QUALITY ASSUPANCE MANUAL

NUCLEAR ENGINEERING COMPANY, INC.

P. O. BOX 7246

LOUISVILLE, KENTUCKY 40207

NUCLEAR ENGINEERING COMPANY, INC.

QUALITY ASSURANCE MANUAL

INDEX

1742 046

Approved: _____

Vice President

CONTROLLED: _____ UNCONTROLLED: _____ Copy No: _____

RECORD OF REVISION - QUALITY ASSURANCE MANUAL

Date	Section Title	Section No.	Pages	Rev. No.	Approvals		
					Chief Engineer	Vice President	Remarks
10/5/79	General	01-100	a-f	1			
10/5/79	Quality Ass. System (less QA Manual)	01-101 - 01-110		1			
12/13/79	General	01-100	a-h	2			
12/13/79	Procurement Control	01-104	1-4	2			
12/13/79	Nonconformance and Corrective Action	01-108	1-4	2			

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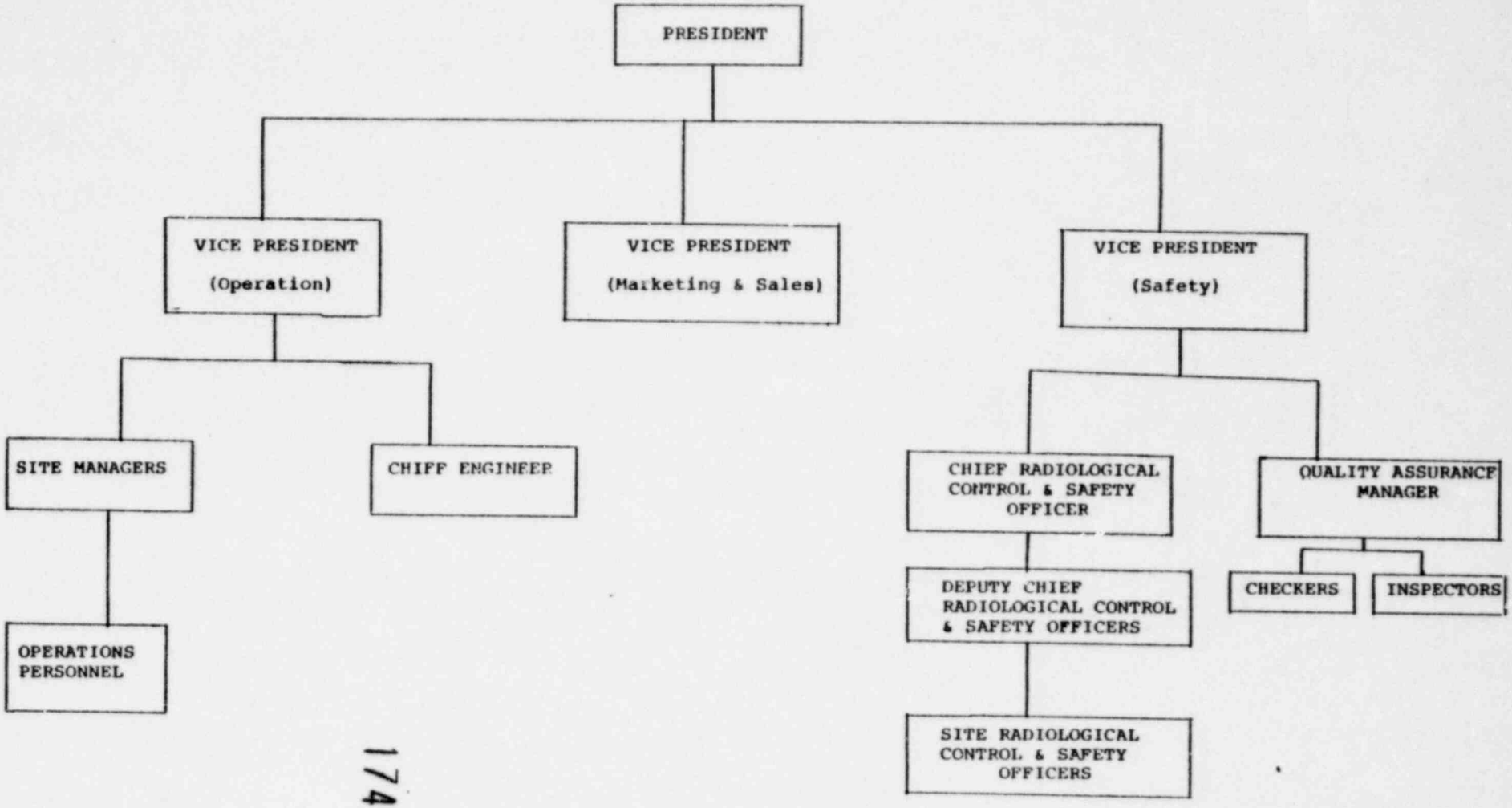
STATEMENT OF POLICY

It is the policy of Nuclear Engineering Company, Inc. to provide services and products of superior quality. This Quality Assurance Manual is designed to provide that systems, procedures, and controls are in effect and implemented to satisfy applicable codes, specifications, and requirements.

The Vice President (Safety) is responsible for establishing NECO quality related policy, and for the implementation and administration of this QA Manual through the Quality Assurance Section and the Chief Engineer Active participation of all other departments is mandatory. All disputes between QA and other departments will be resolved by the Vice President (Safety).

The successful operation of this program requires complete communication and full cooperation of all personnel.

Thomas S. Baer - Vice President
(Safety)


PRESIDENT
VICE PRESIDENT (Operation)
VICE PRESIDENT (Marketing & Sales)
VICE PRESIDENT (Safety)
SITE MANAGERS
CHIEF ENGINEER
OPERATIONS PERSONNEL
CHIEF RADIOLOGICAL CONTROL & SAFETY OFFICER
QUALITY ASSURANCE MANAGER
DEPUTY CHIEF RADIOLOGICAL CONTROL & SAFETY OFFICERS
CHECKERS
INSPECTORS
SITE RADIOLOGICAL CONTROL & SAFETY OFFICERS

QUALITY ASSURANCE POSITIONS

VICE PRESIDENT (SAFETY) - The Vice President (Safety) shall be designated by the President as that individual responsible for the implementation of the safety program and quality assurance program within NECO. He shall be the ultimate authority in matters of safety and quality both within NECO and in the shipments of other companies to NECO. The Vice President (Safety) shall be an experienced professional in the application and administration of safety and quality assurance program commensurate to the potential problems. A Bachelor's Degree, or its equivalent, in a science or engineering subject and at least five years of experience in applied nuclear science or health physics are the qualifications for the position of Vice President (Safety).

CHIEF RADIOLOGICAL CONTROL AND SAFETY OFFICER - The CRC&SO shall be designated by the Vice President (Safety). He shall be qualified as required by the various licenses held by NECO. The Chief Radiological Control and Safety Officer is responsible for implementing the Company's Radiological Control and Safety Program and directing the formal audit program to maintain occupational radiation exposures to as low as reasonably achievable. A Bachelor's Degree, or its equivalent, in a science or engineering subject and at least five years of experience in applied nuclear science or health physics are the qualifications for the position of Chief Radiological Control and Safety Officer.

DEPUTY CHIEF RADIOLOGICAL CONTROL AND SAFETY OFFICER - The Deputy Chief Radiological Control and Safety Officer is responsible to the Chief Radiological Control and Safety Officer. The DCRC&SO will perform the duties usually assigned to the Chief Radiological Control and Safety Officer when directed to do so by the President or the Chief Radiological Control and Safety Officer, or in the absence or inability of the Chief Radiological Control and Safety Officer to perform the duties. A Bachelor's Degree, or its equivalent, in a science or engineering subject and at least four years of experience in applied nuclear science or health physics are the qualifications for the position of Deputy Chief Radiological Control and Safety Officer.

QUALITY ASSURANCE MANAGER - The Quality Assurance Manager shall be designated by the Vice President (Safety) as that individual primarily responsible for the quality of workmanship and maintenance of quality of the equipments for which this Manual applies. He shall either be qualified to perform all required tests and inspections or to obtain qualified individuals to perform required tests and inspections. The position of Quality Assurance Manager may be held by the Chief Radiological Control and Safety Officer, the Deputy Chief Radiological Control and Safety Officer, or another qualified individual.

SITE RADIOLOGICAL CONTROL AND SAFETY OFFICERS - The Site Radiological Control and Safety Officer will, acting as the Chief Radiological Control and Safety Officer's representative, be representative, be responsible for the specific implementation of the NECO Radio-

SITE RADIOLOGICAL CONTROL AND SAFETY OFFICERS (cont'd)

logical Control and Safety Program for burial site operations on a daily basis at the sites. The Site Radiological Control and Safety Officer must have at least an Associate Degree or equivalent in science or engineering technology and have at least three years of practical experience.

INSPECTORS - Inspection operations at NECO shall be performed by personnel independent from the individuals being inspected and shall be qualified in accordance with applicable codes, standards, and company training programs. Records of all such qualifications shall be maintained current. The position of Inspector may be held by the Site Radiological Control and Safety Officer.

CHECKERS - Design verification on individual drawings, draft sketches, and documents are confirmed by Checkers other than the original designer or his immediate supervisor, who assure detail drafting practices were met, numbers and dimensions are correct and other technical details are acceptable. The qualifications of the Checker must be at least the equivalent of those of the preparer of the documents.

CHIEF ENGINEER - The Chief Engineer shall be designated by the Vice President (Operations) as that engineer within the Operations Department responsible for the design, procurement and maintenance of the equipment for which this QA Manual applies. The Chief Engineer shall be responsible for approval, maintenance and distribution of procedures/specifications and shall establish provisions which delineated the sequence of actions to be accomplished in the review, approval and control of procedures, specifications, drawings and instructions. He shall have at least a Bachelor's Degree in engineering and four years of practical experience.

INTRODUCTION

Nuclear Engineering Company, Inc. is a service company where quality assurance is maintained through direct management and control. The basic management philosophy at NECO is that nothing shall be allowed to compromise product quality or compliance with required specifications, procedures, and drawings. The quality of NECO's work is controlled and assured by the Quality Assurance Program. The Quality Assurance Manual (QA Manual) outlines the program and is further defined by supplemental procedures.

The purpose of the QA Manual is to provide a working document for all departments at all facilities describing responsibilities, procedures, systems, and controls provided by NECO to meet the quality assurance requirements.

In addition, it is the intent of the program to meet the relevant requirements of 10 CFR 71, App. E as well as ensure that suppliers meet the requirements of 10 CFR 71, App. E, ASME Section III, NA-4000; 10 CFR 50 App. B and ANSI N45.2 as applicable.

It is the responsibility of the manager of each department involved with the product line to follow the requirements of this QA Manual and to inform and train the personnel in the department in the uses of these procedures and systems, and to review the work of the department to assure compliance with all requirements.

The activities described in this program are performed with specified equipment under suitable environmental conditions and prerequisites satisfied prior to inspections and tests as applicable.

The program specifically applies to the transportation packages owned or rented by NECO for which NRC approval certificates have been issued and for any other equipment designated by the Vice President (Safety).

In particular, this program applies to the transportation packages identified in Certificates of Compliance 6400, 6144, 6272, 6058 and 6679, owned by NECO.

When NECO purchases equipment which is designated as equipment to be controlled by the Quality Assurance program and the design, fabrication or testing of the equipment is to be performed by approved vendors, a detailed inspection plan will be prepared at the direction of the Quality Assurance Manager. The supplier shall be inspected to ensure compliance with, or equivalency to, Sections 01-105 through 01-108 of this Manual.

QUALITY ASSURANCE PROGRAM MATRIX

Appendix E Criterion	Program Requirement	NECO Quality Assurance Program Procedure No. Which Applies	Section/ Paragraph
II	Q. A. Program	NECO 01-100	Pg. f
	Q. A. Position	NECO 01-100	Pg. e
I	Organization	NECO 01-100	Pg. d
III	Design Control	NECO 01-102	Para. 5.0
IV	Procurement Document Control	NECO 01-104	Para. 3.0
V	Instructions, Procedures and Drawings	NECO 01-103 NECO 01-102	
VI	Document Control	NECO 01-103 NECO 01-102	Para. 5.0
VII	Control of Purchased Material, Equipment and Services	NECO 01-104	
VIII	Identification & Control of Material, Parts and Components	NECO 01-105	Para. 2.0, 3.0, 4.0
IX	Control of Special Processes	NECO 01-105	Para. 6.0
X	Inspection	NECO 01-106	Para. 2.0
XI	Test Control	NECO 01-106	Para. 4.0
XII	Control of Measuring and Test Equipment	NECO 01-107	
XIII	Handling, Storage and Shipping	NECO 01-105	Para. 5.0
XIV	Inspection, Test and Operating Status	NECO 01-106	
XV	Nonconforming Items	NECO 01-108	Para. 1.0-6.0
XVI	Correcting Action	NECO 01-108	Para. 7.0
XVII	Q. A. Records	NECO 01-109	
XVIII	Audits	NECO 01-110	

QUALITY ASSURANCE MANUAL

1.0 PURPOSE

1.1 It is the purpose of this section to define the content and the responsibility for the preparation and control of the QA Manual.

2.0 CONTENT

2.1 This QA Manual shall constitute a written description of the Quality Assurance Program maintained by NECO for producing those items referenced in the Introduction. The QA Manual shall contain sufficient detail and exhibits to be a working document for all departments.

3.0 RESPONSIBILITY

3.1 The Quality Assurance Manager (QAM) shall be responsible for preparation and maintenance of this QA Manual and for review and approval prior to submission for Management approval.

4.0 DISTRIBUTION

4.1 Numbered Controlled copies of the QA Manual shall be distributed to all Management and Supervisory personnel who are involved in its implementation and other authorized personnel approved by Management.

4.2 Uncontrolled copies may be distributed to other persons only upon approval of the Vice President (Safety). Such copies will not be updated.

5.0 REVISIONS

5.1 The QA Manual will be revised when significant changes occur in the quality system such as code requirements.

5.2 The contents of the QA Manual shall be reviewed annually, or more frequently if required for possible updating.

5.3 Changes shall be reviewed and approved by the Vice President (Safety) and the Chief Engineer (CE).

6.0 RECORDS

6.1 The QAM or a designee shall maintain a file of the individual to whom each controlled copy is furnished. The record shall include: name, copy number, revision number and record of revisions issued. A card file shall also be maintained for the distribution of uncontrolled copies.

6.1.1 A record of Revision page shall be prepared for each issue of a revision.

6.2 Issuance of addendas shall be made and recorded as are revisions as previously described.

ORDER ANALYSIS AND DESIGN CONTROL

1.0 PURPOSE

1.1 The purpose of this section is to establish the responsiblilty of Radiological Control and Safety, Quality Assurance and the Engineering departments to translate customer order, specifications, codes and other referenced documents into requirements for materials, processing, testing, inspection, work orders and documentation before the start of formal production.

2.0 CUSTOMER PURCHASE ORDER

2.1 The customer issues inquiries or bids which generates a proposal from NECO. A firm customer order are forwarded as follows:

2.1.1 NECO Customer Orders for services shall be received by Sales. The order and referenced documents (if applicable) are forwarded to Operations and Radiological Control and Safety.

3.0 ORDER ANALYSIS

3.1 The customer order and attachments shall include the information required to process the order.

4.0 ORDER ANALYSIS REVIEW

4.1 Order Review Conference

4.1.1 A Pre-Job Conference may be held to review the contractual requirements in detail, obtain recommendations and define problem areas.

5.0 DESIGN CONTROL

5.1 Designs are developed to meet internal requirements and to meet customer specifications on customer design and to build items.

5.1.1 Designs are documented on drawings and specifications which become either part of NECO's standard design or part of a project design file.

5.1.2 Quality standards are specified in design documents.

5.2 Design verification on individual drawings, draft sketches, and documents are confirmed by checkers other than the original designer or his immediate supervision, who assure detail drafting practices were met, numbers and dimensions are correct and other technical details are acceptable. Engineering verifies these documents to assure they correctly reflect the approved design. Customer approvals are also obtained as required by contract on drawings, calculations and specifications. If a test program is used to verify the adequacy of a design, a qualification test of a prototype unit under design conditions shall be used.

5.3 Design activities shall be reviewed and approved by Quality Control to ensure product quality requirements are correct.

5.4 Approved drawings and specifications are released by Engineering for subsequent use in procurement and fabrication after customer approval if required.

5.5 If design changes and revisions are required or deviations from specified quality standards are requested or discovered, they go through the same cycles as the original and require the same approvals. When the change has been approved, it is released to the same groups that received the original issue.

5.6 Positions, groups or individuals responsible for design, review and verification activities and their authority and responsibility are identified and controlled by written procedures.

DOCUMENT CONTROL

1.0 PURPOSE

1.1 To define responsibility and control for preparation, distribution and control of records of the following documents:

Customer orders, drawings and specifications
Drawings and sketches
Specifications and procedures

2.0 EFFECTIVE DOCUMENTS

A master list or equivalent shall be maintained to identify the current revision number of effective instructions, procedures, specifications, drawings, and procurement documents.

3.0 CUSTOMER DOCUMENTS

3.1 Customer furnished drawings and specifications will be received, reviewed and used according to Section NECO 01-102.

3.2 Marketing and Sales shall be responsible for maintenance of original and changes to the Customer Purchase Order and distribution of the Customer Order and changes to appropriate personnel.

3.3 Drawings shall be retained in Engineering and/or other files as appropriate. Customer specifications and revisions shall be distributed by Engineering - one current, permanent copy is to be placed in the Engineering File.

3.4 A record shall be kept by Engineering of the distribution of customer furnished documents. In the event of a change, Engineering shall record to whom the revised copies are to be furnished and shall be responsible for determining that the obsolete copy in the file is marked obsolete for use on the order and dispositioned accordingly.

4.0 PROCEDURES/SPECIFICATIONS/INSTRUCTIONS/DRAWINGS

4.1 Procedures written for processing special orders, preparation of production documents, control of special processes, plant operating systems or specifications are included in the systm.

4.2 The Chief Engineer shall be responsible for approval, maintenance and distribution of procedures/specifications.

4.3 The Chief Engineer shall establish provisions which delineated the sequence of actions to be accomplished in the review, approval and control of procedures, specifications, drawings and instructions.

5.0 CHANGE CONTROLS

5.1 When a change inquiry is requested, Engineering shall immediately determine the status of the project. If the change can be made, Engineering shall have Planning place a Hold notice on the material pending necessary revisions. If the change cannot be made, the appropriate parties shall be notified of the project status and that the change cannot be made.

5.2 Upon receipt of the written change, Engineering (and QA, if applicable) shall review and advise the appropriate parties if the change can or cannot be accomplished.

5.3 Changes initiated internally may be generated by the department and involve both company and customer approval.

5.4 All required approvals must be obtained and change documents issued prior to the implementation of any change.

6.0 PROCUREMENT DOCUMENTS

6.1 See NECO 01-104, paragraph 3.0 for control of procurement documents.

7.0 FABRICATION PROCESS SETS

7.1 See NECO 01-105, paragraph 2.0 for Control of Shop orders.

PROCUREMENT CONTROL

1.0 PURPOSE

To describe the systems and define responsibilities for approving vendor sources, purchasing materials and services, receiving, material identifications, inspection and verification of certified mill test reports and release for shop operations.

2.0 APPROVED VENDORS LIST (AVL)

2.1 Radiological Control and Safety shall be responsible for approval, maintenance, and distribution of the Approved Vendors List for the service facilities. The AVL shall indicate those Vendors approved to furnish material or services to special code and customer requirements.

2.2 The AVL shall be prepared following evaluations of supplies which are based on one or more of the following:

1. The supplier's capability to comply with the elements of Appendix E to 10 CFR 71 that are applicable to the type of material, equipment or service being procured.

2. A review of previous records and performance of suppliers who have provided similar articles of the type being procured.

3. A survey of the supplier's facilities and QA program to determine his capability to supply a product which meets the design, manufacturing and quality requirements.

2.3 Supplier evaluations are documented and filed.

2.4 Surveillance, if required, of suppliers during fabrication, inspection, testing and shipment of materials, equipment and components is planned and performed in accordance with written procedures to assure conformance to purchase order requirements.

3.0 PURCHASING

3.1 Purchase Orders (Exhibit NECO 104-1) shall be prepared by the Purchasing Department.

3.1.1 Purchasing shall select sources for materials and services from the AVL or other Vendors who are approved by Radiological Control and Safety, subject to a review.

3.1.2 Prior to issuing to the vendor, all Purchase Orders which contain procedures or design specifications shall be reviewed and initialed by Radiological Control and Safety or the Chief Engineer for order compliance and approval.

3.1.2.1 Approved copies of the Purchase Order are distributed to appropriate personnel.

3.1.2.2 When required, the supplier will furnish record that identifies the material or equipment and specific procurement requirements. The supplier will also identify any procurement requirements that have not been complied with together a description of those nonconformances dispositioned as "accept as is" or "repair".

3.2 Changes to Purchase Orders shall receive the same approval and distribution as the original Purchase Order.

3.3 PURCHASE ORDER REQUIREMENTS

3.3.1 When applicable, procurement documents will identify the applicable portions of copies, regulations and standards which must be complied with and described in the supplier's QA Program.

3.3.2 The procurement documents shall either contain or reference the design basis technical requirements and shall identify the documentation to be prepared, maintained and submitted to NECO for review and approval is applicable. Additionally, the records to be retained, controlled, and maintained by the supplier and those to be delivered to NECO prior to use or installation of the hardware shall be specified.

3.3.3 The purchase document shall state NECO right of access to the supplier's facilities and records for source inspection and audit.

4.0 RECEIVING AND RECEIVING INSPECTION

4.1 Incoming material received at NECO facilities shall be checked for damage, quality, conformance and item identification in accordance with the specific Purchase Order and receiving documentation.

4.2 Required test reports, certificates of conformance and documentation shall be verified as being received and accurate.

4.3 Upon completion of Receiving Inspection including documentation, if the applicable part is judged acceptable in accordance with predetemined inspection instructions, the item is marked "ACCEPTED" with the

proper Order number included as necessary. If not acceptable, the item is marked "HOLD" or "REJECTED" by identification or segregation.

4.4 Upon final disposition, the receiving copy is stamped with the "Material Receival Inspection" stamp.

4.5 Material accepted by Inspection shll be released as appropriate.

SHIPPER: ____________________

ADDRESS: ____________________

PHONE: ____________________

SHIPMENT NO.: ____________________

DATE OF SHIPMENT: ____________________

CARRIER: ____________________

RADIOACTIVE WASTE SHIPMENT & DISPOSAL FORM

NUCLEAR ENGINEERING COMPANY, INC.

EXECUTIVE OFFICE: (502) 426-7160

P.O. BOX 7246 • LOUISVILLE, KENTUCKY 40207

Illinois Office: (815) 454-2624

California Office: (415) 932-4800

NO. 7940

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☐ P.O. Box 578
Beatty, NV 89003
(702) 553-2203

☐ P.O. Box 638
Richland, WA 99352
(509) 377-2411

☐ ____________________

POOR ORIGINAL

TOTAL QUANTITY	PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172.101)	TOTAL WEIGHT IN POUNDS
	Radioactive Device, N.O.S. – Radioactive Material	
	Radioactive Material, Fissile, N.O.S. – Radioactive Material	
	Radioactive Material, Low Specific Activity, N.O.S. – Radioactive Material	
	Radioactive Material, N.O.S. – Radioactive Material	
	Radioactive Material, Limited Quantity, N.O.S. – Radioactive Material	
	Radioactive Material, Special Form, N.O.S. – Radioactive Material	

(1) Item No.	(2) Cubic Feet	(3) Weight (Pounds)	(4) Physical Form	(5) Chemical Form	(6) Radionuclide	(7) Special Nuclear Material (Grams)	(8) Source Material (Kilograms)	(9) Activity ☐ Curies ☐ Millicuries	(10) Radiation Levels MR/HR Surface	(10) Radiation Levels MR/HR 3 Feet	(11) Transport Group	(12) Transport Index	(13) Label	(14) Fissile Class	(15) Type of Container
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
													Radioactive –		
TOTALS															

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

____________________ Authorized Signature ____________________ Title

THIS IS TO CERTIFY THAT ARTICLES ARE IN COMPLIANCE WITH ALL REGULATIONS APPLICABLE AT THE DESIGNATED DISPOSAL SITE.

____________________ Authorized Signature ____________________ Title

NECO COPY

7942063

PROCESS CONTROL

1.0 PURPOSE

To describe documents and methods used to implement planning and controls throughout the fabrication and assembly cycle and provide records for final documentation.

2.0 MANUFACTURING DOCUMENTS

Fabrication Process Sets shall be prepared and issued by production using information developed, furnished and approved by the Technical departments. The orders are identified by a Work Order number applied by Sales to a Project number. The Fabrication Process Sets (FPS) shall include all relevant basic requirements derived from the order analysis and include drawings, specifications and procedures. The applicability of the various documents and supplemental instructions are given on the FPS document and reference all inspection, testing and special requirements by procedure numbers or instructions.

2.1 IDENTIFICATION FOR PROCESS CONTROL

Material or parts shall be identified throughout assembly by part number, or by assigned item numbers. To assure traceability, part marking is preferred but control by travelers FPS on items being fabricated is also used. When material or part identification is placed directly on the material or parts, it shall be done in such a way as to not affect the fit, function or quality of the part or material being identified.

2.2 DISTRIBUTION OF MANUFACTURING DOCUMENTS

Fabrication Process Sets are distributed by Production.

3.0 PROCESS CONTROL

3.1 Correct identification of materials, parts and component are verified and documented prior to release for fabrication, assembling and installation.

3.2 The Work Order may travel with the part to each planned operation, or a copy be available at the work station. Upon acceptance of the Product at final inspection and subsequent release, the FPS shall be retained for documentation by QA.

3.3 IN-PROCESS INSPECTION

3.3.1 Inspection shall monitor operations and perform product inspections and tests in accordance with the sequence of events and document the results on the FPS or on separate reports.

3.3.2 The In-Process Inspector shall inspect completed units of work and review production records for completeness.

3.3.3 In the case of a nonconformance, the Inspector shall apply a Hold tag and prepare and submit a Nonconformance Report to the Quality Assurance Manager to initiate corrective action. For quality related nonconformances, only the Inspector has the authority to remove the Hold tag and release the item.

4.0 PRODUCT MARKING

4.1 Any special marking shall be applied according to the specified requirements and shall be such that the marking does not affect the fit, function or quality of the item being identified.

4.2 Finished assemblies shall be marked with a nameplate prior to final inspection. The identification number is applied as part of the final marking and the Project File shall include records of, or be traceable to, any other special marking.

4.3 Final marking may also contain specific serial numbers as specified by customer contracts.

5.0 HANDLING-STORAGE-SHIPMENT

5.1 Finished products shall be protected to avoid damage during subsequent handling. Special products shall be handled in containers that provide protection during handling and storage.

5.2 Items subject to deterioration shall be stored in enclosed storage areas.

5.3 Special products are cleaned as required by contracts and subsequent preservation processes, (paint, etc.) following approved procedures.

5.4 Products are packaged for shipment to meet the standards for Common Carrier Acceptance. Any special shipping instructions specified in a contract are followed. Large complex assemblies shall be properly packaged to provide for lifting with cranes or fork trucks when specified by the customer.

5.5 All conditions of the NRC package approval and the U. S. Department of Transportation shipping requirements shall be satisfied for all packages or shipments where such NRC package approval and U. S. Department of Transportation shipping requirements are applicable.

5.6 All necessary shipping papers shall be prepared as required. Movement of the package including departure and arrival time and destination shall be established and monitored to a degree consistent with safe transportation of the package.

6.0 CONTROL OF SPECIAL PROCESSES

6.1 Shop operations involving special processes such as hydrostatic testing, foaming, and other similar processes are performed to written specifications and procedures. Conformance to specifications is verified by QA whenever the end result of the process cannot be inspected to determine acceptability. All processes are performed to comply with applicable contract requirements and the QA Manual.

6.2 Subcontractor processes such as welding and Non-Destructive Examination (NDE) are detailed on Purchase Orders to impose required procedure development, approval and use. Submitted procedures are reviewed and accepted by QA personnel in the same manner as if they were internal documents. If qualification of procedures or personnel is stipulated by the contract, specification or code, these tests are performed and results approved if they comply with the requirements.

6.3 Procedures, equipment and personnel connected with special processes are qualified in accordance with applicable codes, standards, and specifications. Records of qualification of procedures, equipment and personnel associated with special processes shall be maintained current.

INSPECTION AND TEST CONTROL

1.0 PURPOSE

To describe the inspection, release for shipment, and test control program used by NECO.

2.0 INSPECTION

2.1 INSPECTION INSTRUCTIONS

2.1.1 Instructions - Inspection shall be performed as prescribed by instructions that provide criteria for acceptance or rejection.

2.1.2 Drawings - Applicable drawings are provided to each inspection station.

2.1.3 Procedures - Inspection procedures are prepared when required on special products to provide detailed inspection instructions.

2.2 INSPECTION OPERATIONS

2.2.1 Inspection operations at NECO shall be performed by personnel independent from the individuals being inspected and shall be qualified in accordance with applicable codes, standards, and company training programs. Records of all such qualifications shall be maintained current.

2.2.2 Receiving Inspection shall be performed as specified in Procurement Control Section NECO 01-104.

2.2.3 In-process inspections may be performed at designated points in assembly process. Inspection and shop operation steps indicate completion by signoffs and verify conformance to the applicable drawings, procedures and instructions. Inspection checks vary from station to station in order to meet the specific needs of each area.

2.2.4 If hold points are specified, work progresses up to the hold point, but not beyond. Radiological Control & Safety allows the work to continue after approval is obtained. If the hold point is waived, Radiological Control & Safety will obtain the necessary confirmation for the job records.

2.2.5 Final Inspection is performed and signed off by Inspection. After final inspection, items are released to the ship areas or to hold areas for final review and inspection. Separate Final Inspection Reports (Exhibit 106-1) and Hydrostatic Test Reports (Exhibit 106-2) are generated by Radiological Control & Safety if applicable.

2.2.6 Acceptance inspection is based on 100% inspection of conceptual established critical characteristics. Should statistical sampling be required or found to be applicable, such sampling will be conducted in accordance with accepted sampling plans and techniques described in such specifications as MIL-STD 105D.

2.2.7 Modification, repairs, and replacements shall be inspected in accordance with the original design and inspection requirements or acceptable alternatives.

3.0 TEST CONTROL

3.1 Pressure retaining items are pressure tested to limits specified by the engineering documentation following established test procedures. Test requirements are initiated by Engineering, performed by technicians and witnessed by Inspection. Test results are documented by Operations, accepted by Inspection, with Engineering, Radiological Control and Safety reviewing the test report.

3.2 Mechanical devices may be given a functional test as part of the final inspection procedure. The device will be checked in either its normal operating mode or in a manner that subjects the items to conditions that are equivalent to or more severe than those encountered in actual service.

3.3 When design proof or qualification testing is required, it is conducted by outside testing agencies to written procedures. Written reports are recorded to document the test results and kept on file for customer review.

3.4 Any device or part that fails to perform satisfactorily in the opinion of the QA Manager or Inspector will be rejected.

3.5 When modifications, repairs and replacements of equipment or components have been made, the modified, repaired or replaced components shall be tested in accordance with the original design and testing requirements or acceptable alternatives.

4.0 RELEASE FOR SHIPMENT

4.1 Assembled special products or assemblies with requirements for NECO certification and special reporting are placed in the shipping area after final acceptance. Radiological Control & Safety reviews the order requirements, special tests, examinations, and reports required by the order, prepares certifications and documents as required and releases the Shipper for shipment of the product.

NUCLEAR ENGINEERING COMPANY, INC.

FINAL INSPECTION REPORT

DATE:_____

ITEM:_____

PER DRAWING:_____

DEVIATIONS FROM DRAWING:_____

INSPECTED FOR:_____

TEST DESCRIPTION:_____

_____
(Inspector)

Nuclear Engineering Company, Inc.
9200 SHELBYVILLE ROAD, SUITE 526 - P.O. BOX 7246
LOUISVILLE, KENTUCKY 40207 PHONE (502) 426-7160

HYDROSTATIC/HALOGEN/PNEUMATIC TEST REPORT

DATE:_____ ITEM SERIAL #_____

WORKING PRESSURE OF SYSTEM:_____

HYDROSTATIC TEST PRESSURE:_____

HYDROSTATIC TEST DURATION:_____

HYDROSTATIC TEST PROCEDURE:_____

OR HALOGEN/AIR TEST PROCEDURE:_____

REMARKS:_____

GAUGE NO:_____

CALIBRATION DUE:_____ SIGNED:_____

WITNESS:_____

APPROVED:_____

CALIBRATION OF MEASURING AND TEST EQUIPMENT

1.0 SCOPE

This procedure describes the methods used to assure that tools, gauges, instruments, and other measuring and testing devices are controlled, calibrated and adjusted at specified periods to maintain accuracy within necessary limits.

2.0 IDENTIFICATION

Each device or gauge shall be assigned a serial number, labeled and assigned a periodic calibration schedule.

3.0 CALIBRATION

3.1 All calibration of gauges and instruments shall be performed against standards traceable to the National Standards where such standards exist.

3.2 Applicable equipment may include pressure gauges, electronic devices, precision micrometers and calipers.

3.3 Records are kept of the calibration date, due date, tool name and number, calibration frequency, results and calibration certificates.

3.4 A mandatory recall system for devices will be followed.

3.5 An inspection tool checkout and accountability system will prevail and be maintained.

4.0 DISCREPANT EQUIPMENT

4.1 NECO personnel perform simple interim calibration checks such as zero scale and comparison between two similar gauges. When any device is found to be out of calibration, it shall be recorded on a Nonconformance Report and corrective action is required. Products previously checked (since the last valid calibration) with defective equipment shall be held until all applicable requirements have been met.

4.2 Equipment that is defective shall be tagged with a "REJECTED" label pending repair, re-calibration or disposal.

5.0 CONTROL OF SUBCONTRACTOR CALIBRATION

Radiological Control & Safety at NECO shall be responsible for assuring that all vendor sources who perform calibration are capable and use standards of proper accuracies to accomplish the required calibration. Certifications shall be furnished for all calibration performed by contract sources.

6.0 PERSONALLY OWNED TOOLS

All devices used by Quality Control for final acceptance shall be the property of NECO. Personally owned tools shall not be used for final inspection.

NONCONFORMANCE AND CORRECTIVE ACTION

1.0 PURPOSE

1.1 The purpose of the section is to define responsibility for evaluation and disposition of nonconforming items and corrective action.

2.0 DEFINITION

2.1 A nonconformity is a condition in an item that is not according to requirements of the order or applicable code.

3.0 RESPONSIBILITY

3.1 It is the responsibility of Operations, Production, Safety and Quality Assurance department personnel to report any nonconforming item.

3.2 When a discrepancy is detected, the Inspector shall advise the workman and Supervisor to stop work on the item. The Inspector and Supervisor shall investigate to determine whether the discrepancy is or is not a nonconformance as defined in Paragraph 2.1.

3.3 Nonconforming items are identified with a "Q.C. HOLD" tag and segregated.

3.4 If the item can be resolved by rework operations, a revised FPS shall be issued listing the sequence of operations that are to be performed with Inspection as the last operation.

3.5 Nonconformances that can be reworked/repaired to the original specified condition are recorded on Nonconformance Reports (Exhibit 108-1) initiated by the Inspector.

3.6 The NCR reports are for recommendation, resolution, and disposition action development. They are based on code requirements, contractual constraints and other pertinent factors.

4.0 ACCEPTANCE AND DISPOSITION OF A NONCONFORMANCE

4.1 The CE shall be responsible for obtaining agreement of relevant Operation, Engineering, Sales personnel, and when required, from the customer prior to the approval of the disposition. The CE shall disapprove any unacceptable proposed disposition.

4.2 If the approved disposition is Accepted As Is or Rework, upon completion of the operations and acceptance of the item, the NCR report will be completed per requirements.

4.2.1 After rework or repair operations are carried out by Shop/Vendor personnel, acceptance inspection is performed, the Hold tag is removed and the item is allowed to continue normal processing. The Hold tag shall only be removed by Inspection.

5.0 REJECTION OF A NONCONFORMANCE

5.1 When the nonconformance is rejected by NECO, Safety shall mark the item tag Scrap, mutilate items that could be misused and send to scrap area. Acceptable component parts may be removed from an assembly.

6.0 NONCONFORMING PURCHASED MATERIAL (SEE NECO 01-104, PARA. 4.0)

6.1 Items for which correct and complete hardware or software quality requirements are not acceptable shall be detected at Receiving Inspection. A copy of the Nonconformance Report or suitable inspection report shall be submitted to Purchasing for processing a vendor claim.

7.0 CORRECTIVE ACTION

7.1 As Nonconformance Reports are received and reviewed, Safety shall be responsible for analysis to determine if repetitive errors or major problems should be investigated to prevent recurrence.

7.2 For major problems or repetitive errors, Safety shall initiate a Corrective Action Request (Exhibit 108-2) directed to the Supervisor of the department where the problem occurred.

7.3 The Corrective Action Request shall establish the cause of the error and the action that will be taken to avoid repetition of the error.

7.4 Corrective Action Requests may also be used to direct Purchasing to obtain information as to cause and action that will be taken by Vendor when their performance does not meet NECO requirements.

7.5 When corrective action has been completed, a follow-up review shall be conducted to verify proper implementation of corrective actions and to close out the corrective action documentation.

NONCONFORMITY MATERIAL DISPOSITION REPORT

Fabricating Shop:_____ Customer:_____

NECO P. O. No.: _____ Job No.: _____

Contact _____ P.O. No.:_____

Phone: _____

ITEM:_____

Drawing Number(s):_____

_____

_____

Nonconformance:_____

_____

_____

_____

_____

_____

_____

_____

Signed:_____ Date:_____

(Insp.)

Disposition:_____

_____

_____

_____

_____

_____

_____

Signed:_____ Date:_____

(Engr.)

1742 075

Date:_____

Exhibit 108-2
12/13/79 Rev. -2-

TO: _____ DATE: _____

FROM: _____ NUMBER: _____

SUBJECT: REQUEST FOR CORRECTIVE ACTION-
WE HAVE A PROBLEM!

PLEASE COMPLETE THE BOTTOM HALF OF THIS FORM AND RETURN THE COMPLETED FORM TO QUALITY CONTROL, SPECIFYING CORRECTIVE ACTIONS TAKEN TO PREVENT RECURRENCE OF THIS PROBLEM

CUSTOMER: _____ PRODUCT/PART NO. _____

REASON/FILE

1. PLANNING
2. ORDER WRITING
3. DRAWINGS
4. PROCUREMENT
5. MATERIAL
6. IDENTIFICATION
7. FORMING
8. FABRICATION
9. FINISHING
10. PROCESS
11. OPERATION
12. SYSTEM
13. PROCEDURE
14. METHOD
15. DESIGN
16. GAGING
17. DOCUMENT CONTROL
18. PRODUCT

DISCREPANCY: _____

QUALITY CONTROL COMMENTS/RECOMMENDATIONS: _____

ATTACH ☐ SKETCH ☐ OTHER ☐

SIGNED: _____ QUALITY CONTROL _____

CORRECTIVE ACTION TAKEN:

DATE C/A TAKEN: _____ DATE C/A COMPLETED: _____

NOT NECESSARY: _____ AND REASONS WHY NOT: _____

NOTE: CORRECTIVE ACTION REQUESTS ARE TO BE ANSWERED AND RETURNED TO QUALITY CONTROL ENGINEER WITHIN FIVE (5) WORKING DAYS.

SIGNED: _____ DATE: _____

1742 076

C/A APPROVAL _____ YES ☐ NO ☐

IF NOT APPROVED SEE ATTACHED RCA NUMBER _____

CC: _____

QUALITY ASSURANCE RECORDS

1.0 1.0 SCOPE

1.1 It is the purpose of this section to describe the manner in which final documentation is defined, assembled and retained. This section provides for the accumulation of complete final documentation, verification of its correctness and establishment of retrievability.

2.0 POLICY

2.1 Quality Assurance records shall furnish objective evidence of qaulity conformance. All permanent and temporary records are filed in an identifiable order. As records are completed, they are stored in a suitable environment to protect them from damage and deterioration.

3.0 RESPONSIBILITY

3.1 The Chief Engineer at NECO shall be responsible for the accumulation, control and storage of all documentation required by the contract.

4.0 RECORD RETENTION

4.1 Permanent records shall be maintained the life of the equipment.

4.2 Temporary records needed to show compliance with this QA Manual are filed in cabinets or separate facilities. These records are kept until the applicable equipment is in commercial operation for a minimum of five years or as otherwise required after delivery of the item. After this time, these records may be disposed of by or with concurrence of the Owner.

4.3 A list of required records and their storage location shall be maintained by the CE.

5.0 FINAL DOCUMENTATION FILE

5.1 The final records to be available and maintained include the following as applicable #. Permanent Records are identified by an asterisk. The additional records are non-permanent (temporary).

*1. Index to Permanent Records file

*2. Certified Design Specification when applicable.

*3. Stress Report and Stress Calculations

*4. Drawings (Final as constructed)

*5. Data Reports when applicable

*6. Copies of all Certified Material Test Reports

*7. NDE Records

8. Quality Control Plan or equivalent

9. Special Test and Inspection Procedures

10. Customer order and specification(s)

11. Work Order

*12. Weld Control Records and Weld Repair Results

*13. Report of Nonconformance

*14. Copy of Welder's and NDE operator's qualifications

15. Copies of Welding and NDE Procedures and Welding Procedure Qualifications

Items 1 through 7 apply for Section III, Division 1, Class 1, 2, CS and MC; Items 2 and 5 apply for Class 3.

6.0 FINAL DOCUMENTATION TO CUSTOMER

6.1 The above documents indicated by an asterisk shall be provided to the customer as applicable. Items such as Stress Reports, Certified Design Specification and Drawings, may be furnished separate from the documentation package with the product.

7.0 MINIMUM REQUIREMENTS FOR INSPECTION AND TEST RECORDS

Where applicable, inspection and test records shall contain as a minimum the following information:

1. A description of the type of observation.
2. Evidence of completing and verifying a manufacturing, inspection, or test operation.
3. The date and results of the inspection or test.
4. Information, if any, related to conditions adverse to quality.
5. Inspection on data records identification.
6. Evidence as to the acceptability of the results.

AUDITS

1.0 PURPOSE

1.1 To define requirements and responsibility for audits to verify compliance with the Quality Assurance Program, this section describes the procedures for internal audits and requirements for Vendor audits.

2.0 INTERNAL AUDIT REQUIREMENTS

2.1 The Quality Assurance System imposes check-points that require records and feedback to evaluate and verify that quality systems, products and manufacturing and inspection operations are satisfactory.

2.2 A system of planned and periodic audits, shall be preformed using written procedures or checklists by capable personnel not responsible for the areas being audited. An audit cycle is not to exceed twelve months.

3.0 VENDOR AUDITS

3.1 The QA Manager, the Chief Engineer or designee shall conduct audits of Vendor's capability based on surveys, questionnaires, and performance data.

3.2 source Inspection may be used on major subcontracts if product complexity is such that quality must be verified at Vendor facility.

4.0 RESPONSIBILITY FOR AUDITS

4.1 The QA Manager or the Chief Engineer shall initiate Vendor surveys and Internal Audits.

4.2 The Vice President shall annually initiate audits of the internal Quality Control System to review the status and adequacy of the system. The audit shall be performed by personnel not in the QA organization. The Vice President shall designate a person to follow-up that corrective action is taken in areas found to be deficient.

5.0 REPORTS AND CORRECTIVE ACTION

5.1 Detail findings of the audit shall be forwarded to the head of the department audited. The findings shall include results, recommendations and require an answer describing action taken.

5.2 Summary reports of audits shall be furnished to the Vice President.

5.3 Audit records shall be maintained for follow-up and used to indicate the need for retraining of personnel. The Quality department shall recommend training requirements, personnel subject to retraining and the department responsible for conducting training sessions.

5.4 When deficiencies have been found, a reaudit of the areas where deficiencies have occurred shall be conducted within 3 months to verify proper implementation of corrective action.

6.0 TRAINING PROGRAM

6.1 Training programs for personnel performing activities affecting quality shall be held periodically. These sessions shall review program requirements for the area of responsibility of the personnel involved and be directed toward improved understanding of requirements and assurance of proper implementation of the requirements of this QA Manual.

7.0 ACCESS TO FACILITIES

7.1 The customer and/or his representative shall have practical and reasonable access to NECO facilities for the purpose of evaluation and auditing the Quality Assurance Program and its implementation.