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**NHB 5300.4(2B-2)**

April 1993

**RELIABILITY, MAINTAINABILITY, AND QUALITY ASSURANCE PUBLICATION**

**MANAGEMENT OF GOVERNMENT QUALITY  
ASSURANCE FUNCTIONS  
FOR  
NASA CONTRACTS**

(NHB-5300.4(2B-2)) MANAGEMENT OF  
GOVERNMENT QUALITY ASSURANCE  
FUNCTIONS FOR NASA CONTRACTS  
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**NASA**

**National Aeronautics and  
Space Administration  
Washington, DC 20546**

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**PREFACE**

Effective Date: April 1993

This Handbook sets forth requirements for NASA direction and management of Government quality assurance functions performed for NASA contracts and is applicable to all NASA Installations. These requirements will standardize management to provide the minimum oversight and effective use of resources. This Handbook implements Federal Acquisition Regulation (FAR) Part 46, NASA FAR Supplement 18-46, Quality Assurance, and NMI 7410.1.

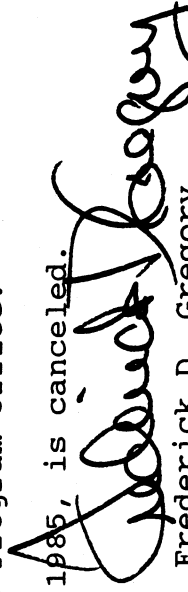
Achievement of established quality and reliability goals at all levels is essential to the success of NASA programs. Active participation by NASA and other Agency quality assurance personnel in all phases of contract operations, including precontract activity, will assist in the economic and timely achievement of program results. This involves broad participation in design, development, procurement, inspection and testing, and in preventive and corrective actions. Consequently, Government, as well as industry, must place strong emphasis on the accomplishment of all functions having a significant bearing on quality and reliability from program initiation through end-use of supplies and services produced.

For purposes of implementing NASA and other Agency agreements, and to provide for uniformity and consistency, the terminology and definitions prescribed herein and in a future handbook shall be utilized for all NASA quality assurance delegations and subsequent redelegations.

This Handbook is issued in loose-leaf form and will be revised by page changes.

Comments and questions concerning requirements set forth in this Handbook should be referred to the Director, Quality Assurance Division, Office of Safety and Mission Quality, NASA Headquarters, Washington, DC 20546. Questions by NASA Installations regarding applicability in specific projects and programs, including experiments, should be referred to the responsible NASA Headquarters Program Office.

NHB 5300.4(2B-1), dated June 1985, is canceled.

  
Frederick D. Gregory  
Associate Administrator for  
Safety and Mission Quality

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## DOCUMENT REFERENCING

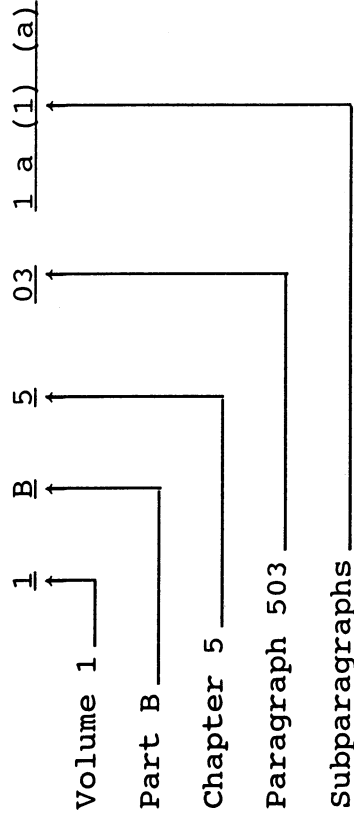
Each RM&QA Manual Part is assigned its own identification number within the basic classification code. The numeric-alpha suffix within the parenthesis identifies the grouping of the publication, that is, the volume and part, such as NHB 5300.4(1B). This number indicates that this is the first "General Provisions" to be used under Volume 1.

When a Manual Part is revised, the suffix identification is changed to include the revision number such as NHB 5300.4(1B-1).

In referencing or requesting any RM&QA publication, the complete specific NHB number must be used.

## PARAGRAPH REFERENCING

1. WITHIN THE RM&QA MANUAL. The following shows the paragraph numbering system applicable to all RM&QA publications:



This system provides a method for referencing any RM&QA publication requirement (paragraph) in any other RM&QA publication without identifying the NHB number, title, volume number, or part. However, when referencing a complete part within another NASA publication, the specific NHB number must be used.

2. IN OTHER NASA DOCUMENTS. When it is necessary to reference an RM&QA publication requirement (paragraph) in any other NASA document, the specific NHB number and paragraph number must be used together as follows: "NHB 5300.4(1B-1), paragraph 1B503-1a(1)(a)," or "paragraph 1B503-2b of NHB 5300.4(1B-1)."



## ORGANIZATION OF THE RM&QA MANUAL

### OVERALL COVERAGE

The Reliability, Maintainability, and Quality Assurance Manual, referred to as the "RM&QA Manual," is the overall generic title which identifies all NASA RM&QA management publications published under the basic RM&QA subject classification code. The publications are grouped by major subject breakdown (volumes) and further divided into specific categories identified as parts. These parts are published as individual RM&QA publications. For any reference to the documents shown below, the user shall use the latest version available.

The following list shows the grouping of RM&QA publications:

<u>TITLE</u>	<u>NUMBER</u>
(Volume 1 - General Provisions)	
Reliability Program Requirements for Aeronautical and Space System Contractors	NHB 5300.4(1A-1)
Quality Program Provisions for Aeronautical and Space Systems	NHB 5300.4(1B)
Management of Government Quality Assurance Functions for NASA Contracts	NHB 5300.4(2B)
Inspection System Provisions for Aeronautical and Space System Materials, Parts, Components and Services	NHB 5300.4(1C)
Maintainability Program Requirements for Space System	NHB 5300.4(1E)
Electrical, Electronic, and Electromechanical (EEE) Parts Management and Control Requirements for NASA Space Flight Programs	NHB 5300.4(1F)
(Volume 3 - Standards)	
Requirements for Soldered Electrical Connections	NHB 5300.4(3A-2)
Requirements for Interconnecting Cables, Harnesses and Wiring	NHB 5300.4(3G)

Requirements for Crimping and Wire Wrap	NHB 5300.4 (3H)
Requirements for Printed Wiring Boards	NHB 5300.4 (3I)
Requirements for Conformal Coating and Staking of Printed Wiring Boards and Electronic Assemblies	NHB 5300.4 (3J)
Design Requirements for Rigid Printed Wiring Boards and Assemblies	NHB 5300.4 (3K)



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## CHAPTER 1: INTRODUCTION

2B100

### GENERAL

1. This publication defines the concepts, principles and practices to be used by NASA to ensure operational uniformity and effectiveness in securing, directing and evaluating the quality assurance functions performed by NASA and other Government or non-Government organizations. These organizations will be referred to in this document as "the Agency(ies)" or "the delegated Agency(ies)". NASA informs these Agencies of their responsibilities via a Letter of Delegation or Letter of Instruction. The provisions herein shall be used to ensure implementation of NASA contract quality requirements.
2. Chapter 2 provides minimum requirements for NASA in planning, initiating and assessing quality assurance functions. Chapter 3 describes how these functions are delegated to other Agencies. Chapter 4 sets forth functions which may be delegated to those Agencies.

2B101

### NASA MANAGEMENT GUIDELINES

1. Government quality assurance functions directly affect contract cost, delivery schedules and contractor capability to satisfy contract technical requirements. The conduct of such activities, therefore, requires detailed planning in conjunction with other related activities and specific direction for each contract.
2. Quality assurance activities for procured supplies and services extend throughout NASA operations, cross organizational lines and are necessary from program initiation through end use. To ensure maximum effectiveness and uniformity, the organizational and functional relationships between personnel responsible for quality assurance, project offices, and other organizational elements such as procurement offices and design groups should be clearly defined.

2B102

### NASA CONTRACT ADMINISTRATION SERVICES POLICY GROUP

Field Installations will directly manage contract administration services obtained from other Agencies. The NASA Contract Administration Services and Audit Policy Group (NCASPG) at NASA Headquarters provides a

central focus for oversight and policy determination for contract administration services provided to NASA by other Federal Agencies. The NCASPG is a forum for resolving issues which are referred to it and which have interoffice effect.

**2B103**

**RELATION TO SYSTEM SAFETY AND RELIABILITY REQUIREMENTS**

The quality assurance provisions herein are intended to aid in achieving the specified system safety and reliability of NASA-procured supplies and services. System safety and reliability requirements shall be specified in the contract for supplies and/or services. Certain contract requirements such as testing and Government Industry Data Exchange Program (GIDEP) participation may be considered common to quality, safety and reliability programs.

**2B104**

**RELATION TO INDUSTRIAL SAFETY REQUIREMENTS**

When NASA elects to delegate to another Agency certain tasks for achieving satisfaction of Industrial Safety requirements, such tasks shall be specified in the Letter of Delegation/Letter of Instruction.

## CHAPTER 2: CONTRACT ADMINISTRATIVE SERVICES MANAGEMENT SYSTEM

### 2B200 GENERAL

This chapter sets forth requirements to be used by NASA in establishing, directing and managing the delegated quality assurance functions at NASA contractor facilities.

### 2B201 PLANNING FOR QUALITY ASSURANCE ACTIVITIES

1. The NASA approach to quality achievement encompasses both systematic Government evaluation of the contractor's quality program or inspection system and physical inspection and testing of the supplies and services by the Government. This approach covers all phases of a project from requirements definition through end use of the supplies or services.
  2. In determining which quality assurance functions are to be accomplished and who should perform them, consideration should be given to the following:
    - a. The technical nature and end use of the supplies and services being procured.
    - b. Contract quality provisions including workmanship and process requirements.
    - c. Delivery schedule requirements.
    - d. Availability of inspection and test facilities.
    - e. The adequacy of the contractor's quality program or inspection system and operational history.
    - f. The availability, qualifications, and location of NASA and Agency quality assurance personnel.
    - g. Training and certification requirements.
- ### 2B202 NASA QUALITY ASSURANCE TECHNICAL DIRECTION
1. NASA representatives provide direct liaison with and furnish technical direction to delegated Agencies. The Letter of Delegation, or supplement thereto, will designate the NASA Quality Assurance Representative (NASA QAR) who will provide technical direction for quality assurance matters.

Such designated NASA QAR's may be resident in the contractor's facility, located at the NASA Installation, or itinerant. Throughout this document, the term "NASA QAR" refers to a NASA person, not a delegated Agency person. Any direction which alters the terms or conditions of the contract shall be provided through appropriate contract channels.

2. Experience and data obtained from NASA and contractor operations and other programs must be properly applied to achieve effective quality assurance technical direction. Technical direction for quality assurance matters includes:
  - a. Review and approval functions as defined in the NASA quality publications and as contractually directed and specified.
  - b. For hardware, determination of the adequacy of fabrication, repair and inspection processes, procedures and techniques; inspection and test conditions, mandatory inspection points, workmanship standards, and conformance criteria; change control activity; and extent of retest after repair, modification, or substitution. The NASA QAR shall consult with Agency, contractor and NASA specialists as necessary.
  - c. For software, determination of the adequacy of the requirements definition, development, and test processes; review and inspection techniques; software engineering and documentation standards and conformance criteria; configuration management for software; and extent of regression testing after correcting discrepancies or modifications to incorporate new requirements. The NASA QAR shall consult with Agency, contractor, and NASA specialists as necessary.
  - d. Guidance in the preparation of procedures, techniques and criteria involved in subparagraphs b and c, for all supplies and services covered by the particular contract.
  - e. Visits to contractor facilities to validate Agency work hours, resolve conflicts between the Agency and the contractor, and evaluate Agency and contractor performance, including the adequacy of hardware/software nonconformance dispositions and corrective action.

- f. Interpretation of contract quality requirements for quality systems (e.g., quality program or inspection system), hardware and software (e.g., drawings and technical data).
- g. Providing assistance in interpretation of design and mission requirements.
- h. Providing assistance in selecting and applying high reliability parts and materials to a given procurement.
- i. Guidance and information for developing and operating nonconformance and corrective action systems.
- j. Providing assistance in processing material review board actions or, when no material review board is authorized, dispositioning nonconforming material.
- k. Technical evaluation of contract deviations, waivers and engineering changes.
- l. Guidance in assessing contractor quality assurance activities including control over subcontractors.

**2B203**

**COORDINATION OF TOTAL NASA QUALITY ASSURANCE REQUIREMENTS AT A CONTRACTOR'S FACILITY**

- 1. When a NASA QAR is resident at a facility where a delegation is to be made, information regarding NASA quality functions already delegated in that facility should be obtained from the NASA QAR before issuing the delegation. If there is no resident NASA QAR, the information should be obtained from the Agency performing quality assurance functions at the facility.
- 2. When there are multiple NASA QAR's for a contractor's facility, duplication of effort must be eliminated where possible. Prior to Agency direction the QAR's shall:
  - a. Agree upon interpretation of common requirements.
  - b. Jointly accept or reject Agency or contractor operational methods.
  - c. Place common requirements on the Agency or contractor for similar supplies and services.

**SELECTION OF THE DELEGATED AGENCY**

Delegated quality assurance support for NASA can be provided by the Defense Logistics Agency (DLA), Office of Naval Research (ONR) and Air Force (AF) as well as other Government and non-Government organizations. DLA provides Contract Administration Services (CAS) quality assurance support for NASA through the Defense Contract Management Command (DCMC). CAS support is provided only as specified in a Letter of Delegation. The DOD Directory of Contract Administration Services Components (DLAH 4105.4) contains a list of DOD offices authorized to provide CAS support. Non-Government organizations include commercial organizations with which the Government contracts to provide quality assurance support. Such support is provided only as specified in a Letter of Delegation/Instruction, as limited by Government regulations and/or policy.

**ARRANGING FOR ACCOMPLISHMENT OF CONTRACT QUALITY ASSURANCE FUNCTIONS**

1. The NASA QAR shall ensure that support requirements, NASA-to-Agency operating channels and procedures, and any other requirements are thoroughly understood prior to transmitting official letters of delegation. This understanding should be reached through a quality assurance planning conference with the Agency representative responsible for quality assurance at the contractor's facility. A face-to-face meeting is recommended when the contractor has no previous history or when there are critical or complex processes involved. The planning conference may also be conducted at the same time as the pre-award survey.
2. The quality assurance planning conference should cover the following items to allow the Agency to begin development of its quality assurance plan:
  - a. Contract, subcontract and purchase order quality requirements.
  - b. End-use and criticality of supplies and services.
  - c. Current Agency procedures and general operations, particularly those applicable to supplies and services similar to those being procured.
  - d. Technical direction to be given to the Agency and contractor.



- e. Functions to be delegated and the performance desired.
- f. Proposed support, including special skills.
- g. Quality assurance functions to be accomplished at the contractor's facility by NASA personnel.
- h. Channels of communication.
- i. Review of past quality history of the contractor, Agency quality program or inspection system evaluation results, known contractor quality program or inspection system deficiencies and contractor's progress in correcting deficiencies.
- j. NASA-unique training and certification requirements.
- k. Redelegation guidance.
  - 1. Interface situations arising from partial delegations or other NASA delegations in the same facility.
- m. Response time for mandatory inspections.
- 3. At the conclusion of the planning conference, arrangements should be made with the Agency for a post-award conference.

**2B206**

**EVALUATION OF IN-PLANT QUALITY EVALUATION (IQUE) AS AGENCY PROGRAM FOR NASA DELEGATIONS**

- 1. NASA QAR's should evaluate the use of the DLAM 8200.5, "In-Plant Quality Evaluation (IQUE)", system on a case-by-case basis. Use of the system should be authorized only after it has been determined that it provides sufficient confidence that the supplies or services provided by the contractor meet all of the contract quality requirements. This evaluation should include the following steps:
  - a. Prepare letters of delegation utilizing NASA terminology to identify specific requirements. Agency personnel performing quality assurance functions for NASA must be trained in NASA procedures and possess the special skills necessary to perform adequately on their contract assignments.

b. Evaluate the Agency's response to the Letter of Delegation utilizing the following guidelines, as applicable, to determine IQUE's acceptability: (This information may be obtained during the pre-award survey, the quality assurance planning conference or other visits to the contractor's facility)

- (1) Ensure that IQUE has been adequately implemented.
- (2) Determine if the contractor has implemented a visible quality awareness program throughout its organization.
- (3) Determine if the contractor has clearly defined processes, and has implemented process controls and a continuous improvement program.
- (4) Determine if there is, or will be, sufficient product flow to justify the use of statistical process control. Consideration should be given to common processes such as heat treat, welding, wave soldering, etc., which are utilized by other customers in addition to NASA.
- (5) Determine if the Agency planning includes:
  - (a) provisions for proofing all critical processes;
  - (b) criteria for determining if the processes are in control;
  - (c) schedules, including locations, for product audits; 2b304 and
  - (d) provisions for verifying all critical characteristics.

**2B207**

**MANAGEMENT OF FUNDING FOR THE AGENCY**

1. NASA Installations shall develop and implement procedures to monitor and control hours associated with the performance of delegated functions. Responsible NASA quality assurance personnel shall familiarize themselves with the applicable CAS reimbursable labor hour reporting system. NASA shall agree in advance to the planned level of support and shall examine for reasonableness the hours reported and charged by the Agency. The examination shall be based on a comparison of the

Agency's billed hours with the hours reported in the Agency's status report, or other information, and the NASA QAR's knowledge of the workload for that period, including redelegated functions.

2. Any areas of dispute shall be resolved by the NASA QAR and the Agency counterpart. In the event that the dispute cannot be resolved at that level, it shall be referred to the responsible NASA quality management. Unresolved problems at that level shall be referred to NASA Headquarters, Code QR.
3. NASA Installations shall provide NASA Headquarters with annual estimates of reimbursable Quality Contract Administration Service needs. Any significant changes in the estimates shall be reported as soon as they become known.
4. NASA Installations shall review their delegations at least semi-annually to ensure that the delegations are still active, the requirements are current, and that the delegated Agencies are charging time only against active delegations.

#### **2B208**

##### **AGENCY PERFORMANCE**

1. NASA Installations shall establish management controls to ensure adequate Agency performance of delegated quality assurance functions. Agency performance should be correlated with the Agency Quality Plan on a continuing basis to ensure that established requirements are realistic and that projected requirements are met or adjusted. Evaluation results shall be provided to the Agency periodically.
2. NASA Installations shall evaluate the Agency quality assurance performance. Evaluation activities shall include surveys, periodic review of Agency plans and reports, observation of Agency performance, NASA QAR evaluations and assessment of Agency workhour reporting.
3. Monitoring of Agency performance shall be included in the NASA QAR duties.

#### **2B209**

##### **INADEQUATE AGENCY SUPPORT**

1. Any of the following conditions are considered to be evidence of inadequate Agency support:
  - a. Lack of an adequate Agency quality plan describing proposed performance required by the Letter of Delegation.

- b. Unsatisfactory performance of delegated functions, as evidenced by facility observations or inadequate quality of supplies or services.
  - c. Lack of adequate Agency reports and records to account for hours charged (e.g., monthly quality status reports, process flow charts, audit records, etc.).
  - d. Improper number of personnel or inadequate skills of Agency personnel performing NASA work.
2. When one or more of the above conditions exist, NASA Installations shall request corrective action from Agency management. If this request does not result in satisfactory corrective action, NASA Installations shall elevate the request to the next level of Agency management. These requests may be either written or oral; however, oral requests should be documented. If these steps fail, the NASA Installation shall request assistance from NASA Headquarters, Code QR. Copies of all correspondence shall accompany the request.

#### 2B210

#### NASA SURVEYS

1. If an Agency is assigned to the facility being surveyed, Agency personnel may be requested to participate in the survey. In cases where there is no existing delegation, this request should be made through the contracting officer for reimbursement purposes.
2. When a pre-award survey is performed at a contractor's facility, and delegation to the assigned Agency is anticipated, Agency operations should also be evaluated. This evaluation will assist in determining the extent of planning required for delegation.
3. When a post-award survey is performed, the delegated Agency should also be evaluated to determine compliance with delegated requirements.

## CHAPTER 3: DELEGATION ACTIONS

2B300

### GENERAL

This chapter describes the planning, composition and issuance of the Letter of Delegation which is the authoritative link between NASA and the delegated Agency and identifies specific requirements for the performance of Government Contract Quality Assurance (GCQA). It is important that a well planned and complete Letter of Delegation be issued as soon as practicable. The issuance of a proper Letter of Delegation prevents confusion in the operations of Agency personnel and contributes to effective utilization of Agency and NASA personnel.

2B301

### PLANNING DELEGATIONS

1. Delegation of contract administration functions is the responsibility of a contracting officer who issues all Letters of Delegation. The Letter of Delegation to an Agency may give that Agency the authority of redelegation.
2. The Letter of Delegation shall be prepared and submitted to the contracting officer for issuance. When redelegation is authorized, letters of redelegation will be prepared and processed by the delegated Agency.
3. Delegations and redelegations shall be issued within 15 days and accepted within 45 days after contract/subcontract award to ensure prompt on-site Agency quality assurance performance.

2B302

### LETTERS OF DELEGATION

1. Letters of delegations shall include the following:
  - a. The contract number.
  - b. Name, location and telephone number of the designated NASA QAR to serve as the point of contact for matters pertaining to the delegation. To ensure continuity of direction, instruct the Agency to include this information in all letters of redelegation.
  - c. Quality assurance functions to be performed, including those functions and decisions which require review by the NASA QAR prior to and after acceptance for the Government

- (applicable paragraphs of Chapter 4, "Operational Quality Activities").
- d. Channels of communication between the NASA Installation and the Agency and point of contact for the Agency to obtain NASA-unique documents.
  - e. Date(s) for submittal of first Agency reports, the frequency thereafter, and distribution requirements.
  - f. Information concerning assignment of NASA technical representatives at the contractor's facility, including names and functions to be performed.
  - g. Request for the name of the Agency representative to serve as the point of contact for the facility where the delegated functions are to be performed.
  - h. Provision for Agency delegation acceptance and requirements to notify NASA of redelegations and acceptances.
  - i. Extent of redelegation authority.
  - j. Instructions on preparation and submission of the Agency quality plan (required on all major or complex systems as a minimum).
  - k. Agency requirement to support the annual cycle of forecasting manpower requirements.
  - l. Special instructions on preparation and distribution of shipping and acceptance documents.
  - m. If final acceptance of supplies and services is not to occur at the contractor's facility, definition of Agency responsibility for interim acceptance and for support at the remote site where final acceptance is to occur.
  - n. If delegated activities will also involve NASA personnel, such as end item test and inspection, definition of the specific responsibilities of Agency and NASA personnel.
2. See Appendix A for a sample typical Letter of Delegation.

3. A central file of Letters of Delegation and Letters of Instruction shall be maintained by each NASA Installation.

**2B303**

**REDELEGATIONS**

1. Redelegation is the formal action taken by a delegated Agency when a portion of the required quality assurance functions cannot be performed because of geographical location, facility cognizance, technical or administrative capability limitations, or interagency agreements.
2. The NASA Installation may choose to withhold redelegation authority, provide complete redelegation authority, or provide the delegated Agency with specific directions on functions to be redelegated.
3. In the event complete redelegation authority is provided, the Agency shall be directed to select supplies and services for redelegation.

**2B304**

**ACTION UPON COMPLETION OF DELEGATED FUNCTIONS**

1. Agency facility quality assurance files are normally considered closed when the last supplies/services on the contract have been delivered/performed. Delegations may be reopened within 1 year after contract completion and need to be retained for easy retrieval.
2. In order to minimize additional delegations on complete yet administratively open contracts, the NASA Installation shall advise the Agency to hold the delegation open when conditions exist or are expected that would justify extension of the contract period of performance. Appropriate action should be taken, however, to ensure reimbursable costs are not accumulated during such periods.

**2B305**

**AGENCY PERSONNEL SKILLS**

1. Capability. The NASA Installation shall identify the skills required of the delegated Agency to perform the quality assurance functions. The classification of personnel needed to perform these functions shall also be identified (e.g., quality engineer, quality assurance specialist, software quality engineer, or software quality assurance specialist).
2. Training and Certification. The NASA Installation shall identify the training required of personnel

assigned to perform delegated functions, including any certification(s).

**2B306**

**MANDATORY REQUIREMENTS**

1. General. Mandatory requirements are those actions and/or characteristics which the delegated Agency must perform. The NASA Installation shall provide a list of actions and characteristics and/or criteria for Agency selection with the Letter of Delegation. In addition, the Agency may select actions and characteristics which it also considers mandatory. The Agency selected requirements shall be approved by the NASA QAR. The established requirements (both NASA Installation provided and Agency selected) shall remain in effect until they are changed, in writing, by the NASA Installation. The following shall be considered as candidates for mandatory requirements:
  - a. Validation of critical process controls.
  - b. Qualification, certification, and first article tests.
  - c. Acceptance tests and/or inspection of hardware and software end items and selected nondeliverable hardware, tooling or software. This includes test readiness activities.
  - d. Preshipment review (data package review, shipment readiness, and shipping/acceptance document sign-off).
  - e. Inspection and test of repaired, reworked, or modified supplies.
  - f. Teardown, buildup, test, and inspection of Government equipment returned for overhaul or refurbishment.
  - g. Failure analyses.
  - h. Refurbishment of previously accepted supplies.
  - i. Review of history of fabrication, inspection, test configuration, changes, and nonconformances.
  - j. Configuration Verification.



## 2. Selection of Mandatory Requirements.

- a. In the selection process, full consideration shall be given to utilizing the technical skills of the Agency (including its engineers and staff specialists), experience with the supplies/services and the contractors, and the information/data from all available sources including:
- (1) Design, safety, drawing, engineering, configuration, specification, and technical document reviews including the related documentation.
  - (2) Reliability, maintainability, and system safety tests and analyses.
  - (3) Development, qualification, certification, and acceptance tests.
  - (4) Failure Mode and Effects Analysis and Critical Items List (FMEA/CIL) and Hazards Analysis.
  - (5) Interface and interchangeability requirements.
  - (6) Contractor fabrication procedures and process control instructions and design standards/manuals.
  - (7) Modification and repair actions.
  - (8) Nonconformance reports and contractor/supplies/services history.
  - (9) Feedback from the NASA Installation or the delegating Agency.
  - (10) Other critical item and critical characteristic lists developed by the contractor.
  - (11) Contractor quality assurance manuals and requirements, e.g., the quality plan.
- b. Mandatory requirements are subject to inspection, witnessing or verification on each item, process or assembly. Sampling of mandatory requirements (either provided by NASA or selected by the Agency), except those involving destructive tests, is prohibited unless approved by the NASA Installation.

3. Other Mandatory Requirements. In addition, the Agency or the NASA QAR may determine if other characteristics should be identified for Agency inspection, witnessing, verification, or monitoring on a temporary basis, dependent upon quality data or adverse trends.

4. Mandatory Assurance Implementation.

- a. The Agency shall independently perform inspections/tests after contractor personnel have made their acceptance decisions, except in those cases where concurrent inspections/tests are necessary due to excessive costs, excessive time involved, or destructive testing.
- b. Under no condition shall the Agency stamp off as acceptable any characteristic which has not been personally inspected, witnessed, verified, or monitored. If a characteristic is inadvertently omitted or overlooked by the Agency, and it is not advisable to repeat the operation, the contractor's records and the Agency's records shall indicate this omission with the appropriate written notation. The NASA QAR shall be promptly notified of the problem and the incident shall be included in the Agency's quality status report.

## CHAPTER 4: OPERATIONAL QUALITY ACTIVITIES

2B400

### GENERAL

1. This chapter describes requirements for Agencies performing quality assurance functions (including inspection) for NASA contracts. The provisions herein shall be used to determine conformance of contractor's supplies and services to NASA contract quality requirements.
2. The objective of this chapter is to identify requirements for providing delegated quality assurance services. Emphasis on various quality assurance provisions will vary due to the research, development and limited production nature of NASA contracts and the differences inherent in various projects and missions. Specific paragraphs of this chapter applicable to a particular contract will be cited in the Letter of Delegation.
3. When implementing these requirements, the delegated Agency should use its existing administrative, operational, and procedural instructions and the technical documents cited in the contract. In the event of conflict with Agency documents, the NASA Letter of Delegation shall take precedence.
4. Within the areas delegated, the Agency shall be responsible for effective management of its personnel, functions, and assessment of accomplishments. The Agency shall assure that:
  - a. Contractors and subcontractors establish and maintain effective quality program and inspection systems in accordance with applicable provisions of NASA quality assurance publications and other quality program and inspection system requirements cited in the contract or subcontract.
  - b. Supplies and services for NASA programs conform to contract requirements.
  - c. Open lines of communications are established and maintained at all times with the NASA Quality Assurance Representative (NASA QAR) and higher/lower-tier Agency representatives. This will facilitate prompt identification and resolution of problems on NASA programs.

2B401

**QUALITY ASSURANCE DOCUMENTS**

The Agency shall obtain contractual specifications and standards, other than NASA documents, from the usual distribution points. NASA documents should be obtained from the NASA QAR or the Installation concerned. The NASA QAR shall be notified immediately if documents cannot be obtained from normal sources.

2B402

**CONTRACT REVIEW**

1. The Agency, immediately upon the receipt of a delegation/redelegation, shall review the contract, quality plans, and other pertinent documents to ascertain the quality and technical requirements imposed upon the contractor.
2. The Agency shall review the contractor's records, and include in the contract review and planning document any deficiencies in the contractor's quality program and/or inspection system, or any program or system changes required to satisfy the procurement requirements. The information shall include current corrective action and progress regarding uncorrected deficiencies, including any instances of delinquency in corrective or preventive action on the part of the contractor.
3. The Agency shall also record the review of these documents on a typical Agency contract review and planning document. This document shall include information on new operating procedures, proprietary or restricted processes and design data and critical processes.
4. The completed Agency contract review and planning document shall be submitted to NASA or the delegating Agency with the Agency quality plan, or the initial quality status report.

2B403

**AGENCY QUALITY PLAN**

1. General.
  - a. Upon completion of the contract review process, the Agency shall immediately begin preparation of the Agency quality plan. The Agency plan shall describe performance of the delegated quality assurance functions necessary to assure contractor conformance and shall comply with the Letter of Delegation.

b. Repetition of details of Agency procedures is not desired. However, sufficient detail shall be provided to permit NASA and/or Agency evaluation of the adequacy, extent, and degree of delegated/redelegated Agency performance. NASA terminology as contained in this document shall be used in all plans and reports.

2. Contents of Agency Quality Plan. The Agency plan shall include the following information:

a. Contract Review and Planning Document

b. Skill Capability

(1) In large resident facilities, an organization chart showing the numbers of Agency personnel assigned to perform delegated functions, including series and job titles. In small plants and nonresident facilities, the name of the quality assurance representative, and the immediate supervisor will suffice in lieu of an organization chart. In either case, the name, location, and business telephone number of the quality assurance representative and immediate supervisor are required.

(2) Names of qualified and/or certified personnel; functional areas for which they are qualified and/or certified; and courses completed, including location and dates.

(3) Training schedule for skills determined to be necessary through the contract review. If special NASA training or certification is required, the Agency should submit a request to the NASA QAR. If already authorized, the Agency should submit a schedule for such training.

c. Agency Records

(1) Identification of contractor or Agency forms or documents used for Agency records.

d. Operations

(1) Describe in narrative format how the Agency will perform the functions outlined in the Letter of Delegation.

In addition, a matrix should be provided which cross references, by paragraph, the Agency plan with the Letter of Delegation.

- (2) Describe how mandatory requirements for Agency quality assurance are selected and a listing of known mandatory requirements.

3. Submission of Agency Quality Plan. The Agency shall submit its quality plan within 30 calendar days after acceptance of the delegation. It shall be revised, as necessary, to keep pace with changes in the contractor's and Agency's operations. The plan shall be reviewed annually by the Agency to determine need for revision. The plan and its revisions shall be approved by NASA.

4. Determining Agency Quality Plan Requirements on Redelegations.

- a. When quality assurance functions are redelegated, the Agency shall determine the requirements for the lower-tier Agency plan submission, unless otherwise directed by NASA. A lower-tier Agency plan, subject to Agency approval, may be required from the lower-tier Agency when the contractor requires submission of a quality program or inspection plan from the subcontractor.
  - b. The Agency shall ensure submittal of a lower-tier Agency plan within the time specified and shall notify the lower-tier Agency of the adequacy of its plan. In some cases, a flowchart and a list of mandatory requirements will suffice in lieu of a lower-tier Agency plan.
5. When the agency is not required to prepare an Agency Quality Plan, the Agency shall submit an initial quality status report as described in the section on Agency Reports.

#### **2B404**

#### **PERSONNEL AND STAFFING**

1. The Agency shall assign sufficient numbers of qualified personnel to perform the delegated/redelegated functions. For effective performance of required functions, a combination of engineering and quality assurance specialist personnel, as well as other technically skilled personnel, may be required.

2. Physical suitability may be a requirement in the performance of some functions, particularly where the hearing, visual acuity, and color requirements are specified by special process documentation.
3. The Agency shall notify the NASA QAR of any proposed change in personnel prior to effecting the change.
4. The Agency shall ensure that its personnel are adequately trained, qualified, and certified in the technical requirements of NASA procurement, and in processing, fabricating, inspection, testing, and nondestructive evaluation (NDE) techniques. The Agency shall establish a training schedule for all personnel requiring training and certification in NASA requirements.
5. In determining staffing/skill requirements, the Agency shall consider the complexity of the supplies and services and the mandatory requirements associated with the NASA procurement. Staffing and skill mixes shall be sufficient to accommodate contractor operations involving multiple shifts, extended work hours (flexitime), and scheduled or unscheduled overtime.
6. Information concerning the experience, capability, and training of Agency personnel selected to perform work for NASA shall be made available to the NASA QAR upon request.
7. A time-phased schedule for satisfying human resources requirements, corresponding to contractor activities, shall be submitted in the first quality status report and modified as changes occur.

**2B405**

**AGENCY REPORTS**

1. General. Agency reports shall be in narrative format.
2. Quality Status Reports.
  - a. Initial Quality Status Report. When an Agency quality plan is not required, or, when required, will not be submitted within 30 days after acceptance of delegation or redelegation, an initial report shall be submitted within this time frame. The report shall contain the following information:

(1) Copy of completed Agency contract review document, including status of

contractor's quality program or inspection system.

- (2) Identification of Agency quality assurance representative(s) and immediate supervisor's name, location, and business telephone number.
- (3) Listing of mandatory requirements and all completed critical process reviews.
- (4) Identification of contractor or Agency forms and documents used to record Agency actions.

b.

Quality Status Report. The Agency shall prepare and submit monthly a summary narrative quality status report for each procurement. Each report shall be identified with the applicable NASA prime contract number. The report(s) shall address results or events which have an affect on status, performance or quality of supplies or services and contractor or Agency performance. Status reports received from redelegated Agencies shall be included with the status reports submitted by the delegated Agency. The following topics, as a minimum, shall be considered for the report:

- (1) Areas of noncompliance with the quality requirements of the contract, including quality program or inspection system documents; e.g., procurement reviews, drawings and specification reviews, special process evaluations, certifications of personnel, equipment, and materials, fabrication process requirements, configuration control, corrective action taken or in process, and agreements reached.
- (2) Applicable information on surveys or audits planned and conducted by the Agency, contractor, or redelegated Agency.
- (3) Changes in the contractor's quality program or inspection system affecting the level or degree of inspection or testing performed by the contractor and/or the Agency, including status of contractor-prepared quality program or inspection system documents.



- (4) Summary of Agency inspection and test results, including mandatory inspections.
- (5) Unauthorized use of advance or disapproved documentation by the contractor.
- (6) Agency independent comments on contractor or Agency-initiated corrective action which is considered unsatisfactory.
- (7) Total number of regular and overtime hours planned and expended on each NASA contract during the reporting period. Hours expended on redelegations shall also be reported.
- (8) Changes in projected Agency human resources commitments for work on NASA contracts in the next 3 months. Notification of any proposed transfer of assigned personnel.
- (9) Actual and proposed changes in contractor's key personnel.
- (10) Problems previously reported which remain unresolved, including delinquent corrective action.
- (11) Progress in completing scheduled training.
- (12) Summary of mandatory delegated tasks not performed.
- (13) List of contract deliverable supplies shipped or services completed.
- (14) Summary of special processes reviewed and evaluated by the Agency.
- (15) Narrative overall evaluation of contractor performance, including a written summary of Agency deficiency reports.
- (16) Contractor and subcontractor labor strikes.

(17) Changes in the contractor facility and/or process capability that could affect performance under NASA contracts. These changes may be planned or caused by accident or natural disasters.

c. See Appendix B for a sample typical quality status report.

3. Special Notification Reports. The Agency shall immediately notify the NASA QAR (or the initiator of the redelegation when applicable) of any of the following types of situations or occurrences:

a. Failures which occur during qualification, acceptance, and first article tests of hardware and software.

b. Any unusual phenomena, occurrence, or difficulty, the detection and correction of which is not specifically contained in the applicable requirements.

c. Supplies/services already delivered/completed or ready for delivery/completion which require further evaluation, inspection, or test.

d. Designs or procedures which, although in compliance with current requirements, may compromise or reduce quality, safety, or reliability. Reasons for such conclusions shall be included.

e. Changes, waivers, deviations, or occurrences which could have a significant unsatisfactory impact on quality, safety, reliability, schedule, or cost.

f. Work stoppages, including those resulting from contractor and subcontractor labor strikes and natural disasters.

g. Missed mandatory inspection points.

#### **2B406**

#### **PROCEDURES REVIEW AND EVALUATION**

1. Subsequent to the initial contract review, the Agency shall continuously review and evaluate the contractor's quality program and inspection system to determine if adequate procedures exist and are fully complied with during all operations requiring control.

2. When reviews, inspections, or tests reveal noncompliance with contract requirements, the Agency shall require the contractor to promptly effect positive corrective action. The method and frequency for accomplishing this review and evaluation shall be outlined in the Agency quality plan.

**2B407**

**DESIGN REVIEWS**

The Agency shall provide qualified personnel to participate in design and project reviews subject to NASA QAR approval. The purpose of this participation is to familiarize Agency personnel with project design, fabrication and testing processes to support the implementation of the Agency's quality plan, including the selection of inspection points.

**2B408**

**SPECIAL AGENCY SURVEYS**

1. General. When the Agency's initial or continuous review identifies significant contractor quality program or inspection system deficiencies, the Agency may recommend to NASA that a special formal Agency survey be performed. In addition, NASA may request the Agency to perform special surveys. The Agency shall establish a plan for conducting each survey to ensure all aspects of the contractor's quality program or inspection system related to the deficiencies are reviewed and evaluated. The survey plan shall be submitted to NASA for approval.
2. Survey Reports and Corrective Action. Upon completion of a survey, the Agency shall:
  - a. Prepare a detailed narrative report of findings and recommendations, and
  - b. Ensure that the corrective actions are implemented and effective.

**2B409**

**MANDATORY REQUIREMENTS**

1. The Agency shall independently verify certain actions and shall independently witness, inspect, verify, or monitor certain product, process and test characteristics on each item processed. These requirements are designated "mandatory". NASA will provide a list of mandatory actions and characteristics and/or provide criteria for selection by the Agency. Mandatory requirements selected by the Agency shall be submitted to the NASA QAR for approval. The established requirements (both NASA provided and Agency

selected) shall remain in effect until changed by NASA.

2. The following rules apply to mandatory requirements:
  - a. Mandatory requirements are subject to inspection, witnessing, or verification on each item, process, or assembly.
  - b. Sampling of mandatory requirements (either supplied by NASA or selected by the Agency), except those involving destructive tests, is prohibited unless approved by NASA.
  - c. The Agency shall not waive performance of mandatory requirements without authorization by the NASA QAR.
  - d. The Agency shall independently perform inspection/tests after contractor personnel have made their acceptance decisions, except in those cases where concurrent inspections/tests are necessary due to excessive costs, excessive time involved, or destructive testing.
  - e. The Agency shall not stamp off as acceptable any characteristic which has not been personally inspected, witnessed or verified. If a mandatory characteristic is omitted and the operation will not be repeated, the contractor's records and the Agency's records shall indicate this omission with the appropriate written notation. The NASA QAR shall be promptly notified.
3. The Agency or NASA QAR may select temporary mandatory requirements depending upon quality data or adverse trends.
4. Definitions. For the purposes of planning and implementing mandatory requirements, the following definitions shall be used:
  - a. Inspect: Independent, hands-on inspection.
  - b. Witness: To observe a test or process to verify that correct procedures and processes were followed for a specific action.

- c. Verify: Review of recorded data (inspection, test, etc.) for conformance to specifications, drawing requirements, etc.
- d. Monitor: Less than 100 percent surveillance of an operation, test, etc.

**2B410**

**PROCUREMENT CONTROL**

- 1. Agency Responsibility. The Agency shall review the contractor's procurement documents and controls over procurement sources. As a minimum, the review shall ensure that:
  - a. Procurement is from subcontractors which have been selected and approved in accordance with contract requirements.
  - b. All necessary quality, item usage, and technical (quality inspection) requirements are complete, clearly defined, and accurately reflect contract flowdown requirements.
  - c. Applicable documentation is referenced and special documents are provided.
  - d. The Government Source Inspection clause, as required by the contract, is included for procurements which require Government Contract Quality Assurance/Government Source Inspection (GCQA/GSI).
  - e. When a subcontractor quality program or inspection system plan is required to be prepared, submission is appropriately specified and is reviewed and approved.
  - f. A supplier rating system is in place based on established criteria and that it provides the basic data to determine subcontractor quality performance and trends.
  - g. The contractor is conducting periodic audits of subcontractors.
- 2. Third-Party Accreditation. When the contractor utilizes a third-party accreditation program, the Agency shall ensure that the program is conducted according to a NASA-approved plan or procedure. As a minimum, the Agency shall verify that:
  - a. The audit standards and checklists used by the third-party organization verify contract requirements.

- b. The audit frequency is commensurate with the complexity of the supplies or services.
- c. The subcontractor audits are conducted on-site.
- d. The third-party organization has access to proprietary data required for auditing any subcontractor function.
- e. The audit reports are made available to the contractor and Agency.

**2B411**

**REDELEGATING QUALITY ASSURANCE FUNCTIONS**

**1. Government Contract Quality Assurance/Government Source Inspection (GCQA/GSI) at Subcontractor Facilities.**

- a. To facilitate early Agency determination of need for GCQA/GSI and to avoid delays in the procurement cycle, the Agency shall:
  - (1) Review preliminary purchase documents prior to contractor negotiations with potential subcontractors.
  - (2) Advise the contractor of procurements potentially requiring GCQA/GSI.
  - (3) Prepare the detailed instructions for letters of redelegation. A letter of redelegation shall accompany each GCQA/GSI request. These instructions shall be reviewed periodically and adjusted as circumstances require.
- b. The Agency shall consider the following criteria in determining the need for GCQA/GSI:
  - (1) The supplies being procured are at such a level of assembly or are of such a nature as to prevent actual inspection and verification of performance and/or specification requirements at the procuring contractor's facility.
  - (2) Special inspection/test equipment, measuring devices, or test environments, are not available at the procuring contractor's facility to verify the characteristics of the supplies as required by the performance and/or specification documents.

- (3) The supplies being procured are produced by special manufacturing processes which cannot be verified at a later time.
- (4) Supplies are designated for direct shipment from source to the procuring NASA Installation or using site.
- (5) Government Property or components thereof are being returned to a contractor for repair, rework, retrofit, modification, test, teardown and evaluation, failure analysis, retest, cleaning, or have other special quality requirements.
- (6) Past performance or quality history of the subcontractor is marginal.
- (7) The Agency has been requested by NASA to require that certain supplies and services be subject to GCQA/GSI.

2. Redelegation Requirements

- a. The delegated Agency shall instruct the lower-tier Agency, by letter, how and to what extent quality assurance functions shall be implemented.
- b. Redelegations shall include applicable portions of the NASA delegation, the name and business telephone number of the assigned NASA QAR and Agency contact and detailed requirements consistent with the criteria for GCQA/GSI.
- c. Prior to redelegation, the delegated Agency shall determine if the lower-tier Agency can provide a sufficient number of experienced and competent personnel to perform the required functions. If this determination reveals that staffing may be inadequate, the NASA QAR shall be notified and the lower-tier Agency shall be asked to provide the delegating Agency a plan for acquiring a sufficient number of experienced personnel.
- d. The delegated Agency shall provide the lower-tier Agency a copy of the purchase order or subcontract with the letter of redelegation and shall provide the NASA QAR a copy of the redelegation upon request.

- e. The delegated Agency shall ensure that the staffhours charged by the redelegated Agency are reasonable and that redelegations are appropriately closed so that reimbursable costs are properly controlled.
- f. Redelegations shall be issued within 15 days and accepted within 45 days after subcontract award to ensure prompt and on-site Agency performance.

**2B412**

**RECEIVING INSPECTION AND TEST**

- 1. General. The Agency shall ensure that procured supplies are inspected and tested upon receipt by the receiving contractor in accordance with approved quality program or inspection system requirements.
- 2. Agency Requirements. In addition to inspecting, witnessing, and verifying selected mandatory requirements, the Agency shall review and evaluate the results of the contractor's receiving and test activities, including documentation, in sufficient depth to determine that:
  - a. Approved/qualified subcontractors and appropriate specifications were used.
  - b. Procured supplies indicate evidence of quality assurance actions performed by the subcontractor and contractor in accordance with purchase requirements and are accompanied by required inspection, build history, certification, and test data.
  - c. Procured supplies or accompanying records exhibit evidence of Agency quality assurance as required.
  - d. Contractor performs sufficient verification of physical, chemical, or other test data to determine the validity of data received with purchased supplies when drawings and specifications include chemical and/or physical test criteria. When certifications and/or certificates of conformance are contractually authorized, the Agency shall ensure that the validity of such data is periodically verified by the receiving contractor using approved procedures for sampling testing, source inspection, and data analyses. The Agency, as a minimum, shall compare the actual test data with the applicable drawing or contract requirements.



- e. The quality status of supplies is maintained during receiving inspection and test operations. This shall include physical separation and identification of supplies according to the requirements of the quality program or inspection system plan.
- f. Supplies and their records clearly indicate their acceptance or nonconformance status when released from receiving inspection and test.
- g. Released supplies are adequately controlled and protected for subsequent handling, storage, or use.
- h. The receiving contractor initiates corrective action with the subcontractor on nonconforming supplies to prevent recurrence. When GCQA/GSI is involved, the Agency shall immediately notify the lower-tier Agency of the nonconformances.

**2B413**

**IN-PROCESS CONTROLS**

- 1. General. The Agency shall perform procedures review and evaluation, mandatory inspections, tests, and other quality assurance actions deemed necessary to ensure conformance to contractual requirements.
- 2. In-Process Inspection.
  - a. The Agency shall establish controls and perform quality assurance activities during fabrication, assembly, and tests. The extent, degree, and frequency of these actions, including those directed by NASA, shall be included in the Agency quality plan and shall be sufficient to provide a continuous evaluation of the contractor's performance and physical verification of the quality status of the supplies and services.
  - b. The Agency shall ensure early positive preventive and corrective action by advising the contractor and, when appropriate, the NASA QAR of any operations, controls, or nonconformances which may jeopardize quality or the safeguarding of the supplies and services.

3. Control of Processes.

- a. The Agency shall ensure that the contractor has established and maintains acceptable control of processes.
- b. In the event the Agency is prevented from evaluating the contractor's processes (including proprietary processes), the NASA QAR shall be notified immediately so that appropriate action can be taken.
- c. When statistical process control techniques are used by the contractor, the Agency shall ensure pertinent charts are updated and analyzed in real time. Agency personnel involved shall be trained to comprehend the purpose of the techniques and be proficient in the interpretation of the data. The Agency shall ensure that corrective action is implemented immediately when adverse trends are noted.
- d. The Agency shall ensure that the contractor provides for the certification of equipment, software and personnel for selected processes. Records certifying that tests have been performed and the results of such tests shall be maintained. Equipment, software, and personnel shall be recertified as indicated by the results of quality surveys, inspections, or tests, or when changes are made which may affect process integrity. The Agency shall verify that certified equipment, software, and personnel are used when required.
- e. Changes in contractually approved parts, materials, fluids, processes, or procedures shall not be accepted unless the change has specific approval from the procuring organization. Violations shall be reported immediately to the NASA QAR.

4. Workmanship Standards. The Agency shall participate with the contractor in the selection and/or review of samples or visual aids of acceptable workmanship standards. The Agency shall recommend changes in standards to the NASA QAR when such changes, revisions, or replacements are considered necessary to reflect current requirements. For deliverable software, the Agency shall ensure that the actual software source code complies with the applicable coding standards and conventions.

that the contractor takes immediate corrective action when nonconformance trends a process is not within acceptable

nonconformance records to determine effectiveness of the contractor's corrective action system.

#### **WARD (MRB)**

Agency MRB representatives shall be on the basis of technical competence to identify and commitments necessary to corrective preventive and corrective action disposition for the supplies the Agency representative(s) assigned shall be subject to approval by the

#### requirements.

Agency shall designate its representative(s) and submit the name(s) to QAR. Resume(s) of the education and experience for each individual assigned responsibility shall also be submitted.

Authority is redelegated to a lower-level agency, the name and resume submitted made to the delegating Agency and representatives shall be subject to approval of the delegating Agency.

Agency representative on the MRB shall:

Examine, upon receipt of nonconforming material, whether the material is that which the MRB is authorized to make final disposition or that requiring approval by the contracting officer.

Verify the accuracy and clarity of the discrepancy description on the MRB documentation.

Concur in or disapprove contractor's disposition in accordance with contractor's NASA-approved MRB procedures.

Place Agency inspection points in the disposition, as applicable.

The Agency shall ensure that critical operations are detailed work instruction documents shall include:

Plans for fabrication, assembly, fixtures and tolerances to be used for inspection planning; and safety, handling, and safety precautions, as applicable. Work to be reviewed to the extent that these requirements are

#### **UTION**

End item test and inspection, ensure that all requirements for fabrication, assembly, inspection, development have been met and is complete and is ready for . Test and inspection of the conducted in accordance with documentation required by the

uctions. The following actions shall be used by the the operations for first identification tests, acceptance verification tests:

Planned for testing must be of the delineated by the latest drawings and specifications use authorized by NASA, or in subcontracts, by the prime

Methods and procedures used by the must be approved in writing, or as subcontract.

Equipment, including test software, must be being in accordance with test

Equipment used in the performance of must have verification of up-to-date condition and must have been evaluated the requirements of the

3. End Item Test Operations.

- a. Mandatory requirements in contractor tests shall be witnessed by the Agency to ensure the authenticity of test data. Whenever data are recorded on automated equipment or software/firmware, witnessing/monitoring shall be accomplished at start and completion of tests and periodically during tests.
- b. If a test criterion is not met and the contractor proceeds with testing at its own risk, the Agency shall: (1) notify the contractor verbally (in writing as soon as possible) of the deficiency and that continued witnessing does not constitute Agency acceptance; (2) continue to witness the contractor's performance; (3) record the contractor's action; (4) list requirements (including documentation) that must be completed prior to verification of test results; and (5) notify the NASA QAR immediately.

4. Modifications After End Item Test and Inspection. Subsequent to end item test and inspection, and prior to acceptance, the occurrence of any modifications, repair, disassembly, or damage resulting from mishandling, shall void previous tests and inspections. The extent of Agency and contractor reinspection and retest shall be as authorized by the NASA QAR.

**2B415**

**NONCONFORMING MATERIAL CONTROL, DISPOSITION, AND CORRECTIVE ACTION**

1. General Requirements. The Agency shall ensure that the contractor controls and processes nonconforming material in accordance with contract requirements. This includes certain nondeliverable tooling, test equipment, and test software which could adversely affect deliverable hardware or software. As a minimum, the Agency shall:
  - a. Ensure that nonconforming material is properly identified and controlled.
  - b. Ensure that the contractor initiates prompt and effective action on nonconformances to prevent recurrence.

c. Ensure that the contractor takes immediate corrective action when nonconformance trends indicate a process is not within acceptable limits.

d. Review nonconformance records to determine the effectiveness of the contractor's corrective action system.

**2B416 MATERIAL REVIEW BOARD (MRB)**

1. General. Agency MRB representatives shall be selected on the basis of technical competence to make decisions and commitments necessary to achieve effective preventive and corrective action and appropriate disposition for the supplies involved. The Agency representative(s) assigned to the Board shall be subject to approval by the NASA QAR.

2. Agency MRB Requirements.

- a. The Agency shall designate its representative(s) and submit the name(s) to the NASA QAR. Resume(s) of the education and work experience for each individual assigned this responsibility shall also be submitted.
- b. When MRB authority is redelegated to a lower-tier Agency, the name and resume submittal shall be made to the delegating Agency and the MRB representatives shall be subject to the approval of the delegating Agency.
- c. The Agency representative on the MRB shall:

- (1) Determine, upon receipt of nonconforming material, whether the material is that for which the MRB is authorized to make final disposition or that requiring approval by the contracting officer.
- (2) Verify the accuracy and clarity of the discrepancy description on the MRB documentation.
- (3) Concur in or disapprove contractor's disposition in accordance with contractor's NASA-approved MRB procedures.
- (4) Place Agency inspection points in the disposition, as applicable.

- (5) Provide results of MRB evaluation and recommendations when approval of the contracting officer is required.
- (6) Follow up to ensure that pertinent document changes and final dispositions are made as authorized by the MRB and that disposal of scrapped supplies is appropriate. Verify the completion of repairs.

2B417

**GOVERNMENT PROPERTY CONTROL**

1. Agency Responsibility. The Agency shall participate in contractor inspections of Government Furnished Property (GFP) upon receipt at the contractor's facility. If complex GFP can only be functionally tested after installation, appropriate action shall be taken to allow for such conditions. Government acquired property being returned to the contractor shall be processed in accordance with the provisions of the contract.
2. Defective GFP. If GFP is defective, the Agency shall immediately feed back failure and deficiency data to the NASA QAR or cognizant NASA Installation and the source Agency for corrective action. The Agency shall ensure that an accurate determination is made regarding cause and responsibility when GFP is determined to be defective during and subsequent to contractor receiving inspection. The disposition of such property which is received in a condition not suitable for use shall be as directed by the contracting officer.
3. Utilization of GFP. The Agency shall ensure that GFP is utilized only as authorized by the contract. GFP shall not be repaired, reworked, replaced, or in any way modified without Government authorization.

2B418

**UTILIZATION OF INSPECTION AND TEST EQUIPMENT BY AGENCY PERSONNEL**

When the Government provides inspection and test equipment to be used by their personnel, the Agency shall ensure that it is included in the calibration program of either the contractor, NASA, or the Agency and that only qualified personnel are assigned to use it.

**FAILURES AND FAILURE ANALYSIS**

1. Agency Responsibility. The Agency shall ensure that problems are documented in accordance with the contractor's trouble, malfunction, failure, and deficiency reporting and feedback system and that contractor and NASA-generated reports are promptly distributed to the Agency and the NASA QAR. When the contractor is required by contract to participate in GIDEP, the Agency shall ensure that the GIDEP system is implemented. If NASA reports or delegations on failed supplies returned to the contractor are not received, the Agency shall contact the NASA QAR for information and direction.
2. Agency Failure Analysis Participation. The Agency shall participate in the examination of supplies that fail during fabrication and test at contractor facilities or are returned from NASA. The Agency's participation shall include the following functions:
  - a. Prior to the start of analysis, review the contractor's failure analysis plan for proper approvals.
  - b. Inspect all supplies returned (as received and unpacked) to verify reported nonconformances and possible physical damage.
  - c. Witness physical analysis and tests performed during failure analysis.
  - d. Review corrective and preventive actions and report to the NASA QAR on their adequacy.
  - e. Follow up on all reports to ensure that resulting action is complete.

**2B420****QUALITY STATUS STAMPING AND CONTROL**

1. Contractor Stamps. The Agency shall ensure that the contractor establishes and maintains a stamp control system commensurate with the contract requirements.
2. Agency Stamps.
  - a. General. The Agency shall have established procedures for usage and control of stamps assigned to quality assurance representatives. Agency stamps shall be used for NASA-delegated functions unless NASA stamps are issued by the NASA QAR.

**b. Application**

- (1) Agency stamps shall be applied directly to Agency inspected supplies, unless it is impractical or prohibited by drawings or specifications. Stamp impressions shall also be used and dated on pertinent documents to indicate Agency inspection and test of selected characteristics. This applies to all phases of inspection and test. Stamps shall not be applied in a manner which may degrade the quality of the supplies. Steel stamps shall not be used.
- (2) Stamp ink and methods of application shall meet the same requirements as those imposed on the contractor.
- (3) When supplies are not stamped, stamps shall be applied to tags, cards, labels, or other records associated with the individual items in accordance with approved procedures.
- (4) Stamp impressions shall be legible and shall not interlock with those of contractor stamps.
- (5) Agency personnel shall stamp only those supplies and/or related documentation actually verified or inspected by them.
- (6) When the contractor uses a paperless manufacturing system, the Agency may utilize the contractor's approved system for indicating quality status.

**2B421**

**CONFIGURATION AND CHANGE CONTROL**

1. The Agency shall continuously review and evaluate the contractor's documented configuration and change management system when one is required by the contract. The contractor shall not be permitted to release or otherwise incorporate changes that violate these procedures.
2. In some instances, contractor personnel may be authorized to initiate on-the-spot changes for supplies under contractor design control. The Agency shall ensure that changes are promptly and formally documented in accordance with the established procedures prior to shipping. The Agency shall ensure that obsolete drawings are purged from the system.



3. The Agency shall ensure that the contractor's specifications, drawings and support documents are maintained to reflect all approved changes installed in the associated end item.

**2B422**

**SOFTWARE ASSURANCE**

1. Definitions. For the purposes of this document, software is divided into two categories defined as follows:
  - a. **Category A:** Deliverable software developed and produced either as a contract end item or included as part of a deliverable end item (firmware/embedded software). It includes commercially available, reusable or Government furnished software, whether modified or unmodified, designated as part of a deliverable end item.
  - b. **Category B:** Nondeliverable software (commercially available or user developed) used for development, fabrication, testing, or acceptance of deliverable software, It includes firmware/embedded software or hardware. It includes automated manufacturing, test and inspection/acceptance equipment software, compilers, and software design, test, and inspection tools.
2. Agency Requirements.
  - a. **Category A Software.** The Agency shall:
    - (1) Review all contract deliverable software documentation to ensure correctness, consistency, and compliance with contract format and content requirements.
    - (2) Ensure contractor conformance to approved software plans and implementing procedures.
    - (3) Ensure flowdown of requirements to subcontractors.
    - (4) Monitor the requirements development process and ensure that all system requirements are allocated to software or hardware and are expressed in testable terms.
    - (5) Monitor the design process and ensure that design standards are followed, all

software requirements are allocated to software functions, and results of design walkthroughs or inspections are incorporated into design.

- (6) Monitor the implementation process and ensure applicable coding standards are being followed and results of code walkthroughs or inspections are incorporated into the code.
- (7) Monitor the verification and validation process and ensure test procedures are adhered to, test results meet acceptance criteria and are documented, and nonconformances are documented and dispositioned in accordance with approved procedures.

b. Category B Software: The Agency shall:

- (1) Ensure software is verified and validated prior to use. Ensure changes to verified software are retested prior to use to assure the software maintains its functionality.
- (2) Ensure verified software is uniquely identified and placed under configuration management control.
- (3) Ensure the physical software media is properly stored to prevent damage, loss, or unauthorized modifications.

## 2B423

### METROLOGY CONTROL

- 1. General. The Agency shall ensure that the contractor uses a documented metrology system that controls measurement processes and provides objective evidence of quality conformance. The system shall ensure that measurement standards and equipment are selected and controlled to meet the requirements of the contract.
- 2. Agency Requirements. The Agency evaluation should include, as applicable, the following elements:
  - a. Special measurement standards and equipment (e.g., automatic test and checkout equipment).
  - b. Article or material measurement process.
  - c. Calibration measurement process.

- d. Traceability to National Institute of Standards and Technology (NIST).
- e. Handling, storage, and transportation.
- f. Identification and labeling.
- g. Calibration intervals.
- h. Recall system.
- i. Calibration records.
- j. Environmental requirements, e.g., environment at calibration laboratory and at actual test locations.
- k. Traceability of calibrated tools and equipment to the operations where used.

**2B424**

**PRESERVATION, PACKAGING, PACKING, MARKING, HANDLING, AND SHIPPING**

- 1. Agency Responsibility. The Agency shall ensure the following for all supplies shipped from the contractor's facility:
  - a. Supplies are complete and all required fabrication, tests, and inspections have been performed.
  - b. Inspected supplies and accompanying documents have been properly identified as to inspection status with appropriate NASA or Agency stamps or Agency accepted contractor procedures.
  - c. Required shipping and technical documentation, including approved waivers and deviations, have been provided.
  - d. All supplies are in the proper state of assembly and have been preserved, packaged, packed, and marked in accordance with applicable procedures and specifications.
  - e. Handling devices, environmental control methods, and transportation vehicles are suitable for supplies involved and are loaded to prevent damage.
  - f. The loading and transportation methods conform to applicable specifications and requirements.

- g. Applicable safety criteria have been met.
2. Shipping Documents.
- a. The Agency shall ensure that the following information is on the shipping documents for the prime contractor: shipping address; contract number; contract line item number; prime contractor's name, part number, quantity; and special marking information when required. The Agency shall ensure that direct shipments from subcontractors are identified per the prime contract requirement.
- b. Specific authority from NASA is required to ship supplies with open deficiencies, uncompleted actions or shortages to the Government. Specific authority from the prime contractor is necessary to ship supplies with open deficiencies, uncompleted actions, or shortages from a subcontractor to the prime contractor. Concurrence of the NASA QAR may also be required. Evidence of approval must be in the data package and must be referenced on all shipping papers.
3. Data (Documentation) Packages. Prior to release of each shipment the data package shall be verified for accuracy and completeness in accordance with contractual requirements.
4. Removal from Shipping Container. When an item which has passed final test is removed from the shipping container due to an unplanned event, the NASA QAR must be notified.
5. Special Provisions for Critical Items.
- a. When NHB 6000.1, "Requirements for Packaging, Handling, and Transportation for Aeronautical and Space Systems, Equipment and Associated Components," is contractually imposed, the Agency shall ensure that preparation for delivery, application of NASA-critical item labels, preparation and processing of packaging, handling, and transportation records (as appropriate and required), and selection of carriers are accomplished as prescribed therein.
- b. When the contract specifies other special control of critical items, the Agency shall ensure that items are prepared, packaged, and labeled per the contract for delivery, and

that provisions for data packages (history jackets) are met by the contractor.

**2B425**

**SUPPLIES/SERVICES ACCEPTANCE**

1. General. The Material Inspection and Receiving Report (DD Form 250), when specified in the contract, shall be used by Agency quality assurance personnel.
2. Agency Requirements. When required, the Agency shall ensure that the DD Form 250 has been prepared by the contractor in accordance with NASA FAR Supplement 18-46.672. The Agency shall complete block 21A indicating Contract Quality Assurance (CQA) has been performed and, when directed by contract, acceptance. The following shall be recorded/reported on the DD Form 250:
  - a. Waivers and deviations from contract specifications, including the source and authority for the waiver or deviation (i.e., procuring installation issuing the waiver or deviation and identification of the authorizing document).
  - b. Authorizing documents for incomplete shipments (i.e., supplies shipped less components, accessories, or ancillary supplies).
  - c. Open items requiring completion that are being transferred.
  - d. Other information required by the contract.
3. Subcontractor Shipments. When subcontractor shipments requiring GCQA/GSI at source are made to a prime contractor, the Agency may be authorized to indicate inspection on the subcontractor's shipping documents. If shipments are made from a subcontractor's facility directly to the Government, the Agency shall use DD Form 250, when required of prime contractor.
4. Other Shipping Documents. For shipments using other shipping documents, the Agency shall indicate performance of Procurement Quality Assurance (PQA) on the shipping document in accordance with NASA FAR Supplement 18-46.671.

**2B426**

**STORES CONTROL**

The Agency shall review and evaluate the effectiveness of the contractor's control of supplies in store rooms

and large assemblies or items not confined to store rooms for various reasons. The Agency shall ensure that the contractor's system of stores control provides effective protection for supplies subject to limited shelf life, quality deterioration, loss of identification or damage due to:

- a. Exposure to adverse environmental conditions.
- b. Handling.
- c. Packaging.
- d. Stocking and distribution practices.
- e. Modification, rework, and repair.
- f. Configuration changes.
- g. Time.

**2B427**

**SAFETY**

1. Safety is a prime consideration in the conduct of quality assurance operations. Agency personnel performing quality assurance functions for NASA shall know, understand, and comply with the requirements of the contractor's and the Agency's safety programs.
2. Agency personnel who observe and recognize an unsafe operation or practice shall immediately inform the contractor operations personnel and shall also inform the contractor agency and NASA management personnel.

**2B428**

**AGENCY RECORDS**

1. General. Results of Agency quality assurance actions shall be recorded and made available to the NASA QAR or provided when requested.
2. Agency Requirements.
  - a. Agency actions shall be documented on applicable Agency and/or contractor records, unless otherwise specified. The records shall provide evidence that Agency reviews, inspections, and tests have been performed. Actual numerical or observed results obtained by Agency independent inspections and tests shall be recorded when:

- (1) The results do not agree with those recorded by the contractor; or

- (2) Recorded results are considered necessary by the Agency; or
- (3) Agency recorded results are requested by NASA.

- b. Agency records shall be identified and traceable to the item, specific test or operation procedures, contract, and/or purchase document. When items are serialized, or carry specific identification under a controlled system (i.e., lot numbers and date codes), such identification shall be documented on quality records. NASA terminology such as "mandatory" shall be used on quality records in lieu of Agency terminology.
- c. Records shall include problems and nonconformances, including the nature and probable cause of deficiencies, malfunctions, troubles and failures, and the corrective action taken. While the probable cause of every nonconformance may not be readily determined, the best judgment and facts available at the time of detection shall be recorded.

3. Retention of Agency Records. Agency-generated records and reports at all tiers shall be maintained for the same period of time as required by contract/subcontract. NASA record retention requirements take precedence over Agency record retention regulations. The Agency shall notify the procuring NASA Installation before destroying any records. Delegations may be reopened within 1 year after contract completion and need to be retained for easy retrieval.

#### 2B429

#### CHANNELS OF COMMUNICATION

1. Communications with NASA. The NASA QAR shall be the point of contact concerning delegated quality assurance functions. Direct liaison is necessary on quality technical matters between Agency representatives and the NASA QAR.
2. Communications with Contractors. The Agency shall communicate directly with the contractor when performing delegated functions. Copies of Agency correspondence shall be provided to the NASA QAR.
3. Interagency Communications. When functions have been redelegated, the Agency shall communicate directly with the lower-tier Agency in matters

associated with the quality of the supplies or services.

4. Identification of Procuring NASA Installations. Appendix C lists prefix symbols identifying NASA contracts and purchase orders with the procuring NASA Installations as set forth in the Federal Acquisition Regulation Supplement (NASA/FAR Supplement, NHB 5100.4).



**APPENDIX A - SAMPLE TYPICAL QUALITY ASSURANCE LETTER OF DELEGATION**

1. This document sets forth the Quality Assurance (QA) functions to be performed by your Agency on NASA Contract NAS7-150 with Dale Manufacturing Co., 92658 Mark Ave., Hillside, NJ 10026, in accordance with Chapter 4, "Operational Quality Activities," of this Handbook, and supplemental information referenced herein.
2. The designated NASA QA contact, hereafter referred to as the NASA QAR, will be:  
  

A.B. Jones	Alternate: B.C.Smith
NASA Resident Office	NASA Resident Office-JPL
Dale Mfg Co.	4800 Oak Grove Drive
92658 Mark Ave.	Pasadena, CA 91109
Hillside, NJ 10026	Phone: 123-456-7890
Phone: 234-567-8901	
3. The NASA QAR will provide technical guidance and assistance to your organization to assure full implementation of the NASA contractual quality requirements.
4. Authority to change or modify the terms and conditions of the contract, the resolution of disputes concerning a question of fact, initiation of any termination and similar contractual actions are specifically reserved for the NASA Contracting Officer.
5. You are authorized to redelegate functions delegated to you herein, with one exception. Redlegation to the Agency at CDEF Corp. is being withheld by NASA. The NASA QAR shall be notified of all planning conferences concerning redelegations. Include the prime contract number and the name, address, and telephone number of the NASA QAR and Alternate identified herein in all redelegations. Provide copies of all redelegations and acceptances to the NASA QAR.
6. It is requested that this Letter of Delegation be accepted within 30 days of receipt.
7. The following paragraphs of Chapter 4, of this Handbook, are applicable to this delegation as written unless expanded or modified below:
  - a. 2B400 GENERAL
  - (1) Delete subparagraphs 1 and 2.

- b. 2B401 QUALITY ASSURANCE DOCUMENTS
- c. 2B402 CONTRACT REVIEW
- d. 2B403 AGENCY QUALITY PLAN
- (1) An Agency quality plan is required and shall be submitted to the NASA QAR by July 8, 1993.
- e. 2B404 PERSONNEL AND STAFFING
- (1) Provide the name of the principal contact for this delegation to the NASA QAR.
- (2) A list of specific quality engineering functions to be performed by your Agency is attached.
- (3) During the first week of November of each year, provide the NASA QAR with an estimate of human resources requirements for the next calendar year.
- f. 2B405 AGENCY REPORTS
- (1) Monthly status reports shall be submitted to the NASA QAR by the 10th of each month. The first report shall be submitted on August 10, 1993, covering the activities of July 1993.
- g. 2B406 PROCEDURES REVIEW AND EVALUATION
- h. 2B407 DESIGN REVIEWS
- i. 2B408 SPECIAL AGENCY SURVEYS
- j. 2B409 MANDATORY REQUIREMENTS
- (1) An initial list of mandatory actions and characteristics is attached. Guidelines for selection of additional mandatory actions and characteristics by your personnel is also attached. Assistance will be provided by the NASA QAR.
- k. 2B410 PROCUREMENT CONTROL
- (1) All Criticality 1 items, as identified by the contractor's FMEA/CIL, shall be subject to GCQA/GSI at any subcontractor's facility within the guidelines of this paragraph. NASA will delegate GCQA/GSI directly to the Agency at CDEF Corp. on the LOX Seal Assembly, PN 22734.

l. 2B411 REDELEGATING QUALITY ASSURANCE FUNCTIONS

m. 2B412 RECEIVING INSPECTION AND TEST

n. 2B413 IN-PROCESS CONTROLS

o. 2B414 END ITEM TEST AND INSPECTION

p. 2B415 NONCONFORMING MATERIAL CONTROL,  
DISPOSITION, AND CORRECTIVE ACTION

q. 2B416 MATERIAL REVIEW BOARD (MRB)

(1) Redelegation of MRB authority to other Agencies is authorized when subcontractors have been given this responsibility by the contractor.

r. 2B417 GOVERNMENT PROPERTY CONTROL

(1) Boot Assembly, PN 70856, will be returned to the contractor's facility for overhaul. Your Agency shall assure compliance with Dale Manufacturing Co. Quality Assurance Manual procedures concerning GFP/Overhaul hardware.

s. 2B418 UTILIZATION OF INSPECTION AND TEST  
EQUIPMENT BY AGENCY PERSONNEL

t. 2B419 FAILURES AND FAILURE ANALYSIS

(1) The NASA QAR will provide direction on your participation in failure analyses on specific items.

u. 2B420 QUALITY STATUS STAMPING AND CONTROL

v. 2B421 CONFIGURATION AND CHANGE CONTROL

w. 2B422 SOFTWARE ASSURANCE

(1) This paragraph is not applicable to this delegation since no software is being procured on this contract.

x. 2B423 METROLOGY CONTROL

y. 2B424 PRESERVATION, PACKAGING, PACKING,  
MARKING, HANDLING, AND SHIPPING

(1) The shipping document will be used to indicate the completion of in-process and end item inspection.

z. 2B425 SUPPLIES/SERVICES ACCEPTANCE

(1) DD Form 250 is the document to be used to indicate acceptance by the Government. Each shipping document shall bear the signature and inspection stamp of the responsible Agency representative. Provide the NASA QAR a copy of each completed DD Form 250.

(2) Final acceptance by the Government of all supplies and services provided under this contract will be made at the contractor's facility.

aa. 2B426 STORES CONTROL

ab. 2B427 SAFETY

ac. 2B428 AGENCY RECORDS

(1) Agency records shall be retained for 10 years after close of the contract.

ad. 2B429 CHANNELS OF COMMUNICATION

(1) Correspondence shall be addressed to the NASA QAR identified on the first page of this delegation.

8. DEFINITIONS

a. Definitions can be found in NHB 5300.4(1G), "NASA Assurance Terms and Definitions."

9. ATTACHMENTS

a. No attachments are included in this sample Letter of Delegation to keep it brief and because the attachments are project specific.

**APPENDIX B - SAMPLE TYPICAL AGENCY PERIODIC QUALITY STATUS REPORT**

AGENCY: DCMC - Newark, NJ

PRIME CONTRACT: NAS7-150

PERIOD COVERED: July 1, 1993  
- July 31, 1993

SUBCONTRACT: SC 0521

REPORT NO.: 93-1

PURCHASE ORDER: PO-5269

DATE: Aug. 10, 1993

CONTRACTOR: Dale Mfg. Co.

ITEM OR SYSTEM: Galileo-LOX  
System

ADDRESS: Hillside, NJ

1. The following information is provided in accordance with NHB 5300.4 (2B-2), paragraph 2B405-2b:

- a. Noncompliance With Contract Quality Requirements.  
Report significant areas of noncompliance with the quality requirements of the contract.

Example: The contractor does not comply with NHB 5300.4(1B-1) in the following areas:

- (1) Chapter 9 (Metrology Controls). Instruments proposed for use during qualification tests of the LOX System were not currently calibrated and lacked evidence of compatibility with contractor's established requirements (NAA-16723). Quality Deficiency Report 770935 was issued to Dale Manufacturing Company management. Contractor has taken necessary corrective action and followup by DCMC QAR was completed. The NASA QAR was advised and compatibility requirements were resolved between NASA and Dale. One week delay of qualification test resulted as reported by DCMC Failure Report 000515. Delivery schedule of system was not affected.
- (2) Chapter 5, paragraph 1B505 (Procurement Documents). In reviewing procurement documents, it was noted that the contractor did not include the quality specifications in the purchase orders of several items of raw materials and electrical components. This noncompliance was brought to the attention of responsible Dale Manufacturing Co. personnel who issued procedures to ensure that purchase orders include the quality specifications.

(3) This month's procedures review and evaluation of the contractor's quality program revealed noncompliances in the areas of in-process fabrication controls, engineering changes, receiving inspection, and shipping documents. The contractor has taken acceptable corrective action.

b. Surveys or Audits Conducted or Planned. Report the results of any surveys or audits conducted by the Agency during the reporting period and any scheduled for the future.

Example: An audit of the contractor's corrective action system was conducted at the request of the NASA QAR. A report is currently being written and will be provided to the NASA QAR. Results will be summarized in next month's quality status report.

Example: The redelegated Agency at ABCD Co. (PO 0385) has scheduled a quality survey of that facility during the second week of next month. ABCD supplies a critical flexible joint for the Galileo-LOX System.

c. Changes in Contractor's Quality Program or Inspection System. Provide a narrative description of all changes in the contractor's quality program or inspection system affecting the level or degree of inspection or testing performed by the contractor and/or the Agency. It shall also include the status of contractor-prepared quality program and inspection documents.

Example: The contractor has completed all system and procedure actions required by the March 1993 NASA-JSC survey recommendations. Action is being taken by Dale Manufacturing Co. management to include changes in the Quality Assurance Manual to correct the system deficiencies reported in paragraph 2 of the survey report.

Example: The contractor initiated a change in the sequence of assembly of Adapter, PN 280945, and as a result, X-ray tests, now performed at Station No. 12, must be performed at Station No. 14. This will cause difficulty in the inspection of the welds at this station. It will, however, improve assembly operations to an appreciable extent which will outweigh the difficulties incurred in inspection. A procedure for accomplishing the required inspection is presently being prepared by the contractor.

d. Summary of Agency Inspection and Test Results. Provide a summary of Agency inspection and test results for the reporting period. Identification of supplies, percent rejected, description, and corrective action shall be

indicated for problem areas on critical items. The Agency shall submit:

- (1) Total number of mandatory characteristics planned for each item or system.
- (2) Total number of mandatory characteristics actually inspected, witnessed and verified for the reporting period. Explain any difference between subparagraph a and b totals. Include number of rejections.
- (3) Total number of other characteristics inspected, witnessed, verified, and monitored during the reporting period. Include number of rejections.
- (4) Number of quality deficiency reports issued to the contractor during the reporting period.
- (5) Number of MRB actions in which the Agency participated during the reporting period.
- (6) Summary of Agency actions taken regarding corrective action followup on previous deficiency reports. This information should be reported each month until the resolution of these problems has been found acceptable.

e. Unauthorized Use of Advance or Disapproved Documents. Summarize the Agency's activities in ensuring that drawings, specifications, procedures, and other quality documentation used by the contractor in producing, testing, and accepting supplies or services are current, approved, and properly applied. Any deficiencies should be reported.

Example: A preliminary specification covering hi-pot acceptance test of new transformers was found in receiving inspection. An out-of-date detail drawing was found in the soldering area. Both conditions were corrected on-the-spot by the contractor. A survey was conducted in three other areas involving 59 documents and no additional discrepancies were found.

f. Agency Comments on Contractor or Agency-Initiated Disposition and/or Corrective Action. Provide comments on the disposition of nonconforming hardware and/or corrective action which the Agency considers unsatisfactory.

Example: NASA Specification 007, Weld Repair for 105-Inch Diameter Aluminum Alloy Tanks, permits two repairs per seam weld not to exceed 6 inches in length. A tank was rejected by personnel of this office as not meeting that requirement; however, the contractor

obtained a contractual waiver (No. 4-7, dated July 11, 1993) from Jane H. Doe, Contracting Officer. In the opinion of this office, the waiver has authorized a condition which could possibly result in failure of the tank when pressure is applied.

Example: Contracting Officer approval of Dale Manufacturing Company request for waiver of approved welding procedure NAA-51528 (weld pass sequence) will affect final dimensions of tank assembly. Please reassess and advise .

- g. Staffhour Status. Provide the total number of regular and overtime staff hours planned and expended during the reporting period, including hours reported by redelegated Agencies.

Example:

<u>Category:</u>	<u>Actual Hours</u>	<u>Planned Hours</u>
Regular Quality Assurance Time Charged:	945	1000
Quality Assurance Overtime Charged:	59	0
Engineering and Staff Specialists:	21	30
Redelegations: Regular Time	33	50
Overtime	8	

Cumulative data is attached which compares hours expended with the annual forecast.

- h. Projected Agency Manpower Requirements. Identify projected changes in Agency human resources commitments over the next 3 months. Include proposed transfers of assigned personnel and impending changes of key contractor personnel.

Example: Increase in activity in module assembly will require an additional electrical inspector, Grade GS-11, by September 1, 1993. A requisition has been filed and approved. The billet will be occupied by the required date by a qualified inspector. This addition to the staff will increase our applied work force to five full-time inspectors and two part-time inspectors.

Example: Jane Jones, Inspection Stamp D-015, is transferring to another facility. Arrangements are being made for replacement by an equally competent inspector with the necessary nondestructive test



experience and background. Orderly transfer will be accomplished without loss of mandatory characteristic coverage at applicable inspection stations.

- i. Changes in Contractor Key Personnel. Identify actual and planned changes of key contractor personnel.  
  
Example: Mr. Friday Noon, Dale Mfg Company's Director of Quality Engineering, resigned on July 24, 1993, to accept a position with another company. His replacement will be named within 30 days. Ms. June Bride has been appointed Interim Director until Mr. Noon's replacement is named. No significant change in quality operations is expected.
- j. Unresolved Problems: Technical or administrative problems with the contractor, subcontractor, or the Agency which remain unresolved since last reported should be described. This should include delinquent corrective action.  
  
Example: Difficulties in producing consistently acceptable plastic sleeves reported May 22, 1993, are still evident at the subcontractor, Jones and Smith Company. Thirty-one percent of delivered assemblies were rejected this reporting period. The contractor's plastic processing specialists have been assigned to assist the subcontractor.  
  
Example: As reported in telephone conversation on July 8, 1993, NASA assistance is needed in resolving a problem with Snow Company process specification 92658 on resistance welding. A copy was forwarded to the NASA QAR on July 10, 1993. This is still an open item and should be resolved by September 1, 1993 as the present schedule requires assemblies to be processed by this method on that date. Request expeditious action. Late reply could result in rework and requalification testing.
- k. Progress in Completing Training. Training of Agency personnel should be reported until all anticipated certifications have been accomplished. Upgrading and refresher courses should also be similarly reported.  
  
Example: Inspectors Brown and Green have completed training in magnetic particle inspection and radiographic weld inspection, respectively. Three other inspectors are scheduled for magnetic particle inspection training during September at Watertown, Massachusetts.
- l. Missed Mandatory Inspection Points. Identify any mandatory characteristics that were not inspected, witnessed, verified, or monitored by the Agency as

required. Include reasons for the omission and corrective action taken.

Example: Weld wire alloy type was not verified for PN 2468, Weld #W16, on July 23, 1993. Investigation revealed that the contractor's processing documentation did not adequately identify this weld as an Agency mandatory inspection point. Documentation was corrected. An Agency weld inspector examined the weld with a metal monitor and found it to be the proper alloy.

m. Supplies Shipped. Identify end items or other significant hardware or software shipped or services completed during this reporting period.

Example: Galileo-LOX System, PN 3579-1, S/N 004 was accepted on DD Form 250 on July 26, 1993, and shipped to SSC. There were no open discrepancies or open work.

n. Special Processes Reviewed. Identify the special processes reviewed by the Agency during this reporting period and the discrepancies found.

Example:

(1) Radiographic Inspection. Operator visual examination had expired. No impact.

(2) Crimping. No deficiencies.

(3) Dip Brazing. Temperature was not properly controlled during a 2-day period. No NASA parts were brazed during that period.

o. Narrative Overall Evaluation of the Contractor.  
Provide a narrative which contains the Agency representative's evaluation and opinion, based on the previous month's observations, of the overall effectiveness of the contractor's quality program or inspection system. The subjects to be discussed should include:

(1) The contractor's management of the quality program or inspection system.

(2) The overall effectiveness of the contractor's quality program or inspection system and procedures.

(3) The overall quality of the supplies or services provided.

(4) The overall effectiveness of the contractor's corrective action system.

- (5) The effectiveness of the contractor's quality representative assigned to subcontractor's facility, where applicable.
- (6) Corrective action by subcontractor on survey or audit recommendations of contractor, where applicable.

p. Changes in Contractor Facility and/or Process Capability Identifying Any Changes, Planned or Unplanned, Which Have Occurred.

Example: Lightning struck a power transformer during a storm on July 27, 1993, resulting in loss of power in the main machine shop for two shifts. The NASA QAR was notified immediately. Schedule impact has not yet been determined. The NASA QAR will be advised when known. There were no personnel injuries.

2. ATTACHMENTS

- a. No attachments are included in this Quality Status Report to keep it brief and because the attachments are project specific.



**APPENDIX C - IDENTIFICATION OF PROCURING NASA INSTALLATIONS**

To facilitate identification of procuring NASA Installations for NASA contracts and purchase orders, the following is a list of NASA Installations/offices and corresponding prefix symbols:

<u>NASA INSTALLATION/OFFICE</u>	<u>CONTRACT SYMBOL</u>	<u>PURCHASE ORDER SYMBOL</u>	<u>MAIL ADDRESS</u>
For Headquarters Basic Agreements and Institutional Cost Sharing Agreements	NAS11-		NASA Office of Procurement, Washington, DC 20546
For All Other NASA Headquarters Contracts	NASW-	W-	NASA Office of Procurement, Headquarters Acquisition Division, Washington, DC 20546
Langley Research Center	NAS1-	L-	NASA Langley Research Center, Hampton, VA 23665
Ames Research Center	NAS2-	A-	NASA Ames Research Center, Moffett Field, CA 94035
Lewis Research Center	NAS3-	C-	NASA Lewis Research Center, 21000 Brookpark Road, Cleveland, OH 44135
Dryden Flight Research Facility	NAS4-	E-	NASA Dryden Flight Research Facility P.O. Box 273 Edwards, CA 93523

Goddard Space Flight Center	NAS5-	S-	NASA Goddard Space Flight Center, Greenbelt, MD 20771
Wallops Flight Facility	NAS6-	P-	NASA Goddard Space Flight Center Wallops Flight Facility, Wallops Island, VA 23337
NASA Resident Office-JPL	NAS7-	WO-	NASA Resident Office-JPL, 4800 Oak Grove Drive, Pasadena, CA 91109
George C. Marshall Space Flight Center	NAS8-	H-	NASA George C. Marshall Space Flight Center, Marshall Space Flight Center, AL 35812
Lyndon B. Johnson Space Center	NAS9-	T-	NASA Lyndon B. Johnson Space Center, Houston, TX 77058
John F. Kennedy Space Center	NAS10-	CC-	NASA John F. Kennedy Space Center, Kennedy Space Center, FL 32899
John C. Stennis Space Center	NAS13-	NS-	NASA John C. Stennis Space Center, Stennis Space Center, MS 39529

