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REVISION 2

# QUALITY ASSURANCE PROGRAM FOR NUCLEAR FUELS DEPARTMENT SHIPPING CONTAINERS

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EXXON NUCLEAR COMPANY, Inc.

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# EXXON NUCLEAR COMPANY, INC.
# QUALITY ASSURANCE PROGRAM FOR
# NUCLEAR FUELS DEPARTMENT
# SHIPPING CONTAINERS

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Summary of changes: This revision reflects recent organizational changes and minor editorial changes needed to make this document fully compatible with the most recently approved version of Exxon Nuclear's Topical Report, XN-NF-1A, Rev. 3.

# LIST OF EFFECTIVE PAGES

| Page Number | Revision | Page Number | Revision |
|---|---|---|---|
| Signature Page | 2 | 15 | 2 |
| List of Eff. Pgs. | 2 | 16 | 1 |
| i | 2 | 17 | 2 |
| ii | 2 | 18 | 2 |
| iii | 1 | 19 | 2 |
| iv | 1 | 20 | 2 |
| 1 | 2 | 21 | 1 |
| 2 | 2 | 22 | 1 |
| 3 | 2 | 23 | 1 |
| 4 | 1 | 24 | 1 |
| 5 | 2 | 25 | 1 |
| 6 | 2 | 26 | 1 |
| 7 | 2 | 27 | 2 |
| 8 | 2 | 28 | 1 |
| 9 | 2 | 29 | 2 |
| 10 | 1 | 30 | 1 |
| 11 | 2 | 31 | 2 |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 1 | | |

EXXON NUCLEAR COMPANY, INC.
QUALITY ASSURANCE PROGRAM FOR
NUCLEAR FUELS DEPARTMENT
SHIPPING CONTAINERS

TABLE OF CONTENTS

TABLE OF CONTENTS (Contd)



(2)

TABLE OF CONTENTS (Contd)

EXXON NUCLEAR COMPANY, INC.
QUALITY ASSURANCE PROGRAM FOR
NUCLEAR FUELS DEPARTMENT
SHIPPINC CONTAINERS

## LIST OF FIGURES

# QUALITY ASSURANCE PROGRAM FOR NUCLEAR FUELS DEPARTMENT SHIPPING CONTAINERS

## 0.0 INTRODUCTION

0.1 Purpose. The purpose of this plan is to define the Exxon Nuclear Company quality assurance program for shipping containers used by the Nuclear Fuels Department that are required to be licensed per 10 CFR 71, Appendix E.

0.2 Scope

0.2.1 The scope of this program includes design, procurement, fabrication, assembly, maintenance, modification, and repair of shipping containers intended for use to ship unirradiated nuclear fuel and radioactive material.

0.2.2 This program applies to the nuclear and radiological safety-related and functional performance characteristics of shipping containers to the extent justified by the relative importance of the characteristic involved. Certain major features, such as fuel bundle container strongback design and material type will receive prime attention, whereas standard nuts, bolts and packaging materials warrant little QA/QC effort unless these items affect licensed features such as the closure system or the structural integrity of the container. 2

0.2.3 In cases where changes are being made to an already licensed container, this program shall be limited to the design, procurement, fabrication, and assembly activities associated with the change being made and not to the entire previously existing container design.

0.2.4 The use of shipping containers to store and ship fuel is outside the scope of this document and is covered under the currently approved version of XN-NF-1A. 2

0.3 Implementation

0.3.1 Implementation of this QA plan for new designs commences with the start of preliminary design.

0.3.2 Applicable portions of this QA plan shall be implemented for procurement to a design that is already licensed or maintenance and modification of existing containers.

0.4 Authority

0.4.1 10 CFR 71, Appendix E.

0.5 Supporting Documents

0.5.1 The currently approved version of Exxon Nuclear Company's Quality Assurance Program Topical Report for Nuclear Fuel Design and Fabrication, XN-NF-1A, which meets the requirements of 10 CFR 50, Appendix B. 2

0.6 Definitions

Approval: Denotes factors that impact the company internally and its external relationships have been appropriately accommodated within designated area of responsibility. (2)

Audit: An activity to determine, through investigation, the adequacy of and adherence to established procedures and instruction, and the effectiveness of implementation.

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.

Concur: The concur function signifies agreement in the individual's assigned area of responsibility including, where applicable, acceptance of the documented requirements as operable, within budget and schedule. (2)

Defective Material: A material or component which has one or more characteristics that do not comply with specified requirements.

Design Criteria: Exxon Nuclear imposed requirements combining safety, technical, material choice, quality control, and compatibility factors which serve as the basis for design, including design methods, engineering, process, environmental impact, and appropriate standards and codes.

Design Package: A compilation of a Parts List, Product and Material Specifications and Drawings. Together, they uniquely define the specific container design or modification.

Deviation: A nonconformance or departure of a characteristic or procedure from specified requirements.

Documentation: Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.

Execute: The execute function is assigned to line organization managers responsible for carrying out a specific function or task.

Guidelines: Particular provisions which are considered good practice, but which are not mandatory. The term "should" denotes a guideline; the term "shall" denotes a requirement.

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

Item: Any level of unit assembly, including subassembly, component, part, or material.

Major Change: Any modification to an existing shipping container design which sufficiently changes the safety-related aspects such that a license amendment is required.

Minor Change: Any modification other than those classified as major.

Modification: Process of changing from an approved drawing or specification.

Nonconformance: A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformances include: physical defects; test failures; incorrect or inadequate documentation; and deviation from prescribed processing, inspection, or test procedures.

Parts List: List which displays by numbers and revision all Product Specifications, Material Specifications and drawings required to define the container. The Parts List shall be the sole authoritative definition of the shipping container.

Prepare: Lead role, primary responsibility for document preparation and coordination. Must assure, where applicable, acceptance of the documented requirements as operable, within budget and schedule. (2)

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.

Quality Assurance: All those planned and systematic actions necessary to provide adequate confidence that a shipping container or component will perform satisfactorily in service.

Quality Control: The detailed and systematic inspection, testing, and documentation to ensure that a material, process, or component, is in accordance with predetermined quality and design requirements.

Repair: The approved 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 that item still may not conform to the original requirement.

Rework: The process by which a nonconforming item is made to conform to a prior specified requirement by completion, remachining, reassembling or other means.

Source Surveillance: A review, observation, or inspection for the purpose of verifying that an action has been accomplished as specified at the location of material procurement or manufacture.

Specification: A concise statement of a set of requirements to be satisfied by a product, a material, or a process indicating wherever appropriate the procedure by means of which it may be determined whether the requirements given are satisfied.

Supplier: Any organization under contract to furnish items or services to Exxon Nuclear. It includes the terms Vendor, Supplier, Contractor, and sub-tier levels of these where appropriate.

## 1.0 ORGANIZATION

The Exxon Nuclear organization applicable to shipping containers quality assurance is shown in Figure 1.1. A responsibility matrix summarizing responsibilities is shown in Figure 1.2.

General responsibilities for key individuals are contained in the currently approved version of XN-NF-1A, Part II. Additional responsibilities as they relate to shipping container activities are summarized below and are discussed in greater detail in subsequent sections of this document. (2)

1.1 President & Chief Executive Officer. The Chief Executive Officer of Exxon Nuclear is responsible for establishing the Corporate Quality Assurance Policy and ensuring that all Company operations are carried out in full compliance with that policy. This responsibility is extended to the shipping container Quality Assurance Program. (2)

1.2 Vice President and Executive In Charge, Projects. The Vice President and Executive in Charge, Projects reports to the Chief Executive Officer and has responsibility for Licensing and Quality Assurance. (2)

1.3 Manager, Corporate Quality Assurance. The Manager, Corporate Quality Assurance reports to the Vice President and Executive in Charge, Projects and is responsible for providing Quality Assurance program management for the shipping containers. He has overall responsibility for the implementation of the quality assurance related activities within the responsibility assigned to the Manager, Corporate Quality Assurance including stop work authority. In matters pertaining to Quality Assurance, he has direct lines of communication to the President & Chief Executive Officer and Vice Presidents and Executives in Charge, Fuels Manufacturing and Engineering and Technology. (2) (2)

1.4 Manager, Corporate Licensing & Compliance. The Manager, Corporate Licensing & Compliance reports to the Vice President & Executive in Charge, Projects and is responsible for conducting safety analyses and other activities required to license shipping containers.

1.5 Manager, Licensing and Compliance - Operating Facilities. The Manager, Licensing and Compliance - Operating Facilities reports to the Manager, Corporate Licensing & Compliance and is responsible for verifying that license conditions with respect to shipping containers are being complied with.

1.6 Manager, Quality Assurance - Nuclear Fuels. The Manager, Quality Assurance - Nuclear Fuels reports to the Manager, Corporate Quality Assurance and is responsible for the direct quality assurance activities related to fuels design and manufacturing including shipping containers. His duties and responsibilities for shipping containers include:

a. Preparing, interpreting, revising and administering the quality assurance program, procedures and requirements.
b. Ordering work stopped when the seriousness of a condition adverse to quality warrants such action in order to maintain the requisite quality.
c. Performing quality assurance audits of design, procurement, fabrication, inspection and testing activites and reporting deviations from established quality assurance practices and procedures.

d. Conducting audit followup and monitoring corrective actions.
e. In matters pertaining to shipping container Quality Assurance, he has direct lines of communication to the Vice Presidents and Executives in Charge, Fuels Manufacturing and Engineering and Technology. (2)

1.7 Vice President and Executive in Charge, Fuels Manufacturing. The Vice President and Executive in Charge, Fuels Manufacturing reports to the President & Chief Executive Officer. He is responsible for the Fuels Manufacturing activities, facilities and for ensuring that the Fuels Manufacturing activities are carried out in compliance with the Quality Assurance Program and procedures. As such, he is responsible for quality control, design, engineering, purchasing and maintenance activities related to shipping containers.

1.8 Manager, Manufacturing. The Manager, Manufacturing reports to the Vice President and Executive in Charge, Fuels Manufacturing. The Manager, Manufacturing is responsible for the overall management of the Exxon Nuclear fuels fabrication plants including the functions of quality control, maintenance, and document/records control. These responsibilities are extended to shipping containers. (2)

1.9 Manager, Quality Control. The Manager, Quality Control reports to the Manager, Manufacturing. He is responsible for implementing the Quality Control Program relating to vendor inspection requirements, offsite source surveillance, and required inspections as related to shipping containers.

1.10 Manager, Auxiliary Operations. The Manager, Auxiliary Operations reports to the Manager, Manufacturing and is responsible for document control and related activities for shipping containers.

1.11 Manager, Purchasing & Logistics. The Manager, Purchasing & Logistics reports to the Vice President & Executive in Charge, Fuels Manufacturing. He has overall responsibility for shipping container activities including procurement of new containers and custodial responsibility for existing shipping containers. He shall provide overall project coordination for design, funding, procurement, fabrication and testing of shipping containers. Specific responsibilities are as indicated in Figure 1.2. (2)

1.12 Manager, Logistics. The Manager, Logistics reports to the Manager, Purchasing & Logistics. He has detailed responsibility for the implementation of activities within the overall responsibilities assigned to the Manager, Purchasing & Logistics.

1.13 Vice President & Executive in Charge, Engineering and Technology. The Vice President & Executive in Charge, Engineering and Technology is a Chief Operating Officer reporting to the President & Chief Executive Officer and has authority for the day-to-day conduct of the Company within assigned areas of responsibility including nuclear fuel design, research and related engineering functions or services.

1.14 Manager, Nuclear Fuels Engineering. The Manager, Nuclear Fuels Engineering reports to the Vice President & Executive in Charge, Engineering and

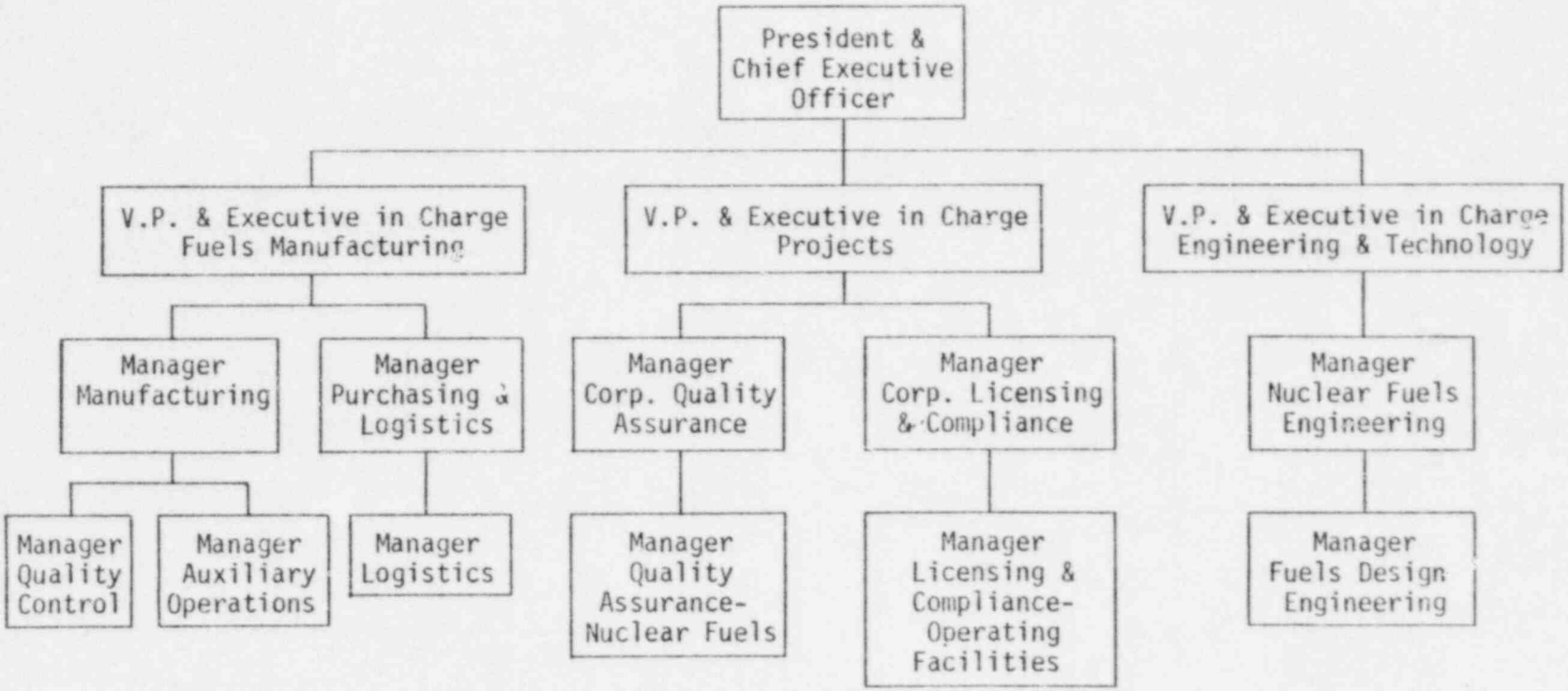
Technology. His responsibility for shipping containers includes preparation of design critera, parts lists, specifications, and drawings, and providing assistance in preparation of license documentation. Major changes to existing shipping container designs, which require license amendment, are identified with concurrence by Licensing. He is also responsible for the acceptance of the final design and for testing required as a condition for container licensing. 2

1.15 Accountability and Responsibility Matrix. The principal accountabilities, authorities and interrelationships among managers are shown in Figure 1.2, "Exxon Nuclear Accountability and Responsibility."

Failure to obtain the required signatures for the documents shown in Figure 1.2 shall prevent their use until resolution is obtained at the respective level or through higher levels of management, if need be.

FIGURE 1.1 EXXON NUCLEAR ORGANIZATION

(Related to Shipping Container Activities)




NOTE: Only organizations having QA responsibility for shipping containers are shown on the organization chart.

FIGURE 1.2 MATRIX OF ACCOUNTABILITY & RESPONSIBILITY

| A = Approve<br>C = Concur<br>P - Prepare | QA | | QC | | | DESIGN | | | | PROCUREMENT | | | MAINT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QA Program (Shipping Cont.) | QA Procedures | QC Procedures | QC Standards | Nonconformances | Parts List, Mat'l & Product Specs.[3] | Design Criteria | Final Design Review | Design Test Authorization | Vendor Qualifica. Program | Approved Vendor List | Purchase Specs. | Material Instr. (for maintenance) |
| VP & EIC, Fuels Manufacturing | C | | | | | | | | | | A | | |
| Manager, Manufacturing | | $C_1$ | A | A | | $C_1$ | | C | $C_1$ | A | | | |
| Manager, Quality Control | | | P | P | A | | | | | C | C | C | |
| Manager, Manufacturing Engineering | | | C | | | | | | | | | | |
| Manager, Purchasing & Logistics | | $C_1$ | | | $A_1$ | $C_1$ | | | $C_1$ | P | P | A | A |
| VP & EIC, Engineering & Technology | | | | | | | | | | | | | |
| Manager, Nuclear Fuels Engineering | C | $C_1$ | | | A | | A | A | | | | | |
| Manager, Fuel Design Engineering | | | | C | | A | $P_1$ | $P_1$ | A | | | C | C |
| Manager, Corporate Lic. & Comp. | | | | | $A_2$ | C | $P_1$ | | $C_2$ | | | | |
| Manager, Corporate QA | A | A | | | | | | | | | | | |
| Manager, Quality Assurance-NF | P | P | | | | | | C | | C | C | | |
| Manager reporting to manager approving document | | | | | | P | | | P | | | P | P |

Note 1: Only required for those activities or documents applicable to their area of responsibility.

Note 2: Only required for nonconformances or Design Test Authorizations affecting licensing parameters.

Note 3: If no Parts List exists, Drawings which affect licensing criteria also require this category of approvals.

## 2.0 QUALITY ASSURANCE PROGRAM

The Quality Assurance Program for shipping containers shall be implemented through the use of written procedures and instructions and the documentation of inspections, personnel and procedure qualification, tests and audits. In complying with the Quality Assurance Program requirements, procedures and instructions shall be controlled in the following areas: design, procurement, fabrication, inspection, testing, licensing, maintenance and modification.

2.1 Indoctrination and Training. Personnel performing activities significantly affecting quality shall receive Quality Assurance indoctrination and training. The Manager, Quality Assurance - Nuclear Fuels is responsible for assuring that the training is performed in a timely manner. (1)

2.2 Personnel Qualification. The specific manufacturing processes of fabrication, inspection, testing and assembly requiring performance by specially qualified personnel shall be defined in the Specification(s). Qualification shall be as per established requirements and shall be documented.

Quality Assurance lead auditors shall be qualified.

2.3 Management Review. Review of the scope, status, implementation and effectiveness of the Quality Assurance Program shall be conducted by management for the portion for which they have designated responsibilities. The reviews shall be conducted and documented at least once during a two calendar year interval. (1)

2.4 Temporary Deviations. Temporary Deviations from procedures or instructions may be approved, provided the following conditions are met:

1) The Temporary Deviations are not used for deleting license requirements and do not decrease assurance of product quality;

2) The Temporary Deviation or addition is approved by the Manager, Quality Assurance - Nuclear Fuels and the responsible manager;

3) The Temporary Deviation is documented prior to use and a description of the change is distributed to all affected individuals and to signators of the original document. Any one of the individuals who signed the original document may ask for a full review of the change; and

4) The Temporary Deviation includes the effective dates, not to exceed 30 days.

2.5 Revisions

The Manager, Quality Assurance - Nuclear Fuels shall be responsible for soliciting comments from the Nuclear Fuels Department Managers on proposed changes to this document. New or revised Quality Assurance Program requirements shall be implemented within 90 days following issue unless additional time is approved by the Manager, Quality Assurance - Nuclear Fuels.

Temporary deviations or additions to this document may be made with the approval of the Manager, Quality Assurance - Nuclear Fuels and acceptance by the Vice President and Executive in Charge, Fuels Manufacturing and the responsible manager. (2)

Revisions to quality assurance program documents shall be approved prior to implementation of the change. Major revisions to quality assurance program documents shall be approved by the same signators as the original document.

## 3.0 DESIGN CONTROL

New designs of shipping containers or major modifications to previously licensed designs shall be controlled to assure: 1

a. Design requirements are correctly translated into specifications, drawings, procedures, and instructions;
b. Appropriate quality standards are specified and included in design documents and that deviations and changes from such standards are controlled; 1
c. Proven technology is used as the basis for selection of parts, materials, and processes. In situations where this technology does not exist, special development and/or qualification tests must be prescribed for those intended services that involve nuclear safety related items; 1
d. Where applicable, design analysis, such as structural and criticality analysis is performed; 1
e. Proper design verification methods, such as design review, and qualification testing are performed; 1
f. Major changes to previously approved design documents have the same approval requirements as the original documents;
g. Identification and control of design interfaces and coordination between organizations is established and implemented; 1
h. Design documents, records and changes thereto are collected, stored, issued, and maintained in a systematic and controlled manner; and 1
i. Necessary licensing data are obtained, approved and submitted.

Design control for shipping containers shall be maintained through the use of controlled and approved Design Criteria, Parts Lists, Specifications, Drawings and Calculations to support modifications to existing licensed designs.

Shipping container design may be assigned to a Contractor rather than an Exxon Nuclear engineering group. Design control by a Contractor shall meet the requirements of this Quality Assurance Program. Contractor designs shall receive an Exxon Nuclear final design review as defined by the Quality Assurance Program as per figure 1.2.

3.1 Design Criteria. The Design Criteria shall combine mechanical, materials, inspectability, licensability, usability, and criticality requirements of the design modification to be licensed. It shall be consistent with the latest applicable Federal regulatory requirements.

3.2 Parts List. The Parts List shall display, by number and revision, the specifications and drawings required to define the container or modification in the case of an existing licensed container.

3.3 Specifications. For new container designs the Product Specification, Material and Purchase Specification described below are applicable. In the case of modifications to previously existing designs, requirements may be defined in a less formal manner; e.g., Purchase Order with appropriate inputs from QA and other involved functions. 1

Product Specifications shall provide for the control of material and fabrication to ensure meeting the design requirements. As such, they provide detailed, and measurable requirements which each component, sub-assembly and

final assembly must meet. Also included are definitions of what constitutes a sampling lot, special traceability requirements if necessary, and where performance may be affected, special shipping and handling specifications. Whenever possible, dimensional details will be contained in Design Drawings.

Material Specifications define the material requirements and supplement the Product Specifications in certain cases where relatively broad applicability and procurement action make a separate specification convenient.

Purchase Specifications are a composite of product/material specifications, drawings and Quality Assurance/Quality Control requirements, and are the specific documents delivered to a vendor for compliance and further bases for internal acceptance and audit.

The various required specification data may be combined into one document and designated as the Specification for a particular shipping container design.

3.4 Drawings. Design Drawings provide the detailed component, sub-assembly, and final assembly dimensions, configuration, physical arrangement, and fabrication details which cannot be conveniently detailed in the Product Specification and are, in that respect, supplemental to the Product Specifications. Sign-offs of the Parts List in accordance with the Accountability and Responsibility Matrix, Figure 1.2 constitutes approval of the listed drawings.

3.5 Calculations. Non-computerized calculations shall be documented and identified as to subject, date and individual performing the calculation. Inputs for these calculations shall also be documented.

Calculations shall be performed using methods which permit reconfirmation at a later date.

3.6 Design Reviews. Design reviews are critical reviews to provide assurance that design documents are correct and satisfactory. Design reviews may be conducted at the conceptual and preliminary design phases at the discretion of the Manager, Nuclear Fuels Engineering.

Before fabrication is initiated, a final design review shall be conducted and signed off as per the Accountability and Responsibility Matrix, Figure 1.2. A final design review is not required prior to fabrication of a prototype for testing, or an already licensed design.

3.7 Modifications. Modifications to shipping containers shall be authorized and documented by revising the Parts List. Modifications shall be accomplished per approved procedures. Modifications shall be classified as major or minor by Nuclear Fuels Engineering, with Licensing concurrence. Major changes require a license amendment. In the case of previously approved licensed containers where no parts list exists, the Parts List shall cover at least those parts to be modified, along with the main assembly drawings of the model container being modified.

3.8 Maintenance. Maintenance and repair of shipping containers shall not degrade or change the approved design. Replacement parts, welding requirements and non-destructive examinations shall meet specified requirements. Minor repair operations not affecting safety related characteristics may be performed without the formal documentation and QA-related activities which would otherwise be required.

## 4.0 PROCUREMENT DOCUMENT CONTROL

4.1 Content of Procurement Documents. Procurement documents for the purchase of material, products and services shall include provisions for the following, as applicable.

a. A statement of work to be performed by the supplier.
b. Technical requirements regarding specific drawings, specifications, codes, regulations, procedures or instructions that describe the items or services to be furnished.
c. Quality assurance requirements appropriate to the items or services being procured.
d. The right of purchaser, and other authorities to access to the supplier's and any subsupplier's facilities and records during the course of the contract for purposes of inspection and audit.
e. Identification of documentation required to be submitted, including quality assurance program, quality assurance procedures, quality assurance records, for the information, review or approval of the Purchaser.
f. Requirement for control and approval of supplier nonconformances.
g. Requirements for extension of applicable requirements to subtier procurements.
h. Certification from the vendor that the container, or components were fabricated to required drawings and specifications.

Purchase requisitions and purchase orders shall be retained as QA records.

4.2 Procurement Document Review. Responsible Purchasing and Logistics personnel shall prepare purchase orders for shipping containers to be purchased by Exxon Nuclear. These shall contain or reference applicable provisions outlined above in Section 4.1. The purchase orders shall be reviewed and signed by the originator's supervisor, and other appropriate managers prior to being processed. The review is made to verify that documents include appropriate provisions to assure items or services meet the specific requirements and to assure that the documents are complete and contain the applicable requirements specified in Section 4.1. Changes made in procurement documents as a result of bid evaluations or preprocurement negotiations shall receive a review of such changes and their effects, prior to contract award. Significant changes and revisions to procurement documents shall receive the same review and sign-off as the original documents as indicated in Figure 1.2. (2)

## 5.0 INSTRUCTIONS, PROCEDURES AND DRAWINGS

Applicable policies, procedures and instructions shall be used to implement the Quality Assurance Program. These include:

a) Quality Assurance Procedures

b) Quality Control Standards and Procedures

c) Quality Control Procedures

d) Procurement Control Procedures

e) Maintenance Procedures.

f) Other procedures, documents, and instructions required in Figure 1.2.

Instructions, procedures and drawings shall be prepared, reviewed and approved as per the Responsibility and Accountability Matrix, Figure 1.2.

Adherence to approved documents shall be mandatory for all personnel. Changes shall receive the same approvals as the original.

## 6.0 DOCUMENT CONTROL

The Responsibility and Accountability Matrix, Figure 1.2, defines the responsibility to prepare, concur, and approve, specific quality assurance related documents. Documents shall be numbered per the applicable Quality Assurance procedure. (2)

The organization assigned responsibility for preparing a document shall also be responsible for obtaining the required reviews and approval signatures, specifying the distribution, and initiating modification, as required.

Document control requirements shall be administered by the Supervisor-Document Control per established procedures and as defined in the currently approved version of XN-NF-1A, Exxon Nuclear Company, Inc. Quality Assurance Program Topical Report for Nuclear Fuel Design and Fabrication. (2)

## 7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

7.1 Supplier Evaluation and Selection. The selection of suppliers shall be based on evaluation of their capability to provide material, equipment or services for shipping containers and shall be in accordance with the requirements of the procurement documents. Determination of supplier capability shall involve an integrated action of the Purchasing and Logistics and Quality Assurance-Nuclear Fuels organizations, based upon the classification and complexity of the item or service being procured. Evaluation of supplier sources shall include any one or combination of the following methods prior to award of the contract or purchase order: (2)

a. Evaluating the supplier's history of providing a quality product based on analysis of supplier survey records, audit reports, or other appropriate methods;

b. Evaluating supplier's current quality records including the supplier's QA program, manual, and procedures, as appropriate; and

c. Performing pre-award source surveys at the supplier's plant to determine current capability to satisfy all procurement requirements.

7.2 Control of Supplier Performance. Exxon Nuclear shall monitor and evaluate shipping container suppliers' performance to the requirements specified in the procurement documents. Methods used shall include provisions for the following as applicable:

a. Establishing written understanding between purchaser and supplier of the provisions, and specifications of the procurement documents;

b. Evaluating the supplier's planning techniques and processes to be utilized in fulfilling procurement document requirements;

c. Controlling documents which are generated or processed during activities fulfilling procurement requirements;

d. Identifying and processing necessary change information;

e. Assuring that information exchange between purchaser and supplier is documented;

f. Requiring fabrication release prior to supplier commencing work after documentation required is approved by Quality Assurance, and Purchasing and Logistics; and (2)

g. Auditing QA program implementation of supplier during time work is in progress.

7.3 Surveillance and Source Inspection. Surveillance and source inspection may be performed at the shipping container supplier's facility by Exxon Nuclear representatives, to assure that the requirements of the purchase order are being met.

In addition, Exxon Nuclear may identify selected witness and hold-points to be witnessed by appropriate Exxon Nuclear quality control or engineering personnel where the relative importance or complexity of the item warrants Exxon Nuclear's participation.

7.4 Receiving Inspection. Purchased items are received by Purchasing and Logistics personnel who perform checks for shipping damage and for proper documentation. Receipt inspection shall be performed by Quality Control personnel for conformance to specifications and drawings in accordance with an approved Receiving Inspection Standard. Nonconformances shall be identified, tagged, segregated and controlled. Known non-conforming items shall not be shipped to ENC unless it is covered by an ENC approved Nonconformance Report. 2

## 8.0 IDENTIFICATION & CONTROL OF MATERIALS, PARTS & COMPONENTS

Procurement documents shall provide the requirements for identification and control of material and fabricated products. The specific identification and control system used by the supplier shall be described in procedures that are reviewed and approved by Exxon Nuclear as part of the suppliers' QA Program. The system used must assure that identification is maintained either on the item or on records traceable to the item throughout fabrication, and shipment. Traceability requirements shall be consistent with applicable specifications, codes and standards as referenced in the procurement documents. Those items requiring specific traceability data shall be so designated in the purchase documents.

As required by the currently approved version of XN-NF-1A, Exxon Nuclear maintains identification and control of shipping containers being used including data on modification, repair, inspection and test. 2

## 9.0 CONTROL OF SPECIAL PROCESSES

The instructions, procedures, specifications and drawings used for control of special processes shall be documented. This documentation shall include the methods used, and the results as required by applicable codes, regulations, specifications and procedures. The special processes involve structural welding and nondestructive examination such as penetrant inspection. Special processes requiring procedure and personnel qualification shall be specified in purchase specifications or material instructions for maintenance by reference to applicable industry codes and standards or by stated requirements. Suppliers' special process qualification data shall be submitted to and approved by Exxon Nuclear.

## 10.0 INSPECTION

Supplier and Exxon Nuclear inspections shall be performed using approved procedures and by personnel who are trained and qualified and independent of the activities being inspected.

Inspection results shall be documented on inspection forms or cards which become part of the QA records. The identification of the person completing the work and the date of completion shall be included on each record sheet.

Hold points which require inspection and formal release plus any special inspection requirements shall be identified in procurement documents.

Preparation and approval of Exxon Nuclear Q. C. Inspection Standards and Procedures are defined in the Matrix, Figure 1.2.

## 11.0 TEST CONTROL

Test requirements shall be defined in the Design Criteria.

Major testing such as drop tests to confirm that a design meets federal regulatory or performance requirements shall be authorized by Design Test Authorizations (DTA) approved and accepted in accordance with Figure 1.2. The Authorization should include the following as appropriate:

a) Justification;

b) Identification of material and equipment to be used;

c) Requirements or acceptance limits contained in applicable design documents, if applicable;

d) Duration of test;

e) Effect on production material or precesses including for controlled environmental condition;

f) Priority of the work;

g) Nuclear safety requirements;

h) Calibrations required;

i) Mandatory inspection or hold points, if required;

j) Assignment of responsibilities including use of appropriately trained or qualified personnel;

k) Record requirements;

l) Disposition of material and equipment; and

m) Return of work areas to original condition.

Testing required per the design criteria shall be documented and become part of the QA records.

## 12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

The organization or supplier responsible for inspecting and testing of material, parts, components, equipment, and end products shall also be responsible for proper identification and control of measuring and test equipment used to determine conformance with specified requirements of drawings and specifications. The procedures used to control measuring and test equipment shall provide for:

a. Identification of measuring and test equipment;

b. Calibration standards having valid relationships to nationally recognized standards or where no national standards exist, the basis for calibration is documented;

c. Calibration standards used are in accordance with the accuracy tolerances recommended by the manufacturer;

d. Establishment of a "frequency of calibration" schedule;

e. Maintenance of calibration records;

f. Assurance that inspection measuring and test equipment used to determine the acceptability of products is calibrated in accordance with applicable frequency schedule and per written calibration procedures;

g. Assurance that damaged or inaccurate measuring and test equipment or equipment that has exceeded calibration due date is removed from service; and

h. Assurance that proper storage and handling facilities and practices are provided for inspection measuring and test equipment.

Provisions for suppliers', control of measuring and test equipment shall be included in procurement documents.

## 13.0 HANDLING, STORAGE AND SHIPPING

Any special handling, storage and shipping requirements for suppliers shall be specified in purchase documents. The packaging, handling and shipping practices of suppliers may be subject to audit by Exxon Nuclear.

## 14.0 INSPECTION, TEST AND OPERATING STATUS

Exxon Nuclear and suppliers responsible for inspecting and testing items shall establish and implement procedures describing measures for indicating the status of tests and inspections performed upon materials, parts and components by use of tags, followers and checklists. The procedure shall provide for the identification of items which have satisfactorily passed required inspections and tests, where necessary to prevent the inadvertent by-passing of such inspections and tests. The procedures shall specifically cover control of reject or nonconforming items, control of repair, rework, and reinspection.

Supplier procedures shall be reviewed for adequacy by Exxon Nuclear as part of the overall review of the Supplier's Quality Assurance Program. In addition, Exxon Nuclear personnel shall perfc m periodic audits, source surveillance and source inspection as required to verify that these programs are being implemented and properly controlled.

## 15.0 NON-CONFORMING MATERIALS, PARTS OR COMPONENTS

Non-conforming materials, parts or components shall be controlled to prevent their further use in fabrication or assembly, pending a decision as to the disposition of the nonconforming item. The discarding of miscellaneous expendables such as common nuts and bolts that are found to be defective and which do not require specific traceability does not require documentation. (2) (2)

Non-conformances may originate during supplier fabrication, ENC receipt inspection, in-process inspection or during testing. Non-conformances shall be recorded on ENC's or the suppliers' non-conformance form. (2)

Suppliers shall be required to advise Exxon Nuclear in writing of nonconformances from procurement documents at the time nonconformances are detected and verified. All nonconformances for which the recommended disposition is "use-as-is" or "repair" shall be required to be approved by Exxon Nuclear prior to their implementation by the supplier or subsupplier. (This includes proposed repair procedures.) (2)

## 16.0 CORRECTIVE ACTION

The term "corrective action" as used herein refers to a documented commitment of specific action planned or being implemented to resolve a known and identified condition or conditions adverse to quality. The commitment shall include a date or specific period of time by which the action is expected to be completed.

Conditions adverse to quality, such as failures, malfunctions, deficiencies (including design deficiencies, audit deficiencies, and procedural deficiencies), deviations, defective material and equipment, and nonconformances shall be promptly identified and corrected. In addition, significant conditions adverse to quality, such as conditions involving suspension of activities or conditions having a major impact on the quality, shall be reported in writing to appropriate management to assure that the cause of the condition is determined and that timely and effective corrective action is taken to preclude repetition.

## 17.0 QUALITY ASSURANCE RECORDS

Sufficient records shall be prepared as work is performed to furnish documentary evidence of the quality of items and of activities affecting quality. Records shall be consistent with applicable codes, standards, specifications and contracts, and shall be adequate for use in management of the program. The records shall be identifiable and traceable to end items and retrievable. Typical quality asssurance records include:

a. Design Criteria

b. Parts List

c. Specification(s)

d. Drawings

e. Supplier Certifications and test data

f. Receiving inspection records

g. Test data sheets

h. Audit reports

i. Nonconforming Material Reports (2)

j. Fabrication records including rework, repair and reinspection

k. Quality Control Standards and Procedures

l. License documentation

m. Design Review reports

n. Unpriced Purchase Orders.

Records shall be stored in Central files. Satellite files may be used for working records. Record retention times shall be based on established procedures and shall be consistent with licensing commitments.

## 18.0 AUDITS

Planned quality assurance internal and supplier audits shall be performed by personnel who are appropriately trained and have no direct responsibilities in the areas being audited. The audits shall be performed using written procedures or checklists. The audits shall determine degree of conformance to approved procedures and quality assurance documents and shall provide objective evidence to evaluate the effectiveness of the Quality Assurance Program. The basic elements include: Planning and performance of audits; reporting of results to management, including recommendations for corrective action; and followup to assure achievement and effectiveness of corrective actions. Uncorrected deficiencies shall be carried as open items until corrected.

Audit frequencies are based on the status and safety importance of the activities performed and are adjusted based on results of previous audits and known problem areas.

Copies of audit reports shall be provided to appropriate Exxon Nuclear management who shall initiate necessary corrective action. Audit reports and related corrective action shall be maintained as quality assurance records.

EXXON NUCLEAR COMPANY, INC.
QUALITY ASSURANCE PROGRAM FOR
NUCLEAR FUELS DEPARTMENT
SHIPPING CONTAINERS

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