required by customer agreement | Responsible Manager |
| Nonconformance Report | Responsible Manager |

## 9. Form(s)

Forms referenced in this document:

| Form | Title |
|---|---|
| ARC 758 | Nonconformance Report |

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|---|---|
| GPO 591-413 | Nonconformance Tag |