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October 10, 1985

TMI Program Office
Attn: Dr. B. J. Snyder
Program Director
US Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Snyder:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Summary of the GPU Nuclear/Bechtel Quality Assurance
Surveillance Program for the First Four Filter Canisters

On Thursday, September 12, 1985, a meeting was held with members of your staff to discuss GPU Nuclear's program to ensure that the filter canisters, manufactured by Nuclear Energy Services (NES), will meet their design specifications. Specifically, this meeting concerned the first four filter canisters which are required to support the start of the early defueling operation (for the Defueling Water Cleanup System). As a result of this meeting, your staff requested that GPU Nuclear submit a letter summarizing the above noted program.

It is important to reiterate that the purpose of this augmented Quality Assurance Program is to assure, through appropriate extension of this program, that the first four filter canisters, in addition to other NES manufactured components, meet their design specifications. Any component that does not meet the required design specifications will not be accepted.

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The attached report describes the established GPU Nuclear/Bechtel (i.e., TMI-2 Recovery Project) Quality Assurance Surveillance Program and its specific application to NES, the events leading to the development of a specialized checklist program for NES fabricated defueling components, and the supplementary actions taken by GPU Nuclear as a result of the deficiencies noted in the implementation of the NES Quality Assurance Program.

Additionally, the attached report defines the specific actions performed to verify compliance with design specifications prior to GPU Nuclear's acceptance of the first four filter canisters.

Based on satisfactory compliance with the program described in the attached report, GPU Nuclear requests your concurrence that the first four filter canisters are acceptable and safe to use for their intended purpose.

Sincerely,

Thomas J. Demmitt

for F. R. Standerfer
Vice President/Director, TMI-2

FRS/RDW/eml

Attachments

cc: Deputy Program Director - TMI Program Office, Dr. W. D. Travers

I INTRODUCTION

GPU Nuclear Quality Assurance has reviewed and approved the Bechtel North American Power Corporation (BNAPC) Nuclear Quality Assurance Manual for TMI-2. BNAPC has been designated as the lead responsibility for procurement of designated defueling components. However, GPU Nuclear retains final acceptance of all defueling components upon on-site arrival.

Between August and December 1984, contracts were placed by Bechtel with Nuclear Energy Services (NES), a wholly owned subsidiary of Qualcorp, of Danbury, Connecticut to fabricate three (3) types of defueling canisters, and for the design and fabrication of two (2) canister handling trolleys and the canister storage racks. These contracts were reviewed and approved by the Director, TMI-2, prior to their placement.

All NES design work was accomplished at the corporate headquarters in Danbury, Connecticut. Fabrication of the canister handling trolleys was divided between Dwight Foote, Co., under contract to NES, who manufactured the trolleys; and the NES Manufacturing Facility at Greensboro, N.C., who manufactured the transfer shields. Defueling canisters and the canister storage racks were also manufactured at the NES Manufacturing Facility at Greensboro, N.C.

This report describes the established GPU Nuclear/Bechtel (i.e., TMI-2 Recovery Project) Quality Assurance Surveillance Program and its specific application to NES, the events leading to the development of a specialized checklist program for NES-fabricated defueling components, and the supplementary actions taken by GPU Nuclear/Bechtel (including implementation of the checklist program) as a result of the deficiencies noted in the implementation of the NES Quality Assurance Program. Specific actions required to verify compliance with design specifications prior to acceptance of the first four filter canisters are emphasized.

II GPU NUCLEAR/BECHTEL QUALITY ASSURANCE SURVEILLANCE PROGRAM AND SPECIFIC APPLICABILITY TO NES

The GPU Nuclear/Bechtel Quality Assurance Surveillance Program is structured to assure that a proper vendor Quality Assurance Program is in effect. The following is a summary of the controls exercised by the TMI-2 Project specifically for NES activities:

- A pre-award survey of NES Manufacturing Facility at Greensboro, N.C. was conducted on September 24, 1984. The NES facility was judged to be satisfactory.

- The NES Greensboro Quality Assurance Manual was reviewed by TMI-2 Project Design Engineering and Bechtel Quality Assurance and was found to be satisfactory.

- TMI-2 Project Design Engineering specified, in procurement documents, that NES submit, for Bechtel's review, welding, nondestructive examination (NDE), cleaning and testing procedures, as well as quality verification documentation, etc. Appropriate documents were submitted by NES to Bechtel, prior to their use. The procurement documents also specified the hold and witness points. The witness and hold points are supplemented by the Bechtel Quality Surveillance Plan. The Surveillance Plan is developed by the Procurement Supplier Quality Department and concurred with by Bechtel Quality Assurance and TMI-2 Project Design Engineering.

- Because of the importance, the nature of the fabrication processes, and number of components involved, Bechtel assigned a full-time "Resident" Supplier Quality Representative (SQR) to the NES Manufacturing Facility on December 11, 1984, prior to starting fabrication. The role of the SQR was to perform surveillance inspections at the NES Manufacturing Facility in accordance with the Bechtel Quality Surveillance Plan.

- A joint GPU Nuclear/Bechtel Quality Assurance Audit of implementation of NES's Quality Assurance Program was planned to be conducted shortly after start of fabrication.

- GPU Nuclear Manufacturing Quality Assurance elected to perform "third-level" surveillance of NES Manufacturing including specific hold and/or witness points.

- Following completion of the fabrication of each component, NES was required to provide a document package to the Bechtel Supplier Quality Representative for review, in accordance with the requirements of the procurement specification, before the item could be released for shipment. The composition of the documentation package is defined in Attachment 2.

- Upon receipt at TMI-2, a material receipt inspection is performed by the GPU Nuclear Quality Control staff. A detailed receipt inspection plan for the defueling canisters and related documentation has been developed (Attachment 3).

Quality Assurance Surveillance Programs of this type have been applied to the TMI-2 Material and Procurement Program with considerable success over the life of the recovery project. This program relies on a stepwise approach, such as the one described above, and provides reasonable confidence in the fabrication process.

However, as a result of concerns regarding adequacy of the implementation by NES of its Quality Assurance Program and its effect on acceptability of the equipment, additional extraordinary actions were deemed necessary and are described in Section IV.

III EVENTS LEADING TO THE DEVELOPMENT OF THE CANISTER CHECKLIST PROGRAM

The following is a summary of the events leading to the development of the canister checklist program. A detailed chronology is provided in Attachment 4.

A GPU Nuclear Quality Assurance representative visited the NES Manufacturing Facility and expressed concerns about how NES was implementing its Quality Assurance Program (see Section IV of Attachment 4).

An audit was conducted by a joint GPU Nuclear/Bechtel Quality Assurance Team on April 23 and 24, 1985, a few weeks after fabrication had commenced. The audit identified three significant findings, and several areas for improvement. Further, it was concluded that a breakdown of the vendor Quality Assurance Program had occurred, and a Quality Assurance Hold was placed on shipments of defueling canisters and canister storage racks pending resolution of the deficiencies (Reference 1).

Subsequent visits by GPU Nuclear/Bechtel personnel revealed that the above deficiencies were not being resolved in a timely manner and new problems were being identified (Attachment 4).

Before all of the above noted deficiencies had been corrected, and while the Quality Assurance Hold was still operative, the Vendor Inspection Branch, NRC Office Inspection and Enforcement, also conducted an inspection of NES Manufacturing at Greensboro, N.C. Although the formal findings were not published until later (Reference 2), the status meeting held at the end of the first visit gave significant insights into the NRC concerns. These, in conjunction with the GPU Nuclear/Bechtel findings, resulted in the conclusion that the normal approach to material acceptance, as described in Section II would not be adequate in this case. Therefore, GPU Nuclear/Bechtel initiated a special program of supplementary, extraordinary actions, as described in the following section, to verify the acceptability of the NES-fabricated defueling components.

IV SUPPLEMENTARY ACTIONS TAKEN

Having concluded that the Quality Assurance Surveillance Program being used to accept the vendor components was inadequate for the work performed by NES Manufacturing, GPU Nuclear/Bechtel devised an approach that would result in acceptance based on supplementing and extending the NES Quality Assurance Program; i.e., the detailed checklist program for each component.

The objective of the checklist program was a) to assure hardware acceptability through the review and verification of completed NES documentation, b) to determine the extent of the Quality Assurance

Program implementation in evaluating the hardware acceptability, and c) to supplement the Bechtel Supplier Quality Surveillance Program which was in existence and operative.

The scope of the checklist program included a complete review of the documentation for the first two canister storage racks, both trolley shields, and the first shipment of each type of canister. In addition, it was intended that this review may continue for future material deliveries based on subsequent vendor performance and/or checklist program results.

Checklists for each category of equipment were prepared in a cooperative effort by representatives of TMI-2 Project Design Engineering (using design documentation provided by Babcock and Wilcox, the canister designer), Bechtel Quality Assurance, and Materials and Quality Services (M&QS). Crucial attributes (e.g., crucial welds, dimensions, material requirements, etc.) which were required to be satisfied for acceptance of each component were identified by TMI-2 Project Design Engineering based on the following:

- Criticality control components and materials.
- Structural components and materials which may affect criticality or canister integrity.
- Components important to lifting and handling.

Bechtel Quality Assurance and M&QS personnel translated the crucial attributes into checklist items and prepared three generic checklists. These checklists were intended to cover: (1) material procurement and traceability throughout the fabrication period; (2) fabrication attributes to satisfy drawing requirements; and (3) welding and NDE characteristics. The checklists were submitted to GPU Nuclear Quality Assurance for review and the resulting comments were incorporated into the checklists, as necessary. All of the items identified in the NRC's Vendor Inspection Report were reviewed and categorized to ensure each category is addressed either in the checklists or in the Bechtel Quality Assurance Surveillance Program (Attachment 5).

Actual implementation of the checklist program, i.e., review and verification of NES documentation, required formation of a task force for each component consisting of representatives from Bechtel Quality Assurance, M&QS, and TMI-2 Project Design Engineering. The Bechtel Supplier Quality Representative assisted the task force team. The intent of the checklist implementation was to evaluate one hundred percent of each identified attribute.

The task force for the four filter canisters, comprised of three (3) members, conducted a thorough review of NES documentation from July 28 to September 28, 1985. This review included Assembly Travelers; Purchase Orders; Non-Conformance Reports (NCRs); Welding and NDE Travelers; NDE

Report Calibration Logs; Supplier Deviation Disposition Requests (SDDRs); Qualification of welding, NDE, and inspection personnel; various logs; and a variety of relevant correspondence. This review resulted in the identification of incomplete or missing documentation and discrepancies in existing documentation (e.g., incomplete travelers, missing entries, missing penetrant testing records, NCRs not closed out, and deviations not approved by TMI-2 Project Design Engineering). NES completed the corrective actions on all discrepant or incomplete items by correcting the documentation, obtaining necessary approvals and performing the omitted operations, as applicable. Completion of the review and verification process by the task force resulted in satisfactory resolution of all identified unacceptable items. No modifications or rework of the filter canisters was found to be needed as the result of this effort.

GPU Nuclear/Bechtel Quality Assurance performed a sampling of the final dimensions of the first four filter canisters prior to their shipment to TMI. Additionally, NES's documentation package was reviewed by GPU Nuclear/Bechtel Quality Assurance prior to its submittal to TMI.

In addition to the above described supplementary activities, EG&G Idaho will accept the canisters as suitable for shipment and storage prior to fuel loading. EG&G Idaho, therefore, has developed an independent canister checklist emphasizing their specific areas of responsibility and concern. An EG&G representative participated in the review of one filter canister at NES Manufacturing. He also reviewed the completed checklists for the other three with Bechtel in Gaithersburg and he inspected all four canisters after delivery at TMI-2.

Furthermore, filter integrity and pressure vessel hydrostatic testing of the filter canisters has been performed successfully at NES. This testing provides further assurance that the filter canisters satisfy the required design specifications.

V ACTIONS REQUIRED PRIOR TO USE OF THE FIRST FOUR FILTER CANISTERS

The following actions have been identified as prerequisites to GPU Nuclear's use of the first four filter canisters:

- The checklist described above shall be completed for all four canisters (this has been accomplished). A copy of a completed filter canister checklist is included as Attachment 6.

- GPU Nuclear Quality Assurance personnel shall perform an on-site receipt inspection in accordance with the established receipt inspection plan. Additionally, GPU Nuclear shall review and concur with the results of the completed filter canister checklists. The GPU Nuclear Quality Assurance Manager will notify the Office of the Director, TMI-2, in writing, of the acceptability of each of the first four filter canisters. Additionally, if it is determined that a canister is not acceptable, based on the above review, that item will be placed on Quality Assurance Hold pending disposition (e.g., reject, rework, etc.), and controlled in accordance with the GPU Nuclear Quality Assurance Plan.

- o EG&G Idaho acceptance of the canisters for turnover, shipment and storage at INEL, after loading with TMI-2 core debris.

- o NRC concurrence that the first four filter canisters are acceptable and safe to use for their intended purpose.

VI CONCLUSION

GPU Nuclear believes that the GPU Nuclear/Bechtel Quality Assurance program described above demonstrates a thorough and conscientious effort to assure that the components manufactured at NES for use during defueling are acceptable for use in accordance with the design criteria. GPU Nuclear further believes that the extraordinary actions taken by GPU Nuclear/Bechtel Quality Assurance provide adequate confidence that the initial four filter canisters satisfy their required design criteria and are safe to use for their intended purpose.

References:

1. Bechtel North American Power Corporation letter from T. I. Gillespie to F. Sugar, dated May 6, 1985, BNAPC/GPUN QA Audit No. NES-85-02.

2. NRC letter from C. Zech to F. Sugar, dated July 26, 1985, NRC Vendor Branch Inspection conducted on June 10-15 and June 24-18, 1985.

FILTER CANISTER SUPPLIER QUALITY DOCUMENTATION PACKAGE

Quality Verification documentation for the defueling canisters includes:

a. Material Test Reports or Material Certificates of Compliance.

b. Ultrasonic Examination Reports.

c. Radiographic Examination Reports (Reader Sheets).

d. Liquid Penetrant Examination Reports.

e. Code Data Reports.

f. Pressure Test Report (Hydrostatic Test).

g. Post Fabrication Integrity Test Report (Filter Canisters Only).

h. Certificate of Compliance to Specification 13587-G-400.

i. Certificate of Compliance to the Poison Tube Packing Procedure. (Filter and Knockout Canisters Only)

j. Inspection/Test Reports and Certification for Poison Material.

k. Inspection and Verification Reports for Installation of Poison Tubes and Fuel Canister Filler Material.

l. Applicable Supplier Deviation Disposition Requests (SDDRs).

The Material Test Reports and Material Certificates of Compliance will be submitted in a common book with each page being numbered for identification. Individual canister documentation will reference the applicable common book pages.

The Bechtel Supplier Quality Representative (SQR) will review the documents for accuracy, completeness and legibility. Each completed page will be either stamped or signed by the SQR. The completed G-321V indicating the number of each type of document will be signed by both the vendor and the Bechtel SQR.

SITE: TMI-2

CONTROL NO.: R-6111-7014.1 Rev 1

Prepared by: [signature] 10.10.85

Concurred by: [signature] 10/10/85

Approved by: [signature] 10-10-85

RECEIPT INSPECTION/SURVEILLANCE PLAN

RECEIPT INSPECTION

PROCESS

DEFUELING CANISTERS & DOCUMENTATION

ITEM

Sampling Criteria: 100% for all attributes

P.O.: TC-016172 SPEC: 15737-2-M-101A Rev 3

Canister Type: Fuel/Filter/Knock out/
(circle applicable type & record the numbers)

SERIAL NO. : _____

NATIONAL BOARD NO.: _____

NOTE: (1) Internal damage assessment for filter & knockout canisters is excluded from this Receipt Inspection as these are close welded vessels.

(2) ASME Code stress report and poison packing density test reports are with Design Engineering and are generic reports.

GPU Nuclear

INSPECTION/SURVEILLANCE PLAN

APPLICABLE SITE	APPROVAL QAEM	CONCURRENCE USER MGR.
☐ CORP.		
☒ TMI		
☐ OC	Date:	Date:

CONTROL NUMBER: R-6111-7014.1

REV 1

ITEM/ACTIVITY

Receipt Inspection of Defueling Canist and Documentation.

SAMPLING BASIS: (May be implicit in method of verification)

100% for all attributes.

ATTRIBUTE CODE	ATTRIBUTE	ACCEPTANCE CRITERIA	METHOD OF VERIFICATION	REMA
I-18	Serial Number Fuel Canister Head	Same as Fuel Canister	Visual	
M-91	CMTRs for components identified in Attachment 1.	Verify that applicable CMTRs are received.	Document Review	
M-96	C of C for Cleaning (4.3.3.1)	Verify Cert. is received	Document Review	
M-96	C of C - Boron Carbide (5.3.2)	ASTM C750 Type 2	Document Review	
M-96	Test report for Boron Carbide Packing (5.3.3)	Verify Certified Test report is received.	Document Review	
M-93	ASME Code Data Report Forms (4.3.4.1)	Verify Code Report forms for the inspected canister is received.	Document Review	
N-24	RT Report	Verify that RT report for the inspected canister is received.	Document Review	
N-23	UT Report	Verify that UT Report for the inspected canister is received.	Document Review	

ITEM	ATTRIBUTE	ACCEPTANCE CRITERIA	METHOD OF VERIFICATION	REMARKS
N-21	PT Report	Verify that PT Report for the inspected canister is received	Document Review	
R-70	Pressure Test Report (5.2)	Verify certified hydro test report for the inspected canister is received.	Document Review	
N-29	Certified Inspection and Verification Report (5.6)	Verify for filter & knock out canisters - poison tube fit up inspn. reports are there. For Fuel Canisters - Filler material installation inspection report is there.	Document Review	
R-70	Canister Checkout test Reports (5.4)	Verify Reports are received - Filter integrity test report (5.4.5.6)	Document Review	
I-26	Shipping Release	Verify that Bechtel G321-V form for all types of canisters is signed off by Bechtel & Supplier Representative.	Document Review	
S-23 S-24 S-27 S-28	DENTS TEARS BENDING WARPAGE	Verify no Visual Damage	Visual	
	Fuel Canister Closure Seal (if accessible)	No visible damage	Visual Inspection	
	SDDR Closeout	Verify Design Engineering has signed off all SDDR's.	Document Review	

FILTER CANISTERS

COMPONENT/DRAWING, PIECE no.	ACCEPTANCE CRITERIA	METHOD OF VERIFICATION	REMARKS
Closure Head/ 1150958D, Pc. 1	ASME SA 240 Type 316L or Type 304L	Document Review	
Shell/ 1150945C, Pc. 1	ASME SA 312 Grade TP 304L or Grade TP 316L	Document Review	
Lower Head/ 1150917D, Pc. 1	ASME SA 479 or SA 240 Type 304L or 316L	Document Review	
Skirt/ 1150944C, Pc. 1	ASTM A-312 Grade 304L or Grade TP 316L	Document Review	
Plug (in closure head)/ 1150957B, Pc. 1	ASME SA 479 Type 316L or Type 304L	Document Review	
Poison Tube/ 1150949D, Pc. 2	ASTM A 269 Grade TP 316L	Document Review	
Bottom End Plug/ 1150949D, Pc. 3	ASTM A 479 or A 276 Type 316L	Document Review	
Top End Plug/ 1150949D, Pc. 4	ASTM A 479 or A 276 Type 316L	Document Review	
Filter Bundle Assembly/ Pall Trinity 7ED4893-2	Chemistry only - 316L/304L Stainless steel	Document Review	

FUEL CANISTERS

Closure Head/ 1150989F, Pc. 1	Will be provided later	Document Review	
Bulkhead/ 1154014F, Pc. 1	Will be provided later	Document Review	
Shell/ 1150983C, Pc. 1	Will be provided later	Document Review	
Lower Head/ 1150917D, Pc. 1	Will be provided later	Document Review	
Skirt/ 1150988C, Pc. 1	Will be provided later	Document Review	
Bolts/ 1154021C, Pc. 1	Will be provided later	Document Review	

FUEL CANISTERS

COMPONENT/DRAWING, PIECE no.	ACCEPTANCE CRITERIA	METHOD OF VERIFICATION	REMARKS
Locating Pins/ 1154033C, Pc. 1	Will be provided later	Document Review	
Shock Absorber Support/ 1150993C, Pc. 1	Will be provided later	Document Review	
Impact Plate "C"/ 1150994C, Pc. 1	Will be provided later	Document Review	
Impact Plate "D"/ 1150995C, Pc. 1	Will be provided later	Document Review	
Ribs/ 1154104A, Pc. 1	Will be provided later	Document Review	
Bottom Plate/ 1150992E, Pc. 1	Will be provided later	Document Review	
Impact Plate "A"/ 1154006D, Pc. 1	Will be provided later	Document Review	
Impact Plate "B"/ 1154007D, Pc. 1	Will be provided later	Document Review	
Standoffs/ 1154103A, Pc. 1	Will be provided later	Document Review	
Ribs/ 1154105A, Pc. 1	Will be provided later	Document Review	
Drain Tube/ 1155381C, Pc. 1	Will be provided later	Document Review	
Poison Shroud Assembly/ 18163E100	Will be provided later	Document Review	

KNOCKOUT CANISTERS

COMPONENT/DRAWING PIECE no.	ACCEPTANCE CRITERIA	METHOD OF VERIFICATION	REMARKS
Closure Head/ 1150943E, Pc. 1	Will be provided later	Document Review	
Shell/ 1150945C, Pc. 1	Will be provided later	Document Review	
Lower Head/ 1150917D, Pc. 1	Will be provided later	Document Review	
Skirt/ 1150944C, Pc. 1	Will be provided later	Document Review	
Inlet Tube/ 1155247E, Pc. 1	Will be provided later	Document Review	
Intermediate Support Plate "A"/ 1150939D, Pc. 1	Will be provided later	Document Review	
Support Ring/ 1150937D, Pc. 1	Will be provided later	Document Review	
Center Tube/ 1154090C, Pc. 1	Will be provided later	Document Review	
Center Tube End Cap/ 1150961C, Pc. 1	Will be provided later	Document Review	
Center Tube Drain Line/ 1154030C, Pc. 3	Will be provided later	Document Review	
Poison Tube "A" - Tubing/ 1155233D, Pc. 2	Will be provided later	Document Review	
Bottom End Plug/ 1155233D, Pc. 3	Will be provided later	Document Review	
Top End Plug/ 1155233D, Pc. 4	Will be provided later	Document Review	
Poison Tube "B" - Pipe/ 1150946C, Pc. 4	Will be provided later	Document Review	
Bottom End Cap/ 1150946C, Pc. 3	Will be provided later	Document Review	
Top End Cap/ 1150946C, Pc. 2	Will be provided later	Document Review	
Bottom Support Plate/ 1150950E, Pc. 1	Will be provided later	Document Review	

CHRONOLOGY OF EVENTS AT NES, GREENSBORO, NORTH CAROLINA RELATED TO DEFUELING RACKS, TROLLEY SHIELDS AND CANISTER FABRICATION FOR TMI-2 PROJECT AS OF JULY 17, 1985*

I SCOPE OF SERVICES

NES' scope of services includes detailed design, some procurement of materials and fabrication of the following:

four fuel canister racks,

fuel building transfer shield and reactor building transfer shield, and approximately 250 canisters (filter, fuel and knockout).

The purchase orders for racks and transfer shields were issued to Danbury, CT, and for the canisters to NES, Greensboro, NC.

The detailed design engineering is performed at Danbury, CT. Most of the fabrication is performed at Greensboro, NC, with some sub-tier suppliers performing fabrication of sub-component assemblies. NES' procurement activities are performed from Greensboro, NC.

Bechtel has directly purchased some material for canisters and had it shipped to NES at Greensboro.

II QUALIFICATION OF NES

1. Bids were received as follows:

   - Shields - 9/28/84

   - Canisters - 8/7/84

   - Racks - 9/22/83

2. Bechtel Procurement Supplier Quality Department (PSQD) performed a pre-award survey at NES, Greensboro, NC on 9/24/84. The survey was performed by a qualified Supplier Quality representative (SQR).

3. At the time of the survey, NES was and still continues to be a holder of the following ASME certificates:

   "P", "S", "U", "U2", "R", "H".

4. At the time of the survey, NES was fabricating fuel racks for the following nuclear plants:

   Beaver Valley and Nine Mile Point.

* An update of this chronology from 7/17/85 - 9/29/85; i.e., the canister shipment date, will be provided later.

5. The purchase orders were issued as follows:

   Shields - 12/4/84

   Canisters - 12/4/84

   Racks 8/7/84

6. NES submitted their Quality Assurance Manual for engineering operations, performed at Danbury, CT, and the Greensboro NC, Quality Assurance Manual for Bechtel's review and approval. Both manual were approved on 10/22/84.

III OVERVIEW OF MANUFACTURING ACTIVITIES

1. Manufacturing operations in the shop commenced essentially in February 1985.

2. The Bechtel Quality Surveillance Plan (QSP) which indicates the surveillance inspections to be conducted by the Bechtel Supplier Quality Representative, was issued as follows:

   Racks - 9/21/84

   Canisters - 11/12/84

   Shields - 12/14/84

   The plan for canisters was revised on 4/30/85 and the shields on 7/3/85.

3. Bechtel's Supplier Quality Representative was assigned to NES, Greensboro, NC, as a Facility Resident in December 1984.

4. The pre-fabrication meeting (initial visit) was conducted by the Bechtel SQR as follows:

   Canisters - 12/11/84

   Racks - 1/29/85

   Shields - 4/1/85

5. The Bechtel Supplier Quality Representative writes a weekly Quality Surveillance Report (QSR), for each of the three purchase orders separately, to indicate the surveillance activities performed by him. The number of QSRs issued for each of the purchased orders to date is as follows:

   Racks - 18

Canisters - 31

Shields - 10

6. Bechtel's Procurement Supplier Quality Surveillance Program provides for issuance of Quality Surveillance Deficiency Reports (QSDRs) by the SQR for deficiencies which the supplier is unable to act on immediately. To date, the number of QSDRs have been issued for each of the purchase orders:

   Racks - 5

   Canisters - 3

   Shields - 1

   The dates for issuance of the first QSDRs for these purchase orders is as follows:

   Racks - 4/26/85

   Canisters - 4/26/85

   Shields - 6/7/85

   Of the nine QSDRs issued to date, five are closed and the other four are still open. Two of the open QSDRs were issued on 6/29/85 and the other two on 7/2/85*.

7. The Quality Surveillance Reports, issued between 12/11/84 and 2/16/85, essentially covered receipt of Bechtel-procured equipment at the NES shop since at that time there was very little, if any, fabrication activities in the shop.

8. On 2/16/85 a meeting took place between Bechtel SQR, his Area Supervisor, and the Code Inspector to discuss and resolve questions concerning the radiographs for the pipe supplied by ARMCo (purchased by Bechtel).

9. There have been a lot of meetings and discussions with NES concerning quality problems at the NES shop. Such discussions are summarized as follows:

   Visits by Bechtel Project Supplier Quality Supervisor - 2 (2/11/84/, 6/13-14/85)

   Project Procurement Manager - 9 (first visit - 1/9/85; last visit 6/21/85)

   Division Procurement Manager 1 - (7/8/85)

* All of these QSDRs have been closed.

Supplier Quality Area Supervisor - 23 (12/84 - 7/85, approximately one per week).

10. A second SQR was assigned at the shop for several days to provide additional coverage and assistance to the resident SQR, as warranted.

IV GPU NUCLEAR SURVEILLANCE OF GREENSBORO FACILITY

A GPU Nuclear Quality Assurance Representative, in conjunction with Bechtel's Resident Supplier Quality Representative, conducted surveillances at the Greensboro facility on 4/18-19/85.

Problems/concerns noted regarding the canisters included shell to bulkhead seam welding problems, there was no firm plan by NES for successful NDE of these welds, no NES procedure for inspection of cement type liners (fuel canisters) and a concern regarding the number of SDDRs issued with less than 30% of the fabrication estimated to be complete.

GPU NUCLEAR/BNAPC AUDIT OF GREENSBORO, NC

An audit of Greensboro, NC facility was performed by a joint GPU Nuclear/BNAPC audit team (3 auditors) on 4/23-24/85.

Three Quality Assurance findings (QAFs) were written:

1. Two inspectors performing NDE had not been certified.

2. Nonconforming items were not identified with status indicating tags. Also, they were not documented on nonconformance reports.

3. A calibration equipment check out log was not being used for removal of inspection equipment from the gage crib/inspection area.

Additionally, the following six observations, which did not require a written response by NES, were identified:

1. Of six (6) travelers reviewed, four were not reviewed by Quality Engineering as required.

2. Concrete fill between shroud and shell of the canisters indicated there was no QC-inspection/verification of the concrete mix and fill during manufacturing operations.

3. In one case, a traveler called out the wrong revision of a welding procedure (WPS 001, Rev. 0 in lieu of WPS 001, Rev. A).

4. At the time of the audit, the procedure for handling, storage and shipping were in preparation.

5. The audit program being implemented was weak. Lack of emphasis on hardware and hardware-related problems was noted.

6. In some instances the master index for keeping records was not complete.

HOLD SHIPMENT was imposed on April 24, 1985 as a result of the Audit Findings. The HOLD SHIPMENT was still in effect on 7/17/85*.

A follow-up visit was performed on May 3, 1985 by two BNAPC Quality Assurance representatives. Although some improvements and actions taken by NES were noted, the Quality Program was still considered weak and the audit findings not closed out.

Another follow-up visit was performed by the Bechtel Project Quality Assurance Engineer on 6/19-20/85. It was again determined that NES was not effectively implementing their material control program. As a result, the hold shipment was continued.

Close-out of QAFs 2 and 3

NES' Corrective Actions for QAF #2 (NDE personnel certification) and QAF #3 (check out of calibration equipment) were verified as acceptable on June 29, 1985 and these QAFs were closed.

VI NRC INSPECTION AT GAITHERSBURG, MD ON JUNE 5-6, 1985

NRC held a pre-inspection meeting at TMI Site on May 30, 1985 and conducted an inspection at Gaithersburg on June 5-6, 1985.

NRC identified two concerns:

A. Records of review of three Supplier's Quality Assurance manuals did not include check lists.

B. Purchase Order to Pall Trinity Corp. for canister filter bundles was issued prior to a satisfactory survey and this deviation was not properly documented.

VII NRC INSPECTION AT NES, GREENSBORO, NC ON JUNE 10-14, 1985

NRC conducted an Inspection of NES, Greensboro, NC on June 10-14, 1985. The NRC Inspection team consisted of 5 people. On June 14, 1985, the NRC held a status review meeting (not a formal exit interview) to provide information to NES about their concerns. The following is a brief summary of their concerns:

1. Canister Material in the shop not properly identified and nonconforming materials were not properly controlled.

* The HOLD SHIPMENT was lifted on July 18, 1985.

2. a. No welders identification on longitudinal seam welds from ARMCo.

   b. One area of pipe 28P2 in zones 11-14 did not appear to match radiographs.

   c. Seam areas appearing to have been repaired were not identified as repaired on radiographs, reader's reports, or pipe.

3. Bechtel SQR's name had been written by an NES employee in the approval block of a sample form.

4. Internal audits performed by NES "don't say anything". Reports never seem to have findings. External agencies have discovered numerous findings.

5. NES not working to or controlling procedures.

6. NES has not called out Quality Assurance program or Part 21 requirements in their P.O. to vendors.

7. 16 of 19 of the NES Suppliers were not audited.

8. NES receipt inspection reports were unavailable for both NES procured material and Bechtel supplied material.

9. NRC observed on several occasions during the welding of a lower head to a canister shell that voltage readings were below that required by the welding procedures.

VIII GPU NUCLEAR SURVEILLANCE OF GREENSBORO FACILITY - 6/10-14/85

A GPU Nuclear Quality Assurance representative conducted a surveillance at the Greensboro facility on June 10-14, 1985. Unsatisfactory conditions in the areas of NDE and hydro testing were noted.

IV NRC INSPECTION AT NES, GREENSBORO, NC, ON JUNE 24-28, 1985

A team of two NRC Inspectors performed an audit of NES, Greensboro, NC on 6/24-28/85.

The NRC Inspection team consisted of two persons. It was indicated that this exit interview would cover only one of the Inspector's concerns and only for this inspection.

The following concerns were identified:

1. A Class V Deviation regarding non-imposition of 10 CFR 21 requirements on Suppliers by NES.

2. ANSI N45.2 requirements not passed on to Suppliers.

3. Receipt Inspection Reports not available.

4. Suppliers not on NES' qualified Supplier's list.

5. Lack of certification of welders and NDE personnel.

6. Material test reports not available for six pieces of material (not specifically identified by NRC).

7. NES is not using welding procedures provided by Bechtel.

8. No hold area for nonconforming material and red tags not being used to identify nonconforming materials.

X GPU NUCLEAR SURVEILLANCE OF GREENSBORO FACILITY - 7/8-10/85

A GPU Nuclear Quality Assurance representative conducted a surveillance at the Greensboro facility on July 8-10, 1985. Unsatisfactory conditions in the areas of radiography and UT were noted.

XI REVIEW OF DOCUMENTATION FOR RACK #1 TO ESTABLISH ACCEPTABILITY OF THE COMPLETED RACK BY A BECHTEL QUALITY ASSURANCE TASK FORCE AT NES

In view of programmatic Quality Assurance problems encountered at the NES shop, it was decided that a total review of documentation pertaining to Rack #1 was necessary to provide confidence that the fabricated rack was acceptable, on a technical basis. To conduct this review, a task force consisting of Bechtel Quality Assurance, M&QS, PSQD and Quality Engineering representatives was sent to NES' Greensboro facility on July 1, 1985.

As a result of the initial review and verification of the documentation provided by NES, the task force identified two categories of items requiring resolution by NES. The first category consisted of hardware related items presented to NES for their corrective action and resolution. The second category of action items related to the software deficiencies presented to NES for their corrective action.

NES completed all required corrective actions for each of the identified action items and submitted the corrective action results to the task force. The task force verified the corrective actions and determined that the documentation was acceptable. Based on this information, the rack was released and shipped to TMI-2 on 7/22/85.

NRC INSPECTION NONCONFORMANCES COVERED IN CHECKLISTS

NRC ITEM	CHECKLIST COVERAGE	CHECKLIST LOCATION
1. Material Traceability (nonconformance #2, 10, 13)	yes	FC 1, 3b, 5, 6; WC Pg 1C
2. Receipt Inspection (nonconformance #1, 14, 15, 16)	yes	MC 3, 3b
3. Storage and Handling of Material (nonconformance #5, 9)	no(1)	
4. Supplier Control (nonconformance #4, 6)	yes	MC 2
5. Procedure Control (nonconformance #8, 12, 17, 19)	yes	WC Pg 2a, FC 2,
6. Qualification of Inspection and NDE Personnel (nonconformance #20, 21, 22)	yes	WC Pg 2.B(1), 3.B(1), 4.9B(1)
7. Supplier QA Requirements (nonconformance #7 and violation)	yes	MC 1d; 1a
8. Welding Machine Calibration (nonconformance #3)	yes	WC Pg 2C
9. Use of Approved Adhesive Tapes (nonconformance #11)	no(2)	
10. Quality Assurance Manual Not Signed Off, Organization Chart Incorrect (nonconformance #18)	no(3)	

LEGEND: MC - Material Checklist
FC - Fabrication Checklist
WC - Welding and NDE Checklist

NOTES:
1. These items are part of SQR routine activities performed through shop tours. As nonconformance are identified, they are brought to the attention of NES and appropriate action is taken.
2. This item is being covered by the SQR final and in-process inspections. When nonconformances are identified, they are written and corrective action is taken.
3. This is is an administrative item which has no impact on hardware.

Filter Canister
Checklist Package
Index

Rev. 1, 10/10/85

NOTE: Where the checklist denotes Selamco, it means the same as NES.

1. Checklist Verification Summary pages (22 pages)

2. Materials (M) Checklists

Checklist	Drawing No.	Subject
M-1	1150917D	Canister Lower Head
M-2	1150940A	Recombiner Catalyst Pellet
M-3	1150944C	Skirt
M-4	1150945C	Shell
M-5	1150949D	Tube
M-6-A	1150949D	Top & Bottom End Plugs
M-6-B	1150949D	Top & Bottom End Plugs
M-7	1150949D	B_4C Pellets
M-8-A	1150957B	Plug
M-8-B	1150957B	Plug
M-9-A	1150958D	Upper Head
M-9-B	1150958D	Upper Head
M-10	1150972A	Silicon-Coated Recombiner Catalyst
M-11	1154097A	Hansen Part No.
M-12	1154098A	Hansen Part No.
M-13	1154099A	Hansen Part No.
M-14	1154110A	Hansen Part No.
M-15	1154114A	Hansen Part No.
M-16	1150994C	Skirt

3. Fabrication (F) Checklist

Checklist	Drawing No.	Subject
F-1	1154018F	Assembly
F-2	1154020E	Subassembly
F-3	1150959D	Upper Head
F-4	1154045D	Lower Head - Catalysts

Filter Canister
Checklist Package
Index
(Cont.)

REV. 1

3. Fabrication (f) Checklist (Cont.)

Checklist	Drawing No.	Subject
F-5	1150917D	Lower Head
F-6	1150944C	Skirt
F-7	1150945C	Shell
F-8	1150949D	Tubes - Loaded Pellets
F-9	1150957B	Plug
F-10	1150958D	Upper Head
F-11	1154044C	Inlet/Outlet Coupler

4. Welding (W) and NDE Checklists

Checklist	Drawing No.	Subject
W-1	1154018F	Upper Head
W-2	1154020E	Subassembly
W-3	1150959D	Upper Head
W-4	1150949D	Top & Bottom End Plugs

5. Canister Checklist Verification Discrepant Items for which no NES action is required (Attachment No. 1)

Item No.	Subject
1.	Calibration of Receipt Inspected Equipment/Tools
2.	Details on Receipt Inspection Records
3.	Part 21 not Imposed on Sub-suppliers
4.	ANSI N 45.2 Requirements not Identified
5.	NCR Review
6.	SDDR Review
7.	Calibration of Incoming, Inprocess, and Final Inspection Equipment and Tools

Filter Canister
Checklist Package
Index
(Cont.)

REV. 1

6. Comments

1. Resolution of NES Receipt Inspection(s) on Customer (Bechtel)-furnished material.

2. SDDRs

3. Calibration of Incoming, Inprocess and Final Inspection Equipment and Tools.

4. Upper head traceability.

CHECKLIST COMPLETION FORMAT

Rev. 1

The first 22 pages of the checklist consist of the identification of critical attributes required to be verified for all four (4) Filter Canisters. The balance of the checklist package reflects documentation of the verifications. In most of the checklists, verification of the attributes were performed simultaneously for all four Filter Canisters. The checklists bearing Nos. M1 to M16 and F-3 to F-11 were determined to be common for all four Filter Canisters. These checklists bear identification number F-402. The remaining checklists F-1, F-2, W-1, W-2, W-3, and W-4 are unique for each of the four Filter Canisters bearing identifications F-401, F-402, F-403, and F-404 respectively.

Bechtel Review Team

W. C. Lowery, Bechtel Quality Assurance
P. C. Kochis, Bechtel Engineer
B. Bain, Bechtel Material and Quality Services

Review Dates - July 29 through September 27, 1985

FILTER
SERIAL NO. F- 401
1 of 22 ~~F-402~~
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		DIM. $149\frac{3}{4} \pm \frac{1}{4}$ (12' - $5\frac{3}{4}$")	Refer to Fabrication Checklist F-1	Verified
	2		DIM. 3.200 Typ Max		
	3		Weld - Upper Head Weld 1	Refer to Welding & NDE Checklist W-1	Verified
	4		Weld - Lower Head Weld 2		
	5		Weld - Drain Tube To Upper Head Weld 3		
	P/N 2	1	Upper Head Weldment 1150959D	Refer to Sheet 3	
	P/N 3	1	Lower Head Ass'y 1154045D	Refer to Sheet 5	
	P/N 4	1	Filter Canister Sub - Ass'y 1154020E	Refer to Sheet 2	
	Note 13		Envelope of Canister Within Perfect Cylinder of $14\frac{15}{16}$" DIA.	Refer to Fabrication Checklist F-1	Verified

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		DIM. $1\frac{1}{4} \pm \frac{1}{16}$ Zone C-12	Refer to Fabrication Checklist F-2	Verified
	2		DIM. $1 \pm \frac{1}{16}$ Zone C-4		
	3		Weld - Zone D-12	Refer to Welding And NDE Checklist W-2	Verified
			$\frac{1}{4}$V Weld 1		
	4		Weld - Zone F-4		
			$\frac{1}{4}$V Weld 2		
	P/N 3	1	Shell, Filter Canister 1150945C	Refer to Sheet 9	
	P/N 6	1	Poison Tube Ass'y 1150949D	Refer to Sheets 10 & 11	

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	1		DIM. 6 1/4° Zone B-7	Refer to Fabrication Checklist F-3	Verified
	2		DIM. 90° Zone C-6		
	3	2	DIM. .750 ± .005 ⌖ D .010 (S)	(Continued on Next Sht)	
	4		Weld - Zone D-5	Refer to Welding & NDE Checklist W-3	Verified
			Weld 1		
	5		Weld - Zone C-4		
			Weld 2	(Continued on Next Sheet)	
	P/N 3	1	Plug 1150957B	Refer to Sheet 12	
	P/N 4	A/R	Recombiner Catalyst (Englehard-Deoxo-D) 1150940A	Refer to Sheet 7	
	P/N 5	1	Upper Head, Filter Canister 1150958D	Refer to Sheet 13	
	P/N 6	A/R	Recombiner Catalyst (AECL) 1150972A	Refer to Sheet 14	
	P/N 7	1	Skirt 1150944C	Refer to Sheet 8	

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4 (Cont'd)	Note 2		PT in Accordance w/ ASME Sect. V, Art. 6 (1983 w/ no Addenda)	Refer to Welding & NDE Checklist W-3	Verified
	Note 3		Add Catalysts (P/Ns 4 & 6) in Portions Specified Prior to Welding of Screen Assy.	Refer to Fabrication Checklist F-3	Verified

FILTER
SERIAL NO. F-401
5 of 22 F402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154045D REV. 5	P/N 2	1	Canister Lower Head 1150917D	Refer to Sheet 6	
	P/N 4	A/R	Recombiner Catalyst Particle (Englehard Deoxo-D) 1150940A	Refer to Sheet 7	
	P/N 5	A/R	Silicon Coated Recombiner Catalyst Particle (AECL) 1150972A	Refer to Sheet 14	
	Note 2		Add Catalysts (P/Ns 4&5)in portions Specified Prior to Welding of Screen Assy.	Refer to Fabrication Checklist F-4	Verified
	A		SDDR 2-M101A-20	Programmatic Only	
	B		SDDR 2-R200C-3	Programmatic Only	

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D REV. 1	1		DIM. 14.093 / 13.969 O.D. Zone C-6	Refer to Fabrication Checklist F-5	Verified
	2		DIM. 3/8 Zone C-8		
	3		DIM. 5/16 MIN. Zone B-5		
	4		DIM. 2 3/4 Zone B-4		
	P/N 1	-	Canister Lower Head 1150917D	Refer to Material Checklist M-1	Verified
	A		SDDR 2-M101A-13	Programmatic Only	

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150940A REV. 2	1		Recombiner Catalyst Pellet: Reqmts Defined in 6 Notes	Refer to Material Checklist M-2	Verified

FILTER
SERIAL NO. F-401
8 of 22 F-402
F 403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C REV. 1	1		DIM. $\frac{14.062}{13.969}$ DIA. Zone B-3	Refer to Fabrication Checklist F-6	Verified
	2		DIM. $4\frac{1}{2}$ Zone D-2		
	P/N 1	1	Skirt 1150944C	Refer to Material Checklist M-3	Verified

FILTER
SERIAL NO. F-401
9 of 22 F-402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150945C REV. 1	1		DIM. 14.000 $^{+.093}_{-.031}$ DIA. Zone C-2	Refer to Fabrication Checklist F-7	Verified
	P/N 1	1	Shell 1150945C	Refer to Material Checklist M-4	Verified

FILTER
SERIAL NO. F- 401
10 of 22 F- 402
F-403
F- 404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D REV. 5	1		DIM. $136\frac{1}{8} \pm \frac{1}{16}$ ($11' - 4\frac{1}{8}"$) Zone D-6	Refer to Fabrication Checklist F-8	Verified
	2		DIM. 3/4 Zone C-7		
	3		DIM. $1\frac{3}{8}$ Zone C-4	(Continued on Next Sht.)	
	4		Weld Zone D-7	Refer to Welding & NDE Checklist W-4	Verified
			Weld 1		
	5		Weld - Zone D-4		
			Weld 2	(Continued Below)	
	P/N 2	1	Tube $2\frac{1}{8}$ O.D.X.069 Wall 1150949D	Refer to Material Checklist M-5	Verified
	P/N 3	1	Bottom End Plug 1150949D	Refer to Material Checklist M-6	Verified
	P/N 4	1	Top End Plug 1150949D		
	P/N 5	A/R	B_4C Pellet 1150949D	Refer to Material Checklist M-7	Verified
	Note5		PT in Accordance w/ ASTM E 165	Refer to Welding & NDE Checklist W-4	Verified

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN-TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D REV. 5 (Cont'd)	Note10		Pellets Loaded Within $\frac{1}{4}$" of the Tube Fill Length.	See Fabrication Checklist F-8	Verified
	A		SDDR 2-M101A-12	Programmatic Only	

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150957B REV. 1	1		DIM. 1 Length of Plug	Refer to Fabrication Checklist F-9	Verified
	2		DIM. $\frac{.999}{.997}$ DIA.		
	P/N 1	-	Plug 1150957B	Refer to Materials Checklist M-8	Verified

CANISTER
CHECKLIST

FILTER
SERIAL NO. F-401
13 of 22 F-402
F-403
F-404

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D REV. 3	1		DIM. [4.500] R Zone D-7	Refer to Fabrication Checklist F-10	Verified
	2		DIM. [4.800] Zone C-6		
	3		DIM. 14.083 / 14.093 DIA. Zone B-6		
	4		DIM. 13.437 +.015 -.000 DIA. Zone A-6		
	5		DIM. 3 3/8 Zone B-8		
	6		DIM. 3 7/8 Zone B-8		
	7		DIMS. For Lifting Socket (Zone D-3): a. 2.125 DIA. b. 1/4 X 45° c. 13/16 d. 8° e. 3 1/8 DIA. f. 2 3/8		
	8		DIM. 2.625 DIA. Thru 2 1/2 NPT (Typ 2 Plcs) [⌖ A⊗ ⌀ .200⊗] Zone C-4		
	P/N 1	-	Filter Canister Upper Head 1150958D	Refer to Material Checklist M-9	Verified

CANISTER
CHECKLIST

FILTER
SERIAL NO. F-401
14 of 22 F-402
F-403
F-404

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150972A REV. 1	1		Silicon-Coated Recombiner Catalyst: Reqmts Defined in 6 Notes	Refer to Material Checklist M-10	Verified

FILTER
SERIAL NO. F-401/
15 of 22 F-402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
115404-C REV. 2	1		DIM. 2.218 / 2.223 DIA. Thru ⌖ | A | Ø.010 Ⓢ Zone B-4	Refer to Fabrication Checklsit F-11	Verified

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154075C REV. 2	A		SDDR 2-R200C-8	Programmatic Only	Verified

CANISTER
CHECKLIST

FILTER
SERIAL NO. F-401
17 of 22 ~~F-402~~
F-403
F-404

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154097A REV. 2	A		SDDR 2-R200C-7 (Seal Material)	Refer to Material Checklist M-11	Verified

FILTER
SERIAL NO. F-401
18 of 22 F-402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154098A REV. 2	A		SDDR 2-R200C-7 (Seal Material)	Refer to Material Checklist M-12	Verified

FILTER
SERIAL NO. F-401
19 of 22 F-402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154099A REV. 0	A		SDDR 2-R200C-7 (Seal Material)	Refer to Material Checklist M-13	Verified

FILTER
SERIAL NO. F-401
20 of 22

F-402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154106B REV. 1	A		SDDR 2-M101A-2	Programmatic Only	Verified

FILTER
SERIAL NO. F-401
21 of 22 F-402
F-403
F-404

CANISTER
CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154110A REV. 0	A		SDDR 2-R200C-7 (Seal Material)	Refer to Material Checklist M-14	Verified

FILTER
SERIAL NO. F-401
22 of 22 F-402
F-403
F-404

MASTER CHECKLIST

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154114A REV. 0	A		SDDR 2-R200C-7 (Seal Material)	Refer to Material Checklist M-15	Verified

SHELL S/N 43P1

ISTER (FILTER)
CHECKLIST (Materials) (M-1)

Serial No.* F-402

Rev. 1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D Rev. 1	P/N 1		Canister Lower Head Material: ASME SA-479 or SA-240 type 304L or type 316L stainless steel LOWER HEAD	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	Bechtel P.O. TC-016160-3 This MATERIAL was supplied by GPU NUCLEAR, INC. (Bechtel North American Power Corp.) Therefore checklist items 1. (P.O.) and 2. (suppliers) are not applicable to NES. 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1) • CMTR for HEAT # 20800 Allied Metals, Inc. for lower heads in F401, F 402, F 403 and F 404. • No other documents required to be submitted. Therefore no review of documents required

*This Checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D Rev. 1	P/N 1			3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs written for Receipt Inspected material. See Attachment 1 item 5
				f. Calibration of Inspection Equipment	. See comment 1
				g. Dimensional Inspection	. See comment 1
				h. Documented RI and acceptance of the material for further use	. Document submittals stamped by QC Inspector,* (See Comment 1)
				4. Verify Release to Shop	4 Traveler NO. 003697

* Receipt inspected by Selamco No. 2 on 2-12-85

SHELL S?N 43P1

.NISTER (FILTER)
CHECKLIST (Materials) (M-2)

Serial No. F-402

Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150940A Rev. 2	1		Recombiner Catalyst Pellet: Requirements defined in 6 notes CATALYST	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals. 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	Bechtel P.O. TC-018139-1 This MATERIAL was supplied by GPU NUCLEAR, INC. (Bechtel North American Power Corp.) There for checklist items 1, (P.O.) and 2. (suppliers) are not applicable to NES. 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1) • C of C (Engelhard Corp., dated 3-29-85) • No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150940A Rev. 2				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs written for Receipt Inspected material. See Attachment 1 item 5
				f. Calibration of Inspection Equipment	. See comment 1
				g. Dimensional Inspection	. See comment 1
				h. Documented RI and acceptance of the material for further use	. Document submittals stamped by QC Inspector*, (See Comment 1)
				4. Verify Release to Shop	4. Traveler NO. 003697
					* Receipt inspected by Selamco No. 2

Serial No. P-402
Page 1 of 2

SHELL S/N 43P1

...NISTER (FILTER)
...CKLIST (Materials) (M-3)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1	P/N 1	1	Skirt 1150944C Material ASTM A-312 Grade 304 or Grade TP 316L Stainless Steel Pipe	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	Bechtel P.O. TC-016162 This MATERIAL was supplied by GPU NUCLEAR, INC. (Bechtel North American Power Corp.) There for checklist items 1, (P.O.) and 2. (suppliers) are not applicable to NES. 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1) • CMTR from ARMCO, INC. Heat no. 341158. Inspected by NES/Selamco inspector (INSP.) No. 2 • No other documents required to be submitted. Therefore no review of documents required

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

\NISTER (FILTER)
CHECKLIST (Materials) (M-3)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs written for Receipt Inspected material. See Attachment 1, item 5
				f. Calibration of Inspection Equipment	. See Comment 1
				g. Dimensional Inspection	. See comment 1
				h. Documented RI and acceptance of the material for further use	. Document submittals stamped by QC Inspector. (See Comment 1) *
				4. Verify Release to Shop	4 Traveler NO. 003570
					* Receipt inspected by Selamco . No. 2

SHELL S/N 43P1

...NISTER (FILTER)
...ECKLIST (Materials) (M-4)

Serial No. F-...

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150945C Rev. 1	P/N 1		Shell 1150945C Material: ASME SA-312 Grade TP 304L or Grade TP 316L Stainless Steel Pipe 13.500" + 0.000" I.D − 0.063 x .250" Wall Nominal (.219 minimum)	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	Bechtel P.O. TC-016162 This MATERIAL was supplied by GPU NUCLEAR, INC. (Bechtel North American Power Corp.) There for checklist items 1, (P.O.) and 2. (suppliers) are not applicable to NES. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1) . CMTR from ARMCO, INC; heat no. 240910 , 341158 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-403 (Shell s/n 11P2)

For F-404, refer to verification package that contains data unique to that canister.

SHELL S/N 43P1

...ISTER (FILTER)
CHECKLIST (Materials) (M-4)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150945C Rev. 1	P/N 1			3. (Continued)	
				d. Inspector's Certification	• Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	• No NCRs written for Receipt Inspected material. See Attachment 1, item 5
				f. Calibration of Inspection Equipment	• See comment 1
				g. Dimensional Inspection	• See comment 1
				h. Documented RI and acceptance of the material for further use	• Document submittals stamped by QC Inspector. (See Comment 1) *
				4. Verify Release to Shop	• Traveler NO. 003568

* Receipt inspected by Selamco No. 2

SHELL S/N 43P1

NISTER (FILTER)
ECKLIST (Materials) (M-5)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
21509490 Rev. 5	P/N 2	1	Tube 2-1/8 O.D. x 0.065 Wall Material ASTM-A-269 Grade TP 316L Stainless Steel Tube	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals. 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S03938-4 SUPPLIER: Marmon Keystone Corp HT-71393 Charlotte N.C. . NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 identified on PO . Receipt Inspection Performed at NES. . CMTR submittal identified on PO 2. Suppliers: . Supplier included on NES corp. AVL dated 3/27/85 . Corp. AVL indicates that this supplier was approved based on the history of Receipt Inspections by NES and is ASME certified. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . Marmon Keystone, Heat No. 71393 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

a/n F-401 (Shell s/n 45P2)
a/n F-404 (Shell s/n 140P2)
a/n F-403 (Shell s/n 11P2)

SHELL S/N 43P1

.NISTER (FILTER)
CHECKLIST (Materials) (M-5)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs written for Receipt Inspected material. See Attachment 1, item 5
				f. Calibration of Inspection Equipment	. See comment 1
				g. Dimensional Inspection	. See comment 1
				h. Documented RI and acceptance of the material for further use	. Receiving copy of the PO stamped by QC Inspector Receipt inspected by Selamco No 2
				4. Verify Release to Shop	4. Traveler NO. 003662 Poison Tube Assy

SHELL S/N 43P1

.ISTER (FILTER) CHECKLIST (Materials) (M-6A)

Serial No.* F- 402
Page 1 of 2

Rev. 1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION MAT'L
					P.O.: S03941-2-3 Dubose Steel
11509490 Rev. 5	P/N 3	1	Bottom end plug material: ASTM A-479 or A-276, Type 316L Stainless Steel Bar	MATERIALS	
				1. Purchase Order (P.O.)	
				a. ANSI N45.2 requirements identification	a. NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4)
				b. Identification of Part 21 applicability	b. Part 21 identified on PO
				c. Is Source/Receipt Inspection identified	c. Receipt Inspection Performed at NES.
				d. Identification of Document submittals	d. CMTR submittal identified on PO
	P/N 4	1	Top End Plug Material: ASTM A-479 or A-276 Type 316L Stainless Steel Bar	2. Suppliers	2. Suppliers:
				a. Included on Qualified Source List	a. Supplier included on NES AVL dated 8-2-85
				b. Evidence of Audit/Surve	b. AVL indicates that this supplier was approved based on the history of Receipt Inspection by NES and is ASME Certified
				c. Evidence of Auditor Certifications	
				3. Receipt Inspection (RI)	3. Receipt Inspection:
				a. Documented approval of RI requirements	a. NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements
				b. CMTRs/C of Cs review	b. Item No. 2, on PO-S-3941, CMTRs Armco, Inc., Heat No. 626532. insp by Selamco 2
				c. Other P.O. required documents review	b. Item No. 3, on PO-S-3941, CMTR from Slater Steel Heat No.86949 insp. by Selamco 2
					c. No other documents required to be submitted. Therefore no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5				3. (Continued)	
				d. Inspector's Certification	• Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	• No NCRs identified on the Receipt Inspection Report. See Attachment 1, item 5
				f. Calibration of Inspection Equipment	• On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)
				g. Dimensional Inspection	• Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)
				h. Documented RI and acceptance of the material for further use	• Receiving copy of the PO stamped by QC Inspector Selamco No 2,
				4. Verify Release to Shop	4 Traveler NO. 003662

SHELL S/N 43P1

ANISTER (FILTER)
CHECKLIST (Materials) (M-6B)

Serial No.* F-402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION (FAB)
11509490 Rev. 5	P/N 3	1	Bottom end plug material: ASTM A-479 or A-276, Type 316L Stainless Steel Bar	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S04337-3 SUPPLIER: K & C Machine, Greensboro NC • NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) • Part 21 applicability not included in the P.O. (For Resolution see Attachment 1, Item 3) • Receipt Inspection Performed at NES. • N/A on PO however C of C submitted 2. Suppliers: • No, at time of PO placment. NCR No.176 documents non qualified sources. • K & C Machine was post qualified on 6/85 • K & C Machine is now qualified 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements • C of C, Insp. by Sela co 2 • No other documents required to be submitted. Therefore no review of documents required
	P/N 4	1	Top End Plug Material: ASTM A-479 or A-276 Type 316L Stainless Steel Bar		
			For P/n - 3 see FAB checklist No F-8		

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-6-B)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	• Receiving Inspector Certification acceptable. • No NCRs identified on Receiving Report See Attachment 1, item 5 • On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) • Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) • Receiving copy of the PO stamped by QC Inspector Selamco 2 • Traveler NO. 003662

SHELL S/N 43P1

...NISTER (FILTER) CHECKLIST (Materials) (M-7)

Serial No. * P-402

Rev. 1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	P/N 5	A/R	B_4C Pellet Material: ASTM C-750 Type 2 Boron Carbide	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: 04789-2 SUPPLIER: Advanced Refractory Technologies . ANSI N 45 2 requirements identified. . Part 21 identified on PO via Bechtel Spec. . Receipt Inspection Performed at NES. . C of C submittal identified on PO 2. Suppliers: . Yes, Included on NES Corp. List dated 9/16/85 . Audit performed on 4/12/85 . Audit No. QAA-314 . PO No. 04789 was issued on 4-22-85 which is after the date the Audit/Survey was performed. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . C/C and special processes from Advanced NES stamp Selmco 5,9-9-85 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

NOTE: Traveler 003662 references P.O. S04032 which no longer applies to B & C pellets; Traveler 004096 which is linked to Traveler 003562 references P.O. S04789 which is correct

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-8A)

Serial No. F- 402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION MAT'L
1150957B Rev. 1	P/N 1	--	Plug Material: ASME SA-479 Type 316L or ASME SA-479 type 304L Stainless Steel Bar Stock	MATERIALS	P.O.: 03941-4 SUPPLIER: Dubose Stell, Roseboro NC
				1. Purchase Order (P.O.)	
				a. ANSI N45.2 requirements identification	. NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4)
				b. Identification of Part 21 applicability	. Part 21 identified on PO
				c. Is Source/Receipt Inspection identified	. Receipt Inspection Performed at NES.
				d. Identification of Document submittals.	. CMTR submittal identified on PO
				2. Suppliers	2. Suppliers:
				a. Included on Qualified Source List	. Supplier included on NES corp. AVL dated 8-2-85
				b. Evidence of Audit/Surve	. AVL indicates that this supplier is approved based on the history of Receipt Inspection by NES and ASME Certification.
				c. Evidence of Auditor Certifications	
				3. Receipt Inspection (RI)	3. Receipt Inspection:
				a. Documented approval of RI requirements	. NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements
				b. CMTRs/C of Cs review	. Yes, CMTR, stamped by elamco 2
				c. Other P.O. required documents review	. No other documents required to be submitted. Therefore, no review of documents required.

This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

Serial No. P-402

SHELL S/N 43P1

HISTER (FILTER)
CHECKLIST (Materials) (N-8A)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION MAT'L
1150957B Rev. 1				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	• Receiving Inspector Certification acceptable. • No NCRs identified on Receipt Insp. see Att. 1 item 5. • On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) • Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) • Receiving copy of the PO stamped by QC Inspector Selamco 2 • Traveler NO. 003778

SHELL S/N 43P1

...ISTER (FILTER)
...ECKLIST (Materials) (M-88)

Serial No.* P-402

Rev.1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION FAB
1150957B Rev. 1	P/N 1	--	Plug Material: ASME SA-479 Type 316L or ASME SA-479 type 304L Stainless Steel Bar Stock	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals. 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: 04337-8 SUPPLIER: K&C Machine Co., Greensboro NC • NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) • Part 21 applicability not included in th P.O. (For Resolution see Attachment 1, Item 3) • Receipt inspection performed at NES Machining operation only, items were Receipt inspected by NES. 2. Suppliers: • No, at time of PO placement. NCR No. 176 documents nonqualified sources. K & C Machine Co. was post • qualified on 6/85. • K & C Machine is now qualified • yes 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements • None required by PO • No other documents req red to be submitted. Therefore, o review of documents required.

* This checklist also applies to canister:

s/n P-401 (Shell s/n 45P2)
s/n P-404 (Shell s/n 140P2)
s/n P-403 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150957B Rev. 1				3. (Continued)	
				d. Inspector's Certification	• Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	• No NCRs identified on Receiving Report See Attachment 1 item 5
				f. Calibration of Inspection Equipment	• On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)
				g. Dimensional Inspection	• Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)
				h. Documented RI and acceptance of the material for further use	• Receiving copy of the PO stamped by QC Inspector Selamco 2
				4. Verify Release to Shop	• Traveler NO. 003778

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-9A)

Serial No.* F-402
Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D Rev. 3	P/N 1	--	Filter Canister Upper Head Material: ASME SA-240 Type 316L or Type 304L Stainless Steel Plate	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals. 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	Bechtel P.O. TC-016160 This MATERIAL was supplied by GPU NUCLEAR, INC. (Bechtel North American Power Corp.) Therefore checklist items 1, (P.O.) and 2. (suppliers) are not applicable to NES. 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1) • See Page 2 for identification of CMTRs • No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

Shell s/n 43P1

ANISTER (PILTER)
CHECKLIST (Materials) (M-9 A)

Serial No. P-402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D Rev. 3				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	. Receiving Inspector Certification acceptable. . No NCRs written for Receipt Inspected material. See Attachment 1, item 5 . On the receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) . Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) . Document submittals stamped by QC Inspector. (See Comment 1)* . Traveler NO. 003778 * inspected by Selamco No.2 & no. 5

The following is a list of CMTRs and C of Cs:

Item	Date	Origin
C of C	2/21/85	Guyon Alloys, In
C of C	1/16/85	Guyon Alloys, In
C of C	2/25/85	Jessop Steel, Co.
C of C	1/18/85	Jessop Steel, Co.
C of C	5/23/85	Jessop Steel, Co.
C of C	5/23/85	Jessop Steel, Co.
CMTR	accept 674785	Jessop Steel, Co.
CMTR	accept 7115/85	Jessop Steel, Co.
CMTR	accept 3721785	Jessop Steel, Co.
CMTR	accept 678785	Jessop Steel, Co.

Heat Nos: 20933, 21090, 33577, 35579, 20794, 20840, 33578

SHELL S/N 43P1

CANISTER (FILTER)
CHECKLIST (Materials) (M-9B)

Serial No. * F- 402
Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION FAB
1150958D Rev. 3	P/N 1	--	Filter Canister Upper Head Material: ASME SA-240 Type 316L or Type 304L Stainless Steel Plate	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals. 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S-03942 SUPPLIER: Brown Boveri . NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 identified on PO . Receipt Inspection Performed at NES. . CMTR submittal identified on PO . Material conformance (MC) identified on P.O. 2. Suppliers: . Supplier included on NES corp. AVL dated 3/27/85 . AVL indicates that this supplier is approved based on the history of Receipt Inspection by NES. Supplier surveyed 2/85. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . MC . accepted 4-17-85, by Selamc 2 cmtr is not necessary . No other documents required to be submitted. Therefore, no review of documents required

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

21-5

SHELL S/N 43P1

CANISTER (FILTER)
CHECKLIST (Materials) (M-9'B)

Serial No. F-402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION FAB
1150958D Rev. 3				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	• Receiving Inspector Certification acceptable. • NCRs identified on Receipt Insp. Report NCR 323 and 322, closed Request No. 453, closed 4/16/85 • On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) • Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) • Receiving copy of the PO stamped by QC Inspector Selamco 2 • Traveler NO. 003778

SHELL S/N 43P1

...ISTER (FILTER)
CHECKLIST (Materials) (M-10)

Serial No. F- 402
Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150972A Rev. 1	1		Silicon - Coated recombiner catalyst requirements defined in 6 notes.	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals. 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs revie c. Other P.O. required documents review	Bechtel P.O. TC-016181 TC-018139 This MATERIAL was supplied by GPU NUCLEAR, INC. (Bechtel North American Power Corp.) There for checklist items 1, (P.O.) and 2. (suppliers) are not applicable to NES. 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1) • C of C from AECL Se...mco 2 • No other documents re...ired to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 1iP2)

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-10)

Serial No. F-402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150972A Rev. 1				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	. Receiving Inspector Certification acceptable. . No NCRs identified on the Receiving Report See attachment 1, Item 5 . On the receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) . Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) . Document submittals stamped by QC Inspector. (See Comment 1)* . Traveler NO. 003734 * Receipt inspected by Selamco No. 2

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-11)

Serial No.* F-402
Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154097A Rev. 2	A		Confirm Hansen part numbers end in "_192" (For Ethylene Propylene Diem Monomer Seal Materials) Ref: SDDR 2- R200C-7	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S04291-S SUPPLIER: Air Products Co., Cumming, GA . NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 not identified on PO See Attachment No. 1, item 3 . Receipt Inspection Performed at NES. . C of C submittal identified on PO 2. Suppliers: No at the time of PO placement. . NCR No. 176 documents nonqualified sources. Air Products Co. now been evaluated by NES and determined not to . need a survey as Air Products is a distributer. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . C of C Air Products inspected by Selamco 2 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154097A Rev. 2				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	. Receiving Inspector Certification acceptable. . No NCRs identified on Receiving Report (See Attachment 1, Item 5 . On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) . Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) . Receiving copy of the PO stamped by QC Inspector Selamco 2 4. Traveler NO. 003821

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-12)

Serial No.* P-402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154098A Rev. 2	A		Confirm Hansen Part Numbers end in "_192" (For Ethylene Propylene Diem Monomer Seal Materials) Ref: SDDR 2- R200C-7	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S04291-4 SUPPLIER: Air Products Co., Cumming, GA . NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 not identified on PO See Attachment No. 1, item 3 . Receipt Inspection Performed at NES. . C of C submittal identified on PO 2. Suppliers: No at the time of PO placement. . NCR No. 176 documents nonqualified sources. Air Products Co.now been evaluated by NES and determined not to need a survey as Air Products is a distributer. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . C of C Air Products inspected by Selamco 2 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

SHELL S/N 43P1

NISTER (FILTER)
CHECKLIST (Materials) (M-12)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154098A Rev. 2				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs identified on Receiving Report. (See Attachment 1, item 5)
				f. Calibration of Inspection Equipment	. On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)
				g. Dimensional Inspection	. Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)
				h. Documented RI and acceptance of the material for further use	. Receiving copy of the PO stamped by QC Inspector by Selamco no 2
				4. Verify Release to Shop	4. Traveler NO. 003820

SHELL S/N 43P1

...NISTER (FILTER)
...ECKLIST (Materials) (M-13)

Serial No. F- 402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154099A Rev. 0	A		Confirm Hansen Part Numbers end in "_192" (For Ethylene Propylene Diem Monomer Seal Materials) Ref: SDDR 2- R200C-7	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S0429I-2 SUPPLIER: Air Products Co. . ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 not identified on PO See Attachment No. 1, item 3 . Receipt Inspection Performed at NES. . C of C submittal identified on PO 2. Suppliers: No at the time of PO placement. . NCR No. 176 documents nonqualified sources. Air Products Co. now been evaluated by NES and determined not to need a survey as Air Products is a distributer. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . C of C Air Products in pected by Selamco 2 . No other documents req ired to be submitted. Therefore, no review of documents required.

This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

SHELL S/N 43P1

WNISTER (FILTER)
CHECKLIST (Materials) (M-13)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154099A Rev. 0				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs identified on the Receiving Report. (See attachment 1, item 5)
				f. Calibration of Inspection Equipment	. On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)
				g. Dimensional Inspection	. Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)
				h. Documented RI and acceptance of the material for further use	. Receiving copy of the PO stamped by QC Inspector Selamco 2
				4. Verify Release to Shop	. Traveler NO. 003832

SHELL S/N 43P1

ANISTER (FILTER)
HECKLIST (Materials) (M-14)

Serial No.* F- 407
Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154110A Rev. 0	A		Confirm Hansen Part Numbers end in "_192" (For Ethylene Propylene Diem Monomer Seal Materials) Ref: SDDR 2- R200C-7	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: S04291-3 SUPPLIER: Air Products Co. Cummings GA . NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 not identified on PO See Attachment No. 1, item 3 . Receipt Inspection Performed at NES. . C of C submittal identified on PO 2. Suppliers: No at the time of PO placement. . NCR No. 176 documents nonqualified sources. Air Products Co. now been evaluated by NES and determined not to need a survey as Air Products is a distributer. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . C of C Air Products, inspected by Selamco 2 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154110A Rev. 0				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs identified on the Receiving Report (See attachemant 1 item 5)
				f. Calibration of Inspection Equipment	. On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)
				g. Dimensional Inspection	. Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)
				h. Documented RI and acceptance of the material for further use	. Receiving copy of the PO stamped by QC Inspector Selamco 2
				4. Verify Release to Shop	. Traveler NO. 003840

SHELL S/N 43P1

...ISTER (FILTER)
...CKLIST (Materials) (M-15)

Serial No. F- 402

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154114A Rev. 0	A		Confirm Hansen Part Numbers end in "_192" (For Ethylene Propylene Diem Monomer Seal Material) Ref: SDDR 2- R200C-7	MATERIALS 1. Purchase Order (P.O.) a. ANSI N45.2 requirements identification b. Identification of Part 21 applicability c. Is Source/Receipt Inspection identified d. Identification of Document submittals 2. Suppliers a. Included on Qualified Source List b. Evidence of Audit/Surve c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CMTRs/C of Cs review c. Other P.O. required documents review	P.O.: 04291 SUPPLIER: Air Products Co Cumming GA . NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 not identified on PO See Attachment No. 1, item 3 . Receipt Inspection Performed at NES. . C of C submittal identified on PO 2. Suppliers: No at the time of PO placement. . NCR No. 176 documents nonqualified sources. Air Products Co. now been evaluated by NES and determined not to need a survey as Air Products is a distributer. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . C of C Air Products inspected by Selamco 2 . No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

SHELL S/N 4SP1

...STER (FILTER)
...HECKLIST (Materials) (M-15)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154114A Rev. 0				3. (Continued)	
				d. Inspector's Certification	. Receiving Inspector Certification acceptable.
				e. Identification and Disposition of NCRs	. No NCRs identified on the Receiving Report (See attachment 1, item 5)
				f. Calibration of Inspection Equipment	. On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)
				g. Dimensional Inspection	. Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)
				h. Documented RI and acceptance of the material for further use	. Receiving copy of the PO stamped by QC Inspector Selamco 2.
				4. Verify Release to Shop	. Traveler NO. 003820

SHELL s/n 43P1

Serial No. F-402
Page 1 of 2

IISTER (FILTER) CHECKLIST (Materials) (M-16)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev.	P/N 1	1	DIM 2.218 Dia 2.223 THRU ⌖ A (S) Ø.010 (S) ZONE B-4	MATERIALS	B & B Hose & Rubber, Co.; P.O. S-04293, item 2
				1. Purchase Order (P.O.)	
				a. ANSI N45.2 requirements identification	. Not specified by Nes in P.O. . Not specified by NES in P.O.
				b. Identification of Part 21 applicability	See Attachment 1, item 4 See Attachment 1, item 3
				c. Is Source/Receipt Inspection identified	. Source inspection not specified by NES in P.O.; NES performed receipt inspection
				d. Identification of Document submittals	. Yes, Item 3. (compliance certification)
				2. Suppliers	
				a. Included on Qualified Source List	• Not at the time of PO placement. NCR No. 176 documents nonqualified sources. B&B Hose and Rubber Co. was post surveyed on 7/9/85 by NES QA and has now been evaluated by NES and determined not to need additional surveys as the company is a distributor.
				b. Evidence of Audit/Surve	
				c. Evidence of Auditor Certifications	
				3. Receipt Inspection (RI)	
				a. Documented approval of RI requirements	. Policy procedures manual, Q-12
				b. CMTRs/C of Cs review	. Yes, 3.1, PT coupling Co. to B.B. Rubber, inspected by Selmco 2
				c. Other P.O. required documents review	. No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canister:

s/n F-401 (Shell s/n 45P2)
s/n F-404 (Shell s/n 140P2)
s/n F-403 (Shell s/n 11P2)

ANISTER (FILTER)
CHECKLIST (Materials) (M-16)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev.				3. (Continued) d. Inspector's Certification e. Identification and Disposition of NCRs f. Calibration of Inspection Equipment g. Dimensional Inspection h. Documented RI and acceptance of the material for further use 4. Verify Release to Shop	. Receiving Inspector Certification acceptable. . No NCRs identified on the Receipt Inspection Report. See Requests (REQ) . REQ 750, Cleared 2-18-85 REQ 318, cleared 5-7-85 . On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1) . Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2) . Yes, accepted by Salamco 2 as P.O. item 2 4 Yes Traveler 003840

SHELL S/N 11P2

CANISTER
CHECKLIST (FABRICATION)(F-1)

FILTER
Serial No. F-403

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		DIM. 149 3/4" ± 1/4" (12' - 5 3/4")	1. Issuance of Material for next operation (release to shop)	Yes, Traveler 003838
	2		DIM. 3.200 Typ (MAX.)	2. Identification of latest approved drawings on Traveller	Yes, Traveler 003838
	Note 13		Envelope of Canister Within Perfect Cylinder of 14 15/16" DIA.	IN PROCESS INSPECTIONS	
				3. Machining Operations	Not applicable to the items being verified.
				a. Supplier performed - (Refer to Material Checklist)	↓
				b. If NES performed -	
				1) Identification of Requirements	See Item 5.C on Page 2
				2) Inspection and Acceptance for further use	See Item 5.C on Page 2
				3) Certification of Inspectors	See Item 5.a on Page 2
				4. Welding Operations	Not applicable to the items being verified.
				a. Welding	↓
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

FILTER
Serial No. F- 403

CANISTER
CHECKLIST (FABRICATION)(F-1)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		Dim. $149\frac{3}{4} \pm \frac{1}{4}$"	5. Dimensional Inspection	
				a. Qualification of Inspectors	a. Selmaco 6 and RDH are qualified for inprocess and final inspection per QA issuance log.
	2		Dim. 3.200 Typ (Max)	b. Use of calibrated equipment	b. Tools/gauges calibrated. See Attachment 1, Item 7.
	Note 13		14 5/16" Cylinder	c. Evidence of inspection and acceptance to required criteria	c. Yes, Traveler 003838 except for Item 2 (on inlet coupler) NCR 385 written.
				6. Identification, Control, and Disposition of NCRs	NCR 385 - open. See Attachment 1, Item 5.
				7. Implementation of SDDRs	No SDDRs. See Attachment 1, Item 6.
				8. Assembly Inspection	Yes, Traveler 003838

Shell S/N 11P2

CANISTER
CHECKLIST (FABRICATION)(F-2)

FILTER
Serial No. F- 403

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		DIM. $1\frac{1}{4}$" $\pm$ 1/16" Zone C-12	1. Issuance of Material for next operation (release to shop)	Yes, Traveler 003754
	2		DIM. 1" $\pm$ 1/16" Zone C-4	2. Identification of latest approved drawings on Traveller	Yes, Traveler 003754
				IN PROCESS INSPECTIONS	
				3. Machining Operations	Not applicable to the items being verified.
				a. Supplier performed - (Refer to Material Checklist)	
				b. If NES performed -	
				1) Identification of Requirements	1) See Item 5.C on Page 2
				2) Inspection and Acceptance for further use	2) See Item 5.C on Page 2
				3) Certification of Inspectors	3) See Item 5.a on Page 2
				4. Welding Operations	Not applicable to the items being verified.
				a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

FILTER
Serial No. F- 403

CANISTER
CHECKLIST (FABRICATION)(F-2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		Dm. 1¼" ± 1/16"	5. Dimensional inspection a. Qualification of Inspectors b. Use of calibrated equipment c. Evidence of inspection and acceptance to required criteria 6. Identification, Control, and Disposition of NCRs 7. Implementation of SDDRs 8. Assembly Inspection	a) Selamco 3 is qualified for inprocess inspection per NES QA issuance log. b) Tools/gauges calibrated. See Attachment 1, Item 7. c) Yes, Traveler 003754 the dimensional criteria on Traveler 003754 is not in accordance with drawing (see below) NCR 197 written for Item 5.C, above; NCR 197 - open. See Att. 1, Item 5. Yes SDDR 73 - approved. See Att. 1, Item 6. Yes, Traveler 003838 Traveler 003754 requires dimensions of 1 1/8" and 1 1/8" instead of 1¼" and 1" (NCR 197 written) as required at the drawing.

FILTER
Serial No. F-402

SHELL S/N 43P1 — FILTER CHECKLIST (FABRICATION)(F-3) —

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS — Rev. 1

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	1		DIM. 6 $\pm\frac{1}{4}$" Zone B-7	1. Issuance of Material for next operation (release to shop)	TVR.003778, ------ Assy
	2		DIM. 90° Zone C-6	2. Identification of latest approved drawings on Traveller	2. No. TVR 003778 (issued 2-4-85) @ Rev 3 DWG. Rev. 4. (2/7/85) Work on TVR performed ~ 4/85 Resolved SDDR No. 2-M181A-99
	3	2	DIM. .750" + .005" Ⓜ|D|.010Ⓜ	IN PROCESS INSPECTIONS	
	Note 3		Add Catalysts (P/Ns 4 & 6) in Portions Specified Prior to Welding of Screen Assy.	3. Machining Operations	3.
				a. Supplier performed - (Refer to Material Checklist)	a) Not applicable
			Filter Canister upper Head weldment	b. If NES performed -	b) see below items 1 and 3
				1) Identification of Requirements	1) Yes. TVR 003778, verified
				2) Inspection and Acceptance for further use	2) Yes. TVR 003778, verified
				3) Certification of Inspectors	3) Yes. Selamco ② performed final inspection
				4. Welding Operations	4 Refer to welding & NDE checklist No. W-3, in each canister verification package, accept.
				a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

This Checklist also applies to canister:

S/N F401 (Shell S/N 45P2)
S/N F404 (Shell S/N 140P2)
S/N F403 (Shell S/N 11P2)

Serial No. F-402

SHELL S/N 43P1 — MASTER CHECKLIST (FABRICATION)(F-3) —

Rev. 1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	1		DIM 6 ¼"	5. Dimensional Inspection	
	2		DIM 90°	a. Qualification of Inspectors	a. Selamco Inspector (2) on the Master Selamco QA Issuance Log.
	3		DIM 0.750" ± 0.005	b. Use of calibrated equipment	b. Tools/gauges calibrated. See Attachment 1, Item 7.
	Note 3		Add Catalysts	c. Evidence of inspection and acceptance to required criteria	c. Yes. TVR 003778
				6. Identification, Control, and Disposition of NCRs	6. Not applicable. There are NO NCRs documented on this TVR. See Attachment 1, Item 5.
				7. Implementation of SDDRs	7. SDDR on this item (2M181A-99) See Attachment 1, Item 6.
				8. Assembly Inspection	8. • TVR 003840 by Sel (2) 5/85, F402 • TVR 003842 by Sel (2) 5-8-85, F401 • TVR 003839 by Sel (2) 5-10-85, F404 • TVR 003838 by Sel (2) on 5-9-85, F403

Serial No. F- 402

SHELL S/N 43P1 — MASTER CHECKLIST (FABRICATION)(F-4) — Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154045D REV. 5	Note 2		Add Catalysts (P/Ns 4 & 5) in Portions Specified Prior to Welding of Screen Assy. Canister Lower Head Assy.	1. Issuance of Material for next operation (release to shop) 2. Identification of latest approved drawings on Traveller IN PROCESS INSPECTIONS 3. Machining Operations a. Supplier performed - (Refer to Material Checklist) b. If NES performed - 1) Identification of Requirements 2) Inspection and Acceptance for further use 3) Certification of Inspectors 4. Welding Operations a. Welding b. NDE c. Visual Examination (Refer to Welding & NDE Checklist)	TVR 3697 added catalyst prior to welding. TVR 003734 weighted catalyst. Source catalysts-P.O.(Bechtel) TC 016181 TVR No. 003697 does not have the DWG Rev. NES review of drawing files denotes that Rev. 5 was used. Also TVR 003734 has Rev. 5 weights. 3. Not applicable (NA) 4. NA

This Checklist also applies to canister:

S/N F401 (Shell S/N 45P2)
S/N F404 (Shell S/N 140P2)
S/N F403 (Shell S/N 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 1

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154045D REV. 5	Note 2		Add Catalysts	5. Dimensional Inspection a. Qualification of Inspectors b. Use of calibrated equipment c. Evidence of inspection and acceptance to required criteria 6. Identification, Control, and Disposition of NCRs 7. Implementation of SDDRs 8. Assembly Inspection	a. Selamco Inspector (2) on the Master Selamco QA Issuance Log. b. Tools/gauges calibrated. See Attachment 1, Item 7. c. For weight of catalysts NCR 245 was issued, along with SDDR No. 68(NES) being issued and approved by Bechtel. Item is now acceptable, Selamco 3 date 2-25-85 Inspection on TVR 3697 6. NCR-245 closed 8-22-85. See Attachment No. 1, item 5. 7. SDDR 68 (NES NO.), Bechtel NO. 2M-101A 68 closed-----8-22-85. See Attachment 1, Item 6. 8. TVR 003697

FILLER
Serial No. F- 402

SHELL S/N 43P1 CANISTER CHECKLIST (FABRICATION)(F-5) Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D REV. 1	1		DIM. 14.093 / T3.969 O.D. Zone C-6	1. Issuance of Material for next operation (release to shop)	Detail TVR 003690 Source PO# TC-016160-3 Heat 20800
	2		DIM. 3/8 Zone C-8	2. Identification of latest approved drawings on Traveller	2. Yes
	3		DIM. 5/16 MIN. Zone B-5	IN PROCESS INSPECTIONS	
	4		DIM. 2 3/4 Zone B-4	3. Machining Operations	3. see below
			Canister Lower Head	a. Supplier performed - (Refer to Material Checklist)	a. 14.093 / T3.969 , 3/8 , & 5/16 MIN Performed on PO NO. TC-016160-3, which was Bechtel supplied material.
				b. If NES performed -	
				1) Identification of Requirements	1. Yes, 2 3/4, on TVR 3690.
				2) Inspection and Acceptance for further use	2. Yes on TVR 3690
				3) Certification of Inspectors	3. Yes Selamco 2
				4. Welding Operations	4. Not applicable to Item 4 in "Description"
				a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

This Checklist Also Applies to Canister:

S/N F401 (Shell S/N 45P2)
S/N F404 (Shell S/N 140P2)
S/N F403 (Shell S/N 11P2)

Serial No. F- 402

SHELL S/N 43P1 — .IISTER CHECKLIST (FABRICATION)(F-5) —

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D REV. 1	1		DIM. 14.093 / 13.969	5. Dimensional Inspection	
				a. Qualification of Inspectors	a. Selamco Inspector (2) on the master Selamco QA Issuance Log.
	2		DIM. 3/8	b. Use of calibrated equipment	b. Tools/gauges calibrated. See Attachment 1, Item 7.
	3		DIM. 5/16 Min	c. Evidence of inspection and acceptance to required criteria	c. Yes. TVR 003690
	4		DIM. 2 3/4	6. Identification, Control, and Disposition of NCRs	6. None written for items being verified See Attachment 1, Item 5.
				7. Implementation of SDDRs	7. None. See Attachment 1, Item 6.
				8. Assembly Inspection	8. TVR 003840 (11P2) TVR 003842 (45P2) TVR 003839 (140P2) TVR 003838 (11P2)

Serial No. F-402

SHELL S/N 43P1

CANISTER CHECKLIST (Fabrication) (F-6) Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1	1		Dim. $\frac{14.062}{13.969}$ Dia. Zone B-3	1. Issuance of Material for next operation (release to shop)	TVR 003570 Det'l
	2		Dim. 4-1/2 Zone D-2	2. Identification of latest approved drawings on Traveller	2. Yes. TVR 003570
			Filter and knockout canister skirt	IN PROCESS INSPECTIONS	
				3. Machining Operations	
				a. Supplier performed - (Refer to Material Checklist)	a. Not applicable
				b. If NES performed -	b. see below
				1) Identification of Requirements	1. Yes, for 4 ½, TVR 003570 1. Yes, for $\frac{14.062}{13.969}$, TVR 003570
				2) Inspection and Acceptance for further use	2. Yes, for 4 ½, TVR 003570 Yes, for $\frac{14.062}{13.969}$, TVR 003570
				3) Certification of Inspectors	3. Yes, for 4 ½, TVR 003570 by (2) Selamco, first Art, 2-27-85 and (2) Selamco 8-23-85 3. Yes, for 14.062/13.969 by (2) Selamco (Operation 70) discussed with Selamco (2) 4-19-85
				4. Welding Operations	
				a. Welding	
				b. NDE	4. No welding operations were performed not applicable
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

This Checklist also applies to Canister:

S/N F401 (Shell S/N 45P2)
S/N F404 (Shell S/N 14DP2)
S/N F403 (Shell S/N 11P2)

FILTER
Serial No. F-402

SHELL S/N 43P1

CANISTER CHECKLIST (Fabrication) (F-6) Page 2 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1	1		DIM. $\frac{14.062}{13.969}$ DIA.	5. Dimensional Inspection	5.
				a. Qualification of Inspectors	a. Selamco Inspector (2) on the Master Selamco QA Issuance Log.
	2		DIM. 4 ½	b. Use of calibrated equipment	b. Tools/gauges calbrated. See Attachment 1, Item 7.
				c. Evidence of inspection and acceptance to required criteria	c. Yes. TVR 003570
				6. Identification, Control, and Disposition of NCRs	6. No NCRs on TVR. See Attachment 1, Item 5.
				7. Implementation of SDDRs	7. None. See Attachment 1, Item 6.
				8. Assembly Inspection	8. TVR-003778 Assy.
					Note material supplied by Bechtel - see M-3.

FILTER
Serial No. F- 402

SHELL S/N 43P1 CANISTER CHECKLIST (Fabrication) (F-7) Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150945C Rev. 1	1		Dim. 14.000 + .093 Dia. - .031 Zone C-2 Shell Filter & knockout canister.	1. Issuance of Material for next operation (release to shop) 2. Identification of latest approved drawings on Traveller	/. TVR 003568 TVR 003450 2. Yes. Rev. 0, on TVR 003568
This Checklist also applies to Canister: S/N F401 (Shell S/N 45P2) S/N F404 (Shell S/N 40P2) S/N F403 (Shell S/N 41P2)				IN PROCESS INSPECTIONS 3. Machining Operations a. Supplier performed - (Refer to Material Checklist) b. If NES performed - 1) Identification of Requirements 2) Inspection and Acceptance for further use 3) Certification of Inspectors 4. Welding Operations a. Welding b. NDE c. Visual Examination (Refer to Welding & NDE Checklist)	a. see Material checklist No. M-4 The shell, which includes the 14,000 dia. is supplied by GPU Nuclear Inc. via PO. TC-016162 1. Yes, for 14.00 +.093 -.031 TVR 3450 TVR 3568 2. Yes for 14.00 +.093 -.031 TVR 3450 TVR 3568 3. Yes 4. Welding is not part of this "Description" review. V/

SHELL S/N 43P1

...NISTER CHECKLIST (Fabrication) (F-7)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150945C Rev. 1	1		DIM. 14.000 + 0.093 DIA - 0.031	5. Dimensional Inspection a. Qualification of Inspectors b. Use of calibrated equipment c. Evidence of inspection and acceptance to required criteria 6. Identification, Control, and Disposition of NCRs 7. Implementation of SDDRs 8. Assembly Inspection Heat No 240910 240910 341158 240910	a. Selamco Inspector (9) on the Master Selamco QA Issuance Log. (Inspector's initials are RDH) b. Tools/gauges calibrated. See Attachment 1, Item 7. c. Inspection data traveler 003840 TVR 3568 6. NCR 180-Void NCR 427-Closed. See Att. 1, Item 5. 7. None. See Attachment 1, Item 6. 8. See below. Assembly TVR 003751 (45P2) 003753 (43P1) 003741 (140P2) 003754 (11P2)

FILTER
Serial No. F- 402

SHELL S/N 43P1 CANISTER CHECKLIST (Fabrication) (F-8) Page 1 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	1		Dim. 136-1/8 ± 1/16 (11' - 4-1/8"). Zone D-6	1. Issuance of Material for next operation (release to shop)	Assy TVR 003753, item 6 Assy TVR 03662, Tube Assy TVR 004067 Det 1 TVR 003563-Tube, 1150949-2 Det 1 TVR --3553-Plug, 1150949-3 TVR 003662 Lists DWG 1150949D as REV 4. (11-23-84) Fab date 2/85 current DWG is REV 5 (5-24-85)
	2		Dim. 3/4 Zone C-7	2. Identification of latest approved drawings on Traveller	
	3		Dim. 1-3/8 Zone C-4	IN PROCESS INSPECTIONS	
	Note 10		Pellets loaded within 1/4" of the tube fill length	3. Machining Operations	
				a. Supplier performed - (Refer to Material Checklist)	a. Yes, on Mat's checklist no. M-6 for DIM 3/4 PO 4337
				b. If NES performed -	b. Below
				1) Identification of Requirements	1. Yes, DIM 136 1/8 + 1/16, TVR 003563 1. Yes DIM 1 3/8 ± 1764, TVR 003553
				2) Inspection and Acceptance for further use	2. Yes, Dim 136, TVR 003563 2. Yes. Dim 1 3/8 TVR 003553
				3) Certification of Inspectors	3. Yes, Dim 136 1/8, Sel 2 2-11-85 3. Yes, Dim 1 3/8, Sel 2 1-15-85
				4. Welding Operations	4. See Welding Checklist
				a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

This Checklist also applies to Canister:

S/N F401 (Shell S/N 45P2)
S/N F404 (Shell S/N 40P2)
S/N F403 (Shell S/N 41P2)

SHELL S/N 43P1

CANISTER CHECKLIST (Fabrication) (F-8)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	1		Dim. 136 1/8" ± 1/16"	5. Dimensional Inspection	
	2		Dim. 3/4"	a. Qualification of Inspectors	a. Yes, Selamco Inspectors 2, 3 on the Master Selamco QA Issuance Log.
	3		Dim. 1 3/8"	b. Use of calibrated equipment	b. Tools/gauges calibrated. See Attachment 1, Item 7.
	Note 10		Pellets	c. Evidence of inspection and acceptance to required criteria	c. Yes PO. S04337 TVR. 003563 TVR. 003553 TVR 004096,A,B,C,D
				6. Identification, Control, and Disposition of NCRs	6. None listed on PO's or TVRs NCR No. 126 issued. See Attachment 1, Item 5.
				7. Implementation of SDDRs	7. NCR 126, resulted in SDDR 75 which was approved by Bechtel 9-9-85 and closed by NES QA on 9-12-85 See Attachment 1, Item 6.
				8. Assembly Inspection	8. TVR 003754 (11P2) 003753 (43P1) 003751 (45P2) 003741 (140P2)

FILTER
Serial No. F-402

SHELL S/N 43P1

CANISTER CHECKLIST (Fabrication) (F-9)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150957B Rev. 1	1		Dim. 1" Length of Plug	1. Issuance of Material for next operation (release to shop)	Source P.O. - S- 04337-8
	2		Dim. $\frac{.999}{.997}$ Dia.	2. Identification of latest approved drawings on Traveller	Not applicable - machining done by vendor (K*C Machine Co, Inc)
			Plug, Det. 3	IN PROCESS INSPECTIONS	
This Checklist also applies to Canister:				3. Machining Operations	
S/N F401 (Shell S/N 45P2)				a. Supplier performed - (Refer to Material Checklist)	Yes, P.O. S04337, Item 8 see Material Checklist M-8
S/N F404 (Shell S/N 140 P2)				b. If NES performed -	Not applicable, see item 2, above
S/N F403 (Shell S/N 11P2)				1) Identification of Requirements	↓
				2) Inspection and Acceptance for further use	
				3) Certification of Inspectors	
				4. Welding Operations	Not applicable to the "tasks listed under "Description""
				a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

FILTER
Serial No. F- 402

SHELL S/N 43P1

CANISTER
CHECKLIST (Fabrication) (F-9)

Rev.1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509578 Rev. 1	1		Dim. 1"	5. Dimensional Inspection	5. Not applicable, refer to material checklist
	2		Dim. .999/.997 DIA.	a. Qualification of Inspectors	
				b. Use of calibrated equipment	
				c. Evidence of inspection and acceptance to required criteria	
				6. Identification, Control, and Disposition of NCRs	6. No NCRs written against the plug. See Att. 1, Item 5.
				7. Implementation of SDDRs	7. Not applicable, no SDDRs were written for the plugs. See Attachment 1, Item 6.
				8. Assembly Inspection	8. Yes, traveler 003778 for 140P2, 45P2, 43P1, 11P2

FILTER
Serial No. F-402

CANISTER CHECKLIST (Fabrication) (F-10) Page 1 of 2

SHELL S/N 43P1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D Rev. 3	1		Dim. [4.500] R Zone D-7	1. Issuance of Material for next operation (release to shop)	1 PO-S-3942-2
	2		Dim. [4.800] Zone C-6	2. Identification of latest approved drawings on Traveller	2. See mat'l list M-9b
Upper Head	3		Dim. 14.083 / 14.093 Dia. Zone B-6	III PROCESS INSPECTIONS	
	4		Dim. 13.437 ± 0.015 / 0.000 Dia. Zone A-6	3. Machining Operations	
	5		Dim. 3-3/8 Zone B-8	a. Supplier performed - (Refer to Material Checklist)	a. Machining for this item was performed on PO No. 03942 by Brown-Boveri Inc.
	6		Dim. 3-7/8 Zone B-8	b. If NES performed -	
	7		Dims. for lifting socket (Zone D-3) a. 2.125 dia. b. 1/4 x 45° c. 13/16 d. 8° e. 3-1/8 Dia. f. 2-3/8	1) Identification of Requirements	
				2) Inspection and Acceptance for further use	
				3) Certification of Inspectors	
				4. Welding Operations	
	8		Dim. 2.625 Dia. thru 2-1/2 NPT Type 2 Places Zone C-4 [⌖ | A Ⓢ | Ø.020 Ⓢ]	a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	

SHELL S/N 43P1

CANISTER CHECKLIST (Fabrication) (F-10)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D Rev. 3	1 thru 8		"various dimensions"	5. Dimensional Inspection a. Qualification of Inspectors b. Use of calibrated equipment c. Evidence of inspection and acceptance to required criteria 6. Identification, Control, and Disposition of NCRs 7. Implementation of SDDRs 8. Assembly Inspection	8. TVR-003778 for 43P1, 45P2, 140P2, 11P2
UPPER HEAD					
This checklist also applies to Canister: S/N F401 (Shell S/N 45P2) S/N F404 (Shell S/N 140P2) S/N F403 (Shell S/N 11P2)					

FILTER
Serial No. F- 402

SHELL S/N 43P1 CANISTER CHECKLIST (Fabrication) (F-11)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044C Rev. 2	1		Dim. $\frac{2.218}{2.223}$ Dia. thru ⌀ | A Ⓢ | ⌀ .010 Ⓢ B-4 Inlet/Outlet Coupler	1. Issuance of Material for next operation (release to shop) 2. Identification of latest approved drawings on Traveller IN PROCESS INSPECTIONS 3. Machining Operations a. Supplier performed - (Refer to Material Checklist) b. If NES performed - 1) Identification of Requirements 2) Inspection and Acceptance for further use 3) Certification of Inspectors 4. Welding Operations a. Welding b. NDE c. Visual Examination (Refer to Welding & NDE Checklist)	Source P.O. S-04293-2 Not Applicable; refer to attached material checklist a. Yes, P.O. S04293, item 2 Material checklist M-16 b. Not applicable, machining was performed by vendor 4. Not applicable, welding is not one of of the items being reviewed as part of this checklist.

This Checklist also applies to Canister:

S/N F401 (Shel S/N 45P2)
S/N F404 (Shel S/N 40P2)
S/N F403 (Shel S/N 1 P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044C Rev. 2			Inlet/Outlet Coupler	5. Dimensional Inspection a. Qualification of Inspectors b. Use of calibrated equipment c. Evidence of inspection and acceptance to required criteria 6. Identification, Control, and Disposition of NCRs 7. Implementation of SDDRs 8. Assembly Inspection	5. Receipt inspection of machined coupler performed by NES. Refer to the material checklist M-16 6. No NCRs during fabrication. See Attachment 1, Item 5. 7. Not applicable; no SDDRs written for the coupler. See Att. 1, Item 6. 8. Traveler 003840 (43P1) 003839 (140P2) 003842 (45P2) 003838 (11P2)

SHELL s/n 11P2

CAN...ER

Serial No. F-403

Page 1 of 4

CHECKLIST (Welding & NDE) (W-1)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154Q18F REV. 5	3		Weld - Upper Head Weld 1	WELDING • Verify Qualification and approval of WPS utilized • Verify welder qualification for WPS utilized • Verify filler material control and disbursal • Verify by a review of traveller that the correct WPS was utilized • Verify calibration (affixed sticker and calibration record) of AVP meter on welding machine	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding. . *WPs-001 Rev. B, is approved WPS-004 Rev. 0, is approved . *Welders are qualified Welder no's 24,39,40 . Filler Material is controlled/ dispursed . The correct WPS was utilized . The welding machines are calibrated
	4		Weld - Lower Head Weld 2		
	5		Weld - Drain Tube To Upper Head Weld 3		
				IN PROCESS INSPECTION/ EXAMINATION • Verify the following activities were performed using latest approved procedure a. Fit-up Inspection b. Cleanliness Inspection c. Correct items were welded d. Minimum Interpass temperature e. Maximum Interpass temperature f. NDE (in process) g. Inspection/Examination personnel certified	IN PROCESS/INSPECTION/EXAMINATION . Fit up by Selamco Inspector Fit up witnessed by Bechtel supplier control Rep(QSR) . Cleanliness is not specifically addressed on the Traveler . The correct items were welded . Preheat temperature is welding procedure, for implementation by welder. Task monitored by Bechtel SQR. . Max. interpass temp. monitored by welders . NDE is not required (N/R) . I & E is not applicable (NIA) as NDE is not required

SHELL s/n 11P2

CAN..ER

Serial No. F-403

Page 1 of 4

CHECKLIST (Welding & NDE) (W-1)

Rev. 1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154Q18F REV. 5	3		Weld - Upper Head Weld 1	WELDING • Verify Qualification and approval of WPS utilized • Verify welder qualification for WPS utilized • Verify filler material control and disbursal • Verify by a review of traveller that the correct WPS was utilized • Verify calibration (affixed sticker and calibration record) of AMP meter on welding machine	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding. . *WPs-001 Rev. B, is approved WPS-004 Rev. 0, is approved . *Welders are qualified Welder no's 24,39,40 . Filler Material is controlled/ dispursed . The correct WPS was utilized . The welding machines are calibrated
	4		Weld - Lower Head Weld 2		
	5		Weld - Drain Tube To Upper Head Weld 3	IN PROCESS INSPECTION/ EXAMINATION • Verify the following activities were performed using latest approved procedure a. Fit-up Inspection b. Cleanliness Inspection c. Correct items were welded d. Minimum ~~Interpass~~ temperature e. Maximum Interpass temperature f. NDE (in process) g. Inspection/Examination personnel certified	IN PROCESS/INSPECTION/EXAMINATION . Fit up by Selamco Inspector Fit up witnessed by Bechtel supplier control Rep(QSR) . Cleanliness is not specifically addressed on the Traveler* . The correct items were welded* . Preheat temperature is welding procedure, for implementation by welder. Task monitored by Bechtel SQR. . Max. interpass temp. monitored by welders . NDE is not required (N/R) . I & E is not applicable (N1A) as NDE is not required

* See Page 4

CANISTER
CHECKLIST (Welding & NDE) (W-1)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				COMPLETED WELD VERIFICATION • Verify the following activities were performed using the latest approved procedure: a. Visual Examination b. Radiographic (or Ultrasonic) Examination c. Liquid Penetrant Examination d. Welder and weld number identified on weld or on documentation, i.e. (weld map) NON-DESTRUCTIVE EXAMINATION • RADIOGRAPHIC/ULTRASONIC EXAMINATION Verify the following requirements/activities a. Latest approved RT (or UT) procedure used b. Personnel qualified to perform the examination (1) Review RT (or UT) personnel education, training and work history records including current eye exam.	COMPLETED WELD VERIFICATION . *Visual Examination by Selamco No 6 . RT & UT procedures are approved by Bechtel . RT & UT not required . PT by Selamco No. 3 & 4 . Welder and weld no.(s) are identified NON-DESTRUCTIVE EXAMINATION • RADIOGRAPHIC/ULTRASONIC EXAMINATION . *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing labatory via procedures; PTL-QC-RT-1, PTL-QC-UT-1 . Personnel qualified: Selamco. L. Ludwig, Level III Selamco No. 6 . Personnel Education: Training & Eye exam are acceptable

CANISTER
CHECKLIST (Welding & NDE) (W-1)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				• LIQUID PENETRANT EXAMINATION Verify the following requirements/activities a. Latest approved PT procedure used b. Personnel qualified to perform the examination (1) Review PT personnel education, training and work history records, including current eye examination. c. PT materials utilized are acceptable materials and certificates of compliance are available for review d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.) e. PT material batch numbers recorded on traveller	• LIQUID PENETRANT EXAMINATION . *Latest approved procedure was used . Personnel qualified Selamco QC- 3 Selamco QC 4 . *Personnel, education, training and eye examination are acceptable . PT materials are acceptable C of C(s) are available . PT materials comply to project specification . *Batch no's are acceptable Batch no's used are: URESCO H 233 REMOVER 1520 DEVELOPER 1522

CANISTER
CHECKLIST (Welding & NDE) (W-1)

Rev. 1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				• VISUAL EXAMINATION Verify the following requirements/activities a. Latest approved procedure used b. Personnel qualified to perform the examination (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized	. *Procedure used is acceptable . *Personnel qualified Selamco no. 3,4,6 . *Personnel, education, training and eye examination are acceptable . Not applicable for weld inspection o Continued from Page 1, Item b, Cleanliness The Bechtel Resident Inspector has performed surveillance for cleanliness; also several travelers document the Resident Inspector's inspection for cleanliness. o Continued from Page 1, Item c, The correct items were welded. The correct items are documented on the traveler(s).

CANIS.

MATRIX OF APPROVED/CERTIFIED WELDING AND NDE PROCEDURES, PERSONNEL AND MATERIALS.

This matrix has been developed as a result of review, verification and/or approval of welding procedures, welder qualifications, filler material certifications, NDE procedures, NDE personnel certifications, NDE material certifications and equipment calibrations for this project at NES Greensboro, N.C.

Certified Welders Symbol	Weld Procedures NO. 001/A	NO. 002/B	NO. 004/O	QC INSP Symbols	NDE Procedures QIP VT/O	QIP-PT-V/O	NDE Personnel Qual Level II VT	Level II PT(INT)	Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS. DYE	REMOVER	Developer	MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
														W-002
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-003
5	X	X	X	4	X	X	X	X(SEB/RMG)	PO-S-04707		H-236	H305	83-A-015	W-004
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G-003	W-005
14	X	X	X	6	X	X	X	X(GT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-006
19	X	X	X	7	X	X	X	X(RAS/MG) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-057	W-007
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-008
21	X	X	X								1586		84-T-044	W-009
22	X	X	X						PO# S04280 HT# 41039					W-010
23	X	X	X						PO# S03854 HT# 48291					W-011
24	X	X	X						PO# S03854 HT# 57731					W-012
25	X	X	X						PO# S04056 HT# 49586					W-013
27	Renumbered to NO. 40								PO# S04631/04816 HT# 4740-57					W-014
28	X	X	X						PO# S04819 HT# 5250-0076					W-015
30	X	X	X						PO# S04819 HT# 7621-57					W-016
32	X	X	X						PO# S04819 HT# D4829R308L					W-017
39	X	X							PO# S01885 HT# 3932-57					W-018
40	Renumbered to NO.28													W-019
41	X	X	X											W-020
														W-021
														W-022
														W-023
														W-024
														W-025
														W-026

NOTES:

1. • Mr. Gary Talley Symbol No. 6 L II, PT&VT. 5-8-85 to 5-31-85
   • Mr. Steve Petrich Symbol No. 6 L II, PT&VT, 7-22-85
2. • Mr. Manfred Grell Symbol No.7 L II, PT&VT as of 7-22-85
   • Mr. Rick A. Sellers Symbol No.7 L II, PT&VT, from 4-24-85 to 5-31-85
3. All the welding machines were calibrated into 1986.

SHELL s/n 11P2

FILTER
Serial No. F- 403
Page 1 of 4

CANISTER
CHECKLIST (Welding & NDE) (W-2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	3		Weld - Zone D-12	WELDING	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.
		1/16 V	Weld 1	• Verify Qualification and approval of WPS utilized • Verify welder qualification for WPS utilized • Verify filler material control and disbursal • Verify by a review of traveller that the correct WPS was utilized • Verify calibration (affixed sticker and calibration record) of AMP meter on welding machine	. *WPs-001 Rev. B, is approved WPS-004 ,Rev. 0, is approved . *Welders are qualified Welder no's 21, 22, 40 . Filler Material is controlled/ disbursed. . The correct WPS was utilized . The welding machines are calibrated
	4		Weld - Zone F-4	IN PROCESS INSPECTION/ EXAMINATION	IN PROCESS/INSPECTION/EXAMINATION
		1/4 V	Weld 2	• Verify the following activities were performed using latest approved procedure a. Fit-up Inspection b. Cleanliness Inspection c. Correct items were welded d. Minimum Preheat temperature e. Maximum Interpass temperature f. NDE (in process) g. Inspection/Examination personnel certified	. Fit up by Selamco 3 Fit up witnessed by Bechtel Supplier Quality Rep (SQR) . Cleanliness is not specifically addressed on the Traveler . The correct items were welded . Preheat temperature is welding procedure, for implementation by welder. Task monitored by Bechtel SQR. . Max. interpass temp. monitored by welders . NDE is not required (N/R) . I & E is not applicable (N/A) as NDE is not required

CANISTER
CHECKLIST (Welding & NDE) (W-2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				COMPLETED WELD VERIFICATION • Verify the following activities were performed using the latest approved procedure: a. Visual Examination b. Radiographic (or Ultrasonic) Examination c. Liquid Penetrant Examination d. Welder and weld number identified on weld or on documentation, i.e. (weld map) NON-DESTRUCTIVE EXAMINATION • RADIOGRAPHIC/ULTRASONIC EXAMINATION Verify the following requirements/activities a. Latest approved RT (or UT) procedure used b. Personnel qualified to perform the examination (1) Review RT (or UT) personnel education, training and work history records including current eye exam.	COMPLETED WELD VERIFICATION . *Visual Examination by Selamco No 3 . RT & UT procedures are approved by Bechtel . RT & UT not required . PT by Selamco No. 3 . Welder and weld no.(s) are identified NON-DESTRUCTIVE EXAMINATION • RADIOGRAPHIC/ULTRASONIC EXAMINATION . *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing labatory via procedures; PTL-QC-RT-1, PTL-QC-UT-1 . Personnel qualified: Selamco. L. Ludwig, Level III Selamco No. 6 . Personnel Education: Training & Eye exam are acceptable

SHELL s/n 11P2

CANISTER
CHECKLIST (Welding & NDE) (W-2)

FILTER
Serial No. F403
Page 3 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				° LIQUID PENETRANT EXAMINATION Verify the following requirements/activities a. Latest approved PT procedure used b. Personnel qualified to perform the examination (1) Review PT personnel education, training and work history records, including current eye examination. c. PT materials utilized are acceptable materials and certificates of compliance are available for review d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.) e. PT material batch numbers recorded on traveller	° LIQUID PENETRANT EXAMINATION . *Latest approved procedure was used . Personnel qualified Selamco QC- 3 . *Personnel, education, training and eye examination are acceptable . PT materials are acceptable C of C(s) are available . PT materials comply to project specification . *Batch no's are acceptable Batch no's used are: Penetrant 84J044 Remover 84F057 Developer 85A015

CANISTER
CHECKLIST (Welding & NDE) (W-2)

Rev.1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 5				• VISUAL EXAMINATION Verify the following requirements/activities	
				a. Latest approved procedure used	. *Procedure used is acceptable
				b. Personnel qualified to perform the examination	. *Personnel qualified Selamco no. 3
				(1) Review visual examination personnel education, training and work history records, including current eye examination.	. *Personnel, education, training and eye examination are acceptable
				c. Calibrated inspection tools were utilized	. Not applicable for weld inspection o Continued from Page 1, Item b, Cleanliness The Bechtel Resident Inspector has performed surveillance for cleanliness; also several travelers document the Resident Inspector's inspection for cleanliness. o Continued from Page 1, Item c, The correct items were welded. The correct items are documented on the traveler(s).

CANIS

MATRIX OF APPROVED/CERTIFIED WELDING AND NDE PROCEDURES, PERSONNEL AND MATERIALS.

This matrix has been developed as a result of review, verification and/or approval of welding procedures, welder qualifications, filler material certifications, NDE procedures, NDE personnel certifications, NDE material certifications and equipment calibrations for this project at NES Greensboro, N.C.

Certified Welders Symbol	Weld Procedures NO. 001/A	NO. 002/B	NO. 004/O	QC INSP Symbols	NDE Procedures QIP VT/O	QIP-PT-V/O	NDE Personnel Qual Level II VT	Level II PT(INT)	Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS. DYE	REMOVER	Developer	MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
														W-002
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-003
5	X	X	X	4	X	X	X	X(SEB/RMW)	PO-S-04707		H-236	H305	83-A-015	W-004
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G-003	W-005
14	X	X	X	6	X	X	X	X(GT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-006
19	X	X	X	7	X	X	X	X(RAS/MG) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-057	W-007
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-008
21	X	X	X								1586		84-T-044	W-009
22	X	X	X						PO# S04280 HT# 41039					W-010
23	X	X	X						PO# S03854 HT# 48291					W-011
24	X	X	X						PO# S03854 HT# 57731					W-012
25	X	X	X						PO# S04056 HT# 49586					W-013
27	Renumbered to NO. 40								PO# S04631/04816 HT# 4740-57					W-014
28	X	X	X						PO# S04819 HT# 5250-0076					W-015
30	X	X	X						PO# S04819 HT# 7621-57					W-016
32	X	X	X						PO# S04819 HT# D4829R308L					W-017
39	X	X							PO# S01885 HT# 3932-57					W-018
40	Renumbered to NO.28													W-019
41	X	X	X											W-020
														W-021
														W-022
														W-023
														W-024
														W-025
														W-026

NOTES:

1. • Mr. Gary Talley Symbol No. 6 L II, PT&VT. 5-8-85 to 5-31-85
   • Mr. Steve Detrich Symbol No. 6 L II. PT&VT, 7-22-85
2. • Mr. Manfred Grell Symbol No.7 L II, PT&VT as of 7-22-85
   • Mr. Rick A. Sellers Symbol No.7 L II, PT&VT, from 4-24-85 to 5-31-85
3. All the welding machines were calibrated into 1986.

SHELL s/n 11P2

CA TER

Serial No. F-403
Page 1 of 4

CHECKLIST (Welding & NDE) (W-3)

Rev.1

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	4		Weld - Zone D-5 Weld 1	WELDING • Verify Qualification and approval of WPS utilized • Verify welder qualification for WPS utilized • Verify filler material control and disbursal • Verify by a review of traveller that the correct WPS was utilized • Verify calibration (affixed sticker and calibration record) of AMP meter on welding machine	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding. . *WPs-001 Rev. B, is approved WPS-004 ,Rev. 0, is approved . *Welders are qualified Welder no's 22,23,25,39 . Filler Material is controlled/ disbursed. . The correct WPS was utilized . The welding machines are calibrated
	5		Weld - Zone C-4 Weld 2		
	Note 2		PT in Accordance with ASME Sect. V, ART. 6 (1983 W/No Addenda)	IN PROCESS INSPECTION/ EXAMINATION • Verify the following activities were performed using latest approved procedure a. Fit-up Inspection b. Cleanliness Inspection c. Correct items were welded d. Minimum Preheat temperature e. Maximum Interpass temperature f. NDE (in process) g. Inspection/Examination personnel certified	IN PROCESS/INSPECTION/EXAMINATION . Fit up by Selamco inspector. Fit up witnessed by Bechtel Supplier Quality Rep (SQR) . Cleanliness is not specifically addressed on the Traveler * . The correct items were welded * . Preheat temperature is welding procedure, for implementation by welder. Task monitored by Bechtel SQR. . Max. interpass temp. monitored by welders . NDE is not required (N/R) . I & E is not applicable (N/A) as NDE is not required

* See Page 4

ISTER CHECKLIST (Welding & NDE) (W-3)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				COMPLETED WELD VERIFICATION	COMPLETED WELD VERIFICATION
				• Verify the following activities were performed using the latest approved procedure:	. *Visual Examination by Selamco No 4
				a. Visual Examination	. RT & UT procedures are approved by Bechtel
				b. Radiographic (or Ultrasonic) Examination	. RT & UT not required
				c. Liquid Penetrant Examination	. PT by Selamco
				d. Welder and weld number identified on weld or on documentation, i.e. (weld map)	. Welder and weld no.(s) are identified
				NON-DESTRUCTIVE EXAMINATION	NON-DESTRUCTIVE EXAMINATION
				• RADIOGRAPHIC/ULTRASONIC EXAMINATION	• RADIOGRAPHIC/ULTRASONIC EXAMINATION
				Verify the following requirements/activities	
				a. Latest approved RT (or UT) procedure used	. *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing labatory via procedures; PTL-QC-RT-1, PTL-QC-UT-1
				b. Personnel qualified to perform the examination	
				(1) Review RT (or UT) personnel education, training and work history records including current eye exam.	. Personnel qualified: Selamco. L. Ludwig, Level III Selamco No. 6
					. Personnel Education: Training & Eye exam are acceptable

CA TER
CHECKLIST (Welding & NDE) (W-3)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				• LIQUID PENETRANT EXAMINATION Verify the following requirements/activities	• LIQUID PENETRANT EXAMINATION
				a. Latest approved PT procedure used	. *Latest approved procedure was used
				b. Personnel qualified to perform the examination	. Personnel qualified
				(1) Review PT personnel education, training and work history records, including current eye examination.	. *Personnel, education, training and eye examination are acceptable
				c. PT materials utilized are acceptable materials and certificates of compliance are available for review	. PT materials are acceptable C of C(s) are available
				d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)	. PT materials comply to project specification
				e. PT material batch numbers recorded on traveller	. *Batch no's are acceptable Batch no's used are: 85B066 85A015 85C003 83H041 84L010 84F057 83A051 84D024 84T044

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				• VISUAL EXAMINATION Verify the following requirements/activities	
				a. Latest approved procedure used	. *Procedure used is acceptable
				b. Personnel qualified to perform the examination	. *Personnel qualified Selamco no. 4
				(1) Review visual examination personnel education, training and work history records, including current eye examination.	. *Personnel, education, training and eye examination are acceptable
				c. Calibrated inspection tools were utilized	. Not applicable for weld inspection
					o Continued from Page 1, Item b, Cleanliness The Bechtel Resident Inspector has performed surveillance for cleanliness; also several travelers document the Resident Inspector's inspection for cleanliness.
					o Continued from Page 1, Item c, The correct items were welded. The correct items are documented on the traveler(s).

CANIS 5

MATRIX OF APPROVED/CERTIFIED WELDING AND NDE PROCEDURES, PERSONNEL AND MATERIALS.

This matrix has been developed as a result of review, verification and/or approval of welding procedures, welder qualifications, filler material certifications, NDE procedures, NDE personnel certifications, NDE material certifications and equipment calibrations for this project at NES Greensboro, N.C.

Certified Welders Symbol	Weld Procedures NO. G01/A	NO. 002/B	NO. 004/C	QC INSP Symbols	NDE Procedures QIP VT/O	QIP-PT-V/O	NDE Personnel Qual Level II VT	Level II PT(INT)	Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS. DYE	REMOVER	Developer	MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001 W-002
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-003
5	X	X	X	4	X	X	X	X(SEB/RMM)	PO-S-04707		H-236	H305	83-A-015	W-004
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-005
14	X	X	X	6	X	X	X	X(GT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-006
19	X	X	X	7	X	X	X	X(RAS/MG) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-057	W-007
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-008
21	X	X	X						PO# S04280 HT# 41039		1586		84-T-044	W-009
22	X	X	X						PO# S03854 HT# 48291					W-010
23	X	X	X						PO# S03854 HT# 57731					W-011
24	X	X	X						PO# S04056 HT# 49586					W-012
25	X	X	X						PO# S04631/04816 PT# 4740-57					W-013
27	Renumbered to NO. 40								PO# S04819 HT# 5250-0076					W-014
28	X	X	X						PO# S04819 HT# 7621-57					W-015
30	X	X	X						PO# S04819 HT# D4829R308L					W-016
32	X	X	X						PO# S01885 HT# 3932-57					W-017
39	X	X												W-018
40	Renumbered to NO.28													W-019
41	X	X	X											W-020
														W-021
														W-022
														W-023
														W-024
														W-025
														W-026

NOTES:

1. • Mr. Gary Talley Symbol No. 6 L II, PT&VT. 5-8-85 to 5-31-95
   • Mr. Steve Detrich Symbol No. 6 L II. PT&VT, 7-22-85
2. • Mr. Manfred Grell Symbol No.7 L II, PT&VT as of 7-22-85
   • Mr. Rick A. Sellers Symbol No.7 L II, PT&VT, from 4-24-85 to 5-31-85
3. All the welding machines were calibrated into 1986.

CA TER

CHECKLIST (Welding & NDE) (W-4)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 1

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	4		Weld - Zone D-7 Weld 1	WELDING • Verify Qualification and approval of WPS utilized • Verify welder qualification for WPS utilized • Verify filler material control and disbursal • Verify by a review of traveller that the correct WPS was utilized • Verify calibration (affixed sticker and calibration record) of AMP meter on welding machine	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding. . *WPs-001 Rev. B, is approved WPS-004 Rev. 0, is approved . *Welders are qualified Welder no's 22,30 . Filler Material is controlled/ disbursed. . The correct WPS was utilized . The welding machines are calibrated
	5		Weld - Zone D-4 Weld 2		
	Note 5		PT in accordance with ASTM E165	IN PROCESS INSPECTION/ EXAMINATION • Verify the following activities were performed using latest approved procedure a. Fit-up Inspection b. Cleanliness Inspection c. Correct items were welded d. Minimum Preheat temperature e. Maximum Interpass temperature f. NDE (in process) g. Inspection/Examination personnel certified	IN PROCESS/INSPECTION/EXAMINATION . Fit up by Selmco 2 Fit up witnessed by Bechtel Supplier Quality Rep (SQR) . Cleanliness is not specifically addressed on the Traveler * . The correct items were welded * . Preheat temperature is welding procedure, for implementation by welder. Task monitored by Bechtel SQR. . Max. interpass temp. monitored by welders . NDE is not required (N/R) . I & E is not applicable (N/A) as NDE is not required

* See Page 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				COMPLETED WELD VERIFICATION • Verify the following activities were performed using the latest approved procedure: a. Visual Examination b. Radiographic (or Ultrasonic) Examination c. Liquid Penetrant Examination d. Welder and weld number identified on weld or on documentation, i.e. (weld map) NON-DESTRUCTIVE EXAMINATION • RADIOGRAPHIC/ULTRASONIC EXAMINATION Verify the following requirements/activities a. Latest approved RT (or UT) procedure used b. Personnel qualified to perform the examination (1) Review RT (or UT) personnel education, training and work history records including current eye exam.	COMPLETED WELD VERIFICATION . *Visual Examination by Selamco . RT & UT procedures are approved by Bechtel . RT & UT not required . PT by Selamco No. 4 . Welder and weld no.(s) are identified NON-DESTRUCTIVE EXAMINATION • RADIOGRAPHIC/ULTRASONIC EXAMINATION . *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing labatory via procedures; PTL-QC-RT-1, PTL-QC-UT-1 . Personnel qualified: Selamco. L. Ludwig, Level III Selamco No. 6 . Personnel Education: Training & Eye exam are acceptable

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				• LIQUID PENETRANT EXAMINATIO	• LIQUID PENETRANT EXAMINATION
				Verify the following requirements/activities	
				a. Latest approved PT procedure used	. *Latest approved procedure was used
				b. Personnel qualified to perform the examination	. Personnel qualified Selamco QC- 4
				(1) Review PT personnel education, training and work history records, including current eye examination.	. *Personnel, education, training and eye examination are acceptable
				c. PT materials utilized are acceptable materials and certificates of compliance are available for review	. PT materials are acceptable C of C(s) are available
				d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)	. PT materials comply to project specification
				e. PT material batch numbers recorded on traveller	. *Batch no's are acceptable Batch no's used are: H233 H295 H305 _____ _____ _____ _____ _____ _____ _____

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				• VISUAL EXAMINATION Verify the following requirements/activities	
				a. Latest approved procedure used	. *Procedure used is acceptable
				b. Personnel qualified to perform the examination	. *Personnel qualified
				(1) Review visual examination personnel education, training and work history records, including current eye examination.	. *Personnel, education, training and eye examination are acceptable
				c. Calibrated inspection tools were utilized	. Not applicable for weld inspection
					o Continued from Page 1, Item b, Cleanliness The Bechtel Resident Inspector has performed surveillance for cleanliness; also several travelers document the Resident Inspector's inspection for cleanliness.
					o Continued from Page 1, Item c, The correct items were welded. The correct items are documented on the traveler(s).

CANIS...

MATRIX OF APPROVED/CERTIFIED WELDING AND NDE PROCEDURES, PERSONNEL AND MATERIALS.

This matrix has been developed as a result of review, verification and/or approval of welding procedures, welder qualifications, filler material certifications, NDE procedures, NDE personnel certifications, NDE material certifications and equipment calibrations for this project at NES Greensboro, N.C.

Certified Welders Symbol	Weld Procedures NO. 001/A	NO. 002/B	NO. 004/O	QC INSP Symbols	NDE Procedures QIP VT/O	QIP-PT-V/O	NDE Personnel Qual Level II VT	Level II PT(INT)	Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS. DYE	REMOVER	Developer	MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
2	X	X	X	1		X	X	X	PO-S-01058/	H233	1386	1522	85-B-066	W-001
														W-002
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-003
5	X	X	X	4	X	X	X	X(SEB/RM&O	PO-S-04707		H-236	H305	83-A-015	W-004
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-005
14	X	X	X	6	X	X	X	X(GT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-006
19	X	X	X	7	X	X	X	X(RAS/MG) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-057	W-007
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-008
21	X	X	X								1586		84-T-044	W-009
22	X	X	X						PO# S04280 HT# 41039					W-010
23	X	X	X						PO# S03854 HT# 48291					W-011
24	X	X	X						PO# S03854 HT# 57731					W-012
25	X	X	X						PO# S04056 HT# 49586					W-013
27	Renumbered to NO. 40								PO# S04631/04816 HT# 4740-57					W-014
28	X	X	X						PO# S04819 HT# 5250-0076					W-015
30	X	X	X						PO# S04819 HT# 7621-57					W-016
32	X	X	X						PO# S04819 HT# D4829R308L					W-017
39	X	X							PO# S01885 HT# 3932-57					W-018
40	Renumbered to NO.28													W-019
41	X	X	X											W-020
														W-021
														W-022
														W-023
														W-024
														W-025
														W-026

NOTES:

1. • Mr. Gary Talley Symbol No. 6 L II, PT&VT. 5-8-85 to 5-31-85
   • Mr. Steve Detrich Symbol No. 6 L II, PT&VT, 7-22-85
2. • Mr. Manfred Grell Symbol No.7 L II, PT&VT as of 7-22-85
   • Mr. Rick A. Sellers Symbol No.7 L II, PT&VT, from 4-24-85 to 5-31-85
3. All the welding machines were calibrated into 1986.

Attachment No. 1

Rev.1

CANISTER CHECKLIST VERIFICATION ITEMS

FOR WHICH NO NES ACTION IS REQUIRED

1. Calibration of Receipt Inspection Equipment/Tools

NES's QA procedures do not require them to record the tool identifications of Receipt Inspection Records. Also, since the fact that parts were assembled to the drawing requirements, the NES practice was determined to be acceptable. Ref. item 7 for additional calibration data.

2. Details on Receipt Inspection Records

NES Manufacturing Policy and Procedures Manual, Procedure Q-12, requires the Receipt Inspector to check/verify the individual attributes of receiving inspection but, however, does not require the inspector to document each attribute per procedures; inspector's sign-off indicates completion of inspection. On the basis of above, absence of recording all attributes by NES was accepted. Also, the Bechtel Resident has performed surveillance on Receipt Inspection Records.
For NES receipt inspection on Contractor-Furnished Material, see Comment No. 1.

3. Part 21 not Imposed on Subsuppliers

The supplier performing machining operations was considered speciali 1 in these operations. The operations involved were simple and non-critical in nature. Also, some small parts were procured from suppliers as commercial items or standard products. Therefore, absence of Part 21 from purchase orders was considered justified.

4. ANSI N45.2 Requirements not Identified

Imposition of ANSI N45.2 requirements on material suppliers was determined to be not required based on the following: Material involved was a standard product. CMTR/C of C was requested for the material. NES performed the Receipt Inspection.

On the same lines, it was also determined that absence of ANSI N45.2 imposition on vendors performing machining was acceptable.

5. NCR Review

The verification team reviewed all NCRs associated with the defueling canisters, filters fuel, and knockouts. The review established the applicability to the filter canisters, and confirmed the closure on the NCRs applicable to filter canister Nos. F401, F402, F403, and F404.

Attachment No. 1 (Cont.)

Canister Checklist Verification Items
For Which No NES Action is Required

6. SDDR Review

The verification team reviewed supplier deviation disposition requests (SDDR) applicable to the filter canisters. For details of this review, see Comment No. 2.

7. Calibration of Incoming, Inprocess, and Final Inspection Equipment and Tools

A member of the Bechtel Canister Review Team performed an administrative review of NES calibration documents. The document review identified that inspection equipment and tools are within their required accuracy.

For details of this review, see Comment No. 3.

FILTER CANISTERS

Comment No. 1

Resolution of NES receipt inspection(s) on Customer (Bechtel) Furnished Material (CFM)

Problem:

NES had not fully documented the receipt inspection of Customer Furnished Material as required by:

1. NES-POLICY & PROCEDURE MANUAL
   NES-Procedure Q-12, Titled Inspection and Acceptance Tags and Stamps dated 6-6-84. Para 3.2.10 "Customer Furnished Material." Para 3.2.10 states that; Customer Furnished Material is handled identical to material purchased by NES.

2. NES-QA MANUAL
   NES-Procedure-N-12 Titled "Inspection"
   Para. 4.3 unless otherwise provided for in customer contract, purchase order, or specification, a 100% inspection of all items manufactured by and/or for NES/SELANCO shall be imposed.

3. BECHTEL SPECIFICATION NO. 15737-2-M-101A(Q), Rev 2,6-18-85
   Titled "Technical specification for fabrication of DEFUELING CANISTERS."
   Para. 4.2.4 Materials Purchased by the Buyer (GPU)
   4.2.4.1.1 Buyer will provide seller with documents necessary for seller to receive, inspect, and control buyer-supplied material.
   Para. 5.5 Inspection
   5.5.3 The Buyers release of any materials and equipment being furnished by the Seller or his suppliers, shall not be construed to imply acceptance ... and will not in any way relieve the Seller of his responsibilities for inspection.

Resolution(s):

The following documents and actions are available and provide assurance of acceptability of the contractor furnished material.

1. All the Bechtel furnished materials were inspected at the source prior to shipment to NES. The Bechtel inspectors verified that the suppliers of the items meet the requirements of the purchasing documents.

2. NES performed receipt inspection (measurements) on the CFM. However, NES did not document all their receipt inspections.

3. There is documented evidence to support that NES and the Resident Bechtel Inspector have performed 100% documentation review of received material. Examples are: Certified Material Test Reports, Certificates of Compliance, etc.

4. NES Travelers also support inspection of CFM. When the CFM(s) were released for canister fabrication, via travelers, various inprocess and final dimensional inspections performed during the fabrication process support a conclusion that the dimensional CFM requirements were met.

FILTER CANISTER

COMMENT NO. 2 Rev 1
SDDRs

The following is a list of Supplier Deviation Disposition Requests (SDDRs), applicable to the Filter Canisters, that were reviewed by the Bechtel Verification Team. The scope of the review included SDDRs identified by design engineering as a critical verification item, and SDDRs relating to NCRs applicable to Filter Canisters F401, F402, F403 and F404.

SDDR NO.	SDDR NO.	SDDR NO.
2-R200C-03	2-M101A-20	2-M101A-68
2-R200C-7	2-M101A-39	2-M101A-71
2-R200C-8	2-M101A-41	2-M101A-72
2-M101A-2	2-M101A-45	2-M101A-73
2-M101A-5	2-M101A-48	2-M101A-75
2-M101A-12	2-M101A-53	2-M101A-76
2-M101A-13	2-M101A-57	2-M101A-77
2-M101A-15	2-M101A-58	2-M101A-79
2-M101A-16	2-M101A-65	2-M101A-80
2-M101A-17		2-M101A-99

FILTER CANISTERS

Comment No. 3

Calibration of Incoming, Inprocess, and Final Inspection Equipment and Tools

A member of the Bechtel Canister Review Team performed an administrative review of the calibration documents. The type of NES documents reviewed and types of equipment and tools reviewed are listed below.

This review was performed to provide additional assurance that equipment and tools used by the inspection department are calibrated. The review included eighty-six (86) tools and twenty-six (26) welding machines.

The administrative data on the calibration documents were also physically compared to the calibration data on equipment and tools and no inconsistencies were noted.

The review also identified that the NES calibration records document that the previously calibrated tools and test equipment were still within usage tolerance when they were returned to the calibration department where they were remeasured and identified as "no adjustments required." One welding machine had to have one of its (two) voltmeters adjusted/repaired.

NES Documents Reviewed

- Manufacturing Calibration Tool Record, Log

  (Listing of equipment and tools by Serial No./Description/Date Calibrated/ Due Date/Out of Calibration)

- Calibration Record Card

  (Record Card is prepared for each piece of equipment and tool listing calibration dates, calibrated by, and if the item needed adjustment.)

- Calibration Tags on Equipment and Tools

Types of equipment and tools reviewed included:

- Surface plates, vernier calipers, dray tester, mic(s), hardness tester, I.D. calipers, bore gage, weight scale, and welding machines.

The Bechtel Resident Procurement Supplier Quality Representative has also performed random reviews for assurance(s) that inspection equipment used at incoming, inprocess an final inspection are within there calibration interval.

Filter Canisters

Comment No. 4

Upper Head Traceability

The upper heads supplied by Bechtel to NES contained the Heat numbers transcribed inside. The upper heads were inspected by a Bechtel supplier quality representative at the supplier shop, Gruyon Alloys, Inc.

The upper heads were receipt inspected by NES and accepted. The inspection also involved the review of CMTRs provided by Gruyon Alloys. The Heat nos. involved were HT # 33579, 20794, 33577, and 20840.

The upper heads were then sent for the weld-prep machining to Brown Bovery Corp., an outside vendor, by NES. The machined heads were receipt inspected by NES and released for further operations.

Further operations on the upper heads were carried out via NES Traveler Sr. No. 003778. The manufacturing department drew four (4) of the accepted upper heads from stores and assembled with other items. The Traveler instruction also required stamping of serial numbers F-401, F-402, F-403, and F-404 on the outside of the upper heads. After completion of the assembly, NES qualified inspector verified all requisites of the cognizant drawing including the serial numbers on the heads.

The serial numbers transcribed on the upper heads are the same serial numbers that are assigned for the filter canisters. The serial numbers on the heads are traceable to the Travelers.

It can be concluded that the aforementioned NES traveler operations assure the use of upper heads from the receipt inspected and accepted lot. Therefore, each head used is traceable to one of the four heat numbers for which CMTRs are available. This condition satisfies the applicable requirements including that of the ASME Code, Section VIII, Div. 1.

REFERENCE 1

(4410-85-L-0202)
18 Pages

Bechtel North American Power Corporation

Engineers — Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20877-1454
301—258-3000

May 6, 1985

Mr. F. Sugar
General Manager
NES Manufacturing
100 Swing Road
Greensboro, NC 27409

Dear Mr. Sugar:

TMI-2 Project, Job No. 15737
BNAPC/GPUN QA Audit No. NES-85-02
File: 15737-85-031

Enclosed for your information and action is the report for the subject audit conducted at NES Manufacturing, Greensboro, NC, facility during April 23-24, 1985.

Three Quality Assurance Findings (QAFs) were written to document deficient conditions noted during the audit in the areas of material control, inspection personnel qualification, and calibration and control of inspection equipment. These deficiencies indicated a breakdown of NES Manufacturing QA Program implementation. As a result of this conclusion, shipments of Defueling Canisters or Canister Storage Racks were put on hold until such time as all corrective actions in the deficient areas were completed by NES Manufacturing. This action was discussed with you during the post audit conference held on April 24, 1985.

You are requested to provide your corrective action responses by completing the "Action Taken" section of each QAF on or before June 1, 1985.

Please be advised that the "Hold" on shipment will be released after satisfactory verification of the completed corrective actions.

Please extend our appreciation to all cognizant individuals for the courtesies and cooperation extended to the audit team during the course of the audit.

If you have any questions, please contact us.

Very truly yours,

T. I. Gillespie
QA Manager, Projects

TIG:TVS:kc

Enclosure: As Stated

cc: Mr. L. Ludwig w/1

MAY 09 1985

bcc:

S. A. Bernsen	w/1
R. L. Rider	w/1
W. H. Linton	w/1
H. J. Porter	w/1
P. Bradbury	w/1
L. J. McAnallen	w/1
W. W. Perry	w/1
J. W. Brothers	w/1
T. V. Sarma	w/1
W. G. Heysek	w/1
A. Stowe	w/1
A. Smith, PSQD	w/1
S. Heisler/M. Melandin	w/1

THREE MILE ISLAND NUCLEAR STATION
UNIT 2
QUALITY ASSURANCE DEPARTMENT
PROCEDURES MANUAL

QUALITY ASSURANCE PROGRAM
PROJECT AUDIT REPORT

PROJECT NAME & NO. TMI-2 AUDIT NO. NES-85-02 AUDIT DATE 4/23-24/85

TYPE OF AUDIT

☐ ENGINEERING ☐ CONSTRUCTION ☒ OTHER (NES Manufacturing)

AUDITOR T. V. Sarma (ATL)
W. C. Gund
W. D. County (GPU

INDIVIDUALS CONTACTED
(NAME & TITLE)

See Audit Administrative Data

DESCRIPTION & SCOPE OF AUDIT

See Page 1

SUMMARY OF DEFICIENCIES NOTED

Three Quality Assurance Findings were written to document deficiencies in the following areas:

1. Two inspectors performing NDE have not been certified by NES Manufacturing.
2. Nonconforming items were not identified with status indicating tags. Also, they are not documented on nonconformance reports.
3. Calibration control of tools and gages was found deficient in that removal of inspection equipment was not being logged.

DISTRIBUTION	INFO	ACTION	ATTACHED QAF NOS.
L. Ludwig S. A. Bernsen W. H. Linton R. L. Rider H. J. Porter W. Heysek Audit Team Members		X	QAF Nos. 1, 2, & 3

AUDITOR	DATE	PQAM/PQAE	DATE
T V Sarma	5/6/85	T. J. Gillespie	5/6/85

1.0 DESCRIPTION AND SCOPE OF AUDIT

BNAPC and GPUN QA performed a joint audit of NES Manufacturing, Greensboro, NC facility during April 23-24, 1985. The audit scope included verification of the implementation of the NES/Selamco Nuclear Quality Assurance Program and associated procedures in the manufacture of Defueling Canisters, Fuel Storage Canister Racks and Canister Handling Trolleys.

At the start of the audit, a tour of the manufacturing facility was undertaken by the audit team to become familiar with the fabrication process and obtain the status of operations associated with the tasks within the scope of this audit.

2.0 DETAILS OF THE AUDIT

During the pre-audit meeting and subsequent discussions the audit team learned that in the recent past there have been some organizational and personnel changes. The current QA Manager, Mr. Lon Ludwig was relocated from NES, Danbury, CT, a few days prior to this audit.

2.1 Procurement Control:

NES Policy/Procedure MC-03, dated 10/83, governs the preparation, processing, placement of purchase orders issued by NES Manufacturing, Greensboro, NC. To verify compliance to the subject procedure six purchase orders applicable to TMI-2 project were reviewed.

The purchase orders were:

1. NES Job No. 85008 - Canister Handling Trolleys

P.O.	Item	Supplier
4564	Shield Castings	O.G. Kelley Inc.
4588	SS Pipe	Keystone

2. NES Job No. 84075 - Canister Storage Racks

P.O.	Item	Supplier
4333	SS Bar Stock	Carolina Steel
4045	Aluminum Alloy Pipe	Ryerson Steel

3. NES Job No. 84091 - Defueling Canisters

P.O.	Item	Supplier
4302	SS Tubing	Keystone
4322	O-Ring Seals	Carolina Gasket

All of the purchase orders were identified as being required to be placed with approved suppliers with the exception of P.O. 4322 which was for the purchase of buna O-ring seals, a commercial grade item. The latest computerized "Qualified Source List" dated 2/16/85 was reviewed to see if the suppliers for the other purchase orders were

on the list. They were all on the "Qualified Source List" with the exception of O. G. Kelley, supplier of lead shield castings. Discussions, however, revealed that O. G. Kelley was audited by NES personnel on 2/11/85 and found acceptable and recommended for placement on the "Qualified Source List". Audit of O. G. Kelley was verified by the auditors.

In addition to the above, the purchase orders were reviewed for:

- o Identification of Inspection Requirements
- o Identification of Documentation Requirements
- o Imposing Part 21 if Applicable
- o Completeness of Entries
- o Proper Usage of Purchase Order Change Notices

A purchase order log, required to be maintained by the subject procedure was also reviewed.

No deficiencies were identified in the area of procurement document control.

2.2 Material Control

2.2.1 Shop Travelers

2.2.1.1 The basic document used by NES in accomplishing manufacturing and quality activities is identified as Manufacturing Plan and Quality Record (MPQR). The MPQRs are preprinted forms to reflect different types of shop travelers. There are essentially two types of travelers: Detail Traveler and Assembly Traveler. Detail Travelers are used for parts and Assembly Travelers are used for subassemblies and final assemblies. The preparation, processing and control of travelers is covered by NES/Salamco Procedure No. ME-04. To verify the requirements of the procedure and adequacy of the system the following Travelers were reviewed:

Canister Assembly Traveler No. 003815
Canister Assembly Traveler W.O. No: 8409123-01
Canister Assembly Traveler W.O. No: 8409123-05
Canister Assembly Traveler W.O. No: 8409123-06
Canister Assembly Traveler W.O. No: 8409123-08
Fuel Rack - Type 1 Assembly Traveler: 003747

The above referenced travelers were in various completion stages. Also, each Assembly Traveler was made up of several Detailed Travelers representing various parts, the required operations along with QC inspection points, and client hold points. Each of them was verified to have been reviewed/ approved by

Quality Assurance prior to issuance of the traveler. In the case of travelers associated with Canisters the Authorized Inspector's signatures were obtained. Also, upon completion of the item Quality Engineering reviews the traveler for completeness. All but two of the Detail Travelers were verified to have been reviewed by Quality Engineering. These were considered to be isolated cases.

2.2.1.2 While reviewing Canister Assembly Traveler 003815 it was noted that operation 200 was described as follows

"Draw concrete, IT.9, from stores and mix per inst. Fill voids between shroud and shell vibrating to assure no voids. Allow to cure for 24 hours."

There was no QC inspection/verification of the concrete mix and fill after the 200 operation. Further investigation regarding the requirements of concrete mix and fill revealed that the instructions concerning the mixing procedure were provided by Babcock & Wilcox. Mr. Ludwig, NES QA Manager readily acknowledged the requirement to have QC verification of concrete mix and fill. This operation will be incorporated into the traveler. An examination of the partially completed fuel cansters in the shop indicated that the filled concrete in the void appeared to have developed minor cracks. When this was referred to Bechtel Project Engineering personnel it was indicated that such cracks or minor voids are not of any concern since the purpose of the concrete in the void is not for radiological shielding.

Another minor discrepancy was observed in the traveler. Operation 330 reads "verify information in operation #300". The operation should be 320 in lieu of 300. This was brought to the attention of Mr. Ludwig. In the same traveler the welding procedure was referenced as WPS 001 Rev. 0. (GTAW manual/ machine). This should be changed to Rev. A which is the latest approved procedure. Although several discrepancies were noted during this portion of the audit no quality assurance finding was written since they were all treated as minor in nature. However, the items were discussed with the cognizant QA personnel for corrective action(s).

2.2.2 Material Control and Nonconforming Items

2.2.2.1 During this portion of the audit the areas of the NES/Selamco QA Program covered were as follows:

N-8, "Identification and Control Of Material, Parts, and Components"
N-14, "Inspection, Test and Operating Status"
N-15 "Nonconforming Items and Services"

To examine the controls exercised on the shop floor receiving, staging and processing areas were toured by the audit team. In the receiving area it was observed that several items for Canisters, Racks and Trolleys were lying on the floor and to some of them status tags were attached. It was noted that a single Accepted or Partially Accepted Tag was used for a group of like items. This method was found acceptable, however, a Partial Acceptance Tag applied to shield castings for trolleys indicated as applicable to two items. The second item to which the status tag was applicable could not be identified readily. After a careful examination the second item could be verified. At this point NES Inspector applied an independent tag to the second item. The items involved were: Type E 85008, Traveler S-04564, Heat No. HT CHEM-831.

2.2.2.2 In the receiving area a group of 24 canister shells were lying on the floor with no tags attached. On a close examination it was found that there were paint markings on the surface of shells indicating rejection because of rejectable radiographs, length too short, PT not performed etc. It was also found that no nonconformance reports were written to document the deficiency for each pipe shell. When this deficient condition was brought to the notice of the QA Manager, corrective action was instituted and status tags (Withold) were noted to be in the process of being applied. Also, nonconforming reports were being written. This deficiency is addressed in Quality Assurance Finding No. 1. To review the complete nonconforming system, a review of NCR log book was performed. It was noted that some of the log entries were missing. Index was incomplete. Some of the NCRs logged on the index were not available in the book. It was indicated that most of the missing NCRs were in the review and disposition process. It is recommended to review the log periodically and update the information in the log.

2.2.2.3 While examining the items in the staging and process areas it was noted that shells belonging to fuel, knockout, and filter canisters separated by each group were lying on the floor adjacent to each other. No tags were, however, affixed. There are very minor differences between each type of shell.

Although unlikely, potential exists for mistaking one for the other without some clear visible indicators. In the same area three partial fabricated canisters were noted. Only on one there was an Acceptance Tag. The other two canisters did not have any kind of tags. Also noted that there were a group of 7 canisters which were all rejected because of bad welds. Circular seam welds between bulkheads and shells were rejected because of lack of fusion and penetration and the joints were cut out. Of the seven, only two canisters were found to have withold tags and others did not have any. A close examination of tags revealed that tag bearing work order No. 84091 and RN118 was not filled out completely. Purchase order No., Traveler No., and date were not filled out. These deficiencies were identified on Quality Assurance Finding No. 1

2.2.3 Special Processes and Inspection

2.2.3.1 Weld Control

There are essentially two welding processes that are being used for the three TMI-2 orders. The two welding processes being WPS-001 (Gas Tungsten Arc) and WPS-004 (Gas Metal Arc, spray mode). The latest revision being used was verified as approved by Bechtel. The welders stamps appearing on the travelers reviewed for canisters and racks were correlated with their names from a log maintained by the QA department. The five welder's qualification records were reviewed for different welding procedures and found that all of them were appropriately qualified for the procedures appearing on Travelers. No deficiencies were noted in this area.

2.2.3.2 Non Destructive Testing and Inspection

There are essentially four nondestructive examination (NDE) procedures being used for the TMI orders. The four procedures being - Liquid Penetrant (PT), Visual Examination (VT), Radiographic Examination (RT) and Ultrasonic Examination (UT). Of these RT and UT were subcontracted to Pittsburgh Testing Lab (PTL) and the other two are being performed by NES themselves. All four procedures were verified to have been approved by Bechtel Project Engineering. A review of the NES employed NDE personnel qualification and certification records revealed the following:

D. C. Peddycord:	Certified as Level II for PT, MT & VT by L. C. Ludwig and R. M. Wise, Level III examinar (NES). The backup test data was available in the package.
Stamford E. Burdette:	No NES certification were noted. Review of the package indicated that he was certified by Johnson Controls as mechanical inspector Level II. Also, verification from another employee in VT and mechanical inspections.
Rick Anthony Sellers:	No NES certifications were noted. Package includes certification in PT as Level II from Brown & Root. Also verified by Brown & Root as Level II in Q.C. and attended VT training courses.
Don Saintsing:	Certified as Level II in MT and PT by NES. The backup test data was available in the package.

Of the four NDE Inspection personnel, two were found to have been not certified by NES to perform NDE Operations as required by SNT-TC-1A and NES procedures. This deficiency was identified on Quality Assurance Finding No. 2.

NES QA Program and Quality Procedure Q-4, "Qualification of Inspection, Examination, and Testing Personnel" requires the inspectors to have been formally indoctrinated and trained. Documentation indicating that QC, welding, engineering personnel have received training was verfied during the audit.

2.3 Control of Measuring and Test Equipment Used For Inspection and Test

A computer printout of measuring and test equipment was obtained for usage in this portion of the audit. The printout was dated 4/20/85 and was found to list all applicable inspection equipment subject to calibration. One page of the printout listed equipment due for recall during the forthcoming month.

The following inspection equipment was examined in the shop crib/ inspection area:

1. Permeability Tester	SEL-049
2. Gage Blocks	SEL-002
3. Bore Gage	SEL-029
4. Go-No-Go Gage	SEL-001
5. Depth Micrometer	SEL-059
6. Dial Caliper Gage	SEL-028
7. Dial Thickness Gage	SEL-078
8. Durometer	SEL-077

All items were checked for listing on the equipment printout. All were properly listed except for the Go-No-Go gage SEL-001 which along with thread gages are calibrated/checked on an "as use" basis. The items checked all had appropriate and current calibration labels. Gage maintenance records were all found to be in order.

Tools, gages and test equipment that are not listed in Q-01 as to how to calibrate are sent to an approved outside source for calibration, traceable to the National Bureau of Standards. This was the case for the permeability tester SEL-049 and the gage blocks SEL-002. Certifications for these calibrations R-47303 and 16311 from Gage Lab Corp. were reviewed and found acceptable.

It should be noted that for all of these items, the gage maintenance records reflected no out of tolerance conditions were found upon calibration.

A new Dillon Dynamometer was observed in the shop storage area. The dynamometer had been purchased for the defueling canister Job No. 84091. The auditor requested to see the certifications supplied with the dynamometer, but they could not be located during the time of the audit. This fact was passed on to the Resident Bechtel Supplier Quality Representative for followup prior to its usage.

Procedure Q-01 has a requirement that states "Inspection equipment issued from the crib cage shall be controlled by a tool check log". Also, that each inspection performed and tools used for inspection shall be logged on the "Daily Inspection Gage Record."

It was observed that a tool checkout log for inspection equipment was not in use. Also, the latest "Daily Inspection Gage Record" produced was dated 3/26/85. Daily records were also missing for the following periods:

02/15/85 to 03/21/85
01/23/85 to 02/12/85
12/07/84 to 01/07/85
11/05/84 to 12/07/84

The deficiencies on the tool checkout log and the daily records are documented on Quality Audit Finding Number 3 for corrective actions.

2.4 Handling, Storage, Shipping and Preservation

NES QA procedure N-13 provides guidance for the subject activities. No detailed procedures are presently in usage but are being prepared.

At present, any special handling/storage requirements are identified by Engineering and incorporated into applicable travelers.

Only Level "C" storage requirements have been imposed for TMI-2 products at NES.

2.5 Audits:

Per N-18 of the NES QA Manual, 18 internal audits are planned and performed annually. Each audit corresponds to one of the 10CFR50 App. B criteria. Deficiencies are documented on CAR forms and tracked until resolved. Detailed review of the audit reports indicated that they merely check "yes" or "no" against the checklist item and in very few cases remarks were entered. Also, checklist items in the reports indicated the emphasis was mostly on the procedural rather than on hardware. The audit program, as currently being implemented, was found to be weak. It is recommended that the NES audit program be redirected to put emphasis on hardware and hardware related problem identification.

Audits are conducted by designated Lead Auditors. Qualifications for 3 lead auditors were examined, and found to meet ANSI N45.2.23 guidelines.

2.6 QA Records

Documents pertaining to the TMI-2 canister rack, trolley and canister projects are still "working documents" and are not yet dispositioned as records. The program for controlling records was reviewed and found satisfactory based on dual storage at NES (Danbury) and/or customer locations.

Records for Non-GPUN projects were briefly reviewed for compliance to NES procedure Q-09 "Requirements for Storage and Maintenance of Quality Assurance Records". In some instances the master record index was not complete. This deficiency had been previously identified by an NES internal audit (#CLN-17) and a corrective action request (CAR) was initiated. The CAR is still open.

3.0 CONCLUSION

As a result of the document reviews, discussions, and examination of material control system performed by the audit team, it was determined that the NES Manufacturing QA program implementation in the areas of material control and qualification of inspection personnel is deficient requiring immediate corrective action. Activities associated with the calibration and control of inspection equipment need strengthening. Also, audit program needs strengthening to identify problems. Other audited areas appeared to satisfy the requirements of the QA Program.

DATE		QAF NO
4/25/85	THREE MILE ISLAND NUCLEAR STATION UNIT 2 QUALITY ASSURANCE DEPARTMENT PROCEDURES MANUAL	1
	QUALITY ASSURANCE FINDING JOB NO 15737	PAGE 1 OF 2

Description of Audit/Surveillance	Auditor
NES Material Control/Nonconforming Items	T. V. Sarma
Where Found: NES Manufacturing Shop	**Discussed With**: L. Ludwig, QA Manager
Reference Document: NES/Selampco Procedure and Policy Manual; MC-04; Q-12	**SURVEILLANCE AUDIT NO**: NES-85-02 **TYPE OF AUDIT**: ☒ FIELD ☐ OFFICE

REQUIREMENT

1. MC-04, "Identification and Control of Material, Parts, and Components" Date 6/6/84, Para. 4.6, requires that the Receipt Inspected items are affixed with accepted tags. Para. 4.7 requires that the accepted items are accompanied by Travellers and be moved to storage or staging areas for further processing. Also, the Quality Control Inspectors who complete final inspection operations on a traveller, complete a green acceptance tag or label. (Continued)

FINDING

Contrary to the requirements of the procedure, the following discrepancies were noted:

1. 24 canister pipes that were receipt inspected and/or further processed by NES were noted to be rejected because of PT not performed, rejectable radiographs, length too short, etc. However, there were no Withhold Tags or Labels (Continued)

RECOMMENDED ACTION (OPTIONAL)

1. Verify and apply the necessary status indicating tags as required by the procedures.
2. Initiate Nonconforming Reports for all Nonconforming items.
3. Retrain all inspection personnel concerning the requirements of NES Manufacturing QA Program and Procedures in the areas of Status Tags and Nonconforming Reports.

RESPONSIBILITY FOR ACTION	SCHEDULED COMPLETION DATE
L. Ludwig	6-1-85

ACTION TAKEN

RESPONSE SUBMITTED BY (TITLE)	SIGNATURE	DATE

VERIFICATION ACTIONS BY QA

QA VERIFICATION BY (TITLE)	SIGNATURE	DATE

REQUIREMENT/FINDING/RECOMMENDED ACTION/ACTION TAKEN

REQUIREMENT (Continued)

2. Q-12, "Inspection and Acceptance Tags & Stamps" dated 6/6/84, Paras. 3.2.9 and 3.3.1 requires the application of Withhold Tags or Labels and prepare Nonconformance Report on any nonconforming items or services.

3. Q-12, Para. 4.1.1(b) states that "The Yellow Partial Accepted Tag or Label is used to designate uncompleted items and to provide the description or remaining operations, features to be completed, as well as to provide identity and traceability information."

FINDING (Continued)

applied to the nonconforming pipes. Also, no nonconforming reports available.

During the course of the audit, however, application of Tags and issuance of Nonconforming Reports were initiated.

2. About 7 Fuel Canister assemblies were noted to be rejected and the Head to Shell Welds were cut out in some cases because of weld defects. Of the 7 canisters, however, only 2 had Withhold Tags and Nonconformance Reports. Also, the two Withhold Tags were not completely filled out.

3. Shells belonging to all three types of canisters along with three partially completed canisters in laydown area were observed to be without any status indicating tags with the exception of one partially completed canister to which an Accepted Tag was affixed.

DATE		QAF NO.
4/25/85	THREE MILE ISLAND NUCLEAR STATION UNIT 2 QUALITY ASSURANCE DEPARTMENT PROCEDURES MANUAL	2
	QUALITY ASSURANCE FINDING JOB NO. 15737	PAGE 1 OF 2

Description of Audit/Surveillance		Auditor
NES Qualification of Inspection, Examination and Testing Personnel		T. V. Sarma
Where Found	**Discussed With**	SURVEILLANCE AUDIT NO. NES-85-02
NES Manufacturing Shop	L. Ludwig, QA Manager	TYPE OF AUDIT ☒ FIELD ☐ OFFICE
Reference Document		
NES/Selampco Nuclear QA Program & Policy Procedures Manual		

REQUIREMENT

1. Quality Assurance Procedure N-9, "Control of Special Processes & Test," Paras. 4.1 and 4.2 requires that the qualification of personnel performing NDE shall be in accordance with applicable codes and standards.

(Continued)

FINDING

1. Review and examination of records revealed that R. A. Sellers and S. E. Burdette, NDE inspectors for PT and MT, have not been qualified and certified by NES.

RECOMMENDED ACTION (OPTIONAL)

1. All NDE personnel shall be qualified and certified by NES per the requirements of the referenced procedures.
2. Institute an indoctrination and training program for inspection personnel and document the training sessions.
3. Reinspect the welds that were PTed by Sellers or Burdette using a qualified and certified NDE inspector.

RESPONSIBILITY FOR ACTION	SCHEDULED COMPLETION DATE
L. Ludwig	6-1-85

ACTION TAKEN

RESPONSE SUBMITTED BY (TITLE)	SIGNATURE	DATE

VERIFICATION ACTIONS BY QA

QA VERIFICATION BY (TITLE)	SIGNATURE	DATE

THREE MILE ISLAND NUCLEAR STATION
UNIT 2
QUALITY ASSURANCE DEPARTMENT
PROCEDURES MANUAL

QUALITY ASSURANCE FINDING
(Continuation Sheet)

JOB NO. 15737

QAF NO. 2 DATE 4/25/85
AUDIT NO. NES-85-02
PAGE 2 OF 2

REQUIREMENT/FINDING/RECOMMENDED ACTION/ACTION TAKEN

REQUIREMENT (Continued)

2. Procedure Q-11, "Control of Special Processes" dated 6/6/84, Para. 3.2.5.3 requires that personnel performing the Nondestructive Examination shall be qualified and certified by the program title "Qualification and Certification of NDE Personnel," which includes the necessary training and testing in advance of certification. All testing of NES/Selampco N.D.E. personnel will be approved by the Level III.

3. N-2, "Quality Assurance Program" requires that all NES/Selampco personnel are required to receive indoctrination and training.

4. Q-4, "Qualification of Inspection, Examination, and Testing Personnel" dated 10/81, Paras. 4.1, 4.2, and 4.5 requires that all inspection personnel shall receive indoctrination and training and the qualification of personnel shall be certified in writing.

DATE		QAF NO.
4/25/85	THREE MILE ISLAND NUCLEAR STATION UNIT 2 QUALITY ASSURANCE DEPARTMENT PROCEDURES MANUAL	3
	QUALITY ASSURANCE FINDING JOB NO. 15737	PAGE 1 OF 2

Description of Audit/Surveillance		Auditor
NES/Control of Measuring and Test Equipment		W. C. Gund
Where Found Gage Crib/Inspection Area	**Discussed With** L. Ludwig, QA Manager	SURVEILLANCE AUDIT NO. NES-85-02 TYPE OF AUDIT ☒ FIELD ☐ OFFICE
Reference Document Q-01, Rev. 3, Calibration of Tools Gages & Test Equipment		

REQUIREMENT

1. Para. 4.5, Inspection equipment issued from the gage crib shall be controlled by a Tool Check Log.
2. Para. 9.1, Each inspector shall document each inspection on a daily gage record, Exhibit Q-01-6.
   Para. 10.0(c), Tools used for inspection shall be logged on the "Daily Inspection Gage Record.

FINDING

1. A Tool Check Log is not being used for removal of inspection equipment from the gage crib/inspection area. Equipment sent out for calibration is not logged out and no notations are made on maintenance record card as to its location.

(Continued)

RECOMMENDED ACTION (OPTIONAL)

1. Reinstitute the usage of a Tool Check Log and Daily Inspection Gage Record per the requirements of NES Procedure Q-01, Rev. 3.
2. Retrain all appropriate NES personnel concerning the requirement of NES manufacturing QA program and procedures in the area of Tool Check Logs and Daily Inspection Gage Records.

RESPONSIBILITY FOR ACTION	SCHEDULED COMPLETION DATE
L. Ludwig	6-1-85

ACTION TAKEN

RESPONSE SUBMITTED BY (TITLE)	SIGNATURE	DATE

VERIFICATION ACTIONS BY QA

QA VERIFICATION BY (TITLE)	SIGNATURE	DATE

THREE MILE ISLAND NUCLEAR STATION
UNIT 2
QUALITY ASSURANCE DEPARTMENT
PROCEDURES MANUAL

QUALITY ASSURANCE FINDING
(Continuation Sheet)

JOB NO. 15737

QAF NO 3 DATE 4/25/85
AUDIT NO NES-85-02
PAGE 2 OF 2

REQUIREMENT/FINDING/RECOMMENDED ACTION/ACTION TAKEN

FINDING (Continued)

2. The latest "Daily Inspection Gage Record" produced was dated 3/26/85. Records were missing for the following periods:

2/15/85 to 3/21/85
1/23/85 to 2/12/85
12/07/84 to 1/07/85
11/05/84 to 12/7/85

THREE MILE ISLAND NUCLEAR STATION
UNIT 2
QUALITY ASSURANCE DEPARTMENT
PROCEDURES MANUAL

AUDIT NO: NES Manf/85/2
AUDIT DATE: 4-23-85/4-24-85

AUDIT ADMINISTRATIVE DATA

A. AUDIT TEAM MEMBER
B. PREAUDIT CONFERENCE 4-23-85
C. POSTAUDIT CONFERENCE 4-24-85
D. CONTACTED DURING THE AUDIT

NAME	TITLE	A	B	C	D
T. V. Sarma	Audit Team Leader Project QA Engr.	X	X	X	
L. Ludwig	QA Manager - NES Mfg.		X	X	X
W. D. County	GPUN Auditor	X	X	X	
W. C. Gund	QAE	X	X	X	
D. L. Saintsing	QAE		X	X	X
F. A. Sugar	General Manager			X	
A. L. Smith	Bechtel, SQR			X	X

THREE MILE ISLAND NUCLEAR STATION
UNIT 2
QUALITY ASSURANCE DEPARTMENT
PROCEDURES MANUAL

AUDIT NO: NES Manf/85/2
AUDIT DATE: 4-23-85/4-24-85

AUDIT ADMINISTRATIVE DATA

A. AUDIT TEAM MEMBER
B. PREAUDIT CONFERENCE 4-23-85
C. POSTAUDIT CONFERENCE 4-24-85
D. CONTACTED DURING THE AUDIT

NAME	TITLE	A	B	C	D
T. V. Sarma	Audit Team Leader Project QA Engr.	X	X	X	
L. Ludwig	QA Manager - NES Mfg.		X	X	X
W. D. County	GPUN Auditor	X	X	X	
W. C. Gund	QAE	X	X	X	
D. L. Saintsing	QAE		X	X	X
F. A. Sugar	General Manager			X	
A. L. Smith	Bechtel, SQR			X	X