53.ARC.0000 Rev7

Quality Manual

Ames Research Center

Approval:

W.E. Berry, Deputy Director — **2/27/02** Date

Moffett Field, CA

Quality System Management Representative
Ames Research Center

REVISION HISTORY			
Rev	**Description of Change**	**Author**	**Effective Date**
0	Initial release	-	4/20/98
1	Changes made per IV&V Facility and 1st ARC Internal Audit findings	-	7/2/98
2	Appendix A updated for IV&V Facility to correct internal documentation number change	-	9/3/98
3	Changes made to reflect updated Centerwide System Level Procedures and Work Instructions. Major rewrite.	M. Hines	11/4/98
4	Changed 4.5.2 Responsibility section to add training and coordination guidance to Directorate Level DCAs, and to remove “and directorate-level procedures” from the second paragraph.	R. Serrano	11/9/98
5	Changes made to reflect updated Centerwide System Level Procedures and Work Instructions. Changed 4.5.2 Responsibility section to add training, information, and coordination guidance to Directorate Level DCAs, and to remove “and directorate-level procedures” from the second paragraph.	R. Serrano	11/12/98
6	Changes made to reflect actual practices. Section 3.2 revised to reflect new office, section 4.9 revised to reflect actual practices, Appendix A deleted. (DCR 99-029)	R. Serrano	9/21/99
7	Change the definition of Quality Record in Section 3.5 (DCR 02-001) and name change in Section 4.13.3 of 53.ARC.0013 to Control of Nonconforming Products and Services (DCR 01-011)	J. Weller	2/2702

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1. PREFACE

In order for Ames Research Center (ARC) to maintain its position as one of the nation's premier aeronautics and space research centers, it is essential that we consistently meet or exceed our customers' requirements and expectations for the quality, performance, timeliness, and cost of the products and services we provide.

This manual defines the ARC policies that reflect the requirements of ISO 9001, *Quality Systems–Model for Quality Assurance in Design, Development, Production, Installation, and Servicing*. Implementation of these policies ensures that we consistently meet the quality and performance requirements of customers in a timely and cost-effective manner.

I personally affirm my commitment to enhancing the ARC Quality System through the implementation of ISO 9001. I fully support the provisions of this manual and solicit the active partnership of all ARC personnel in its implementation throughout the Center.

Dr. Henry McDonald, Director
Ames Research Center

2. QUALITY POLICY

QUALITY POLICY

Ames will provide world class quality products and services that meet or exceed our customers' requirements.

Approved by: Dr. Henry McDonald

Dr. Henry McDonald, Director
Ames Research Center

3. INTRODUCTION

3.1. Scope

The scope of the Ames Research Center ISO 9001 certification is:

> *The design and development of Aeronautics, Information Technology, and Space research and technology products, including software, hardware, and services.*

The primary source for products delivered to ARC customers resides within the disciplines of Aeronautics, Information Technology, and Space. The missions and objectives of these disciplines contain common activities, which are embodied within the following key elements:

Programs and Projects
Management of the processes that control the development and delivery of hardware, software, and/or systems associated with programs and projects as governed by a specific customer agreement,

Research
Management of the processes that control the manner in which research is identified, defined, reviewed, and delivered as governed by a specific customer agreement, and

Research Facility Services
Management of the processes that control the delivery of research data derived from testing in ARC research facilities as governed by a specific customer agreement.

3.2. Quality Management Program Office

The ARC Quality Management Program Office provides technical expertise to support Responsible Managers in managing and maintaining the Quality System. This includes training, developing documented procedures, and performing audits. The Office is responsible for defining the document and data control system, the corrective and preventive action system, the nonconformance reporting system, and the internal audit program.

3.3. Contractor Inclusion/Exclusion

ARC contractors are included in the Quality System to the extent that their contract stipulates that they follow ARC Quality System procedures.

3.4. Responsibilities

3.4.1. The Quality System Management Representative is responsible for the development and maintenance of the Quality System.

3.4.2. Primary responsibility for implementing the Quality System resides with the Responsible Managers in each ARC organization. The Responsible Managers shall ensure that documented procedures define the specific responsibilities, authorities, and relationships of personnel who manage, perform, or verify work that affects quality.

3.4.3. General responsibilities for ARC personnel regarding work affecting quality are summarized in Table A.

Table A: Summary of Quality System Responsibilities

Who	Responsibility and Authority
Center Director	? Define the Quality Policy, and ? Ensure the communication and understanding of the Quality Policy throughout the organization.
Quality System Management Representative	? Document and maintain the Quality Policy, ? Ensure that the Quality System is established, implemented, and maintained, ? Chair regular reviews of the suitability and effectiveness of the Quality System, and ? Coordinate improvements to the Quality System.
Responsible Managers	? Implement the Quality System, ? Obtain and communicate customer requirements to the appropriate personnel or functional organization, ? Ensure that qualified, skilled, and trained personnel and other resources are available to implement the Quality System, ? Ensure that products and services satisfy customer requirements including quality, safety, cost, schedule, performance, reliability, durability, accuracy, and maintainability, and ? Ensure that personnel comply with applicable standards, regulations, specifications, and documented procedures.
All personnel	? Ensure the quality of their work, ? Operate in conformance with the requirements of the Quality System, and ? Stop work in progress or make appropriate notifications when unsafe conditions exist or requirements are not being met.

3.5. Key Definitions

Approving Official	ARC individual authorized to approve a Customer Agreement
Customer	Any organization or individual that enters into a formal agreement with ARC for delivery of ARC products or services
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
Objective Evidence	Information which can be proven true based on facts obtained through observation, measurement, test, or other means
Product	Systems, hardware, software, data (including research results), and/or processed material resulting from ARC activities or processes
Program Plan	Document that establishes the overall project baseline for implementation as well as agreements among the Enterprise Associate Administrator, responsible Center Director, and Program Manager
Project Plan	Document that establishes the overall baseline for implementation as well as the agreements among the Center Director, Program Manager, and the involved NASA Center managers
Quality Policy	Overall intentions and directions of ARC with regard to quality as formally expressed by executive management
Quality Record	A subset of records that demonstrates conformance to requirements and the effective operation of the quality system. Quality records are those records important enough to be specifically identified as such in System Level Procedures or Work instructions.

Quality System	ARC organizational structure, procedures, processes, and resources needed to implement quality management
Responsible Manager	Person having the responsibility and authority to accomplish/implement a specific activity or process (includes organizational line managers, project managers, etc.)
Service	Consulting, physical work, and/or intellectual work
Shall	Use of this word means the action described is mandatory
Will	Use of this word shows intent; use of this word means the action described is not mandatory

4. QUALITY SYSTEM REQUIREMENTS

4.1. Management Responsibility

4.1.1. Policy

In this Quality Manual and its implementing procedures, ARC addresses quality objectives, management's commitment to achieving these objectives, organizational goals, and the expectations and needs of ARC customers. Improvements to the Quality System are made to enhance the achievement of ARC strategic objectives in support of the NASA mission. ARC implements periodic reviews of the Quality System to determine the system's effectiveness and suitability. Results of these reviews are maintained as Quality Records.

4.1.2. Responsibilities

The ARC Center Director defines the Quality Policy and ensures that it is communicated to and understood by ARC personnel.

The Quality System Management Representative shall document and maintain the Quality Policy and ensure its implementation. The Quality System Management Representative shall coordinate and chair executive reviews of the Quality System.

Responsible Managers shall identify and provide adequate resources, including trained personnel, for managing and performing work and supporting internal audit activities.

4.1.3. Procedures

53.ARC.0001 Management Responsibility and Authority

4.2. Quality System

4.2.1. Policy

ARC ensures that quality is an integral part of the design, development, and fabrication of ARC products and services. ARC emphasizes the use of problem prevention and problem correction in order to supply quality products and services to its customers.

The activities governed by the Quality System are identified and documented. These documented procedures are controlled and effectively implemented to ensure that ARC products meet customer requirements. The Quality System is defined in the following controlled documents:

? The Quality Manual,

- ARC Centerwide System Level Procedures and Work Instructions,
- Lower-level procedures, including standard operating procedures, work instructions, and other procedures deemed necessary,
- Program and project plans, and
- Quality Records.

Quality planning is embedded in the Centerwide System Level Procedures and Work Instructions and lower-level documents. Quality planning includes, as appropriate:

- Preparation of quality plans,
- Identification and acquisition of controls, processes, equipment, fixtures, resources, and skills needed to achieve the required quality,
- Ensuring the compatibility of the design; the production process; installation, servicing, inspection, and test procedures; and applicable documentation,
- Updating, as necessary, quality control, inspection, and testing techniques, including the development of new instrumentation,
- Identification, in sufficient time for the needed capability to be developed, of any measurement requirement involving capability that exceeds the known state of the art,
- Identification of suitable verification at appropriate stages in the product's life cycle,
- Clarification of standards of acceptability for all features and requirements, including those which contain a subjective element, and
- Identification and preparation of Quality Records.

Documents referenced in the Quality Manual, the ARC Centerwide System Level Procedures or Work Instructions, lower-level procedures or work instructions, and program and project plans are applicable only to the extent specified therein.

The documentation hierarchy for the ARC Quality System is summarized in Figure 1 *Structure of Quality System Documentation*.

4.2.2. Responsibilities

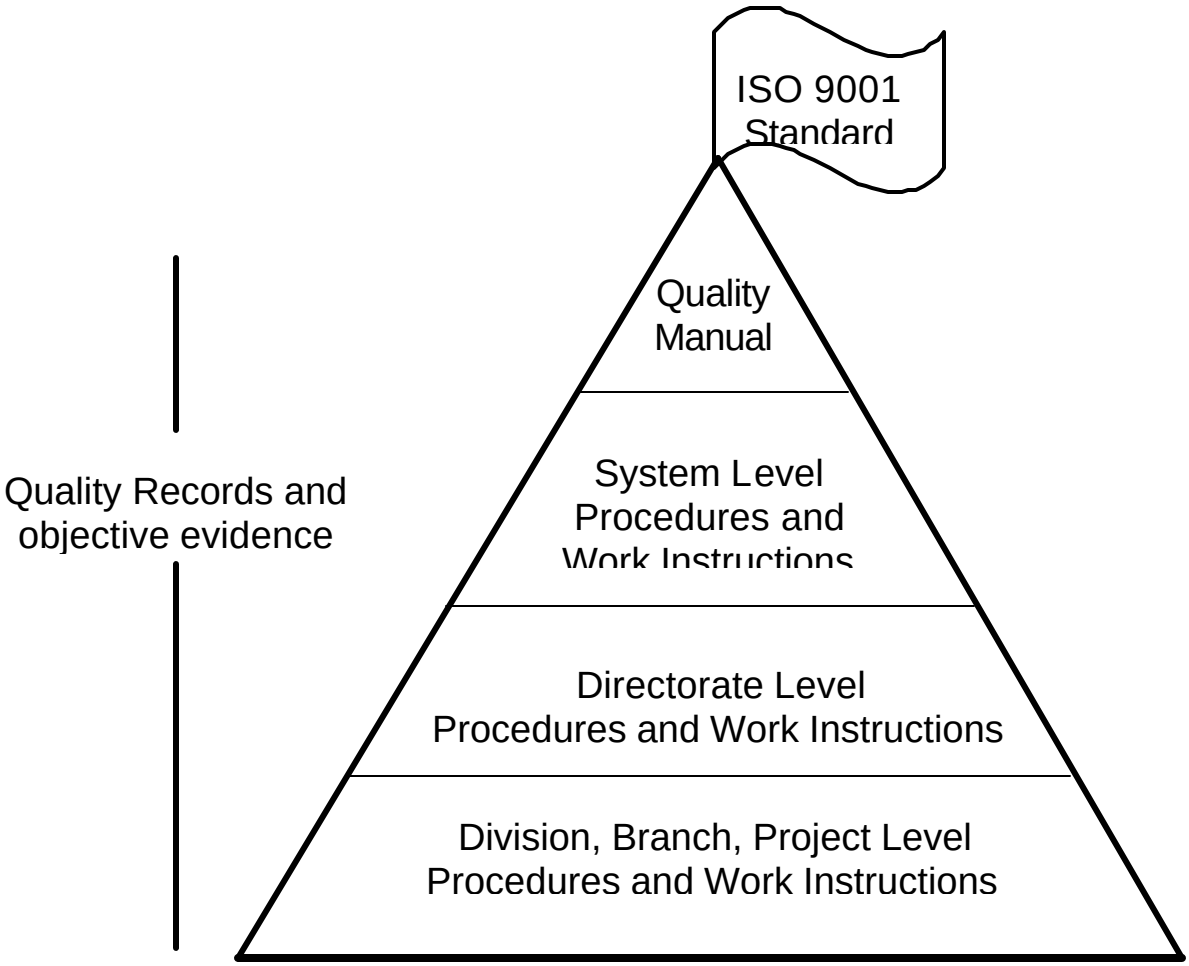
The Responsible Manager shall identify activities governed by the Quality

System and ensure that they are documented. The Responsible Manager shall perform quality planning to relate specific customer requirements to the Quality System and to ensure that quality documentation and records are properly identified, maintained, and controlled.

4.2.3. Procedures

53.ARC.0004.1	Project Management for the Design, Development, and Maintenance of Software
53.ARC.0004.2	Design and Development of Systems and Hardware
53.ARC.0009.2	Management and Performance of Research
53.ARC.0009.4	Program and Project Management

Figure 1: Structure of Quality System Documentation



4.3. Customer Agreements

4.3.1. Policy

ARC develops and executes agreements with its customers. ARC defines a customer as any organization or individual entering a formal agreement with ARC for delivery of ARC products or services.

ARC reviews customer agreements, both oral and written, prior to acceptance to ensure that the specified requirements can be met. These reviews ensure that the requirements are well defined and documented and that differences between parties are resolved. Results of these reviews are maintained as Quality Records.

4.3.2. Responsibilities

The Approving Official for each customer agreement shall ensure that appropriate reviews of these agreements take place and that amendments are made according to documented procedures.

The Responsible Manager shall ensure that effective communication is established with the customer, that all requirements are clearly stated and understood, and that ARC has the ability to meet those requirements.

4.3.3. Procedures

53.ARC.0003	Acceptance and Amendment of Customer Agreements

4.4. Design Control

4.4.1. Policy

ARC controls and verifies product design to ensure that specified customer requirements are met. This includes ensuring that:

- Service or product design documentation agrees with customer documentation,
- Designs are planned, controlled, verified, and validated,
- Requirements for design are documented,
- Design reviews are held as appropriate, and
- Design changes are made in accordance with documented procedures.

Qualified personnel equipped with adequate resources define

responsibilities for design and development activities. These personnel also plan and execute the activities. A plan for each design and development project is required. Plans shall be updated as the design evolves. Each plan will address, as appropriate:

- Organizational and technical interfaces between groups that provide input to the design and development processes,
- Required design inputs and how they are identified, documented, and reviewed for adequacy,
- Required design outputs and how they are reviewed and approved prior to implementation,
- Required design reviews and resulting Quality Records,
- Required design verification approaches and resulting Quality Records,
- Required design validation approaches, and
- The method for review and approval of design changes and modifications prior to implementation.

4.4.2. Responsibilities

The Responsible Manager shall ensure that appropriate design and configuration management plans are developed, implemented, and kept current in accordance with specified requirements.

The Configuration Management Officer shall establish, maintain, implement, and monitor design change control (i.e., configuration control) over baseline requirements, documentation, and deliverable products.

4.4.3. Procedures

53.ARC.0004.1	Project Management for the Design, Development, and Maintenance of Software
53.ARC.0004.2	Design and Development of Systems and Hardware
53.ARC.0004.3	Configuration Management
53.ARC.0009.4	Program and Project Management

4.5. Document and Data Control

4.5.1. Policy

ARC ensures that current Quality System documentation and Quality System data are readily available to ARC personnel via a document and

data control system. This system ensures that all Quality System documentation and Quality System data are reviewed and approved prior to their initial release and any subsequent modifications. Obsolete or invalid Quality System documents and Quality System data are destroyed or, if retained, properly marked.

At their work location, ARC personnel have access to current and approved versions of Quality System documents, Quality System data, and external documentation pertinent to their work that affects the quality of ARC products and services.

4.5.2. Responsibilities

The Responsible Manager shall maintain document control procedures for Quality System documents, Quality System data, and applicable external documentation.

The Centerwide Document Control Administrator shall process, control, and coordinate the creation or revision of the Quality Manual, the ARC Centerwide System Level Procedures and Work Instructions. This includes tracking, status, maintenance, and distribution of information relating to these documents. Additionally, the Centerwide DCA is responsible for the coordination of training, information, and communication between all Directorate Level DCAs.

The Directorate Document Control Administrators will perform the above functions for all procedures and work instructions within their directorate's divisions, branches, etc., as appropriate.

4.5.3. Procedures

53.ARC.0005 Document and Data Control

4.6. Purchasing

4.6.1. Policy

ARC controls the purchase of materials, products, and services incorporated into products delivered to ARC customers. ARC ensures that all purchasing documents describe the product or service to be delivered. ARC reviews and approves purchasing documents for completeness of specified requirements prior to release. This ensures that purchased materials, products, and services are verified (inspected and accepted) against documented and specified requirements.

ARC evaluates and selects vendors based on their ability to deliver products that meet specified requirements. Records of acceptable vendor performance are maintained as Quality Records.

When ARC decides to inspect and/or accept a purchased product at the vendor's facility, the purchasing document will specify inspection and/or acceptance arrangements and the method delivery. When required by customer agreement and specified by ARC contract, ARC customers are allowed to verify the product at the vendor's facility. Such verification by the customer does not absolve ARC of its responsibility to provide an acceptable product.

4.6.2. Responsibilities

The Responsible Manager shall review and approve purchase requests and forward them to the Acquisition Division via the Procurement Control Unit.

The Contracting Officer shall process contracts and purchase requests.

The Purchase Request Originator shall define the specifications for purchased goods and services and verify that received goods and services conform to those specifications.

4.6.3. Procedures

53.ARC.0006 Purchasing

4.7. Management of Customer-Supplied Material and Supplies

4.7.1. Policy

ARC ensures that customer-supplied material and supplies are protected from damage or loss while under ARC custodianship. Review of customer-supplied material and supplies ensures that they do not compromise the quality of ARC products or services. Defects in or damage to customer-supplied material and supplies are reported to the customer and these reports are maintained as Quality Records.

4.7.2. Responsibilities

The Responsible Manager shall ensure that handling and control of customer-supplied material and supplies is specified and performed in accordance with the customer agreement.

The Receiving Inspector shall identify, receive, and test the customer-supplied material and supplies in accordance with documented procedures.

4.7.3. Procedures

53.ARC.0007 Management of Customer-Supplied Material and Supplies

4.8. Product Identification and Traceability

4.8.1. Policy

ARC uniquely identifies materials and products in order to prevent the inadvertent use of an inappropriate item in a final product. Documented procedures, when required by customer agreements, ensure that product identification and traceability is performed in accordance with the configuration management system. This includes the unique identification of each delivered product, component, assembly, module, and part as specified by customer agreement. When required by customer agreement, records of identification are maintained as Quality Records.

4.8.2. Responsibilities

The Responsible Manager shall ensure that appropriate product identification and traceability activities are performed throughout the product's life cycle in accordance with documented procedures.

4.8.3. Procedures

53.ARC.0004.3 Configuration Management

4.9. Process Control

4.9.1. Policy

ARC identifies and plans processes that directly affect quality. This includes product creation, installation, and servicing processes – such as systems and hardware design and development, software design and development, program and project management, and management and performance of research. These core processes shall be carried out under controlled conditions, including:

- Use of written procedures that define the manner of process operation, where their absence would compromise quality.
- Use of suitable equipment, tools, and working environments.
- Compliance with applicable codes, standards, plans, specifications, and documented procedures.
- Monitoring and control of suitable process parameters and product characteristics.
- Approval of processes and equipment, whenever appropriate.
- Clearly stipulated product criteria, such as written standards, representative samples, or illustrations.

- Suitable maintenance of tools and equipment to preclude degradation of process capability.

For special processes, where complete verification of quality using product inspection and testing is not practical, one or both of the following process controls shall also be employed:

- Requirements for pre-qualification of process parameters, equipment, and personnel are specified. Results of these qualifications are maintained as Quality Records.

- Process parameters are continuously monitored and controlled.

4.9.2. Responsibilities

The Responsible Manager shall ensure that ARC processes are appropriately planned, documented, monitored, and controlled.

4.9.3. Procedures

53.ARC.0004.1	Project Management for the Design, Development, and Maintenance of Software
53.ARC.0004.2	Design and Development of Systems and Hardware
53.ARC.0009.2	Management and Performance of Research
53.ARC.0009.4	Program and Project Management

4.10. Inspection and Testing

4.10.1. Policy

ARC ensures that inspection and testing activities prove that product requirements are met consistently.

Inspection and testing occurs throughout the product's life cycle as required by a customer agreement or project plan. Review and approval procedures ensure that the product or its components meet requirements at each stage of development.

ARC performs final product inspection and testing in accordance with documented procedures. Products are inspected and tested per customer requirements before release and are released to the customer when they either meet documented acceptance criteria or when acceptance criteria are otherwise waived. Records of product authorized for urgent release prior to verification are maintained as Quality Records.

Inspection and test records provide evidence of the test and/or inspection, detail the results of the test and/or inspection, and identify the Inspection Authority responsible for product release. These records will be maintained as Quality Records.

4.10.2. Responsibilities

The Responsible Manager for each product shall ensure that appropriate inspection and testing activities are documented and performed.

The Testing and Inspection Staff shall coordinate, perform, and document inspection and testing in accordance with documented procedures.

The Inspection Authority shall review the results of all specified inspections and testing and approve the product for final release to the customer.

4.10.3. Procedures

53.ARC.0010 Inspection and Testing

4.11. Control of Inspection, Measuring, and Test Equipment

4.11.1. Policy

ARC ensures that test and measurement equipment is properly used, calibrated, and maintained. ARC further ensures that equipment is used in a manner consistent with the required measurement capability.

ARC determines what measurements are needed and what degree of accuracy and precision is needed to make those measurements. When accuracy requires calibration, tools and equipment used will be routinely calibrated according documented procedures. Calibration records are maintained as Quality Records.

Test software and comparative reference (e.g. test hardware) are checked and rechecked at prescribed intervals to prove that they are capable of verifying acceptable product. The results and the frequencies of these checks are maintained as Quality Records.

4.11.2. Responsibilities

The Responsible Manager shall ensure that equipment is identified, properly cared for, and calibrated; that measurement and testing tools are evaluated before they are used; and that results of calibrations are documented.

The Performing Calibration Labs shall be compliant with the requirements in documented procedures unless specifically exempt by contract.

4.11.3. Procedures

53.ARC.0011 Control of Inspection, Measuring, and Test Equipment

4.12. Inspection and Test Status

4.12.1. Policy

ARC ensures that only materials and products that have passed required inspections and tests are released. Documented procedures specify that the inspection and test status of materials and products is identified during receipt and throughout the material or product life cycle. The material or product status indicates conformance or nonconformance to inspection and test procedures.

4.12.2. Responsibilities

The Responsible Manager shall ensure that the method for identifying inspection and test status as identified in a customer agreement, project plan, or other documented procedure is implemented effectively.

4.12.3. Procedures

53.ARC.0012 Inspection and Test Status

4.13. Control of Nonconforming Product

4.13.1. Policy

ARC prevents the unintended use, installation, or delivery of nonconforming product to ARC customers via documented procedures. These procedures provide for the identification, documentation, evaluation, segregation (when practical), disposition, and appropriate notification of the occurrence of nonconformances throughout the development life cycle of ARC deliverable products and services.

ARC ensures that the authority and the responsibility for controlling nonconforming product are delegated to the appropriate management authority.

ARC ensures that nonconforming product is reviewed in accordance with documented procedures to determine how the product should be used. If a nonconforming product disposition is “use as is” or “repair and use,” the customer is informed per the customer agreement. If the nonconforming product disposition is “repair” or “rework,” the product is re-inspected in accordance with the customer agreement, project plan, or appropriate documented procedures. Descriptions of nonconformances that have been accepted, and of repairs, are recorded to denote the actual condition and are maintained as Quality Records.

4.13.2. Responsibilities

The Responsible Manager shall ensure that requirements contained in documented procedures that implement this policy are effectively

implemented.

The Nonconformance Report Originator shall initiate a Nonconformance Report and identify and segregate nonconforming items.

4.13.3. Procedures

53.ARC.0013 Control of Nonconforming Products and Services

4.14. Corrective and Preventive Action

4.14.1. Policy

ARC emphasizes the use of problem prevention or problem correction to determine the potential cause or actual cause of nonconformances (including customer complaints, nonconforming products, and nonconforming processes) and prevent their occurrence or recurrence.

ARC investigates the causes of nonconformances relating to the Quality System, including Quality System products and processes. The results of these investigations are maintained as Quality Records. Investigations resulting in changes to documented procedures are processed in accordance with the document and data control system or the configuration management control system.

Preventive and corrective action is taken to eliminate potential or existing nonconformances to a degree appropriate to the magnitude of the problems and commensurate with the risks encountered to eliminate or minimize the impact on safety, performance, dependability, processing cost, quality-related cost, and customer satisfaction.

4.14.2. Responsibilities

The Responsible Manager shall ensure that requirements contained in documented procedures that implement this policy are communicated and followed by the individuals responsible for implementing the process.

The Centerwide Corrective Action Request Coordinator shall collect, process, track, analyze, and report on corrective and preventive action requests.

4.14.3. Procedures

53.ARC.0014 Corrective and Preventive Action

4.15. Handling, Storage, Packaging, Preservation, and Delivery

4.15.1. Policy

ARC minimizes the risk of damage to or deterioration of ARC materials and products by handling, storing, packaging, preserving, and delivering

materials and products in accordance with standard documented procedures unless special requirements are identified or specified.

4.15.2. Responsibilities

The Responsible Manager shall identify and document special procedures for handling, storage, segregation, packaging, preservation, and delivery if required.

4.15.3. Procedures

53.ARC.0015 Handling, Storage, Packaging, Preservation, and Delivery

4.16. Quality Records

4.16.1. Policy

ARC maintains Quality Records as objective evidence that demonstrates conformance to the Quality System and ensures its effective operation.

ARC requires that Quality Records be:

- Identified, collected, indexed, accessed, filed, stored, maintained, and dispositioned according to documented procedures,
- Retained for established retention times,
- Legible,
- Stored in an appropriate environment to prevent deterioration,
- Readily retrievable, and
- Available to customers when required by customer agreement.

ARC ensures that pertinent contractor Quality Records, as identified by contract, are made available upon request.

4.16.2. Responsibilities

The Responsible Manager shall ensure that Quality Records are identified in appropriate procedures, that procedures are documented to control Quality Records, and that Quality Records are developed and maintained in accordance with those documented procedures.

The Center Records Management Officer shall ensure proper disposition of all Quality Records and provide guidance regarding specific retention periods.

The Quality Records Custodian shall ensure legibility of Quality Records. The Quality Records Custodian shall collect, store, and maintain Quality Records for the minimum retention period or for the period designated by the Center Records Manager Officer.

4.16.3. Procedures

53.ARC.0016 Quality Records

4.17. Internal Quality Audits

4.17.1. Policy

ARC conducts internal quality audits to determine the status and effectiveness of the Quality System. Internal audit results are documented and brought to the attention of the Responsible Manager of the audited area. ARC ensures that timely corrective action is taken on nonconformances found during an internal audit. This includes verifying the implementation and effectiveness of corrective action and recording it as a Quality Record.

ARC uses the results of internal audits to improve the effectiveness of the Quality System. This is accomplished by implementing corrective actions, improving documented procedures, or utilizing a combination of the previous two items.

ARC requires scheduling of internal quality audits based on the status and importance of the activity to be audited. Personnel independent of the activity being audited execute these audits.

4.17.2. Responsibilities

The Quality Audit Manager shall develop a Centerwide audit schedule and obtain approval from the Quality System Management Representative. The Quality Audit Manager shall ensure that audits are performed in accordance with the schedule and documented procedures. The Quality Audit Manager shall reconcile any disagreements between the audit team leads and the audited organizations.

The Responsible Manager shall inform personnel of audit time and scope, assign a guide to accompany audit team, provide necessary access for audit team, and take timely corrective action regarding deficiencies found during the audit.

4.17.3. Procedures

53.ARC.0017 Internal Quality Audit

4.18. Training

4.18.1. Policy

ARC ensures that personnel have the training needed to do their jobs safely and effectively and to produce quality products. ARC views training and developing personnel as an essential management responsibility that is vital to meeting the Center's missions and future requirements. ARC is therefore committed to providing relevant training and development opportunities to optimize personnel effectiveness in an environment of changing programs, technologies, and mission requirements. Records of training are maintained as Quality Records.

4.18.2. Responsibilities

The Human Resources Manager shall establish Centerwide training programs. Human Resources shall maintain training records for Centerwide training.

The Manager of the ARC Office of System Safety and Mission Assurance shall coordinate and support training on the Quality System. The Manager shall maintain appropriate records of Quality System training.

The Supervisor shall identify personnel training requirements, ensure all personnel receive required training, and maintain appropriate records.

4.18.3. Procedures

53.ARC.0018 Training

4.19. Servicing

4.19.1. Policy

ARC provides servicing when specifically required in a customer agreement and according to the terms and conditions of the agreement. Servicing follows established quality policies, procedures, and work instructions.

4.19.2. Responsibilities

The Responsible Manager of each program/project in which servicing is a specified requirement shall document in a customer agreement how servicing is to be performed, verified, and reported.

4.19.3. Procedures

53.ARC.0019 Servicing

4.20. Statistical Techniques

4.20.1. Policy

ARC uses statistical techniques when needed for controlling and verifying process capability and product characteristics (i.e., manufacturing and receiving processes).

Implementation of statistical techniques is only required if identified as a requirement by the Responsible Manager or specified as a requirement in a customer agreement.

4.20.2. Responsibilities

The Responsible Manager shall identify, apply, and document the type of statistical technique(s) required for establishing, controlling, and verifying process capability and product characteristics.

4.20.3. Procedures

There are no applicable procedures.