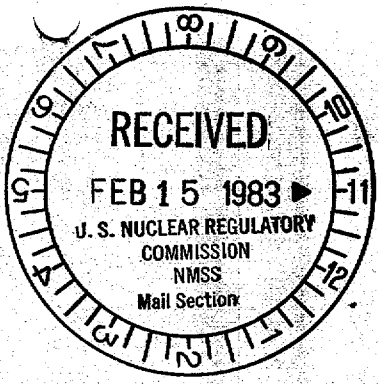


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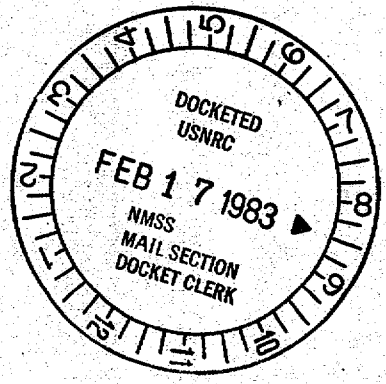


# SPENT FUEL SERVICES OPERATION

and

# GENERAL ELECTRIC URANIUM MANAGEMENT CORPORATION

# QUALITY ASSURANCE PLAN



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ASSIGNED TO: NRC - TRANSPORTATION

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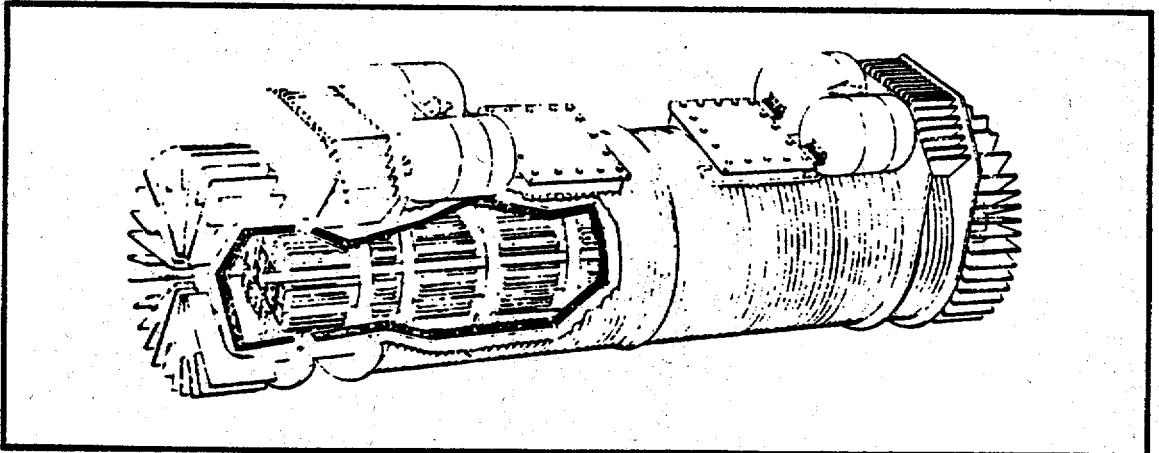
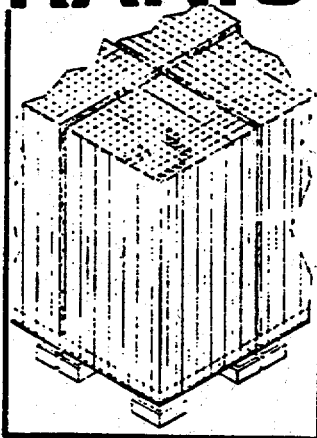
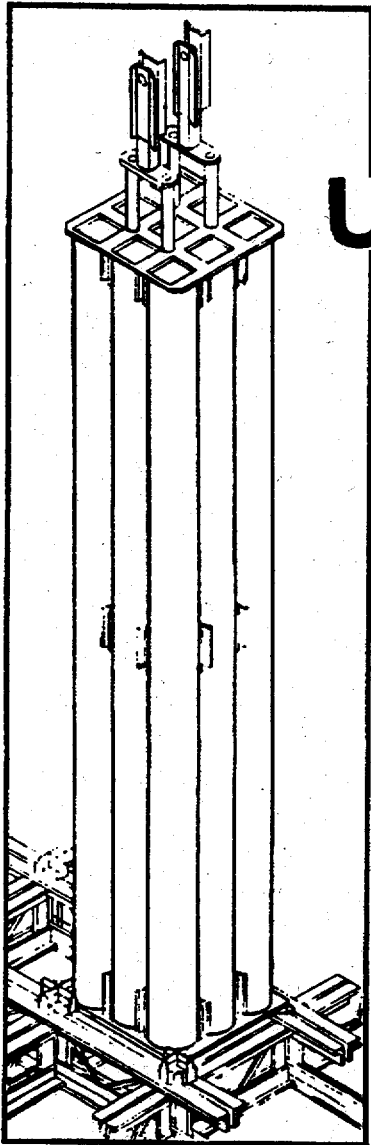
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# **SPENT FUEL SERVICES OPERATION**

and

# **GENERAL ELECTRIC URANIUM MANAGEMENT CORPORATION**

# **QUALITY ASSURANCE PLAN**



## **DISCLAIMER OF RESPONSIBILITY**

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GENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125

## STATEMENT OF AUTHORITY

*It is the policy of the Spent Fuel Services Operation (SFSO) and of the General Electric Uranium Management Corporation (GEUMCO) to provide services and products of a quality that meet the initial and continuing needs of our customers consistent with good engineering practice, and in doing so, to be the leader in quality reputation in the nuclear energy business.*

*This Quality Assurance Plan is used by SFSO and by GEUMCO to implement this policy. All managers within these organizations with quality-related responsibility have the authority to implement this program within their respective areas of responsibility. Development of procedures to accomplish this Quality Assurance Plan is a basic responsibility of each of the various managers.*

*This plan describes methods used to comply with the quality assurance program requirements of NRC Federal Regulation 10 CFR Part 50, Appendix B, "Quality Assurance Criteria For Nuclear Power Plants and Fuel Reprocessing Plants", 10 CFR Part 71, Appendix E, "Quality Assurance Criteria For Shipping Packages For Radioactive Material", and other quality assurance criteria applicable for storage and/or transportation of radioactive materials. These criteria include General Electric internal quality system requirements such as those set forth in the following documents: (a) NEBO Policy No. 70-1, "Product Quality"; and (b) NEBO Organization & Policy Guide No. 70-11, "Standard Quality System Requirements".*

*Implementation of this Quality Assurance Plan has the unqualified endorsement of General Electric Company Spent Fuel Services Operation management.*

Date: September 30, 1982

  
J. E. Van Hoomissen, Manager  
Spent Fuel Services Operation

Revision: 7

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

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SPENT FUEL SERVICES OPERATION  
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**AUDIT**

An activity to determine through investigation, the adequacy of, and adherence to, established procedures, instructions, specifications, codes, and standards or other applicable contractual and licensing requirements, and the effectiveness of implementation.

**CAUSE**

The underlying determinant in design, material, procedures, workmanship, etc., which ultimately resulted in a nonconformance.

**CHARACTERISTIC**

Any property or attribute of an item, process or service that is distinct, describable and measurable, as conforming or nonconforming to specified quality requirements. Quality characteristics are generally identified in specifications and drawings which describe the item, process or service.

**CLEANING**

The treatment for removal of surface contaminants such as oil residue, coatings, metal chips, entrapped water, or other forms of internal or external contamination which prevent utilization of basic material or finished products or would cause degradation of quality. Decontamination for disposal of radioactive items is not included in this definition.

**COMPONENT**

A piece of equipment such as a vessel, piping, pump, valve or core support structure, which will be combined with other components to form an assembly.

**CORRECTIVE ACTION**

The action taken to correct conditions adverse to quality and deficiencies in the Quality Assurance Program or its implementation.

**CORRECTIVE ACTION REQUEST (CAR)**

A document used for reporting conditions having an adverse effect on quality, the results of investigations of problems, and the corrective action taken to preclude recurrence.

**DESIGN BASES**

Broad functional requirements, conditions or constraints chosen to assure that the design objectives of the facility structure, system or component are met.

**DESIGN CONTROL**

A system or program such that desired design actions are accomplished and actions not desired are prevented.

**DESIGN CRITERIA**

Mandatory performance limits, conditions or constraints specified to assure compliance with Corporate policy or Governmental regulations concerning safety, safeguards and environmental protection and which are aimed at assuring that the facility structure, system or component can be operated without undue risks to the health and safety of the employees and public, to the national security and to the environment.

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## **DESIGN REVIEW**

A series of activities that produces an objective examination of a design. The design review may be informal or formal.

## **DEVELOPMENTAL ENGINEERING TESTS**

Tests conducted or planned to obtain information for use in determining design feasibility, design requirements, or justification for alternate approaches.

## **DISPOSITION**

The determination of action to be taken concerning nonconformances such as Rework, Repair, Use As Is, Return to Supplier, or Scrap.

## **ENGINEERING CHANGE NOTICE (ECN)**

A document which records in detail the changes to an issued design document. When approved, the ECN becomes a part of the original document until the document is changed by incorporating the ECN.

## **ENGINEERING REVIEW MEMORANDUM (ERM)**

A document that records the design documentation review of cognizant personnel.

## **EQUIPMENT VERIFICATION TEST (EVT)**

A test of new, repaired, or modified components or systems under simulated operating conditions. EVT's are conducted to determine that operation of the item (or items) is in accordance with design criteria.

## **FACILITY CHANGE NOTICE (FCN)**

A Morris Operation (MO) document which is used to record a description of the proposed change, modification, or addition plus review and approval information. This is the formal document retained with the design package as part of the MO Plant Engineering records.

## **FORMAL ENGINEERING REVIEW (FER)**

A formal series of activities in the project or task schedule that will produce an objective examination of a design for the purpose of evaluating design adequacy and verifying that the design complies with all applicable requirements. These activities are also called Formal Design Reviews.

## **HANDLING**

An act of physically moving items by hand or mechanical means, but not including transport modes.

## **HOLD POINT**

A mandatory inspection point established either by the Quality Assurance Engineer or other responsible engineers.

## **INCOMING MATERIAL REPORT (IMR)**

A document identical to the Source Inspection Report listing inspection criteria and utilized at Receiving Inspection to record inspection results for incoming items.

## **INFORMAL DESIGN REVIEW (IDR)**

An informal series of activities during a preliminary design for the purpose of reviewing objectives and determining that significant factors are included in the design analyses, including optimizing the design and arrangements, and obtaining interim decisions for problems, responses to the NRC, evaluating alternatives, and interpreting design codes and standards.

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## **INSPECTION**

A phase of quality control which by means of examination, observation or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes or structures to predetermined quality requirements.

## **INSTALLATION TEST**

Tests prepared in the format of check lists that assure compliance with drawings and specifications. For example, cleaning instructions, instructions for correct rotation/movement response to power or control signals, inspection records, lubrication instructions, etc.

## **LEVEL 1**

The disposition level for nonconforming items not requiring an MRB, such as "Rework" or "Return to Vendor", disposition may be made by the first supervisory level performing work that detected the nonconformance.

## **LEVEL 2**

The disposition level for nonconforming items requiring MRB approval such as "Use As Is" or "Repair".

## **LIFETIME RECORDS**

Lifetime records are those which would be of significant value in: (a) demonstrating capability for safe operation; (b) maintaining, reworking, repairing, replacing, or modifying an item; (c) determining the cause of an accident or malfunction of an item; or (d) those which would provide required baseline data for inservice inspections (N45.2.9).

## **MANUFACTURING TEST**

A test of the item's ability to meet static or dynamic performance requirements. For example, hydrostatic, load, flow, certain proof or component tests, etc.

## **MATERIAL REQUEST (MR)**

A document used for requesting purchase of materials, equipment or services. In addition, the form is used for obtaining a change in a previously issued MR, and for obtaining cost and lead-time information.

## **MATERIAL REVIEW BOARD (MRB)**

The informal organization which determines the disposition of nonconforming items beyond the scope of Level 1 authority. This organization must include at least a responsible engineer and a QA engineer, but may include others as appropriate. QA will chair the MRB.

## **NDE**

The abbreviation for nondestructive examination, sometimes called nondestructive testing (NDT).

## **NONCONFORMING ITEM RECORD (NIR)**

The form which may be used for reporting nonconforming items or characteristics to Quality Assurance and to record action taken to effect management disposition.

## **NONCONFORMANCE**

A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformance include: physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or test procedures (ANSI N45.2.10).

## **NONPERMANENT RECORDS**

Any records which do not satisfy the requirements for lifetime records.

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## **OPERATIONAL TEST**

A test to determine the ability of the component or system to function within licensing limitations and in accordance with design criteria and functional requirements.

## **PACKAGING**

The preparation of an item for shipping, handling, and/or storage so as to prevent physical damage and degradation of quality due to environmental effects.

## **PREREQUISITES**

Work, precautionary steps, or inspections that must be performed prior to running a specific test so as to enable valid results to be obtained and not to damage the equipment nor violate safety requirements.

## **PRESERVATION**

The special preparation of items utilizing preservatives, inert gas blankets, vapor-proof barriers with desiccants, etc., to prevent deleterious environmental effects.

## **PROCEDURE**

A document that specifies or describes how an activity is to be performed. It may include methods to be employed, equipment or materials to be used and sequence of operations.

## **PROJECT PLAN**

The document which describes the detailed elements, including classification, specific activities, responsibilities, schedules, and interfaces of components of a task.

## **PURCHASE ORDER (PO)**

The contractual document used by Purchasing to procure material, components, or services as ordered by the Material Request.

## **QUALITY**

Conformance to measurable criteria and requirements.

## **QUALITY ASSURANCE**

All those planned and systematic actions necessary to provide adequate confidence that an item or a facility will perform satisfactorily in service (ANSI N45.2.10).

## **QUALITY ASSURANCE PLAN**

A document prepared and issued by Quality Assurance to provide an interpretation of the requirements of 10CFR50, Appendix B, and other quality assurance requirements incumbent on the SFSO/GEUMCO for implementation.

## **QUALITY ASSURANCE ORGANIZATION**

Unless specified otherwise, all references to Quality Assurance or Quality Assurance Organization are applicable to Quality Assurance functions located both in San Jose and at the Morris Operation.

## **QUALITY CONTROL**

Those quality assurance actions which provide a means to control and measure the characteristics of an item, process or facility to established requirements (ANSI N45.2.10).

## **QUALITY CONTROL INSTRUCTION (QCI)**

A document issued by the Quality Assurance Organization covering unique, non-repetitive activities for which quality instructions are required.

# QUALITY ASSURANCE PLAN

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## QUALITY RECORDS FILE

The file maintained (or designated to be maintained) by Quality Assurance for storage of records to support quality-related activities.

## QUALITY ASSURANCE PROGRAM

The total of all quality assurance requirements imposed on SFSO/GEUMCO either from outside, (e.g.: NRC regulations, GE Corporate policy, NEBO Instructions, customer requirements), or internally (e.g.: SFSO internal operating instructions).

## QUARANTINE

The physical segregation of nonconforming material or items from conforming material by moving them to a designated hold area and attaching a Quality Hold Tag. When physical segregation is impractical, the attachment of the Quality Hold Tag constitutes quarantine.

## REMEDIAL ACTION

The action taken to prevent the same cause from generating problems in any other areas until the cause can be corrected and all existing problems cleared.

## REPAIR

The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though the item still may not conform to the original requirement (ANSI N45.2.10).

## REWORK

The process by which a nonconforming item is made to conform to a prior specified requirement by completion, remachining, reassembling or other corrective means (ANSI N45.2.10).

## SAFETY, SAFETY-RELATED

As used in this Plan, refers to nuclear safety.

## SOURCE INSPECTION REPORT (SIR)

A document used by the appropriate Quality Representative for reporting the results of an inspection at the vendor facility.

## SPECIAL PROCESSES

Special processes include welding, brazing, heat treating, cleaning, anodizing, plating, and associated nondestructive examination.

## STORAGE

The act of holding items at the construction site or in an area other than its permanent location in the plant (ANSI N45.2.10).

## SURVEILLANCE

Routine or specific observation, evaluation, review or in-depth survey of methods, procedures, instructions or records to determine the degree of compliance of performing organizations, individuals or products in meeting specified requirements.

## SYSTEM

A group of components united by some interaction and functioning as a single unit. For example, a cask service facility, fuel storage, etc.

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## TESTING

The determination or verification of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental or operating conditions (ANSI N45.2.10).

## USE AS IS

A disposition which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements including performance, maintainability, fit, and safety (ANSI N45.2.10).

SPENT FUEL SERVICES OPERATION  
 GE URANIUM MANAGEMENT CORPORATION

<b>SUBJECT</b>	<b>NUMBER</b>
1.0 ORGANIZATION	NEDO-20776

**1.1 PURPOSE**

This section describes the organizational structure and the relationship among the organizations within the Spent Fuel Services Operation (SFSO) and the General Electric Uranium Management Corporation (GEUMCO) and defines the authority and responsibilities of these organizations in performing quality-related functions for design, construction, and operation of nuclear fuel storage facilities.

**1.2 GENERAL**

- 1.2.1 The SFSO and GEUMCO are organizations within the General Electric Company's Nuclear Fuel and Special Projects Division of San Jose, California. They are assigned responsibility for establishing technical and business functions, design bases, design criteria, and the engineering, licensing, and project management support leading to construction and operation of facilities to transport and store irradiated fuel assemblies. Additionally, in support of this primary function, they provide similar service activities for major modifications to existing facilities, design, fabrication, licensing, and maintenance of nuclear fuel casks.
- 1.2.2 GEUMCO is a wholly-owned subsidiary of the General Electric Co. GEUMCO is under the technical cognizance of the Manager — SFSO.
- 1.2.3 Existing facilities include the Morris Operation (MO) of the General Electric Company which is engaged in the storage of irradiated fuel assemblies under a license granted by the Nuclear Regulatory Commission (NRC) in accordance with Title 10, Part 72 of the Code of Federal Regulations.
- 1.2.4 Equipment used in conjunction with the MO storage facility includes irradiated fuel shipping equipment, licensed as required by the NRC in accordance with Title 10, Part 71 of the Code of Federal Regulations.

**1.3 STATEMENT OF AUTHORITY**

- 1.3.1 The authority for implementation and control of SFSO/GEUMCO Quality Assurance is vested in the Manager — Licensing, Transportation and Quality Assurance by the Manager — Spent Fuel Services Operation, except as specified in subparagraph 1.3.2 of this Plan. The independence of SFSO/GEUMCO Quality Assurance is shown in Figure 1-1.
- 1.3.2 The responsibility for implementing this Quality Assurance Plan at the MO is delegated to the Manager — Morris Operation, by the Manager — Spent Fuel Services Operation. The MO quality assurance function (as approved by the Manager — SFSO) is vested in the Manager — Quality Assurance and Safeguards, and is separate from the engineering and operations functions. The Manager — Morris Operation, thus has the authority and organization required to implement the Quality Assurance Plan in accordance with applicable requirements as set forth in this document. The independence of MO Quality Assurance is shown in Figure 1-1.

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## 1.4 FUNCTIONAL ORGANIZATION RESPONSIBILITIES RELATED TO QUALITY

1.4.1 The relationship among the functional organizations within SFSO/GEUMCO is illustrated in Figure 1-1.

1.4.2 **The SFSO and GEUMCO** establish requirements and implement procedures which assure the following:

- a. That technical and business activities comply with corporate policies for nuclear business ventures.
- b. That regulatory documents, such as the Environmental Report and Safety Analysis reports, are prepared and submitted.
- c. That required licensing activities have been accomplished.
- d. That preparation of design bases and design criteria use sound technology and that such bases and criteria have substantiating documentation, review, and approval.
- e. That design bases and design criteria for initial construction and modifications comply with regulatory requirements and Company requirements.
- f. That design documentation in the form of drawings, specifications, and instructions describe required performance, materials, processes, operating characteristics, and quality requirements.
- g. That design documentation is reviewed, with appropriate independent verification for accuracy, methods of calculation, and assumptions used.
- h. That design documentation and procurement data are reviewed for appropriate quality requirements.
- i. That procurement and construction of nuclear facilities and equipment comply with design bases and design criteria.
- j. That records are maintained and are retrievable to provide objective evidence of assigned quality related responsibilities.

1.4.3 The MO is responsible for establishing requirements and implementing procedures which conform to Spent Fuel Instructions (SFI's) and appropriate "site specific" quality assurance instructions developed by the MO. The MO Instructions are written to assure the following:

- a. That the operation of the MO complies with the design bases, safety analysis, and regulatory and Company requirements.
- b. That the structures, systems, components, and equipment are maintained in accordance with the design bases, safety analysis, and regulatory and Company requirements.
- c. That transportation and storage of irradiated fuel elements are performed in compliance with the design bases, safety analysis, and regulatory and Company requirements.

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- d. That environmental and radiological protection standards are maintained for operating personnel and the general public in accordance with the design bases, the safety analysis, and regulatory and Company requirements.
- e. That records are maintained and retrievable for plant operations and maintenance.

**1.4.4 Quality Assurance personnel** (both MO and San Jose) are responsible for the following:

- a. Maintaining the quality program described in this document.
- b. Establishing requirements (e.g., hold points, inspection, documentation) for verification of quality.
- c. Reviewing and approving quality related documents as required by applicable procedures and instructions.
- d. Verifying by audit, test, or inspection that quality requirements are met for materials, components, processes, and plant and equipment modifications.
- e. Verifying that quality requirements are incorporated into applicable documents and activities and that such requirements have been met and are documented.
- f. Auditing for compliance to operating procedures and license requirements established for the operation of the MO facility and equipment.
- g. Auditing for conformance to the requirements of this Plan.
- h. Documenting and reporting (to responsible management) nonconforming activities, documentation, and nonconforming items (hardware) discovered in the course of inspection, surveillance, or audit.
- i. Stopping unsatisfactory work, fabrication, delivery, or installation of nonconforming materials.
- j. Ensuring that corrective actions are effective and are accomplished in a timely manner.

## **1.5 INTERNAL ORGANIZATIONAL INTERFACES RELATING TO QUALITY**

1.5.1 Internal interfaces within the various organizations are established by the Manager — Spent Fuel Services Operation, in broad terms, through organizational position descriptions that delegate authority and responsibility.

1.5.2 Specific interfaces are established by subsection managers. Implementation of specific interfaces may be delegated to responsible engineers.

1.5.3 During accomplishment of assigned work activity, interface questions are directed as follows:

- a. Basic technical, business, and operations planning requirements are directed to the Manager, SFSO.



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- b. Preliminary and final design, scheduling, procurement, fabrication, cost control, and construction are directed to the Manager, SFSO.
- c. Plant operations, plant maintenance, and storage of irradiated fuel are directed to the Manager — Morris Operation.
- d. Licensing and regulatory requirements, NRC contacts, preliminary and final design of irradiated shipping casks, and related equipment and transportation of nuclear materials as well as quality requirements, inspection, and associated documentation are directed to the Manager — Licensing, Transportation and Quality Assurance (LT & QA).

## 1.6 EXTERNAL ORGANIZATIONAL INTERFACES RELATING TO QUALITY

- 1.6.1 External project related interfaces between SFSO/GEUMCO and other organizations within the General Electric Company or major external contractors for products or services are established and controlled through policies, management directives, and instructions directed to the Manager — LT & QA, by the Manager — Spent Fuel Services Operation, except as noted in subparagraph 1.6.3.
- 1.6.2 Internal review, comment and approval of services or products developed by external contracts for utilization in General Electric's own facility are coordinated within guidelines established in Paragraph 1.5, by the Manager — Spent Fuel Services Operation.
- 1.6.3 External organizational interfaces for products or services in direct support of the MO are coordinated through policies, management directives, and instructions directed to the Manager — Morris Operation, by the Manager — Spent Fuel Services Operation.

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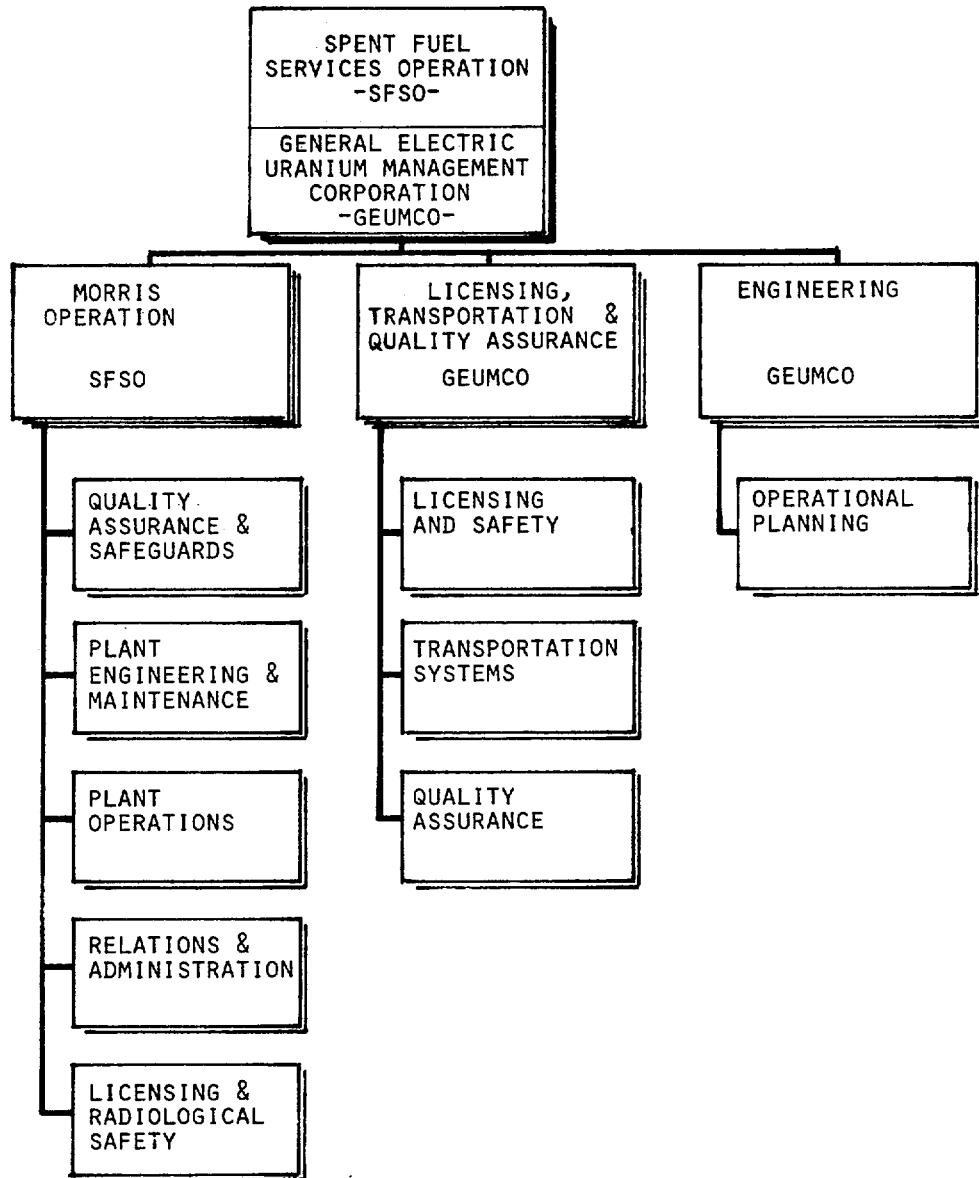


Figure 1-1. SPENT FUEL SERVICES OPERATION -SFSO-  
GENERAL ELECTRIC URANIUM MANAGEMENT CORPORATION-GEUMCO-

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

<b>SUBJECT</b>	<b>NUMBER</b>
<b>2.0 QUALITY ASSURANCE PROGRAM</b>	<b>NEDO-20776</b>

**2.1 PURPOSE**

2.1.1 This section summarizes the Quality Assurance Program established in the Spent Fuel Services Operation (SFSO) and the General Electric Uranium Management Corporation (GEUMCO) to implement the requirements of General Electric Corporate and Nuclear Energy Business Operations (NEBO) Quality Policies. The program is designed to comply with the applicable requirements of the following:

- a. The Code of Federal Regulations, Title 10, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."
- b. The Code of Federal Regulations, Title 10, Part 71, Appendix E, "Quality Assurance Criteria for Shipping Packages for Radioactive Material."
- c. Corporate Organization & Policy Guide, No. 20.1, "Company-wide Quality."
- d. NEBO Organization & Policy Guide, No. 70-1, "Product Quality."
- e. NEBO Organization & Policy Guide No. 70-11, "Standard Quality System Requirements."

2.1.2 The overall program described in this document applies to Functional Class 1, 2, and 3 items only. (Refer to subparagraph 2.2.2 for definitions of Functional Classifications.) Functional Class 4 items are normally excluded from the scope of this document.

2.1.3 The SFSO/GEUMCO Quality Assurance Program described in this section is summarized as follows:

Section No.	Subject
2.2.1	Organization
2.2.2	Quality Assurance Program
2.2.3	Design Control
2.2.4	Procurement Document Control
2.2.5	Instructions, Procedures, and Drawings
2.2.6	Document Control
2.2.7	Control of Purchased Material, Equipment, and Services
2.2.8	Identification and Control of Materials, Parts, and Components
2.2.9	Control of Special Processes
2.2.10	Inspection
2.2.11	Test Control
2.2.12	Control of Measuring and Test Equipment
2.2.13	Handling, Storage, and Shipping
2.2.14	Inspection, Test, and Operating Status
2.2.15	Nonconforming Materials, Parts, or Components

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- 2.2.16 Corrective Action
- 2.2.17 Quality Assurance Records
- 2.2.18 Audits

## 2.2 FUNCTION

### 2.2.1 Organization

2.2.1.1 The Manager, Licensing, Transportation, and Quality Assurance (LT & QA), reporting functionally to the Manager, Spent Fuel Services Operation, has been delegated responsibility and authority for establishment and maintenance of the Quality Assurance Program. The Manager, LT & QA, is also responsible for reviewing, through the use of the techniques of inspection, verification, surveillance, and auditing, the quality-related activities of other organizations, the detection of problems (or potential problems), and recommending appropriate management response to assure timely and effective corrective action to eliminate or mitigate the consequences of such problems and to prevent recurrence. While certain Quality Assurance activities may be delegated to service or fabrication contractors, the Manager, LT & QA retains responsibility for the total Quality Assurance Program.

2.2.1.2 The Quality Assurance function is separate from those organizations with responsibilities for engineering, production, maintenance, procurement, and other services. The Managers in this organization have the authority and organizational independence to carry out their responsibilities. As a result, the Quality Assurance functions listed below have the authority and responsibility to identify quality related problems; to stop unsatisfactory work, processing, delivery, or installation of nonconforming materials until cleared by applicable Quality Assurance procedures; to initiate, recommend, or provide solutions; and to verify that implementation of positive corrective action has been achieved.

- a. Quality Assurance function in San Jose — Part of the overall SFSO/GEUMCO Quality Assurance Organization physically located in San Jose.
- b. Quality Assurance function at the MO — Part of the overall SFSO/GEUMCO Quality Assurance Organization physically located at the MO.

2.2.1.3 The Manager, LT & QA, is responsible for the coordination of the overall Quality Assurance Program.

### 2.2.2 Quality Assurance Program

2.2.2.1 Each SFSO and GEUMCO organization participates in the implementation of the Quality Assurance Program as described in Section 1.4. The Quality Assurance Program includes implementing instructions to ensure that, throughout the design, procurement, fabrication, installation, construction, and operation of facilities and equipment, appropriate controls are provided over the activities which affect the quality of nuclear safety-related and other essential systems and components to an extent consistent with their importance to nuclear safety and to plant and equipment operation. Provision is made to ensure that all activities which affect quality are accomplished under suitably controlled conditions. Controlled conditions include, but are not limited to, the use of proper equipment, suitable environmental conditions for accomplishing the activity, special controls, processes, test equipment, tools, procedures, instructions, and skills to obtain the desired quality, and the verification of quality achievement by inspection and tests. The Quality Assurance Program requires the indoctrination and training of personnel in the application of this document and other activities which affect quality. In addition, regular

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review of status and adequacy of the Quality Assurance Program through quality assurance auditing and surveillance is required. Managers of organizations, participating in the quality program, regularly review the status and adequacy of the portion of the Quality Assurance Program for which they are responsible.

2.2.2.2 The Quality Assurance Program is implemented by the issuance of this Quality Assurance Plan and various instructions, which lead to development and issuance of documentation for design, construction, and operation of facilities and equipment.

2.2.2.3 Structures, equipment, systems, and components are classified in regard to their importance to nuclear safety and to other essential plant functions so that the appropriate levels of quality activities can be achieved. Four Function Classifications are used as follows:

- a. FC-1 BASIC Component. 10CFR 21 Applies. Failure could create a substantial nuclear safety hazard.
- b. FC-2. Failure could create potential for abnormal radiation conditions or reduce nuclear safety margins.
- c. FC-3. No nuclear risk, but failure could result in plant shutdown or non-nuclear hazard.
- d. FC-4. Failure would have negligible effect on operating continuity or safety.

2.2.2.4 Classification of projects, tasks, or equipment is the responsibility of the manager with design responsibility for that project, or equipment. The Functional Class (1, 2, 3, or 4) reflects nuclear safety and the commercial effect on Corporate objectives. Quality Assurance Effort Required (QAER) is specified by levels. These levels of QAER are based on the degree of activity necessary to identify, analyze, verify, and document those attributes that are required to achieve a specific level of confidence in a project, or item(s) of equipment. The Classification System as a combined designation, identifies both Functional Class and QAER needed to achieve control of SFSO/GEUMCO activities. The structures, equipment, systems, and components covered by the Quality Assurance Program include those classified as Class 1, 2, or 3. Structures, systems, and components designated as Class 4 are not normally covered by this Program. Class 4 items are normally processed in accordance with commonly accepted commercial practices.

## 2.2.3 Design Control

Documented control systems are provided to ensure that appropriate quality requirements are specified in design documents. The design control system is discussed further in Section 3.0.

## 2.2.4 Procurement Document Control

Documented procedures are provided to ensure that quality requirements are specified in documents used for the procurement of items and services. Changes in procurement documents are subjected to the same degree of control as the preparation of the original documents. Procurement document control is discussed further in Section 4.0.

## 2.2.5 Instructions, Procedures, and Drawings

Quality requirements of an item design or fabrication, process, shipment, installation, operation, and maintenance are specified by documented procedures, drawings, instructions, or manuals, as applicable.

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Procedures, drawings, instructions, or manuals include appropriate quantitative or qualitative criteria for determining that significant quality activities have been satisfactorily accomplished. Use of instructions, procedures, and drawings is discussed further in Section 5.0.

## 2.2.6 Document Control

Instructions and procedures applicable to each organization provide for control of the issuance of documents, including changes thereto, which prescribe activities affecting quality. Instructions and procedures require documents to be reviewed and approved by authorized personnel for release, and are available at the location where the activity is performed. Document control is discussed further in Section 6.0

## 2.2.7 Control of Purchased Material, Equipment, and Services

2.2.7.1 Documented procedures assure that purchased items and services conform to procurement document requirements. As appropriate, these procedures require source inspection, objective evidence of quality to be furnished by the vendor, inspection, or quality audits at the source, and examination of items upon delivery.

2.2.7.2 Evaluation and selection of vendors include the use of historical quality performance data, vendor evaluations, or surveys. Control of purchased items is discussed further in Section 7.0.

## 2.2.8 Identification and Control of Materials, Parts, and Components

2.2.8.1 Procedures require the identification and control of materials, parts, and components, including partially fabricated sub-assemblies. These procedures ensure that only correct and acceptable items are used during fabrication or processing. Physical identification is used to the maximum extent practical. Where physical identification is either impractical or insufficient, physical separation, procedural control, or other appropriate means are employed. Identification is either on the item or on records traceable to the item, as appropriate. The identification and control program is discussed further in Section 8.0

## 2.2.9 Control of Special Processes

2.2.9.1 The special processes control system ensures that special processes, such as welding/brazing, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, or other special requirements. Special process control is discussed further in Section 9.0.

## 2.2.10 Inspection

2.2.10.1 Inspection of material, equipment, processes, or services is defined and executed in accordance with established, procedures or instructions to ensure that there is conformance to applicable drawings, specifications, instructions, and procedures.

2.2.10.2 Examinations or measurements of items in-process are performed as necessary to provide assurance of quality. Where a sample is used to verify acceptability of an item or lot, the sampling procedure is based upon recognized standard sampling practices. Final inspection activities (release to inventory or shipping) are performed by persons other than those who performed the work being inspected. The inspection process is discussed further in Section 10.0.

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## 2.2.11 Test Control

All verification testing is identified and controlled by written procedures which incorporate or reference the requirements and acceptance limits of applicable design documents. These procedures ensure that all prerequisites for the given test have been met, that proper equipment is used for process control and product acceptance testing, and that the tests are performed under suitable conditions. Test control is discussed further in Section 11.0.

## 2.2.12 Control of Measuring and Test Equipment

2.2.12.1 Documented procedures and instructions define the controls and records needed to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, maintained, and adjusted at specified periods or use intervals. Calibrations are performed against measurement standards which have a known valid relationship to national standards where such standards exist. Control of measuring and test equipment is discussed in Section 17.0.

## 2.2.13 Handling, Storage, and Shipping

2.2.13.1 Handling, storage, and shipping of items, components, and products are conducted in accordance with instructions and/or specifications when quality of such items, components, and products could be affected. Items covered by this Quality Assurance Plan are inspected and identified by tags with a Quality Control signature or stamp identification which is traceable to records.

2.2.13.2 The Quality Assurance function provides surveillance of handling, storage, and shipping activities. Handling, storage, and shipping procedures are discussed further in Section 13.0.

## 2.2.14 Inspection, Test, and Operating Status

Procedures require indication (by tags, forms, and other documents) of the current status of inspections and testing of materials, parts, components, subassemblies, assemblies, or systems. These indicators provide item identification and inspection or status (passed, failed, or are currently under required inspections and tests) in order to preclude inadvertent bypassing of required inspections and tests. Inspection, test, and operating status procedures are discussed further in Section 14.0.

## 2.2.15 Nonconforming Materials, Parts, or Components

Procedures require control of items which do not conform to specified requirements, in order to prevent their use or their release for shipment. Methods of identification, segregation, and disposition of such items, documentation and appropriate notification of affected organizations are included. Nonconforming items are reviewed and rejected, reworked, repaired, returned to vendor or accepted in accordance with procedures which delineate the responsibility and authority for the dispositioning of nonconformances. Nonconformance controls are discussed further in Section 15.0.

## 2.2.16 Corrective Action

Deficiencies in quality or activities affecting quality are documented by use of a Nonconforming Item Record (NIR) (or approved vendor documentation) and/or a Corrective Action Request (CAR). Details for preparation, routing, responsibilities, etc., are covered by procedure and are discussed further in Section 16.0.

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## 2.2.17 Quality Assurance Records

Appropriate records are prepared as work is performed to furnish documentary evidence of the quality of items and of the activities affecting quality. Records generated, retained, transmitted, or maintained are required to be consistent with applicable codes, Company and regulatory requirements, and Government regulations. These records provide the evidence that quality characteristics were controlled, inspected or tested, and that those characteristics meet design and quality criteria. Quality Assurance records are discussed further in Section 17.0.

## 2.2.18 Audits

### 2.2.18.1 Audits are initiated by the Quality Assurance Organization:

- a. To review conformance of implementing instructions with the requirements of this document, license conditions, procedures, and instructions, applicable industry codes and standards, and regulatory requirements.
- b. To review the conformance of actual practices with the requirements of this document and implementing instructions.

2.2.18.2 These audits are performed in accordance with written procedures and checklists by appropriately qualified personnel not directly responsible for areas audited. Corrective action is requested, and follow-up audits are performed as the need is indicated. Records of all audits performed are maintained by the Quality Assurance Organization. Audits are discussed further in Section 18.0



SPENT FUEL SERVICES OPERATION  
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SUBJECT

**3.0 DESIGN CONTROL**

NUMBER

**NEDO-20776****3.1 PURPOSE**

This section describes the design control measures required to assure that applicable regulatory requirements and the design bases are correctly translated into drawings, specifications, procedures, and instructions. Design control includes provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.

**3.2 GENERAL**

3.2.1 The design of SFSO/GEUMCO products, equipment, or facilities is primarily the responsibility of the Manager, LT & QA or the Manager, MO. In addition certain field changes are accomplished by the Morris Operation (MO). These changes are normally limited to facility changes initiated by MO and which are in accord with basic design criteria.

3.2.2. The design control procedures employed require documentation of analyses of (as applicable) nuclear safety, stress, chemical reactions, compatibility of materials, accessibility for inspection, maintenance and repair, disposal criteria, delineation of acceptance criteria for inspections and tests; and for documentation of the selection and review for suitability of application of materials, parts, equipment and processes essential to safety and to plant operations.

3.2.3 Design controls require verification of the adequacy of a design of all safety-related items by independent review of the analyses and by design reviews of design progress, through the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. The verification process is performed by individuals or groups other than those who performed the design, but who may be from the same organization. All design documents are reviewed for adequacy by the next higher level of management.

3.2.4 When a test program is used to verify the adequacy of a specific design feature in lieu of another verifying or checking process, the test program includes suitable qualification testing, under the most adverse conditions, of a prototype unit or a model or mock-up. When tests are performed on models or mock-ups, scaling laws are established and verified.

3.2.5 All design changes, including field changes, involving nuclear safety-related items are subject to design control measures commensurate with those applied to the original design and are approved by the organization that performed the original design except as specified in sub-paragraph 3.4.2.2 of this Plan. Editorial changes, such as typing or drafting errors, or similar discrepancies, are excluded from these controls.

**3.3 RESPONSIBILITIES**

3.3.1 The responsible manager establishes design control procedures for their design activities in accordance with the requirements specified in this Plan, subject to the limitations specified in sub-paragraph 3.2.1.

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3.3.2 **Managers** are assigned areas of design responsibility, usually by specific discipline, to accomplish the design objectives and are accountable to their subsection manager. This includes responsibilities for the following:

- a. Controlling design activities in accordance with design control procedures.
- b. Assuring that responsible engineers under their direction follow these design control procedures.

3.3.3 **Responsible Engineers** are responsible for specifying quality-related design requirements in design documents, such as drawings, specifications, and test procedures.

3.3.4 **The Quality Assurance function** is responsible for reviewing design documents to ensure the following:

- a. That Quality attributes are specified and that such attributes meet applicable quality assurance requirements.
- b. That quality attributes can be inspected.
- c. That design control procedures have been followed and that the design activity is documented.
- d. That adequate inspection planning is included.

## 3.4 DESIGN CONTROL SYSTEM

### 3.4.1 Basic SFSO/GEUMCO System

3.4.1.1 The basic design control system is shown in Design Control Flow Sheets, Figures 3-1, 3-2, 3-3, and 3-4.

3.4.1.2 Key design control elements of the basic system are as follows:

- a. The Project Plan is formulated from the design bases and criteria and designates the scope of activity, design objectives, nuclear safety requirements, organizational responsibilities and safety classification.
- b. As design progresses, engineering reviews are scheduled to assess that design objectives and quality requirements are met. These engineering reviews are documented.
- c. Completed detailed design documents are reviewed for adequacy by responsible managers, Quality Assurance, and appropriate interface organizations in accordance with procedures. These reviews are documented.
- d. Approved documents are released by Document Control.

### 3.4.2 Changes to Approved Design Documents

3.4.2.1 Proposed changes to approved documents are approved by responsible managers prior to altering the documents(s).

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- 3.4.2.2 Review and approval of changes to nuclear safety-related items are normally performed by the same organization that reviewed and approved the original document. Reassignment or delegation of design review responsibility may be required when:
- a. Reviews by SFSO/GEUMCO contractors (e.g., by Architectural Engineers, etc.) are not feasible.
  - b. Cognizant individuals or organizations who approved the original design are no longer available to review the proposed changes (e.g., due to job transfers, reassignment of responsibilities, terminations, reorganizations, etc.).
- 3.4.2.3 Changes to project or task definitions, implementing procedures, personnel assignment and authority, and administrative control functions such as distribution and interface reviews are accomplished by formal letters or memoranda.
- 3.4.2.4 Changes to design documents such as drawings, specifications, and test procedures are authorized as shown in Design Control Flow Sheet, Figure 3-4.
- 3.4.2.5 Spent Fuel Services Operation and GEUMCO in San Jose utilize the Engineering Change Notice (ECN) for processing all requests for changes to design documents.
- 3.4.2.6 Morris Operation (MO) utilizes the Facility Change Notice (FCN), a Scope Committee and a Safety Committee for processing all requests for changes.

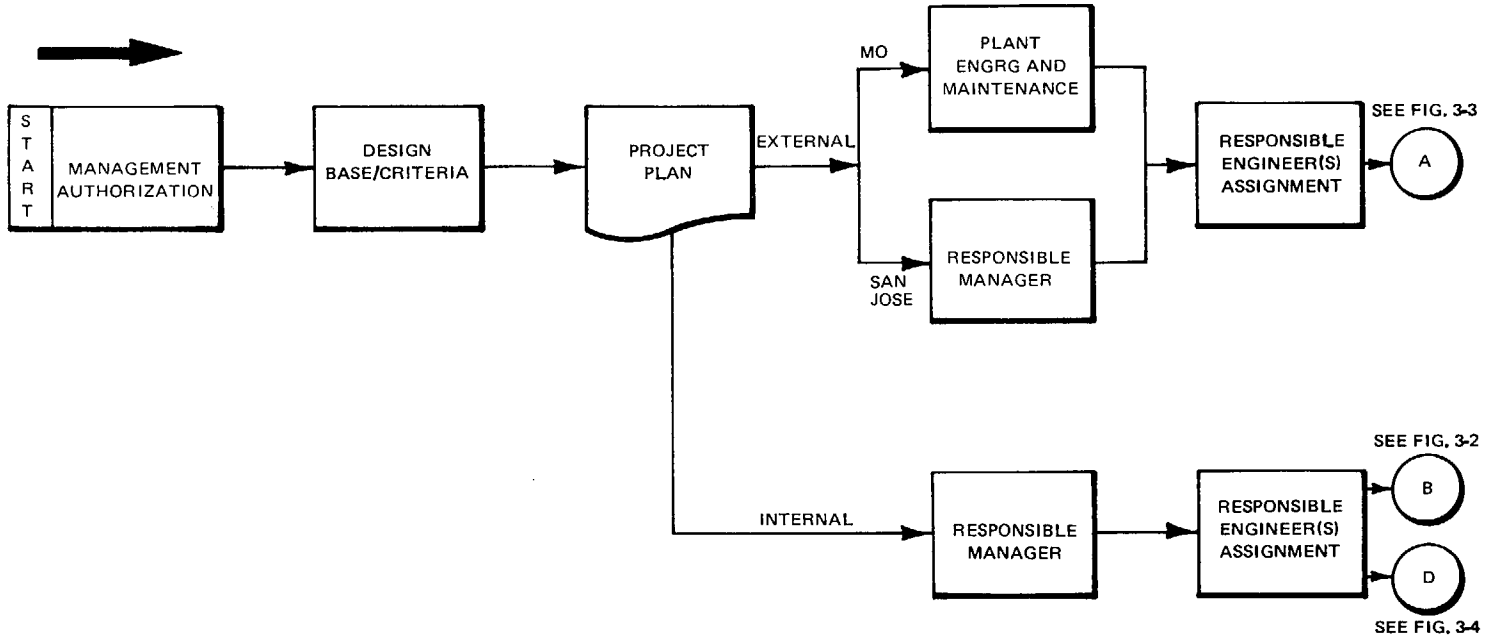


Figure 3-1. Design Control Flow Sheet-Issuing Design Bases Criteria

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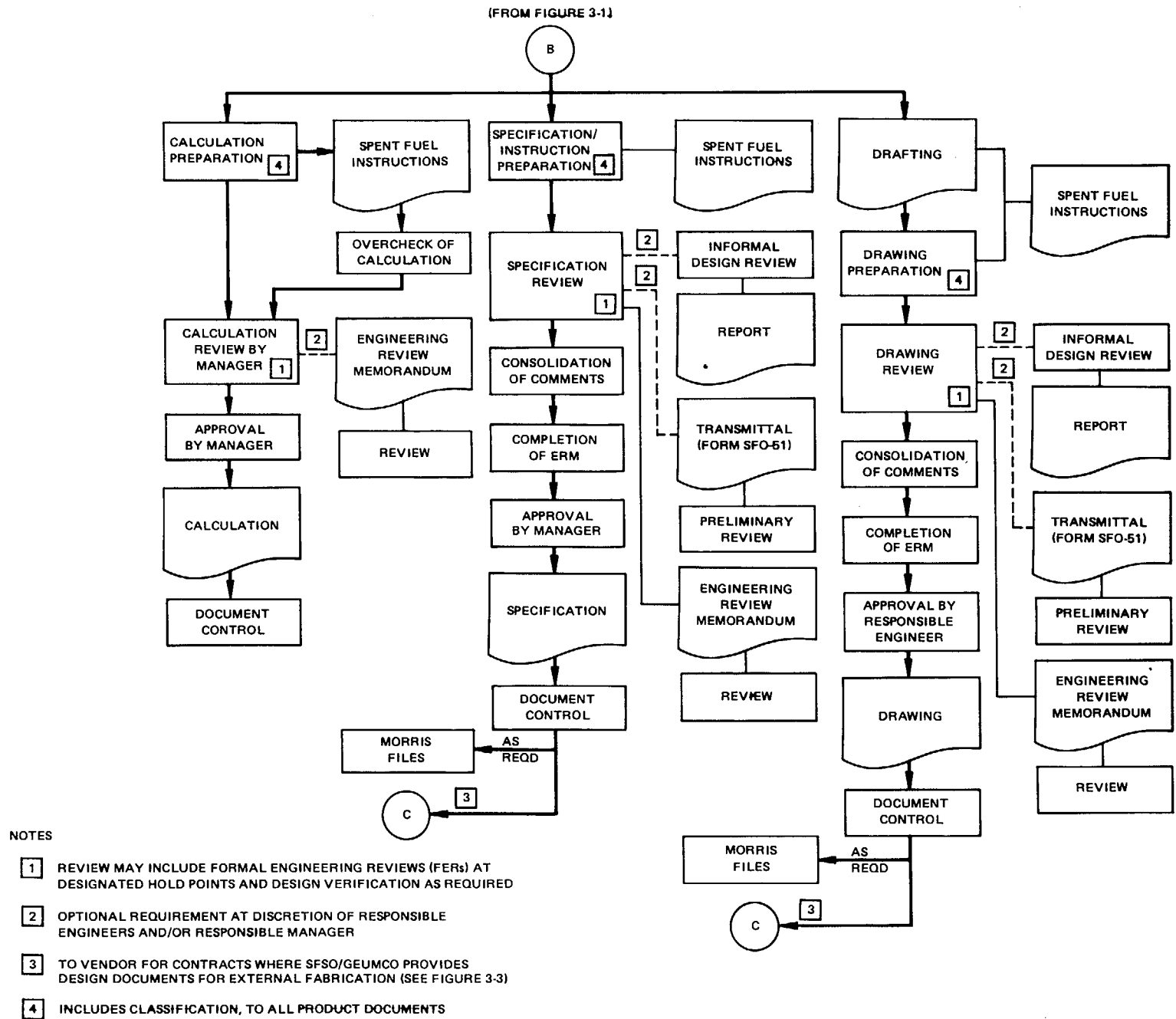
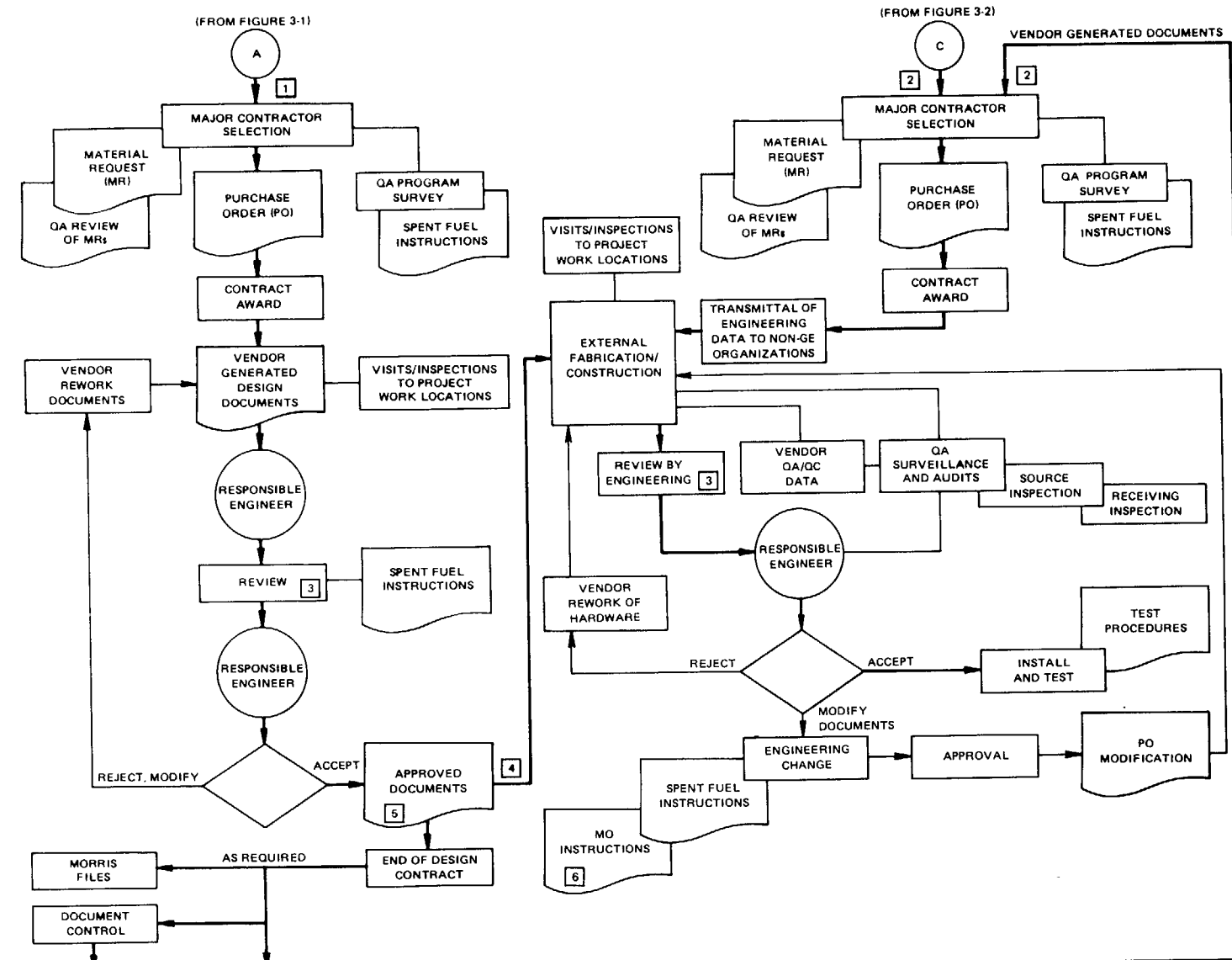


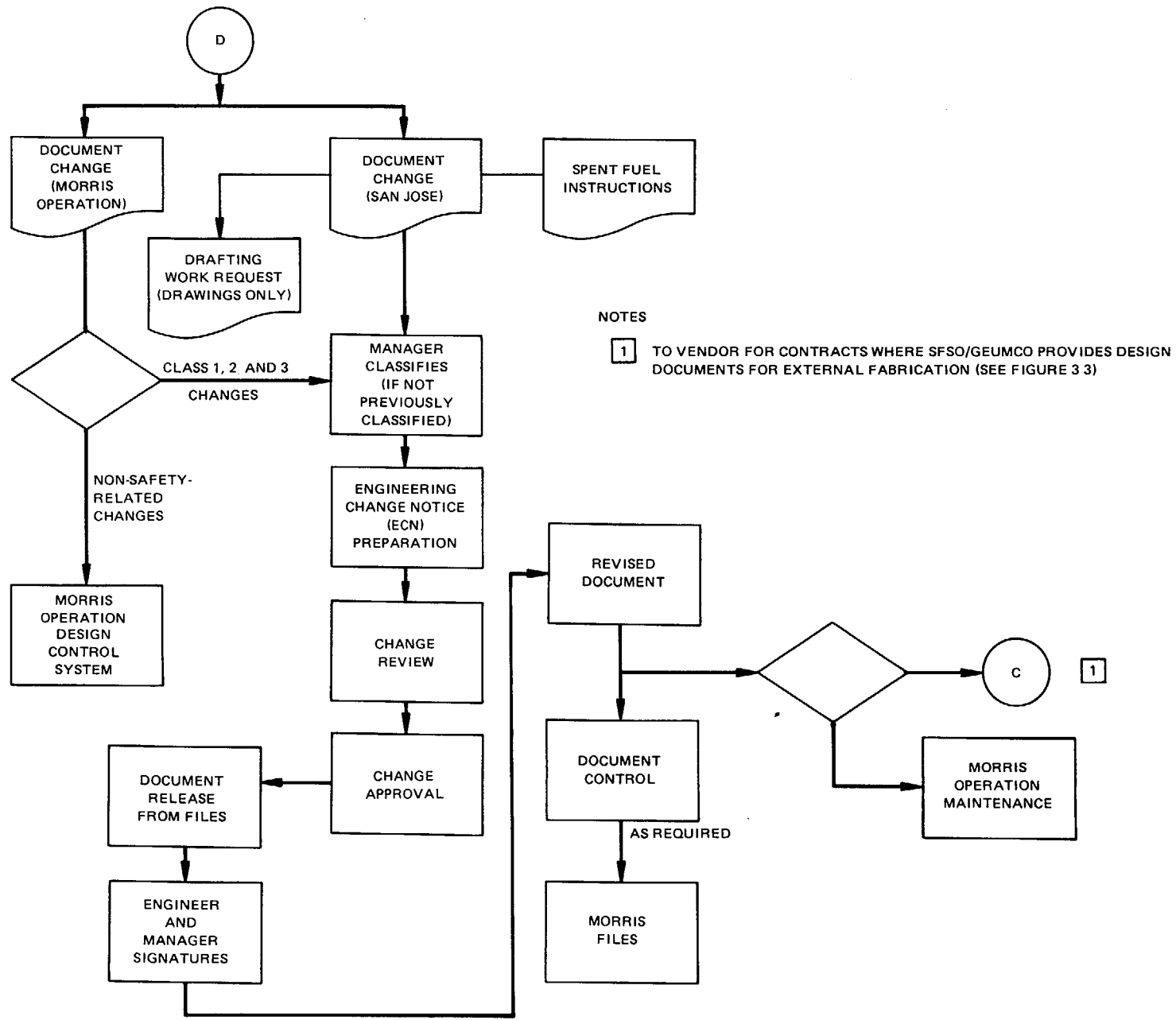
Figure 3-2. Design Control Flow Sheet — Generating Design Documents Within SFSO/GEUMCO



NOTES

- 1 APPLICABLE TO CONTRACTS WHICH REQUIRE GENERATION OF DESIGN DOCUMENTS BY THE VENDOR. DESIGN CRITERIA FURNISHED BY SFSO/GEUMCO
- 2 APPLICABLE TO CONTRACTS REQUIRING EXTERNAL FABRICATION/CONSTRUCTION ONLY. DESIGN DOCUMENTS FURNISHED BY GE (INCLUDES BOTH GE GENERATED AND/OR OTHER VENDOR GENERATED)
- 3 REVIEW MAY INCLUDE FORMAL ENGINEERING REVIEWS (FERs) AT DESIGNATED HOLD POINTS, INFORMAL DESIGN REVIEWS, AND DESIGN VERIFICATION AS REQUIRED
- 4 APPLICABLE TO CONTRACTS WHICH REQUIRE BOTH GENERATION OF DESIGN DOCUMENTS AND EXTERNAL FABRICATION/CONSTRUCTION BY THE SAME VENDOR. DESIGN CRITERIA FURNISHED BY GE
- 5 INCLUDES CLASSIFICATION TO ALL PRODUCT DOCUMENTS
- 6 INCLUDED IN MORRIS OPERATION IMPLEMENTING INSTRUCTIONS

Figure 3-3. Design Control Flow Sheet — External Fabrication/Construction



NOTES

- 1 TO VENDOR FOR CONTRACTS WHERE SFSO/GEUMCO PROVIDES DESIGN DOCUMENTS FOR EXTERNAL FABRICATION (SEE FIGURE 3.3)

Figure 3-4. Design Control Flow Sheet — Engineering Changes

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SUBJECT

4.0 **PROCUREMENT DOCUMENT CONTROL**

NUMBER

NEDO-20776

**4.1 PURPOSE**

This section describes the control measures for assuring that applicable regulatory requirements, design bases, and other requirements which are necessary to assure quality are included or referenced in procurement documents. The sequence of procurement to the preparation of the Request for Quotation (RFQ) or the Purchase Order (PO) is shown in Figures 4-1 and 4-2.

**4.2 GENERAL**

4.2.1 Engineering personnel (e.g., the responsible engineer) ensure that quality requirements are included in the drawings and specifications for which they are responsible.

4.2.2 Classification of the Material Request (MR) is accomplished to reflect the nuclear-safety aspect of the procurement as well as the quality assurance effort required to implement the quality requirements.

4.2.3 The MR and the drawings, specifications and other accompanying documents, are reviewed for quality requirements by the Quality Assurance function. These requirements may include the following:

- a. Access to vendor facilities.
- b. Source inspection.
- c. Material certifications.
- d. Personnel and procedure qualification records.
- e. Audit of vendor facilities.
- f. Inspection plans.
- g. Vendor approval.
- h. Hold points for General Electric inspection.
- i. Requirements for subtier vendors.
- j. Specific quality clauses.
- k. Other quality-related records.

4.2.4 To the extent necessary, procurement documents require vendors to provide a quality assurance program consistent with the requirements of this Quality Assurance Plan.

4.2.5 The Quality Assurance function determines which quality activities are retained by SFSO/GEUMCO and which are delegated to the vendor. The activities delegated to the vendor must meet the requirements of this Quality Assurance Plan and the criteria of the Code of Federal Regulations, Title 10, Part 50, Appendix B or Title 10, Part 71, Appendix E. The determination to delegate or retain these activities is made prior to bid award.

4.2.6 MR revisions are reviewed in the same manner as the original MR by the Quality Assurance function.

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## 4.3 RESPONSIBILITIES

- 4.3.1 The engineer responsible for preparing the MR shall include the classification and quality requirements.
- 4.3.2 The Quality Assurance function is responsible for reviewing the MR to ascertain that the applicable quality requirements have been incorporated in the MR.
- 4.3.3 Purchasing is responsible for submitting the MR package to prospective bidders.

## 4.4 IMPLEMENTATION

- 4.4.1 The sequence of procurement to the preparation of the RFQ is shown in Figures 4-1 and 4-2.
- 4.4.2 The procurement process from receipt of the vendors' response to the RFQ to the procurement on a Purchase Order, is detailed in Section 7.0.

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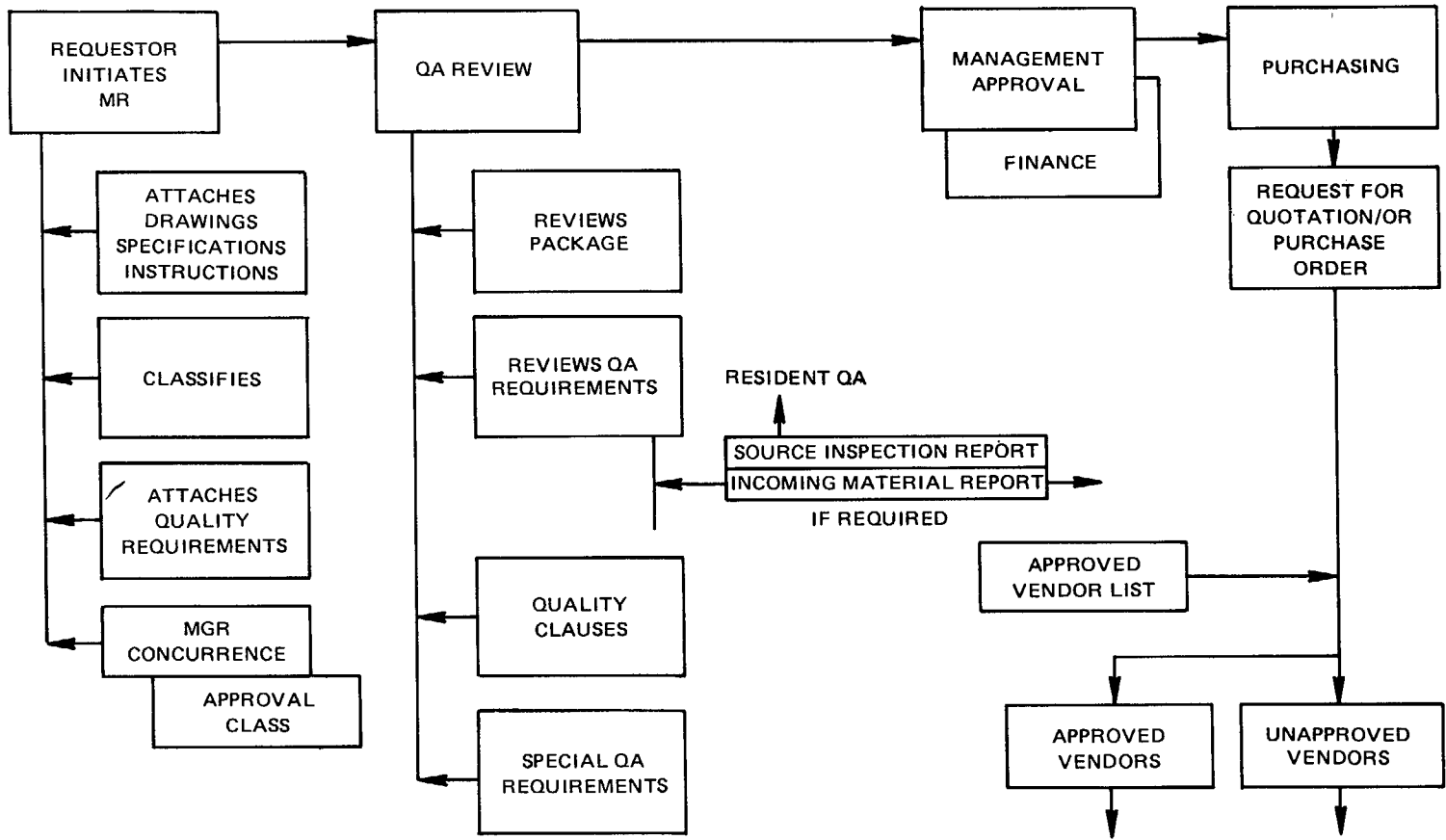
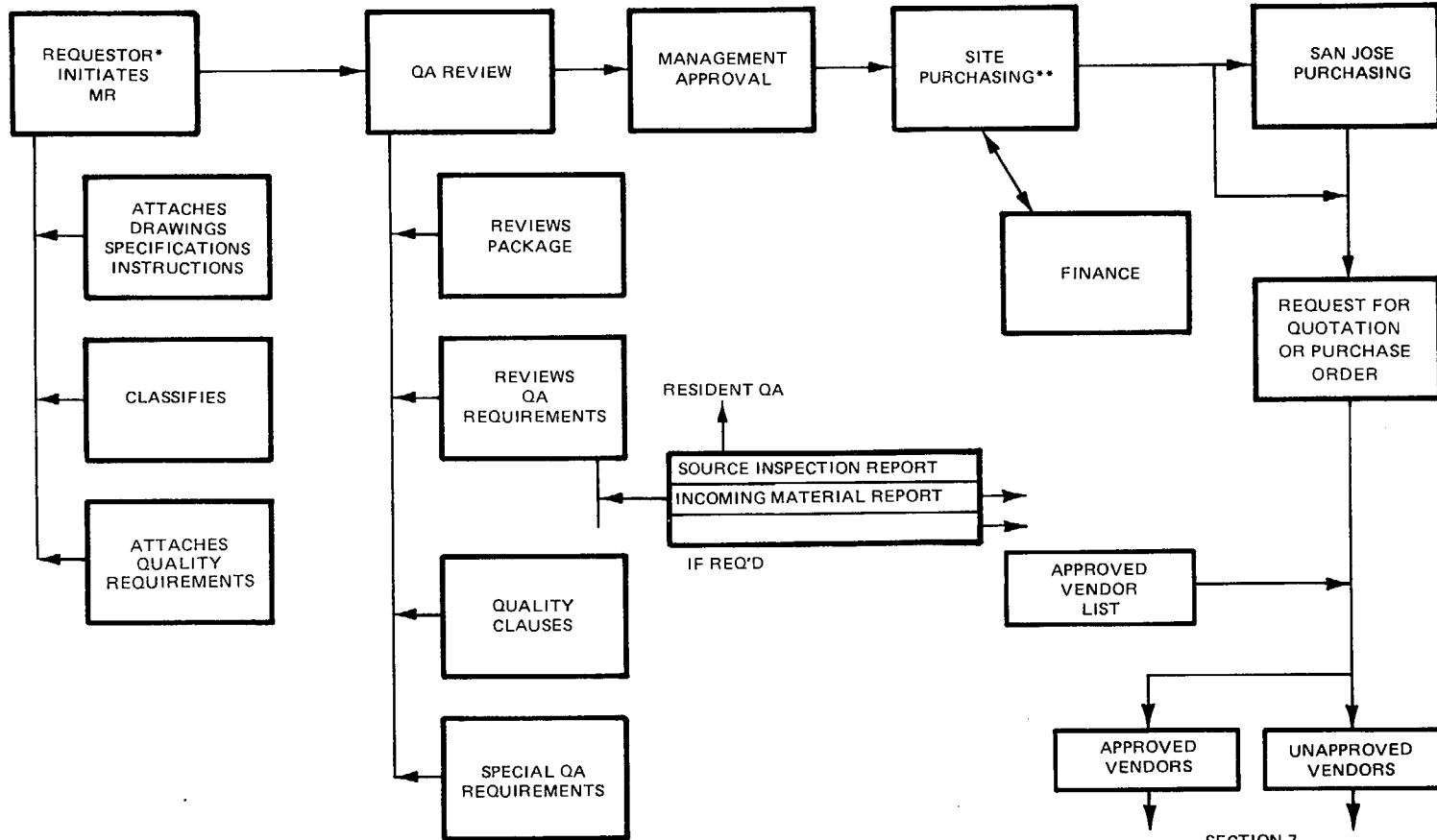


Figure 4-1. Procurement Control (San Jose)



\*Normally the Manager, Plant Engineering and Maintenance, or one in that organization  
 \*\*Part of Relations and Administration

Figure 4-2. Procurement Control (Morris Operation)

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<b>SUBJECT</b>  5.0 <b>INSTRUCTIONS, PROCEDURES, AND DRAWINGS</b>	<b>NUMBER</b>  NEDO-20776
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**5.1      PURPOSE**

This section describes the measures for ensuring that activities affecting quality are described in instructions, procedures, or drawings of a type appropriate to the work being performed, and that the work is accomplished in accordance with those instructions, procedures, and drawings.

**5.2      RESPONSIBILITIES**

5.2.1      **Organizations involved in preparation of instructions, procedures and drawings** are responsible for ensuring that these documents adequately describe the activities affecting quality.

5.2.2      The **Quality Assurance function** is responsible for the following:

- a.      Reviewing and approving instructions and procedures which affect quality.
- b.      Performing verification of compliance with requirements of instructions and procedures.

**NOTE:** The Quality Assurance review of design documents is covered in Section 3.0.

**5.3      DOCUMENTS AFFECTING QUALITY**

5.3.1      Table 5-1 lists documents which affect the performance of quality-related activities. Individual sections of this Plan describe their use.

5.3.2      Specific responsibility for the preparation, approval, issuance and distribution of the documents listed in Table 5-1 is described in Section 6.0.

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**Table 5-1  
DOCUMENTS AFFECTING QUALITY**

<b>Document</b>	<b>Issuer; Document Description</b>	<b>Quality Elements</b>
(1) QA Plan	Issued by Quality Assurance; describes the overall Quality Assurance System followed by Spent Fuel Services Operation and GEUMCO.	Defines the broad requirements and responsibilities for quality activity.
(2) Implementing Instructions	Issued by responsible organization; the instructions implement the requirements of the Quality Assurance Plan.	Specific sequence, details of review, approval, documentation, records, and distribution.
(3) Design Specifications	Issued by responsible organizations; establishes requirements (including quality) for design, fabrication, or test of materials, components, as well as systems and structures.	Defines the bases and quality requirements for design or performance of components, systems, structures, or services as well as acceptance criteria.
(4) Test Instructions	Issued by responsible organization; describes the testing of components and verifies operational conditions; includes equipment to be utilized, and the test setup.	Defines the functional test requirements for products and outlines criteria to verify proper operation as required by engineering drawings and/or design specifications.
(5) Engineering Drawings	Issued by responsible organization; defines the item to be fabricated or modified.	Defines quality characteristics and acceptance criteria by statements on the drawings or by references to applicable specifications.
(6) Engineering Change Notice (ECN)	Issued by responsible organization; defines changes.	Defines quality criteria related to changes to approved documents by statements on the change notice.
(7) Facility Change Notice(FCN)	Issued by MO; defines changes to facilities.	Defines quality criteria related to changes to facilities by statements on the change notice.

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**Table 5-1  
DOCUMENTS AFFECTING QUALITY (Continued)**

<b>Document</b>	<b>Issuer; Document Description</b>	<b>Quality Elements</b>
(8) Standard Operating Procedures(SOP)	Issued by MO; defines the operating procedures for the plant or a plant system.	Includes quality requirements in the procedures.
(9) Analytical Quality Assurance Manual	Issued by MO; specifies analytical laboratory controls.	Defines requirements and responsibilities for quality of laboratory operation.
(10) Analytical Equipment and Instrumentation Manual	Issued by MO; describes calibration control for the laboratory.	Outlines criteria to maintain control of equipment and instruments.

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

SUBJECT

6.0 DOCUMENT CONTROL

NUMBER

NEDO-20776

**6.1 PURPOSE**

This section describes the measures for ensuring that approved design documents related to quality activities are controlled for issue and distribution. Such documents, including changes, are approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed. Initiation, review, and adequacy of documents are covered in Section 3.0. Refer to Table 6-1 for a list of controlled documents.

**6.2 GENERAL**

Document numbering, issuance, storage, revision control, and distribution are covered by appropriate implementing instructions and engineering or quality instructions. Vendor/contractor delegated document control functions are approved by the Quality Assurance function and are compatible with the requirements specified in this Plan.

**6.3 RESPONSIBILITIES**

6.3.1 The **Document Control function** is responsible for the following:

- a. Receiving, logging, maintaining revision status records, and distributing approved documents, including release of approved documents to authorized personnel for revision or permanent storage.
- b. Providing a controlled access repository for documents.

6.3.2 **Individuals holding authorized copies** are responsible for voiding or defacing superseded documents in such a manner that superseded documents are not used for subsequent work activity.

6.3.3 The **Manager, Morris Operation** is responsible for the document control activities at the MO according to the requirements of this Plan.

**6.3.4 Specific Responsibilities**

- a. Responsibility for ensuring use and compliance with instructions, procedures, and drawings is defined in Section 5.0.
- b. Table 6-1 identifies Document Control responsibility for specific instructions, procedures, drawings, and other documents, covering review for adequacy, approval for issuance, revision control, and distribution.

**6.4 DOCUMENT CONTROL SYSTEM**

6.4.1 Approved SFSO/GEUMCO documents and Vendor documents (except for this Quality Assurance Plan) are forwarded to Document Control for retention, for storage, and/or distribution. Figure 6-1 depicts a Document Control flow chart.

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6.4.2 Changes to instructions, procedures, and drawings which may affect nuclear safety-related items are reviewed and approved by the organizations that reviewed and approved the original document unless this responsibility is delegated to another organization.

6.4.3 Proposed changes to approved documents are reviewed and approved prior to release of the document from Document Control custody.

6.4.4 Distribution of documents is in accordance with instructions and authorized distribution lists.

6.4.5 Only approved copies are reproduced for final design, actual construction, and actual operation activities affecting quality.

## 6.5 CONTROL OF THE QUALITY ASSURANCE PLAN

### 6.5.1 Responsibility

The Quality Assurance function is responsible for the preparation and revision of this Quality Assurance Plan.

### 6.5.2 Assignment and Control of the Quality Assurance Plan

- a. These documents are serialized and distributed in accordance with the distribution list maintained by the Quality Assurance function in San Jose.
- b. Copies of this Quality Assurance Plan are maintained in San Jose by the Quality Assurance function and at MO by Quality Assurance and Safeguards, respectively, and are available for review and reference by customers, regulatory, and Company personnel.

## 6.6. CONTROL OF DOCUMENT REVISIONS

6.6.1. Requested changes, such as those arising from revisions to The Code of Federal Regulations, Title 10, Part 50, Appendix B or other applicable regulations and industrial standards, are coordinated with responsible management personnel and directed to the San Jose Quality Assurance function.

6.6.2 The Quality Assurance function in San Jose is responsible for preparing Quality Assurance Plan changes, coordinating reviews, and obtaining approvals (including the MO) prior to issue of revisions.

6.6.3 Revisions are normally made by section, rather than revising the entire Plan. The Table of Contents includes the issue date of current revisions.

6.6.4 Revisions which may affect nuclear safety-related items or practices and changes affecting license conditions or technical specification conditions are reviewed by the Manager, Licensing, Transportation and Quality Assurance. The Manager, LT & QA is responsible for appropriate notification of the NRC.

6.6.5 Revised copies are distributed using Errata and Addenda Sheets, and require acknowledgement of the receipt of the revision and return of obsolete copies.



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## 6.7 DOCUMENT MASTER LISTS

The originating organization is responsible for maintaining a document master list of all issued and approved documents, including current revision numbers. This responsibility may be delegated in part or in full to Document Control by management agreement.

## 6.8 DOCUMENT MASTERS

6.8.1 Document masters are stored by Document Control in San Jose and/or master files at MO.

6.8.2 Vendor/contractor document masters are stored in vendor controlled file(s) and/or Document Control files as defined in contract documents.

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**Table 6-1  
SFSO/GEUMCO CONTROLLED DOCUMENTS\***

Document	Initiation At**	
	San Jose	MO
(1) SFSO/GEUMCO Quality Assurance Plan	X	
(2) Implementing Instructions:		
a. Spent Fuel Instructions (SFI)	X	
b. Morris Operation Instructions (MOI)		X
(3) Design Specifications	X	X
(4) Test Instructions	X	X
(5) Engineering Drawings	X	X
(6) Engineering Change Notices (ECN)	X	X
(7) Facility Change Notices (FCN)		X
(8) Standard Operating Procedures (SOP)		X
(9) Analytical Quality Assurance Manual		X
(10) Analytical Equipment and Calibration Manual		X

\* Initial issue (or changes), approval, and distribution of these documents are covered in appropriate implementing instructions.

\*\*Where two points of initiation are shown either document control organization may introduce into the Document Control system with notification sent to other unit for number coordination.

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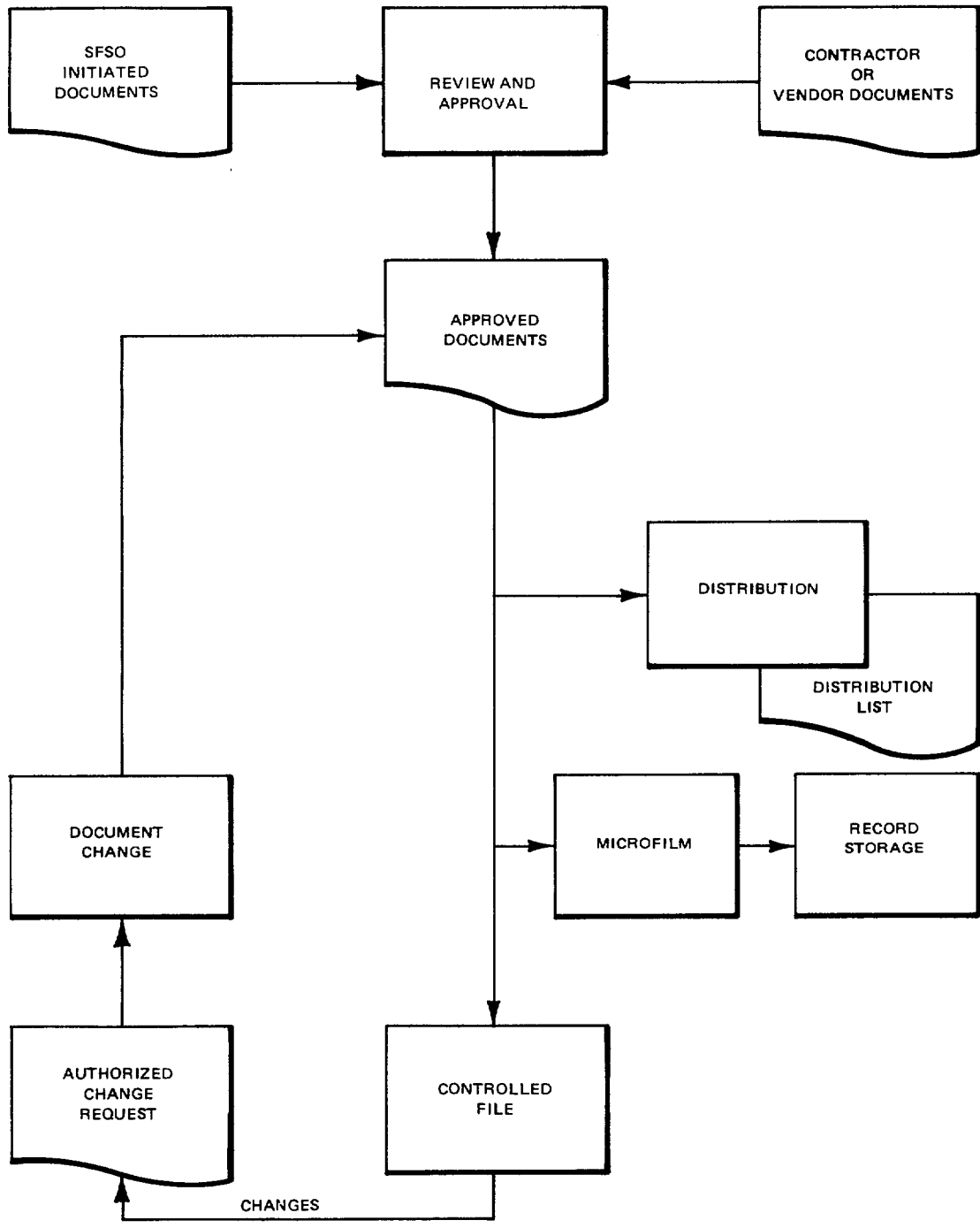


Figure 6-1. Document Control

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

SUBJECT	NUMBER
7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES	NEDO-20776

**7.1 PURPOSE**

This section describes the measures for controlling purchased material, equipment, and services in accordance with procurement documents. Figure 7-1 shows the procurement steps from receipt of the Request for Quotation (RFQ), or issuance of the Purchase Order, described in Section 4.0, through the receiving inspection process.

**7.2 GENERAL**

7.2.1 Vendors must be approved by the Quality Assurance function. The vendor quality evaluation normally consists of one or more of the following:

- a. A review of performance history of a vendor supplying similar products or services and an evaluation of risk associated with past experience, including quality performance.
- b. A review of the vendor's facilities to establish capability of the quality system to control the required work. Engineering components and Purchasing may be requested by QA to assist in evaluating this area.
- c. A review of the vendor's quality system to determine if programmatic control will be retained or delegated and to define specific responsibilities. This includes reviewing the vendor's methods associated with producing products and also includes qualification of individuals.
- d. An appraisal of historical data related to vendor's products and/or services being considered. These data may be documentation covering problems, complaints, or other pertinent information which reflect the capability of the vendor's quality system to control the required work.

7.2.2 The results of the vendor evaluation are summarized on a Vendor Capability Rating Report and the report is transmitted to Purchasing and the responsible organization.

7.2.3 The vendor may be requested to provide objective evidence of his Quality Assurance Program to supplement the evaluation process.

7.2.4 Prior to bid award, the vendor's bid is reviewed by Purchasing and the responsible organization, the Material Request (MR) initiator, and the Quality Assurance function. Exceptions and/or deficiencies, if any, are resolved. When all items are resolved or appropriate action is designated, the Purchase Order (PO) is prepared.

The PO is reviewed by the MR initiator and the Quality Assurance function to ensure that all quality requirements are incorporated. The Quality Assurance function verifies that the order has been placed with an approved vendor. If the PO requires correction, the MR initiator notifies Purchasing.

7.2.5 PO changes require appropriate review and documentation similar to that utilized in the original document.

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7.2.6 Source inspection is performed by Quality Assurance. The inspection is accomplished in accordance with the requirements established in the MR and PO. Source inspection is always controlled or performed by Quality Assurance personnel at the vendor's facility. Source inspected material is released for shipment by appropriate documentation.

7.2.7 All equipment (whether source-inspected or not) is inspected by Quality Assurance at the receiving facility (MO). The receiving inspection procedure is prepared by Quality Assurance from information included on the MR and is forwarded to the receiving facility as an Incoming Material Report (IMR) prior to arrival of the equipment. An IMR is the Quality Assurance document which specifies the inspection criteria and on which the results of the inspection are recorded.

7.2.8 Documentary evidence that the material, equipment or service complies with the procurement requirements is available at the point-of-use prior to installation or use of such material, equipment or service.

This evidence, as Quality Assurance related records, is specified in the PO. These records are generated by the vendor and are reviewed and approved by Quality Assurance. The Quality Assurance documentation together with the vendor's documentation comprise the Quality Assurance Records.

7.2.9 In the establishment of quality requirements in the MR (see Section 4.0) and in vendor evaluation, Quality Assurance concurs with the Quality Assurance activities to be performed by the vendor. These activities may include fabrication tests, in-process tests, and final inspections. When these activities are performed, Quality Assurance conducts vendor surveillance to ascertain compliance to the Quality Assurance requirements.

7.2.10 Vendor audits are conducted to provide a formal, and thorough review of the vendor's compliance to Quality Assurance requirements. The results of audits are documented and discussed with vendor management [including corrective action(s) to be taken for any non-complying activities]. Work is suspended if significant deficiencies affecting quality are discovered.

## 7.3 RESPONSIBILITIES

7.3.1 **Quality Assurance** is responsible for:

- a. Evaluating (and approving) vendors.
- b. Reviewing the MR and the PO to ascertain that quality related requirements are transferred from the MR to the PO.
- c. Conducting source inspection.
- d. Conducting vendor surveillance.
- e. Conducting Quality Assurance audits.
- f. Reviewing, and approving, the vendor's Quality Assurance Records.
- g. Conducting receiving inspection.
- h. Exercising their responsibilities with nonconformances and corrective action as detailed in Sections 15.0 and 16.0

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- 7.3.2 The **responsible organization (and the Material Request initiator)** is responsible for:
- a. Evaluating (with Purchasing) approved potential vendors.
  - b. Reviewing the PO to ascertain that the requirements of the MR have been incorporated in the PO.
- 7.3.3 **Purchasing** is responsible for:
- a. Incorporating MR requirements, and the findings of the vendor review, into a PO.
- 7.4 IMPLEMENTATION**
- 7.4.1 Figure 7-1 outlines the detailed procurement procedure from the receipt of the vendor's response through the receiving inspection process.

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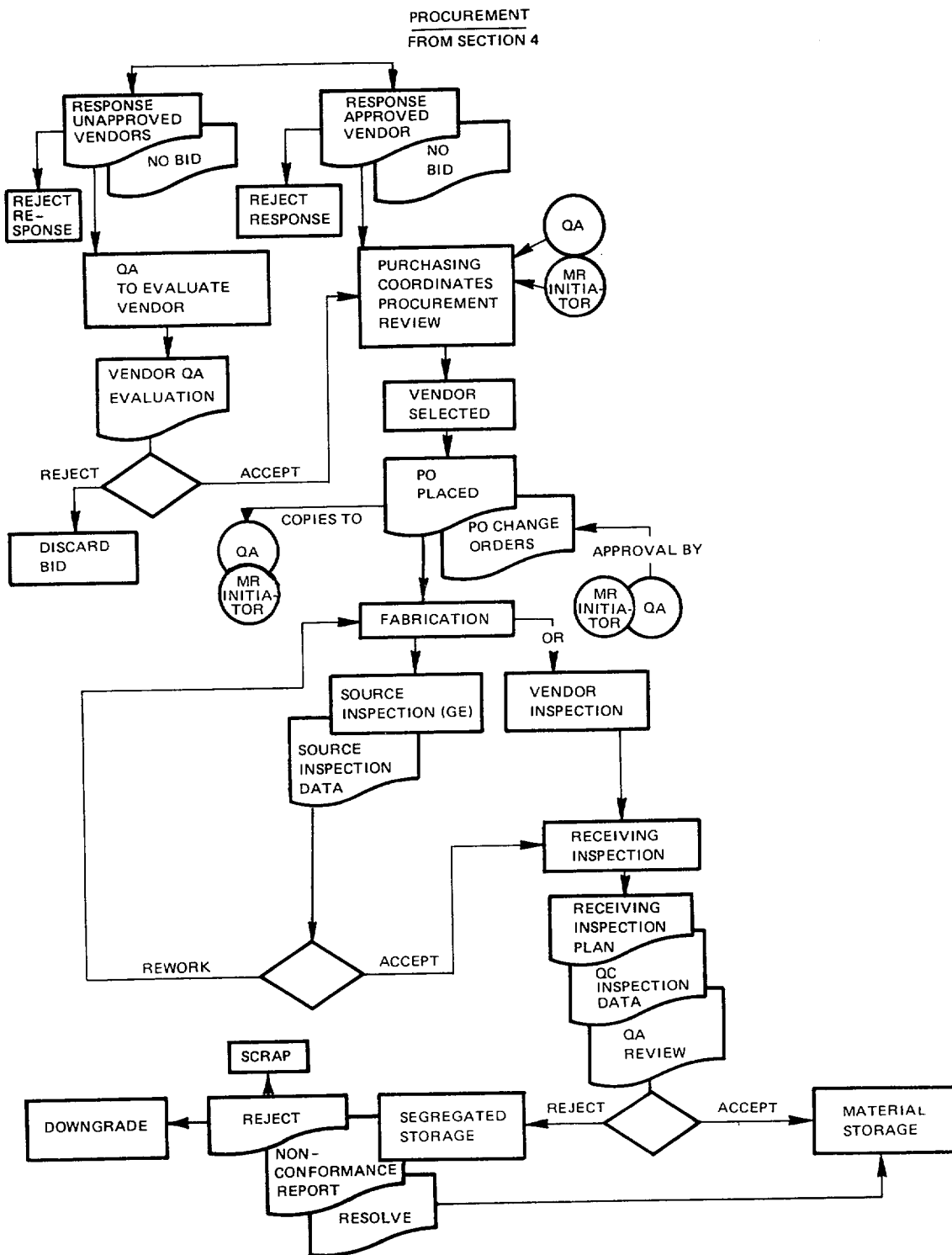


Figure 7-1. Procurement

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

<p><b>SUBJECT</b></p> <p><b>8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS</b></p>	<p><b>NUMBER</b></p> <p><b>NEDO-20776</b></p>
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**8.1 PURPOSE**

This section describes the methods by which materials, parts, and components, including partially fabricated subassemblies, are identified and controlled. This identification and control verifies that only specified items, accepted by Quality Assurance, are used in (1) construction/fabrication/erection/installation; (2) maintenance fabrication/repair/modification work; (3) production operations; or (4) laboratory operations. Figure 8-1 illustrates the identification process.

**8.2 GENERAL**

8.2.1 Identification of items is maintained by heat number, part number, serial number, or other appropriate means, either on an item or on records traceable to an item throughout fabrication, erection, installation, and use of the item.

8.2.2 The identification is maintained on non-permanent items until they are consumed or otherwise utilized. If identification is destroyed prior to use, the organization responsible for use reidentifies the item utilizing procurement, fabrication, operational or quality records. If the item cannot be positively identified, either by direct marking or record traceability, it shall not be utilized in a Class 1 or 2 application (see Section 2.0 for definitions of Classifications).

**8.3 RESPONSIBILITIES**

8.3.1 **Quality Assurance** is responsible for surveillance of methods used for identification and control of items at SFISO/GEUMCO and contractor/subcontractor/vendor facilities.

8.3.2 **Organizations within SFISO/GEUMCO** are responsible for maintaining identification and control of items during the period the items are in their custody. Specific responsibilities at the Morris Operation (MO) include the following:

- a. MO Plant Engineering and Maintenance is responsible for maintaining identification and control of items during fabrication, installation, repair, and modification work as well as for spare parts storage.
- b. MO Plant Operations is responsible for maintaining identification and control of materials during receiving and use by MO.

8.3.3 **Vendors and contractors** are responsible for maintaining identification and control of items (materials, parts, or components) during fabrication/construction/installation while the items are under their jurisdiction and prior to final acceptance.

8.3.4 **Contractors and vendors** are responsible for imposing identification requirements on their subtier vendors, and verifying compliance to these requirements.

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8.3.5 **Quality Assurance** is responsible for verifying identification (as described in sub-paragraph 8.3.3), to determine that identification procedures are adequately described in the contractor or vendor Quality Assurance Plan.

## 8.4 IMPLEMENTATION

8.4.1 The requirements for identification and control of materials, parts and components is imposed on the vendor in the Material Request as part of the vendor's Quality Assurance Program. The vendor Quality Assurance Plan is reviewed by Quality Assurance to ascertain whether the vendor uses procedures which result in an effective identification system and the vendor is surveyed to verify that the vendor's documented system is implemented.

8.4.2 Audits and surveillance are the principal methods by which Quality Assurance verifies compliance with identification control procedures.

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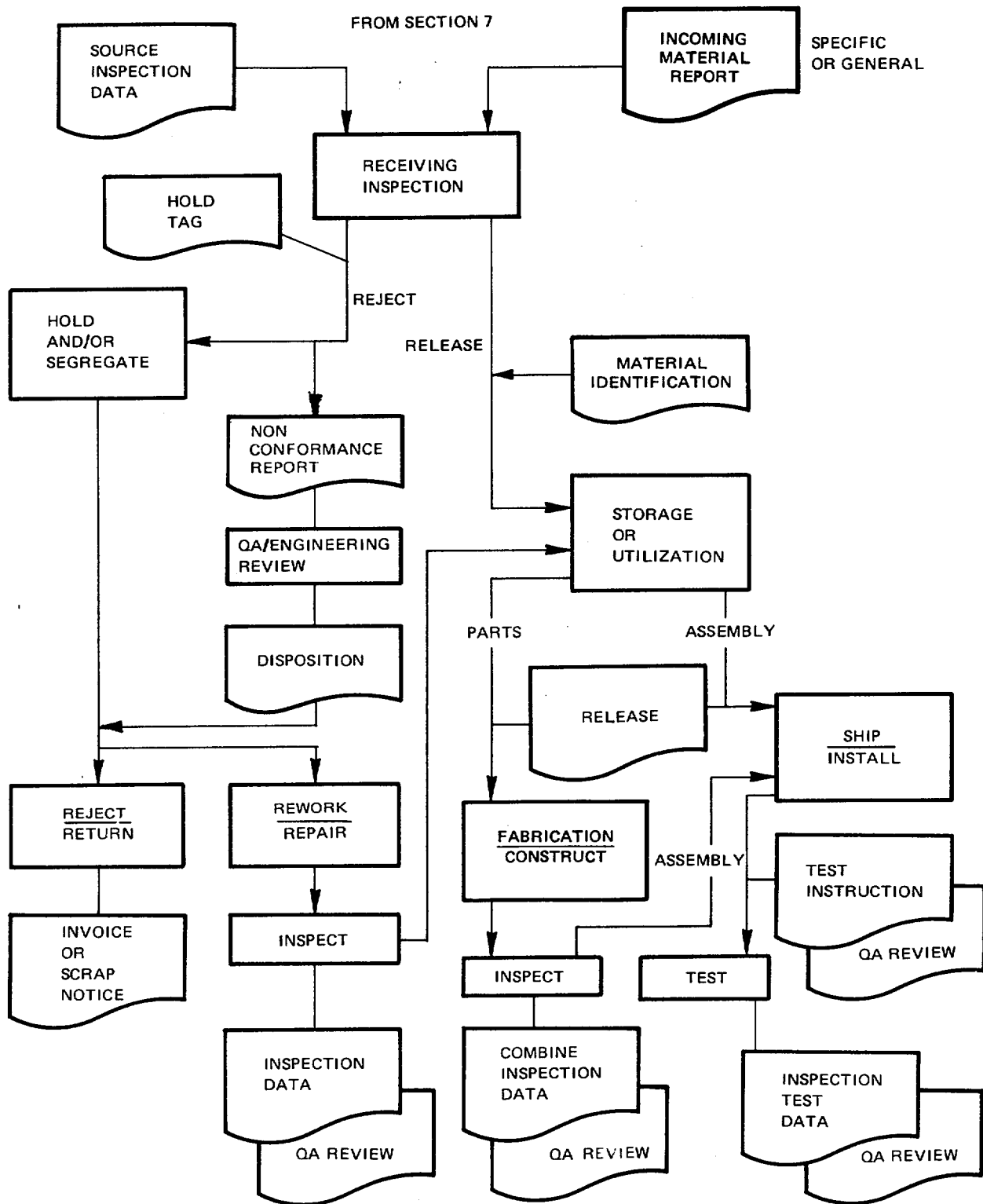


Figure 8-1. Identification and Control of Materials, Parts and Components

SPENT FUEL SERVICES OPERATION  
 GE URANIUM MANAGEMENT CORPORATION

<p><b>SUBJECT</b></p> <p>9.0 CONTROL OF SPECIAL PROCESSES</p>	<p><b>NUMBER</b></p> <p>NEDO-20776</p>
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**9.1 PURPOSE**

This section describes the requirements for assuring that special processes, such as welding/brazing, heat treating, cleaning, and Nondestructive Examination (NDE) are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements. Figure 9-1 delineates the control process.

**9.2 RESPONSIBILITIES**

9.2.1 **SFSO/GEUMCO engineering components** are responsible for the following:

- a. Establishing and/or identifying special processes to be used for fabricating procured equipment. Requirements may be established in the form of criteria, specifications, instructions, and procedures as appropriate.
- b. Developing special processes, whenever appropriate, in accordance with national codes and standards or other recognized data.

9.2.2 **Quality Assurance** is responsible for the following:

- a. Reviewing special processes and personnel qualification requirements to assure that special processes and personnel can achieve stated quality requirements for a specific task.
- b. Reviewing qualification data on personnel prior to utilization of any special process.
- c. Approving special process procedures prior to use.

9.2.3 **Quality Assurance at Morris Operation**, is responsible for verifying that qualified procedures and personnel are used for special processes.

**9.3 SPECIAL PROCESS PROCEDURES**

9.3.1 Special process requirements are specified on drawings or other design media. The required information includes the standard to which the procedure must be qualified.

9.3.2 Each special process is qualified using a written procedure according to the requirements of national standards or codes (where applicable) in specifications incorporating these requirements.

9.3.3 Applicable special process procedures are utilized at the applicable work location.

9.3.4 The use of special process materials is controlled by procedures. For example, weld filler metal and fluxes are segregated and maintained in a controlled area. These, or similar materials, are also identified and controlled throughout all stages of fabrication.

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9.3.5 Equipment which controls special processes (such as heat controls, electrical controls and recording equipment) are calibrated on a planned frequency and the results are documented.

9.3.6 All other records reflecting on the quality of the process and procedure, such as heat treating furnace certification, furnace charts, welding records, and NDE test data are maintained as documentation of the fabrication/test process.

9.3.7 Quality Assurance performs a review of the fabrication/test process, control of process qualification samples, review of process parameters and test result documentation, and in-process inspection for assuring the quality of the special process.

## 9.4 SPECIAL PROCESS PERSONNEL

9.4.1 Each special process is performed by a qualified operator according to the performance requirements of the applicable specification. The operator who successfully performs the "Procedure Qualification" is automatically qualified for performance.

9.4.2 NDE inspection is performed by an operator qualified to the applicable portion of American Society for Nondestructive Testing Standard SNT-1C-1A, "Recommended Practice for Nondestructive Testing Personnel Qualifications and Certification" (or other applicable documents).

9.4.3 Requalification of personnel is performed according to the requirements of the applicable process requirements.

## 9.5 RECORDS

9.5.1 The Quality Assurance function at MO maintains a list of qualified procedures and records to substantiate operator qualifications for all operations performed at MO. The records include name, type of certification, education, and experience backgrounds as well as results of the qualifying examination.

9.5.2 Contractor/vendor process procedures and records are reviewed and approved prior to initiating work at contractor/vendor locations.

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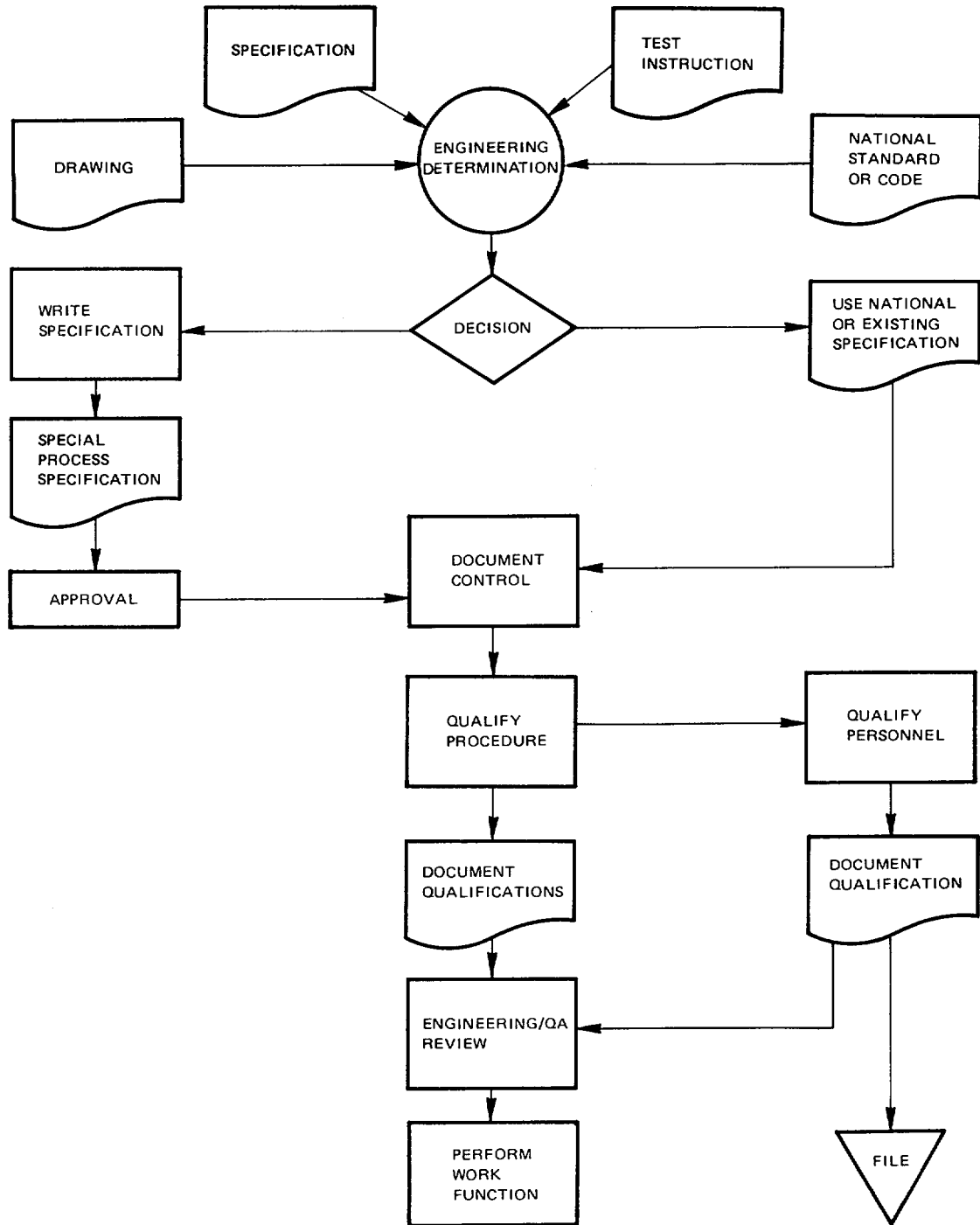


Figure 9-1. Control of Special Processes

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

<b>SUBJECT</b>	<b>NUMBER</b>
10.0 <b>INSPECTION</b>	<b>NEDO-20776</b>

**10.1      PURPOSE**

This section describes the inspection program for verifying conformance of organization activities with documented instructions, procedures, and drawings.

**10.2      GENERAL**

- 10.2.1      Inspection procedures may be prepared from drawings and specifications by Quality Assurance prior to performing the inspection.
- 10.2.2      Examinations and measurements or tests of materials, components, or products, are performed for each work operation when required.
- 10.2.3      Inspection activities are performed in such a manner that the value of the characteristic is verified. After measurement, the results of the inspection are certified by the inspector's symbol (stamp, name, etc.) which is traceable to each inspector.
- 10.2.4      Inspection activities are performed by personnel other than those who performed the actual work activity.
- 10.2.5      Inspectors are qualified by appropriate training or experience to perform the required inspections.
- 10.2.6      Nondestructive Examination (NDE) personnel are certified in accordance with the American Society for Nondestructive Testing Standard SNT-TC-1A, "Recommended Practice for Nondestructive Testing Personnel Qualifications and Certification," or with other applicable requirements.
- 10.2.7      Current inspectors' qualifications and certifications are maintained in Quality Assurance files and are available for review and reference by regulatory and Company personnel.
- 10.2.8      Contractor's/vendor's inspection procedures are evaluated by Quality Assurance to ascertain compliance with these requirements.

**10.3      RESPONSIBILITIES**

- 10.3.1      **The organization(s) preparing procedures, specifications and drawings** is responsible for specifying Classification for equipment and identifying significant quality characteristics and the required Quality Assurance Effort Required (QAER) Levels (see Section 2.0 for Classification and QAER definitions).
- 10.3.2      **Quality Assurance** is responsible for:
  - a.      Reviewing equipment classification to determine whether the QAER will provide the level of quality expected.
  - b.      Planning and establishing the frequency and methods of inspection to be used to attain required quality levels and how quality levels are verified.

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- c. Verifying that inspectors (both SFSO/GEUMCO and contractor/vendor personnel) are qualified (through training or experience) to perform the inspection function.
- d. Assuring that appropriate requirements for process monitoring are established and that quality inspection process(es) meet these requirements.

## 10.4 IMPLEMENTATION

Quality Assurance performs the required inspection in accordance with Quality Assurance instructions, using established inspection forms or other documentation.

- 10.4.1 **Source Inspection.** Source inspections are performed at a vendor or subcontracting source by Quality Assurance personnel. The inspections are performed to verify the services and/or equipment meet the Purchase Order requirements. Source inspections are documented on a Product Quality Certification (PQC), a trip report and/or a Source Inspection Report (SIR).
- 10.4.2 **Receiving Inspection.** Receiving inspection may be performed using an Incoming Material Report (IMR). The IMR defines the inspections to be performed receiving inspection. The IMR, certification, test reports and other quality-related records of receiving are maintained in the Quality Assurance Files. The receiving inspector requirements may be contained in the Purchase Order.
- 10.4.3 **In-Process Inspection.** In-process inspection hold points are established by the responsible Quality Assurance organization. When in-process inspections are performed, the responsible individual signs and dates the appropriate work documents, indicating whether the item is acceptable or nonconforming.
- 10.4.4 **Testing.** Testing is conducted where appropriate to ensure quality. Testing is performed in accordance with written and approved test procedures. Section 11.0 describes the test control requirements.
- 10.4.5 **Process Monitoring.** Process monitoring is used to control quality related activities when an inspection is not possible. When appropriate, an integrated program or process monitoring and inspection is used.
- 10.4.6 **Nonconformances.** Nonconformances detected during performance of quality-specified inspections or process monitoring are documented and processed as described in Section 15.0.

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

<p><b>SUBJECT</b></p> <p style="text-align: center;"><b>11.0 TEST CONTROL</b></p>	<p><b>NUMBER</b></p> <p style="text-align: center;"><b>NEDO-20776</b></p>
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**11.1 PURPOSE**

This section describes the test programs used for demonstrating that structures, systems, and components perform satisfactorily, and are identified and performed in accordance with approved procedures which incorporate the requirements and acceptance limits of applicable design documents.

**11.2 APPLICABILITY**

Test control is applicable to all SFSO/GEUMCO or external contractor organizations which are required to perform a test function in conjunction with work activities as specified in design documents, contracts, or material codes.

**11.3 GENERAL**

11.3.1 Test programs include, as applicable, manufacturing tests prior to installation, installation tests, equipment verification tests, operational tests, and developmental engineering tests.

11.3.2. Testing is conducted by appropriately qualified personnel in accordance with documented and approved test procedures.

11.3.3 Testing procedures include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions.

11.3.4 Test results (test data) are documented and evaluated by responsible engineering and/or operations components to assure that all test requirements have been satisfied.

**11.4 RESPONSIBILITIES**

- 11.4.1 The **engineering and/or operations components** are responsible for the following:
- a. Incorporating testing requirements and acceptance limits in applicable design documents.
  - b. Preparing the basic test instructions and/or procedures.
  - c. Planning and scheduling all tests by contractors and Morris Operation (MO) which are related to project design and construction activities.
  - d. Reviewing and approving applicable test procedures as specified in (c) above, including test status and results.
  - e. Directing MO activities related to performing applicable tests as specified in (c) above (also see subparagraph 11.4.3).

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11.4.3 **MO** is responsible for the following:

- a. Conducting Equipment Verification Tests (EVT's) to verify operational condition of new, repaired, or modified equipment. EVT procedures are prepared by MO Operations personnel.
- b. Conducting operational tests (procedures prepared by MO Operations and approved as in 11.4.1.d) and providing instructions and training to operating personnel.
- c. Coordinating with San Jose in establishing test schedules.

## 11.5 **IMPLEMENTATION**

11.5.1 Responsible organizations perform testing in accordance with written and approved procedures.

11.5.2 Quality Assurance performs audits and surveillance for adherence to the test program for activities affecting quality in accordance with Sections 15.0, 16.0, 17.0 and 18.0

11.5.3 Quality Assurance reviews applicable test procedures and results to assure activities affecting quality are controlled and that quality requirements of the applicable design documents have been met.

SPENT FUEL SERVICES OPERATION  
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<p><b>SUBJECT</b></p> <p>12.0 CONTROL OF MEASURING AND TEST EQUIPMENT</p>	<p><b>NUMBER</b></p> <p>NEDO-20776</p>
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**12.1 PURPOSE**

This section describes the measures used for ensuring that tools, gages, scales, and other measuring and testing devices (instruments) used during fabrication, inspection, construction, maintenance, operation, and modification are properly controlled, calibrated, and adjusted at specific periods to maintain accuracy within necessary limits.

**12.2 GENERAL**

12.2.1 Measuring and test equipment used for determining compliance with specifications, are adjusted and calibrated at prescribed intervals using certified equipment having known valid relationships to nationally recognized standards. If no national standard exists, the basis for calibration is documented.

12.2.2 When non-calibrated measuring and test equipment is found, the nonconformance is documented and an evaluation is made of the validity of previous inspection or tests results and the acceptability of system or items inspected or tested since the last calibration check.

12.2.3 Each organization provides an area where calibrated measuring and test equipment is stored. Environmental conditions of storage areas are appropriate to the type of calibration performed. Use of out-of-calibration instrumentation is precluded by controlled access or administrative control as appropriate.

12.2.4 Personnel responsible for calibration tasks are trained to perform these duties. Overall direction is assigned to a responsible management individual (e.g., foreman, supervisor, manager) with authority to issue and recall.

**12.3 RESPONSIBILITIES**

12.3.1 **Each organization possessing measuring and test equipment** is responsible for control and calibration of electrical, mechanical, or other types of measuring and test equipment used during fabrication and inspection, construction, operation, or maintenance work. The same organization is responsible for identifying all equipment that requires calibration, the frequency of calibration, and issuance control.

12.3.2 **A specific management individual within each organization** is assigned responsibility to ensure that measuring and test equipment is controlled, calibrated and issued to authorized groups in a systematic manner. This individual is responsible (directly or by delegation) to ensure that calibrations are recorded, instruments have current calibration stickers attached, and that instruments are recalled for periodic recheck.

12.3.3 **Users of equipment** are responsible for returning instruments for periodic recheck and/or calibration if damage or malfunction is suspected.

12.3.4 **Each organization** is responsible for ensuring that personnel using measuring and test equipment are appropriately trained as required for installation, checkout, use, and understanding of data readout used in recording data.

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12.3.5 **Quality Assurance** is responsible for the following:

- a. Resolving nonconformances resulting from suspect instruments or equipment discovered not in calibration.
- b. Auditing and surveillance of these activities as well as for complying with all requirements (if it is the "user" organization).
- c. Ascertaining that appropriate corrective action of nonconformances is accomplished.
- d. Ascertaining that contractor's or vendor's calibration programs comply with requirements.

## 12.4 CONTROL SYSTEM

12.4.1 **Standards.** Instruments (standards) used to calibrate production instrumentation and other tools requiring calibration have an uncertainty (error) of no more than 1/4 of the tolerance of the equipment being calibrated. A greater uncertainty may be acceptable when limited by the "state-of-the-art". These standards are calibrated by the National Bureau of Standards or from a certified source having traceability to the National Bureau of Standards. These standards are checked and calibrated on an annual basis.

12.4.2 **Production Instruments.** Mechanical and electrical instruments and tools used to control a critical processor used to test components, subassemblies, or final products are identified with a "Calibration" label and calibrated according to a specific time schedule.

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

SUBJECT	NUMBER
13.0 HANDLING, STORAGE, AND SHIPPING	NEDO-20776

**13.1 PURPOSE**

This section describes the measures used for controlling the handling, storage, and shipping of nuclear and non-nuclear material in compliance with license requirements and in accordance with instructions, procedures, or drawings to prevent damage, deterioration, or loss.

**13.2 APPLICABILITY**

This section applies to all organizations that participate in the packaging, shipping, storage, and handling of items to be incorporated or used in construction or operation of a nuclear fuel storage facility. These items include, but are not limited to, irradiated nuclear fuel, shipping casks, construction materials, fabricated assemblies, and parts.

**13.3 GENERAL****13.3.1 Nuclear Materials**

- a. Nuclear safety is of prime concern in the handling and shipping of nuclear materials. The use of approved procedures and training of personnel to follow such procedures during handling and shipping activities are required. Items of specific concern include the following:
  - 1. Maintaining, testing, handling, and decontaminating irradiated fuel shipping casks.
  - 2. Transporting and in-transit handling of irradiated fuel shipping casks.
  - 3. Removing irradiated fuel from the shipping casks at the Morris Operation (MO).
  - 4. Transferring irradiated fuel assemblies into basin storage baskets and/or casks.
  - 5. Handling, compacting and storage of nuclear waste materials.
  - 6. Placing irradiated fuel into shipping casks at the Morris Operation (MO).
  
- b. Nuclear safety is of prime concern in the storage of nuclear materials. The use of approved containers or equipment, placing in authorized storage areas, use of approved procedures for fuel identification and operations, and monitoring to assure compliance to procedures are required. Primary storage features include the following:
  - 1. Storing irradiated fuel assemblies in baskets or racks designed for criticality safety within the fuel storage pools.
  - 2. Verifying the nuclear safety of storage continuously by using instruments and/or by personnel observations to maintain surveillance of the degree of containment of nuclear materials.
  - 3. Maintaining and testing fuel handling equipment.

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## 13.3.2 Non-Nuclear Materials

- a. Handling, shipping, and packaging is performed in accordance with requirements specified in specifications, drawings, and/or special instructions to prevent damage or degradation of quality.
- b. The identification (and status) of items during handling (including subdivision or joining in the fabrication process), packaging, and shipping are described in Section 8.0 and Section 14.0.
- c. Storage activities include retention of identification, inspection status of items (Section 14.0) through tagging or marking, controlled distribution, preservation of the item from environmental deterioration, and unauthorized access or modification.

## 13.4 RESPONSIBILITIES

13.4.1 **Transportation Systems** is responsible for the following:

- a. Incorporating requirements for handling, storage, and shipping into design documents such as drawings, specifications, special instructions, and where applicable, Material Requests (MR's).
- b. Incorporating requirements for project-related handling, storage, and shipping into Purchase Orders, contract documents, including directing related fabrication/construction activities performed by major and sub-tier contractors.

13.4.2 **Licensing, Transportation and QA** is responsible for shipping of irradiated fuel casks in conformance with licensing requirements.

13.4.3 **Morris Operation (MO)** is responsible for handling, storage and shipping activities performed by MO personnel as part of routine fuel storage operation and maintenance of the facility as well as for maintenance and testing of equipment in accordance with licensing requirements.

13.4.4 **Quality Assurance at MO** is responsible for reviewing proper handling, storage, and shipping procedures.

13.4.5 **Quality Assurance in San Jose** is responsible for surveillance and audit of activities pertaining to handling, storage, and shipping of items for SFSO/GEUMCO.

## 13.5 IMPLEMENTATION

13.5.1 The requirements for cleaning, marking packaging, preservation methods, shipping, storage and handling are incorporated in design documents, special instructions, and the MR by the responsible engineer. These requirements are reviewed and approved by appropriate management.

13.5.2 Organizations performing specific tasks (such as Licensing, Transportation and QA in cask design and licensing, and MO in their shipping and storage activity) implement these tasks by the development and/or use of detailed procedures.

13.5.3 Specific procedures for irradiated fuel handling and storage are developed in accordance with the Quality Assurance Program.

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- 13.5.4 Licensing, Transportation and QA coordinates and directs handling, storage and shipping between major contract organizations during the design, procurement and construction phases of SFSO/GEUMCO projects.
- 13.5.5 The Quality Assurance function in San Jose reviews handling, storage and shipping activities using detailed procedures which cover their audit and surveillance activities.

SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

SUBJECT	NUMBER
14.0 INSPECTION, TEST, AND OPERATING STATUS	NEDO-20776

**14.1 PURPOSE**

14.1.1 This section describes the measures used to indicate the status of inspections and tests performed upon individual items during fabrication and assembly, and subsequently used in a nuclear fuel storage facility, or transportations system. Such measures are designed to preclude the use of nonconforming items due to inadvertent bypassing of inspections and tests.

14.1.2 This section also describes the measures used to indicate the operational status of structures, systems, and components to prevent inadvertent operation while these structures, systems, and components are not in conformance with licensing requirements.

**14.2 GENERAL**

14.2.1 Inspection and test status of individual items are indicated by stamps, tags, labels, routing cards, or other suitable documentation. The using organization ascertains that the status of the equipment is indicated by this type device prior to use.

14.2.2 Such documentation provides for the identification of items which have satisfactorily passed required inspections and tests.

14.2.3 Operational status of the plant, which is dependent on the operational status of the structures, systems, and components, is indicated by tagged valves, tagged switches, lockouts, etc., in conjunction with log book entries that document status to prevent unauthorized adjustment or operation.

**14.3 RESPONSIBILITIES**

14.3.1 The **Manager, Morris Operation (MO)** is responsible for detailing documentation of plant operational status. This includes the following:

- a. Plant Engineering and Maintenance (in conjunction with Engineering Components in San Jose) is responsible for all engineered items, pipe, fittings, valves, instruments, pumps, blowers, etc., used in facilities assigned to MO.
- b. Plant Operations is responsible for using approved operating procedures and for plant readiness as well as providing an interface with San Jose.
- c. The Quality Assurance function at MO is responsible for the inspections and test requirements of facility parts and components used in plant operations and maintenance.
- d. Plant Engineering & Maintenance is responsible for procedures detailing project related documentation of test and inspection status of items, structures, systems, and components during construction or modification.

14.3.2 **Vendors** are responsible for procedures (approved by GE) detailing documentation of test and inspection status of items under their control.

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14.3.3 **Quality Assurance** is responsible for verifying that procedures for the status of inspections, tests, and operations are utilized by applicable organizations.

## 14.4 IMPLEMENTATION

14.4.1 Inspection, test, and operating status of incoming irradiated fuel is covered in part of Section 13.0.

14.4.2 Inspection, test, and operating status of incoming and in-process maintenance and construction items are covered in Sections 7.0 and 13.0. Functional Class 1, 2, or 3 items are identified by a Material Control Tag or a readily recognized identity such as a heat number or serial number (see Section 2.0 for definitions of Classifications).

14.4.3 Nonconforming material and items are handled in accordance with Section 15.0.

14.4.4 The operating status of all systems is controlled by Lock and Tag procedures. The use of these procedures prevents inadvertent operation of a system undergoing maintenance or repair. Basic "Lock-out" tags used are as follows:

- a. **DANGER—DO NOT OPERATE** tags placed on pieces of equipment that are not in service due to maintenance or processing reasons and if operated could result in a hazardous condition to personnel and/or equipment.
- b. **CAUTION** or status tags placed on valves, switches, or controls that indicate condition of applicable systems. The instructions, contained on the tag, specify steps that must be taken in sequence to operate the equipment in question.

14.4.5 Status of functional tests of structures, systems, and components are covered in Section 11.0.

14.4.6 Quality Assurance verifies inspection, test, and operating status by surveillance of the fabrication, receiving, test, and inspection processes, and audits of the processes, documentation produced, and equipment utilized in design, fabrication, inspection, and test of equipment used by SFSO/GEUMCO.



SPENT FUEL SERVICES OPERATION  
GE URANIUM MANAGEMENT CORPORATION

SUBJECT

15.0 **NONCONFORMING MATERIALS, PARTS, OR COMPONENTS**

NUMBER

NEDO-20776

**15.1 PURPOSE**

This section describes the measures used for controlling materials, parts, systems and structures which do not conform to requirements and which are normally detected through inspection, test, operation, or audit. Additionally, the measures used to document and control nonconformances discovered during process operations are described as well as the vehicle for deviating from the original contract.

**15.2 NONCONFORMING ITEM RECORD (NIR) AND QUALITY HOLD TAG**

- 15.2.1 Nonconformances noted in material, parts, or components, systems and structures are documented in NIR's, (or approved vendor nonconforming documentations).
- 15.2.2 The nonconforming item is identified by a "Hold Tag" and the affected organization is notified. Where practical, the item is segregated in a quarantine area to prevent its inadvertent use.
- 15.2.3 The item remains on hold, properly tagged, until restored to an acceptable condition or scrapped. Only QA has the authority to effect a release from quarantine or removal of the "Hold Tag."
- 15.2.4 In certain instances, items may be nonconforming only from the standpoint of the type of service for which the item is purchased, but may be acceptable for other services. In such instances, Quality Assurance signs the NIR releasing the item for a service to which the item conforms.
- 15.2.5 The Material Review Board (MRB) may authorize continuing processing of an assembly pending disposition of a nonconforming component.
- 15.2.6 Vendor Quality Assurance Programs contain requirements equivalent to those of SFSO/GEUMCO, consistent with their scope of work.

**15.3 RESOLUTION OF A NONCONFORMANCE**

15.3.1 Nonconforming materials, parts, or components are identified, dispositioned, and restored in accordance with the following:

a. **Level 1**

- 1. Disposition is by the first supervisory level performing work that detected the nonconformance. The authority for disposition at Level 1 is restricted to the following:
  - (a) Part, item, or assembly may be reworked to meet existing specifications.
  - (b) New scheduling or revision to design or fabrication documentation is not required.
- 2. The Quality Control function of the Quality Assurance function may sign Level 1 dispositions.

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3. If the nonconformance cannot be corrected within the limits of Level 1 authority, the NIR is referred to Level 2.
4. Level 1 correction is reinspected for conformance to stated requirements.

b. **Level 2**

1. Disposition authority for Level 2 requires the Material Review Board (MRB). As a minimum, the MRB consists of representatives from Quality Assurance and other Engineering Organizations as determined by Quality Assurance in San Jose or the Manager, Morris Operations, as applicable. Representatives from Purchasing and other groups (such as Operations) are included in the MRB as appropriate.
2. Disposition is to rework, scrap, return to supplier, repair, or "use as is." Disposition to "use as is" or "repair" may be made without customer notification provided such disposition does not adversely affect function, fit-up, safety, or basic design requirements of the manufacturing plan, supporting documents, design documents or contractual agreements.
3. Level 2 correction is reinspected for conformance to MRB requirements.
4. The QA representative serves as MRB Chairman.

15.3.2 Quality Assurance closes the NIR when all appropriate actions are taken and maintains appropriate records of the NIR.

## 15.4 CORRECTIVE ACTION

15.4.1 Quality Assurance in San Jose is responsible for the correction of generic deficiencies that exist in either the Quality Assurance Program or its implementation.

15.4.2 The Corrective Action Request (CAR) is prepared to implement corrective action if required. (see Section 16.0).

15.4.3 The action requested is directed to the Manager who is responsible for correction. Upon the satisfactory completion of corrective action, the request is closed by the initiator and filed by Quality Assurance. Quality Assurance is responsible for authorizing closure of all CAR's.

## 15.5 SUMMARY OF NONCONFORMING ITEM RECORDS

15.5.1 A periodic summary of applicable open and closed NIR's is provided to the SFSO/GEUMCO Manager and the Managers of Morris Operation (MO), and major contracts by the Quality Assurance function in San Jose or MO. Such reporting may be part of routine management reports to the Manager covering SFSO/GEUMCO design and construction status related to facility changes, major projects, and tasks.

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<b>SUBJECT</b>	<b>NUMBER</b>
16.0 <b>CORRECTIVE ACTION</b>	<b>NEDO-20776</b>

**16.1 PURPOSE**

This section describes the measures used for ensuring that conditions adverse to quality and deficiencies in the Quality Assurance Program, design, fabrication, construction and modification or their implementation or in plant operation are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures ensure that the cause of the condition is determined and corrective action is taken to preclude repetition. The identification of significant conditions adverse to quality, the cause of the conditions, and the corrective action are documented and reported to appropriate levels of management.

**16.2 SYSTEM DESCRIPTION**

16.2.1 Corrective action is requested and documented on a Corrective Action Request (CAR) when conditions are detected that have or may have an adverse affect on quality. CAR's may be initiated as the result of a Nonconforming Item Record (NIR) or to document deficiencies found in a quality audit. CAR's may be written against vendors as well as the internal organization.

16.2.2 A CAR may be requested by anyone but only Quality Assurance may initiate the form.

16.2.3 A CAR is initiated when any of the following conditions exist:

- a. A condition exists which could jeopardize the quality of a product or service, although there has been no specification violation. (Cases involving specification violations are reported on a NIR.)
- b. An audit discloses the need for corrective action.

**16.3 RESPONSIBILITIES**

16.3.1 **Quality Assurance** is responsible for coordinating specific activities relating to the corrective action. This includes the following:

- a. Determining whether the reported or observed condition or incident warrants corrective action.
- b. Initiating CAR's.
- c. Providing copies of completed CAR forms to responsible components.
- d. Determining which organizational component is accountable for corrective action and requesting investigation(s) and documenting the action plan.
- e. Reviewing and approving the action plan.
- f. Providing assistance in investigations when requested by an involved component(s).

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- g. Performing followup to ensure that corrective measures are implemented.
- h. Maintaining files of all completed CAR forms.

16.3.2 The **Accountable Organizational component** is responsible for the following:

- a. Conducting an investigation for the cause of the incident or condition.
- b. Documenting investigation results and corrective action on the CAR form and returning to Quality Assurance.
- c. Determining the method for resolving the CAR.
- d. Consulting with Quality Assurance when investigative assistance is needed.
- e. Initiating corrective action as required.

## 16.4 IMPLEMENTATION

16.4.1 Corrective action is documented on a CAR in accordance with established procedures.

16.4.2 The procedures detail CAR preparation, Quality Assurance and management review, investigation, resulting documentation, reporting of corrective action to prevent recurrence, follow-up audit procedure, and CAR distribution.

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SUBJECT  17.0 <b>QUALITY ASSURANCE RECORDS</b>	NUMBER  <b>NEDO-20776</b>
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**17.1      PURPOSE**

This section describes the measures for ensuring that sufficient records are generated and maintained so as to furnish evidence that activities affecting quality are properly performed, and that such records are stored, maintained, and safeguarded for an adequate period utilizing a systematic means of retrieval. The requirements of this Plan, and those record-keeping requirements established by regulatory agencies, specify the logs, records, and reports required to ensure that comprehensive records of design, fabrication, construction, and operation are maintained.

**17.2      APPLICABILITY**

This section is applicable to all activities for which SFSO/GEUMCO is responsible and which provide evidence of quality in the design, fabrication, construction, and operation of nuclear storage facilities.

**17.3      GENERAL REQUIREMENTS**

17.3.1 Documents which furnish evidence of the quality of items and provide information relating to activities affecting quality are maintained by the originating organization as specified herein until completion of a task or project when the originating organization transfers these records into the appropriate document control system.

17.3.2 Records pertaining to the quality of items or activities of the plant facility are retained in accordance with regulatory requirements as defined by SFSO/GEUMCO internal instructions.

17.3.3 A documentation indexing system assures that all records are readily identifiable and retrievable. It is the responsibility of organizations that generate quality-related records to identify and index such records with appropriate cross references in accordance with document control procedures presented in Section 6.0. Inspection and test records identify the acceptability, and the action taken in connection with any deficiencies noted (Section 15.0).

17.3.4 All records are legible (in original or reproduced form) and adequately identifiable to the item or activity involved.

**17.4      RESPONSIBILITIES**

17.4.1 As records are originated, the **originating organization** is responsible for providing control of such documents commensurate with their ability to replace them.

17.4.2 **Quality Assurance in San Jose** is responsible for the establishment of specific record-keeping requirements applicable to inspection, tests, operation, and other quality-related activities as well as for the establishment and implementation of surveillance and audit procedures to verify that other SFSO/GEUMCO organizations are complying with these requirements.

17.4.3 **Document Control in San Jose** is responsible for the system for storage, retention, and retrieval of non-MO quality assurance records.

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## 17.5 INTERIM DOCUMENT STORAGE

17.5.1 All design-related documents, including the following are maintained by the originating organization:

- a. Drawings, specifications.
- b. Vendor information files.
- c. Tests, procedures, and reports.
- d. Procurement data for design and construction projects and tasks.
- e. Engineering change notices.
- f. Engineering Review memorandum.

17.5.2 **Licensing and Transportation** maintains documents such as:

- a. Official responses to regulatory and licensing correspondence.
- b. Regulatory and licensing regulations.
- c. Calculations in support of cask licensing.
- d. Licenses, permits, and amendments.

17.5.3 **Quality Assurance** maintains documents such as the following:

- a. Inspection reports and acceptance test reports.
- b. Nonconformance Item Records (NIR's).
- c. Corrective Action Requests (CAR's).
- d. Audit reports.
- e. Material certifications and test reports.
- f. Special process records.
- g. Special process personnel training and certification records.
- h. Product Quality Certificates.
- i. Vendor evaluation reports.

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17.5.4 Documentation specifically concerned with plant maintenance, repair, and operations is maintained at Morris Operations (MO).

a. MO Plant Engineering and Maintenance maintains records such as the following:

1. Plant drawings.
2. Facility Change Notices (FCN's).
3. Instrument calibration records.
4. Radioactivity exposure records.
5. Accident reports.
6. Records of unusual events and abnormal occurrences.
7. Maintenance records.

b. Plant Operations maintains records such as the following:

1. Plant operation logs, reports, and procedures.
2. Qualification records for personnel.
3. Equipment Verification Test (EVT) data and similar operational information.

## 17.6 RECORDS HANDLING AND STORAGE

17.6.1 Records are maintained in the NEBO off-site vault, or in Record Centers in San Jose as well as at the MO. Storage of two complete sets of records at remote facilities complies with regulatory requirements concerning the permanency of quality assurance records. Lifetime records are maintained for the lifetime of the item or facility to which they pertain.

17.6.2 Storage is accomplished by retention of complete (hard copy) documentation, microfilm, or other reproductions. Items such as radiographs are not reproduced, but retained as originals.

17.6.3 An index system for ease of retrieval is established for all records being stored by or for SFSO/GEUMCO.

17.6.4 Records (document) control is established so that lifetime records, originals, and/or copies of documents are retained in the Records Centers. A master list of such records is maintained by Document Control in San Jose. The Record Center at MO utilizes an indexing system similar to that used in San Jose.

## 17.7 QUALITY ASSURANCE ORGANIZATION RECORDS ACTIVITIES

In addition to the responsibilities of Quality Assurance pertaining to the generation of records unique to its activities (see sub-paragraph 17.3.2), the Quality Assurance function in San Jose verifies compliance of other SFSO/GEUMCO organizations with regulatory record requirements through surveillance and audit.

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GE URANIUM MANAGEMENT CORPORATION

SUBJECT  <b>18.0 AUDITS</b>	NUMBER  <b>NEDO-20776</b>
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**18.1 PURPOSE**

This section describes the system and responsibilities for conducting planned and periodic reviews (audits) of activities related to the design and fabrication, construction, and operation of a nuclear fuel storage facility and equipments to handle and transport such fuel by the assessment of performance of quality assurance and quality control and compliance with stated requirements.

**18.2 GENERAL**

**18.2.1 Types of Quality Audits**

- a. Extrinsic Audit — Audits may be conducted by customers or other external organizations such as the NRC to assure that SFSO/GEUMCO is in compliance with contractual agreements.
- b. Internal Audit — The Quality Assurance function in San Jose audits SFSO/GEUMCO organizational elements in San Jose and at Morris Operation (MO) to verify that objectives of the Quality Assurance Program are being met.
- c. NEBO Quality Assurance Audit — Audits are conducted to verify compliance to applicable NEBO policies and procedures by P&QAO personnel.
- d. MO Quality Assurance Audit — Audits by MO of the Quality Assurance Program as implemented by their own organization.
- e. Vendor Audit — Audits of vendor's facilities may be conducted by either of the Quality Assurance functions (located in San Jose or at the MO).

**18.2.2 General Requirements**

- a. Audits are formal, they are scheduled by advance notification which specifies the general area and/or specific activities and documents to be investigated.
- b. Audits are conducted utilizing a written procedure (checklist) to assure thoroughness of the review. Checklists may be standardized (for review of compliance to the Code of Federal Regulations, Title 10, Part 50, Appendix B, for example), or they may be prepared for specific audits.
- c. Audits are performed by qualified personnel (See 18.2.3); these personnel do not have direct responsibility in the area being audited.
- d. The responsible management of the function being audited is apprised of the details of the pending audit by the auditing team prior to the investigation.

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- e. The findings of the audit team are discussed with the responsible management of the audited function; this management receives a formal notification of the audit findings and areas requiring correction.
- f. Management of the audited organization must establish appropriate measures to correct the audit findings and must respond to the audit within 30 days after formal notification. This response will state corrective action(s) to be taken; including a schedule for completion of corrective action(s), or other specific response to the findings.
- g. Deficiencies may be reaudited to verify that corrective action has been accomplished.
- h. All activity during audits is documented in the Audit Report which is maintained in Quality Assurance files. Subsequent follow-up activity is also documented and filed with the original audit report.

## 18.2.3 Audit Team Composition and Qualifications

- a. As a minimum, each audit team has a certified Lead Auditor in charge. The Lead Auditor is certified by SFSO/GEUMCO management as having appropriate qualifications.
- b. In addition to the Lead Auditor, there may be one or more qualified individuals as members of the audit team. Each auditor will be selected by virtue of special abilities, specialized technical training, prior pertinent experience, personal characteristics, and/or relevant education.

## 18.2.4 Audit Frequency

- a. The MO shall be audited at least once within each 12 month period to determine the degree of adherence to license requirements.
- b. The SFSO/GEUMCO activities at San Jose shall be audited at least once within each 12 month period to determine the degree of adherence to the QA Program.
- c. Suppliers who provide nuclear safety related equipments/services to SFSO/GEUMCO shall be audited at least once in each 36 month period.

## 18.3 QUALITY ASSURANCE AUDIT RESPONSIBILITIES

Quality Assurance is responsible for conducting quality audits. This does not preclude the appointment of a technical and/or administrative representative to participate directly in the audit or to serve as a consultant. Specific Quality Assurance responsibilities include the following:

- a. Scheduling, coordinating and reporting extrinsic, internal, vendor, and NEBO quality assurance audits.
- b. Establishing an audit schedule.
- c. Generating audit checklists.
- d. Conducting, or coordinating the performance of, audits as planned.

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- e. Issuing audit reports.
- f. Initiating Corrective Action Requests (CAR's) as required.
- g. Conducting follow-up audits to determine the implementation and effectiveness of corrective action(s) taken on significant quality problems.
- h. Analyzing audit findings to detect quality trends and effectiveness of the Quality Assurance Program.

## 18.4 REPORTS

- 18.4.1 At the conclusion of each audit, and after all committed actions are documented on the CAR's, an audit report shall be prepared and distributed to concerned and affected management. The audit report consists of: audit scope, identification of the audit team, audit contacts, summary of audit findings and follow up and close out responsibilities. Copies of the issued CAR's are attached to the audit report.
- 18.4.2 Quality Assurance includes a listing of the status of all open SFSO/GEUMCO quality assurance-related CAR's in the monthly management report to SFSO/GEUMCO management.