

Nuclear

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4410-85-L-0210
Document ID 341A

October 28, 1985

U.S. NUCLEAR
REGULATORY COMMISSION
OCT 28 PM 4 37

TMI Program Office
Attn: Dr. W. D. Travers
Acting Program Director
US Nuclear Regulatory Commission
c/o Three Mile Island Nuclear Station
Middletown, PA 17057

Dear Dr. Travers:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Resolution of Quality Assurance Issues
Relating to the Defueling Canisters

Your letter dated October 17, 1985, provided comments on GPU Nuclear letter 4410-85-L-0202 dated October 10, 1985, which described the actions taken to verify that the first four filter canisters, fabricated by NES, were built in compliance with the design specifications. Attachment 1 provides our response to your comments with the exception of Comment 8 which addresses the cement filler material in the fuel canisters. The response to this comment, which is not a prerequisite to acceptance of the first four filter canisters, will be submitted upon completion of GPU Nuclear's evaluation of this issue. Attachments 2 through 11 contain the applicable canister-related documents that you requested.

Additionally, your letter requested that GPU Nuclear explain our program for ensuring that the design specifications are met for the additional canisters to be fabricated by NES Manufacturing as well as those canisters fabricated by other vendors, i.e., the Joseph Oat Corporation and Babcock and Wilcox (B&W).

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October 28, 1985
4410-85-L-0210

Specifically, you requested that GPU Nuclear explain how this program differs in scope from the program for the first four filter canisters. GPU Nuclear letter 4410-85-L-0206 dated October 23, 1985, described the above program with specific emphasis on the actions implemented at the other canister vendors as a result of the deficiencies identified during NES fabrication of the first four filter canisters.

In addition, please be advised that based on new information just received by us, we are currently evaluating certain UT measurements conducted by NES Manufacturing of these four canisters. We will advise you of the results of this evaluation as more information becomes available.

Sincerely,



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

FRS/RDW/eml

Attachments

LIST OF ATTACHMENTS

<u>NO.</u>	<u>SUBJECT</u>	<u>NO. OF PAGES</u>
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2	C of C's for Catalysts	3
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NRC COMMENT 1

Describe the program controls implemented to assure proper catalyst loading during canister fabrication at NES Manufacturing. Include the following aspects:

- a. What assurance was obtained that the catalyst received from AECL and Englehard met the design specifications. If CoFC's or CMTR's were included, submit these for our review.
- b. What receipt inspection was performed by Bechtel and/or NES, and how was the material stored, handled, and controlled in bulk form.
- c. How was the catalyst transferred from bulk form to the individual quantities for loading into the lower head cartridges and the upper cartridges for all types of canisters. How were the individual packages labeled and controlled, including maintaining traceability to individual lot numbers.
- d. During weighing operations what inspection/verification of weights was performed by NES, what Quality Control witnessing was performed by NES, and how was it documented. What weight verification was required to be performed by the Bechtel Supplier Quality Representative (SQR) and what verification was actually performed by the SQR.
- e. What verification of catalyst loading was performed prior to installing the retaining screen.
- f. What was your basis for selecting the frequency of verification by the SQR and what was your justification for not requiring 100 percent Quality Control verification by the fabricator.

GPU NUCLEAR RESPONSE

The recombiner catalysts were purchased by product trademark from Atomic Energy of Canada Limited (AECL) and Englehard Industries Divisions. Both AECL and Englehard are required by the Bechtel Purchase Order to provide a verification that the catalyst materials are provided in accordance with the specified technical requirements and that they are identical to the materials tested at Rockwell Hanford Operations. From a quality and safety concern, material traceability in subsequent fabrication processes is not required since the chemical nature of the catalyst is certified.

The AECL and Englehard catalysts were received at NES with the required Certificates of Conformance (C of C's), which are provided in Attachment 2, and the test reports. The material was receipt inspected by NES for the general condition of the shipping container and catalyst and included a review of the above documentation. This receipt inspection was witnessed by the Bechtel SQR. The material was stored in the original shipping containers (cardboard lined with plastic sheet) in a clean, dry storage area.

The weighing of the catalyst was performed by NES Manufacturing personnel in the storage area. Wearing plastic gloves, personnel weighed out 5 grams of AECL catalyst into a plastic bag and 20 grams of Englehard catalyst into another plastic bag. These two bags were then bound together with a twist tie to form a catalyst assembly. The weighing operation was controlled by the manufacturing sign-off on the traveler. NES Quality Assurance verified this operation and signed the travelers for approximately 25% of the weighing operations. There is no inspection plan requirement for the Bechtel SQR to verify the weighing operations. However, during random in-process inspections, the Bechtel SQR witnessed approximately 20% of the weighing operations and signed the travelers. The catalyst assemblies were then returned to the original shipping container to await loading.

NES Quality Assurance authorized the withdrawal of the catalyst assemblies necessary for loading. The lower heads for each canister type are identical and have four catalyst bed housings. One catalyst assembly was poured into each of the four catalyst bed housings. The upper heads of the fuel canister have one catalyst bed housing. Four catalyst assemblies were poured into the fuel canister upper head catalyst bed housing. The upper heads of the knockout and filter canisters each have two catalyst bed housings. Two catalyst assemblies were poured into each of the catalyst bed housings in the upper heads of the knockout and filter canisters. The loading operation was controlled by the manufacturing and Quality Assurance sign-off of the traveler.

NES Quality Assurance verified 100% of the loading operations. The Bechtel SQR visually verified the presence of both types catalyst in 100% of bottom heads and upper heads prior to screen installation. A 20% minimum verification by the Bechtel SQR is required by the inspection plan.

The fabrication of all canisters is to be performed under the Quality Assurance program requirements stated in ANSI N45.2 which supports 10 CFR 50 Appendix B. The specification, which governs the fabrication process, identifies clearly those program elements necessary for the Quality Assurance fabrication activities which are described in Appendix A of Specification 15737-2-M-101A (Q) (Attachment 3). Seventeen (17) of the standard eighteen (18) elements are indicated by GPU Nuclear as being applicable to canisters. Design control was not required since this is a "fabrication only" contract.

An audit of the NES Quality Assurance Program conducted prior to the start of fabrication has shown that Quality Control coverage prevails throughout the entire fabrication effort for each step, i.e., 100%. An independent inspector stamps and signs each shop traveler as it is completed. This system fully meets the requirements of ANSI N45.2.

Concerning the SQR surveillance, the level of coverage is selected to ensure sufficient information is available to the buyer to judge that the fabricator complies with procedures. SQR coverage is not meant to

replace the supplier's responsibility. It is noteworthy that GPU Nuclear reviewed the traveler for catalyst installation and verified that the SQR performed a 100% witnessing of catalyst installation.

NRC COMMENT 2

In light of recent discussions on the apparent discoloration of the catalyst screens and pellets seen on one (1) in-process lower head, what actions have been or will be taken to determine if there is any potential for catalyst degradation from heat of welding.

GPU NUCLEAR RESPONSE

The attachment of stainless steel screens to the stainless steel catalyst bed housings is usually accomplished by heli-arc welding. If local catalyst damage does occur as a result of heating, the color of the Englehard catalyst would change from dark grey to very light grey. The color of the silicone-coated AECL catalyst would change from dark grey to black. Vapor from the damaged catalyst would not damage the adjacent catalyst.

To allow for catalyst damage, freezing conditions, and unforeseen conditions, the catalyst beds have a number of significant, built-in margins of safety which are documented in GEND-051, "Evaluation of Special Safety Issues Associated With Handling the Three Mile Island Unit 2 Core Debris", and are briefly discussed below.

Testing of the catalyst was conducted using gas generation rates of 0.2 liter/hr of hydrogen and 0.1 liter/hr of oxygen. As stated in the Defueling Canister Technical Evaluation Report (TER) submitted by GPU Nuclear letter 4410-85-L-0183 dated September 10, 1985, the calculated probable maximum hydrogen plus oxygen generation rate is 0.11 liters/hr. This results in a margin of safety of 2.7. During the above described testing, the mixed bed catalyst maintained the oxygen concentration to below 0.6% and the hydrogen concentration to below 1.2%. As the lower flammability limits are 5% for oxygen and 4% for hydrogen, this results in margins of safety of 8.3 for oxygen and 3.3 for hydrogen. Thus, the resulting net margin of safety is greater than a factor of 9 (i.e., there is 9 times more catalyst than required).

GPU Nuclear has concluded that though limited catalyst damage was observed, the built-in margin of safety is sufficient to ensure recombination of the hydrogen and oxygen generated in the defueling canisters. Therefore, based on the above, GPU Nuclear believes that no further actions are required to determine the potential for catalyst degradation from heat of welding.

NRC COMMENT 3

Submit copies of the reports of all Quality Assurance surveillance and audits performed at NES. Additionally, provide all existing and future reports, as available, of audits and surveillance performed at all other canister fabricators.

GPU NUCLEAR RESPONSE

Attachment 4 provides the surveillance reports of the eleven (11) surveillances performed at NES. Attachment 5 provides a copy of the joint GPU Nuclear/Bechtel Quality Assurance Audit of NES conducted on April 23-24, 1985.

A copy of the initial surveillance/audit of the Joseph Oat Corporation, Camden, NJ, conducted on July 10-11, 1985, is provided in Attachment 6. A copy of the initial surveillance/audit of B&W, Lynchburg, VA, conducted on August 5-7, 1985, is provided in Attachment 7.

Audits of canister fabrication are scheduled as follows:

- a. Joseph Oat Corporation, Camden, NJ - October 23-25, 1985
- b. B&W Lynchburg, VA - November 5-7, 1985

GPU Nuclear maintains records of audits and surveillances performed at vendor facilities. As these records are available for NRC inspection, GPU Nuclear believes that an open-ended commitment to submit all future reports is not necessary; in order for the NRC to ensure that canisters manufactured by these vendors are acceptable; however, we will continue to respond to requests for specific documents.

NRC COMMENT 4

What testing has been performed to demonstrate the capability of the recombiner catalyst with all expected chemical contaminants, including the hydraulic fluids used with the defueling tools and the core boring equipment.

GPU NUCLEAR RESPONSE

GENU-051 describes the testing which has been performed to demonstrate the compatibility of the recombiner catalyst with all expected chemical contaminants exclusive of hydraulic fluids. Supplemental testing is being performed to demonstrate the compatibility of the recombiner catalyst with the hydraulic fluids which may be used in the defueling tools. These hydraulic fluids are either a 25/75% volume mixture of Borate Ester/UCON WS-34 hydraulic fluid or borated UCON WS-34 hydraulic fluid. The hydraulic fluid to be used in the core bore assembly is Houghto-Safe 620. Attachment 8 describes the testing to be performed.

Currently, only one test has been completed. This test and its results are described below. The results of further testing will be forwarded for your information upon their availability.

The testing consisted of briefly rinsing 101 grams of mixed bed catalyst and submerging it in water with a 2% solution of a 25/75% by volume of Borate Ester/UCON WS-34 hydraulic fluid. The water included appropriate quantities of boric acid and sodium hydroxide to simulate the water in the reactor coolant system. The catalyst was then placed in the test chamber under dripping wet conditions and covered with two (2) atmospheres of Argon gas. Next, 0.3 liters/hr of stoichiometric hydrogen and oxygen gases were added to the test chamber; the concentration of oxygen in the cover gas built up to a 0.6% peak in five (5) hours and decreased thereafter. This catalyst performance is essentially identical to that which was reported in GEND-051. It therefore appears that this particular mix of hydraulic fluid has the same effect as water on catalyst performance.

Although not directly related to the above NRC comment, additional evaluations have been made to verify the compatibility of the fluids that may be used during defueling and core bore. The fluids that may be used, namely borated Ester, UCON WS-34, and Houghto-Safe 620, have been tested for compatibility to the RCS, SDS, and EPICOR II by GPU Nuclear and have been deemed acceptable. The miscibility of these fluids with RCS water has also been confirmed. GPU Nuclear has also verified the homogeneity of the borated Ester and UNCON WS-34 mixture and the borated UCON WS-34 mixture as well as the absence of boron precipitation from these mixtures.

NRC COMMENT 5

Describe the program controls implemented to assure proper B₄C loading during canister fabrication at NES Manufacturing. Including the following aspects:

- a. What assurance was obtained that the poison material received from the supplier met the design specifications. If CofC's or CMTR's were included, submit these for our review.
- b. Bechtel Specification 15737-2-M-101A, Section 5.3.1, requires the canister vendor to perform a prototype test of the manufacturing process which demonstrates that the minimum B₁₀ content requirements are met. Explain how this specification was satisfied and submit the related documentation.
- c. What receipt inspection was performed by Bechtel and/or NES of the B₄C material, and how was the material stored, handled, and controlled.

- d. Describe the program for transferring the poison material from bulk supply to the individual poison tubes. In particular, how was the quantity of the material installed in the tube controlled and verified, what independent verification was performed, and how was traceability to individual lots maintained.

GPU NUCLEAR RESPONSE

Due to the importance of neutron poison in the canister safety analyses, it has been a requirement that the fabricator test the manufacturing process for B₄C materials. This was accomplished for pellet fabrication through testing of the first production scale lot of poison pellets. Isotopic and chemical tests were performed. The results of these tests demonstrate that the minimum B-10 isotopic concentrations exceed the requirements of the specification referenced in the above NRC comment.

Additionally, periodic samples are analyzed throughout the fabrication process to demonstrate consistency to a 95/95% statistical confidence level for each every pellet lot. This analysis is documented in vendor documents 15737-2-M-101A-25-01 and 23-03 (Attachments 9 and 10, respectively).

The poison material was received at NES with the required C of C's (Attachment 11) and the vendor inspection and test reports. The material was receipt inspected for general condition of shipping containers, dimensional inspection of a sample of poison material, and review of documentation. The receipt inspection was witnessed by the Bechtel SQR. The material was stored in the original shipping containers (cardboard lined with plastic sheet) in a dry, inside storage area.

The poison pellet was segregated in the packages to correspond to a single tube. The pellet manufacturer does this by placing pellets in a tray which is benchmarked to the minimum poison tube inside volume allowed per canister design. The pellet manufacturer then certifies, using the required Quality Assurance procedures, that each individual tray meets or exceeds the minimum quality of B-10. Each tray is then packaged for shipment to the canister fabricator and marked traceable to pellet lot and powder lot. This is done to ensure minimum B-10 content is achieved.

Since minimum B-10 content is ensured to a 95/95% statistical confidence level for every tray, traceability to a particular canister is not needed. Tray numbers are marked (etched) on the outside of each poison tube by NES; this process exceeds the requirements of the specification.

The loading of the poison material into the tubes was performed by NES Manufacturing personnel in the storage area. The poison, in the form of 2" slugs was received from the vendor in trays. Each tray contained the required poison for one tube. NES Quality Assurance would authorize the withdrawal of a poison tray and the material was spot checked by NES for

general condition and dimensions. After the tube was cleaned and inspected, the slugs were loaded into the tube and the tube capped. The above process is documented in vendor document 15737-2-M-101A-31-02 (Attachment 12). The loading operation and inspections were verified 100% by NES Quality Assurance and travelers were signed off. The SQR witnessed a minimum of 20% of the operations and signed off the travelers as appropriate.

NRC COMMENT 6

You have stated that there is considerably more conservatism in the catalyst bed design than that stated in the Technical Evaluation Report. Provide a description of the design conservatism and the calculations and experimental data to support these statements.

GPU NUCLEAR RESPONSE

See the response to NRC Comment 2.

NRC COMMENT 7

Iron oxide was observed on the canister lower heads, presumably from forming these heads on a carbon steel die. Provide a justification for your conclusion that carbon steel impregnation of the stainless steel heads will not affect the acceptability of the shell to head welds and the long term structural and corrosion properties of the canisters. Will any action be taken to remove this iron oxide.

GPU NUCLEAR RESPONSE

Iron oxide was observed on the canister lower heads. This has been shown to be a surface phenomenon, probably associated with the forming process. The demonstration that this is a surface phenomenon was conducted at the Bechtel Materials Testing Laboratory in San Francisco, CA. A reject head, with iron oxide on both the inner and outer surfaces in quantities significantly greater than those on the canisters, was sent to this laboratory from the canister vendor's fabrication shop.

The Materials Testing Laboratory provided the following information:

"We have examined the canister head shipped to us by NES. Both sides of the head were streaked with red rust. The convex (inner) side had heavier concentrations.

The rust could be removed by light mechanical polishing. We used emery paper, but brushing with stainless steel wire brushes could accomplish the same purpose. After the rust stains were removed, the stainless steel surfaces were tested with a copper sulfate solution that will reveal iron contamination (see ASTM A380). No iron contamination was observed on the cleaned surfaces.

On the basis of our examination we believe that the rust stains are the result of mild iron contamination of the stainless steel surfaces. This contamination would come from steel dyes used for forming the head or from the airborne metal dust that would be expected in a fabrication shop. The rusting patterns are the type that one would expect from such casual contamination.

The rusting is not an indication of any corrosion deficiency of the stainless steel. The iron contamination of the stainless steel surfaces will not affect its ability to resist corrosion in the water environments in a fuel pool. Furthermore, it will not diminish its ability to withstand any reactor coolant water remaining in the fuel".

GPU Nuclear concludes, therefore, that the presence of the small quantities of surface contamination observed will have no deleterious effect on canister performance. However, as an added measure, the fabrication procedures at all canister fabrication shops have been revised to require power brushing, using a stainless steel brush, to remove all visible rust.

NRC COMMENT 9

Attachment 6 to your letter 4410-85-L-0202 dated October 10, 1985, is the completed filter canister checklist package. It is marked as Revision 1. What revisions were made to the checklists after their completion? If additional revisions are to be made, submit the completed final revisions with an explanation of the revision for our review.

GPU NUCLEAR RESPONSE

Revision 2 was issued for configuration control purposes to include previously omitted verification items and to incorporate GPU Nuclear comments which were primarily directed at improving the clarity and understandability of the checklists. All pages of the checklist packages are identified as Revision 2.

Also revised were checklist pages M-6B page 1, M-7 page 1, M-16 pages 1 and 2, F-3 page 1, F-3 page 2, F-4 page 2, F-8 page 1, and F-8 page 2.

A revised checklist is provided in Attachment 13. Note that revisions are identified with a revision bar, and that this checklist covers all four (4) of the filter canisters under consideration.

Currently, GPU Nuclear does not anticipate any further changes to this checklist. However, in the event of future revisions, they shall be submitted for your information along with an explanation of the revisions.

NRC COMMENT 10

Attachment 1 to the completed checklist states in section 4 that imposition of ANSI N45.2 was not necessary since CMTR's/CofC's were requested. Did you verify that the suppliers held a current ASME Quality System Certificate? If not, justify how a CMTR/CofC can be considered valid if not supported by an approved Quality Assurance Program.

GPU NUCLEAR RESPONSE

Filter Canister Checklist Attachment 1, Section 4 provides a brief and general explanation of instances where NES did not impose the ANSI N45.2 Quality Assurance program requirements on material suppliers. The Bechtel Review Team independently evaluated the need for imposing such requirements on the supplier of the specific material mentioned in the checklist and concurred with NES's decision not to impose such requirements. Whenever Section 4 is referenced in the checklists, the review team evaluated, on an item by item basis, the acceptability of the supplied material solely on the basis of either CMTR's or C of C's required by NES.

In judging the need for imposition of Quality Assurance program requirements, the Review Team considered the complexity, uniqueness, degree of standardization, and applicability of any special technical or special process requirements. Note that the materials referenced in Attachment 1, Section 4 are not specifically manufactured for nuclear industry use only. They are standard commercially available products, generally manufactured in accordance with specific Standard requirements, e.g., ASTM. These products generally have been and continue to be procured by the nuclear industry solely on the basis of CMTRs/C of C's, without the imposition of unique nuclear industry Quality Assurance program requirements being imposed on suppliers of such products. As for current ASME Quality System Certification, note that the canisters are ASME Code Section VIII Vessels and ASME Code Section VIII does not specifically mention or require an ASME Quality System Certificate, as is required by ASME Code Section III.

ASME Code Section VIII only requires that "the manufacturers shall have a system of receiving control which will ensure that the material received is properly identified and has documentation including required Certificates of Conformance or material test reports to satisfy code requirements as ordered".

NRC COMMENT 11

Explain in further detail how the upper heads are traceable to their heat numbers. At what point in the process were the heat numbers removed? Justify how this meets the ASME Code requirements on material traceability.

GPU NUCLEAR RESPONSE

The material for the upper heads was received by NES as round plate slugs. Each slug was stamped with a heat number traceable to one of the three CMTRs also received. The material was inspected for dimensions and heat number and the CMTRs reviewed to the material requirements. The heat number was maintained by stamping, throughout the machining operation. When the heads were welded to the shell, the heat number, which was stamped on the underside of the head, was no longer accessible. Although unique traceability to a heat number was not maintained, all heads were verified to be of the same material specification, grade and type; therefore, code required traceability was maintained. This traceability was verified by NES Quality Assurance, the Bechtel SQR and the Code Inspector, as evidenced by his acceptance of the code data report for the canisters.

ENGELHARD

ATTACHMENT 2
(4410-85-L-0210)
3 Pages

ENGELHARD CORPORATION
SPECIALTY CHEMICALS DIVISION
409 DELANCY STREET
NEWARK, NEW JERSEY 07102
(201) 666-6553 TELEX 13-6029



5-10-85

W.O. # 84091

(P.N. 1150940A)

CERTIFICATE OF COMPLIANCE

Requested By:

Engelhard Corporation
Systems Department
Union, New Jersey 07083

Attention of:

G. Tonner

Reference:

Bechtel P.O. TC-018139 Item 1

Material Identification:

Deoxo Catalyst; Type A-16430

Amount:

97 lbs

Lot Number:

32723

Total Halides, ppm:

<50

We hereby certify that the above shipment complies
with the requirements of said order.

JECHTEL
354

By:


Jim Logan
Q.A. Coordinator

Date:

March 29, 1985

ENGELHARD

DIGILHARD CORPORATION
SPECIALTY CHEMICALS DIVISION
479 DELANCY STREET
NEWARK, NEW JERSEY 07102
(201) 466-6052 TELEX 13-8079

CERTIFICATE OF COMPLIANCE

Requested By:

Engelhard Corporation
Systems Department
Union, New Jersey 07083

Attention of:

G. Tonner

Reference:

Bechtel P.O. TC-018139 Item 1

Material Identification:

Deoxo Catalyst: Type A-16430

Amount:

70.548 lbs

2. Number:

32809

Total Halides, ppm:

50

We hereby certify that the above shipment complies with the requirements of said order.

8-6-85
W.O. # 84091
P.N. 1150940A

BECHTEL
354

By:

Lia-Liang
QA, Coordinator

Date:

Aug. 29. 1885

BECHTEL
354



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Research Company
Chalk River
Nuclear Laboratories

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COMMERCIAL OPERATIONS
Research Contracts

1984 December 21

RECEIVED

DEC 27 1984

NES MANUFACTURING

T. Harman Jr.
Project Manager
NES Manufacturing
101 Swing Rd.
GREENSBORO, North Carolina
27409

Dear Mr. Harmon:

Silicone Coated Recombiner Catalyst
for TMI-2 De-fuelling Canisters
Certificate of Compliance

We hereby certify that the above-noted catalyst for Bechtel job #15737 purchase order #TC016181 meets the specifications as follows:

The catalyst shall be spherical-shaped particles, 1/4 inch (\pm 1/8 inch) in diameter. The seller shall provide written certification for the following:

- a) The catalyst consists of a base material of silica with a minimum of 0.14 weight percent of platinum.
- b) The catalyst has less than 5 ppm content of chlorine/fluorine.
- c) All physical and chemical properties shall be essentially identical to those of samples shipped to Rockwell Hanford Operations in October 1983 for testing.
- d) The catalyst particles shall have sufficient structural strength to withstand normal handling and loading without crumbling.

The shipment dated 1984 December 12 contains 5.15 kg with the balance of 5.85 kg to follow early in 1985 January.

Yours sincerely,

R.J. Quaiattini

R.J. Quaiattini
Project Manager

W.J. Langford

W.J. Langford
QA Manager

W.A. Seddon
Business Development Officer

WAS:E

P.N. 1150972A



8-6-85

W.O. # 84091

TC 016181

BECHTEL
354

PAGE 20 OF

SUPPLIER QUALITY ASSURANCE PROGRAM REQUIREMENTS DATA SHEET

ANSI N45.2 REQUIREMENTS

The following marked QA Program Elements of ANSI N45.2 apply and are subject to Bechtel evaluation and verification

PROGRAM ELEMENTS

SUPPLIER DOCUMENT AND PARAGRAPH REFERENCES TO BE COMPLETED BY THE SUPPLIER

- ☒ QUALITY ASSURANCE PROGRAM
- ☒ ORGANIZATION
- ☐ DESIGN CONTROL
- ☒ PROCUREMENT DOCUMENT CONTROL
- ☒ INSTRUCTION, PROCEDURES, & DRAWINGS
- ☒ DOCUMENT CONTROL
- ☒ CONTROL OF PURCHASED MATL., EQUIP., & SERVICES
- ☒ IDENT. & CONTROL OF MATLS., PARTS, & COMPONENTS
- ☒ CONTROL OF SPECIAL PROCESSES
- ☒ INSPECTION
- ☒ TEST CONTROL
- ☒ CONTROL OF MEASURING & TEST EQUIP.
- ☒ HANDLING, STORAGE, & SHIPPING
- ☒ INSPECTION, TEST, & OPERATING STATUS
- ☒ NONCONFORMING ITEMS
- ☒ CORRECTIVE ACTION
- ☒ QUALITY ASSURANCE RECORDS
- ☒ AUDITS

OTHER ANSI QA REQUIREMENTS


- ☒ ANSI N45.2.2
- ☒ ANSI N45.2.13

*Supplement 17S-1 and Appendix 17A-1 of ANSI/ASME NQA-1-1979 (including ANSI/ASME NQA-1a-1981 Addenda to Supplement 17S-1 and Appendix 17A-1)

ASME CODE QA PROGRAM REQUIREMENTS

- ☐ ASME SECTION III (NCA 4000)
- ☐ ASME SECTION III (NCA 3800)
- ☒ ASME Section VIII

SIGNATURE OF SUPPLIER REPRESENTATIVE.....

2	6/19/85	Revised and Reissued for Purchase	<i>[Signature]</i>	SPS	<i>[Signature]</i>	<i>[Signature]</i>
1	11/20/84	Issued for Purchase	<i>[Signature]</i>	SPS	<i>[Signature]</i>	<i>[Signature]</i>
0	7/17/84	Issued for Bids	<i>[Signature]</i>	SPS	<i>[Signature]</i>	<i>[Signature]</i>
NO.	DATE	REVISIONS	BY	CHECKED	QA	APPROVED
 TECHNICAL SPECIFICATION FOR FABRICATION OF FUEL CANISTERS			JOB NO. 15737			
			DOCUMENT NO.		REV.	
			2-M-101A		2	

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 5

To: T.V. Sarma Report No. TMI-2/7/8510074 Rev. -
Project QA Engineer Date: October 15, 1985

Supplier: Nuclear Energy Services Site: TMI-2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. 016172 C/O No. 001
Spec No. - Rev. No. -

Fabricated at: Nuclear Egy. Svc.
Address: 101 Swing Road PQA No. - B/A No. 220060
Greensboro, NC 27409

Date of Visit: 9/18-20, 24-27, 30-10/3 Vendor No. 26106-001
10/7-9/85

Activity Items: Personnel Contacted:
Defueling canisters A.E. Smith - Bechtel Sr. Qual. Rep.
L. Ludwig - NES QA Mgr.

Purpose of Visit:
Perform final documentation review with Bechtel QAR for four (4) filter canisters previously shipped to TMI-2.

Summary of Visit:
Final documentation review for four (4) filter canisters previously shipped to TMI-2 was performed with the Bechtel QAR and considered acceptable with comment. These documentation packages were delivered to TMI by the writer on October 10, 1985. U.T. examinations of (2) fuel canister upper hd. to shell circ. seam weldments were witnessed with the Bechtel QAR and considered acceptable. Presence of poison was verified in a sample of twenty (20) small diameter K/O canister poison tubes. See body of report for details.

Results of surveillance were X Satisfactory Unsatisfactory

Action Required:
By Bechtel - Provide NES with formal instructions to reflect R.T. film control/storage requirements imposed by GPUN/QA Ref. Ballard/Linton memo 6110-85-062 (attached). Revise Specification 15737-2-M-101A(Q) to reflect current poison traceability requirements.

No. of Nonconformance Reports Issued None

Final Report Prepared by: D. H. Kierpa 10/21/85
QA Surveillance Rep. Date

Reviewed by: J. D. Bansch 10/21/85
GPUN - Supv. Surveillance & Controls Date
J. D. Bansch

Concurrence: C. J. Paczolt 10/21/85
Manufacturing Assurance Manager Date
C. J. Paczolt

Distribution: See attached.

For GPUN use only
Rev. 0
Date
Location All Plants

Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention- Lifetime

DISTRIBUTION - TMI-2

B. W. Alatary - QA Engineering Manager, Corp.
J. E. Kunkel - Director, Procurement Section
L. H. Lillien - Manager, TMI Contracts
J. F. Marsden - QA Engineering Manager
C. T. Schrock - Manager, HQ Procurement Office
J. C. Solakiewicz - QA Engineering & Systems Mgr., OC
J. E. Tietjen - QA Program Receiving Supervisor
Vendor File - For Data Entry/CARIRS-HQ
R. P. Warren - Plant Engineering Director, Acting
D. M. Kierpa - QAE
R. Wells - TMI-2, Licensing Engineer

Summary of Visit

The writer visited NES Manufacturing, Greensboro, North Carolina on September, 18-20, 24-27, 30 - October 3, and October 7-9, 1985. The purpose of these visits was to perform final documentation review with the Bechtel QAR for the four (4) filter canisters previously shipped to TMI-2. Bechtel has the prime responsibility for surveillance for this procurement in accordance with Bechtel QA Plan H-15737-101A(Q), Revision 1.

At the present time, seventy-seven (77) canisters remain at this facility. The following is a brief status of canister fabrication at NES.

CANISTER STATUS

	<u>Fuel</u>	<u>Filter</u>	<u>Knockout</u>
Total Quantity	35	18	28*
In Fab.	33	12	27
Fab./Testing Complete	2**	2**	0
Shipped to TMI-2	0	4	0

*One set of K/O internals has been sent to Oakridge National Lab for testing.

**Final dimensional inspection and documentation review still outstanding.

Final documentation review for the four (4) canisters previously shipped to TMI-2 was performed with Bechtel QAR, Mr. A. Smith and was considered acceptable with comments noted below. These documentation packages were delivered to TMI by the writer on October 10, 1985.

Documentation Review for Filter Canisters, S/NS F-401, 402, 403 and 404. (One documentation package per canister, each consisting of the documents listed below.)

- G321V Quality Verification Document Requirements
- U.T. Report, Weld #2
- R.T. Report, Weld #3
- R.T. Report, Long Seam (ARMCO)
- R.T./U.T. Weld MAP
- P.T. Reports - 9 Welds
- P.T. Weld Maps
- U1-A Manufacturer's Data Report
- Hydro Test Report - Pipe (ARMCO)
- Pressure Test Certification - Completed Canister
- Filter Bundle Certifications (Pall Trinity)

Filter Media Verification Certificate
Certificate of Conformance
Bubble Test Report
P.T. Certification

- Post-Installation Integrity Test Report
- Inspection and Verification Report for Fit-Up and Installation of Poison Tubes
- Certificate of Conformance - Poison Tube Assembly
- Certificate of Conformance - Lift Point Test
- Certificate of Conformance - Filter Canister Assembly Cleanliness

The following documentation books contain CMTRs, C of Cs, SDDRS, and other documentation per Specification 15737-2-M-101A Rev. 3, which are common to all canisters as described below.

Common Book #s 1, 2, and 3 contain CMTRs for the following components.

FUEL CANISTERS

<u>Component</u>	<u>Drawing, Piece No.</u>
Closure Head	1150989F, Pc. 1
Bulkhead	1154014F, Pc. 1
Shell	1150983C, Pc. 1
Lower Head	1150917D, Pc. 1
Skirt	1150988C, Pc. 1
Bolts	1154021C, Pc. 1
Locating Pins	1154033C, Pc. 1
Shock Absorber Support	1150993C, Pc. 1
Impact Plate "C"	1150994C, Pc. 1
Impact Plate "D"	1150995C, Pc. 1
Ribs	1154104C, Pc. 1
Bottom Plate	1150992E, Pc. 1

FUEL CANISTERS (cont)

<u>Component</u>	<u>Drawing, Piece No.</u>
Impact Plate "A"	1154006D, Pc. 1
Impact Plate "B"	1154007D, Pc. 1
Standoffs	1154103a, Pc. 1
Ribs	1154105a, Pc. 1
Drain Tube	1155381C, Pc. 1

FILTER CANISTERS

<u>Component</u>	<u>Drawing, Piece No.</u>
Closure Head	1150958D, Pc. 1
Shell	1150945C, Pc. 1
Lower Head	1150917D, Pc. 1
Skirt	1150944C, Pc. 1
Plug (used in closure head)	1150957B, Pc. 1
Poison Tube	1150949D, Pc. 2
Bottom End Plug	1150949D, Pc. 3
Top End Plug	1150949D, Pc. 4

KNOCKOUT CANISTERS

<u>Component</u>	<u>Drawing, Piece No.</u>
Closure Head	1150943E, Pc. 1
Shell	1150945C, Pc. 1
Lower Head	1150917D, Pc. 1
Skirt	1150944C, Pc. 1
Inlet Tube	1155247E, Pc. 1
Intermediate Support Plate "A"	1150939D, Pc. 1
Support Ring	1150937D, Pc. 1
Center Tube	1154090C, Pc. 1
Center Tube End Cap	1150961C, Pc. 1
Center Tube Drain Line	1154030C, Pc. 3
Poison Tube "A" - Tubing	1155233D, Pc. 2
Bottom End Plug	1155233D, Pc. 3
Top End Plug	1155233D, Pc. 4
Poison Tube "B" - Pipe	1150946C, Pc. 4
Top End Cap	1150946C, Pc. 2
Bottom Support Plate	1150950E, Pc. 1

Also, Common Book #3 contains C of CS for all other canister components (including catalyst and non-pressure parts) as required by Specification 15737-2-M-101A.

Common Book #4 contains the following poison certifications applicable to filter and knockout canisters.

0821N/18

- A.R.T. Certificate of Conformance
- Pellet Dimensional Inspection Reports
- B¹⁰/Inch Inspection Report
- Inspection Report for pellet length, weight, weight % boron (B¹⁰ content of B₄ pellets
- Visual Inspection and Loading Reports for B₄C pellets.

Common Book #5 contains closed supplier deviation disposition requests (SDDRs) applicable to the first four (4) shipped filter canisters. NES will forward SDDRs to TMI as they are closed for future canisters for insertion into this common book. Mr. A. Smith, Bechtel QAR, was reminded that all SDDRs applicable to a specific canister must be closed prior to shipment of that canister to TMI.

MISCELLANEOUS DOCUMENTATION PACKAGE NOTES

1. NES was unable to locate the required CMTR for Knockout Canister Bottom End Cap, P/N 1150996C, PC 3. NES will locate this CMTR prior to the shipment of the first Knockout Canister and forward a copy to TMI for insertion in the appropriate common book.
2. Poison Shroud Assembly CMTRs for Fuel Canisters will be forwarded to TMI pending resolution of the applicable documentation-related Bechtel Action Items noted below.

BECHTEL ACTION ITEMS

1. Revise Specification 15737-2-M-101A(Q) to reflect current poison traceability requirements and provide NES with specific instructions regarding required documentation as soon as possible.
2. Provide NES with instructions to reflect R.T. film control/storage requirements imposed by GPUN/QA. Reference Ballard/Linton memo, 6110-85-062 (attached).

During the surveillance visits noted by this report, the following activities were witnessed with Bechtel QAR, Mr. A. Smith, and considered acceptable.

- U.T. Examination; Upper Hd. to Shell Circ. Seam Weldment per approved P.T.L. Procedure PTL-QC-UT. 1. Fuel Canister Weld I.D. #^S 17P1 and 19P2. Note: Personnel Certification and Eye Examination Report for PTL U.T. Level III Inspector R. Doviscak, have been previously reviewed and accepted by Mr. A. Smith.
- Presence of poison was verified in a random sample of twenty (20) small diameter knockout canister poison tubes which were awaiting end cap fit-up and welding.

Subject: Control/Storage of NRS Radiographs**Date:** August 6, 1985**From:** Manager, TMI QA Modifications/Operations -
S. H. Ballard, Sr.**Location:** TMI Trailer 24
6110-85-062**To:** Manager, Recovery Programs -
W. H. Linton

It has come to my attention during our recent involvement with the purchase order with NRS (Greensboro, NC) that there is currently no requirement for NRS to send radiographs of components/equipment with their shipment to TMI. As a result of this information, I am uncertain what plans have been made or requirements imposed upon NRS regarding storage and maintenance of the records.

Based on this uncertainty, I feel a contract change is necessary to assure us that NRS either: (1) notifies us prior to destruction of the radiographs with an option that we take the records into our records storage facility, or (2) send us the radiographs with shipment for our storage with the understanding that NRS has full access rights to those records.

Your help in this matter will be greatly appreciated.

B. H. Ballard, Sr.
S. H. Ballard, Sr.
Manager, TMI QA
Modifications/Operations

BES:DLH:cam

cc: Director, Quality Assurance - W. C. Kazanas
Director, TMI-2 Division, F. E. Standerfer
Task Leader, Defueling Operations - P. Bradbury
CARIRS



GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054-1149
(201) 263-6500
TELEX 136-482
Writer's Direct Dial Number:
201-299-2026

September 18, 1985
6170-85-629

Bechtel North American Power Corp.
15740 Shady Grove Road
Gaithersburg, MD 20877-154

Attention: Mr. T. V. Sarma, Project QA Engineer
Location - 2D4

Gentlemen:

SUBJECT: GPUN/QA SURVEILLANCE REPORT #TMI-2/6/8510074
NUCLEAR ENERGY SERVICES, GREENSBORO, NC
September 3-6 and 9-12, 1985

Enclosed please find a copy of the subject surveillance report for your use and record.

As stated in the report, action is required by Bechtel to evaluate the extensive weld repairs of the same areas of the lower head to shell circumferential weld seam on the canisters.

Please supply the writer with results of Bechtel's evaluation.

If you have any questions, please feel free to call the undersigned at your convenience.

Very truly yours,

J. D. Bansch
Supervisor, Surveillance & Controls

CJP
JDB:CJP:hm

Attachments

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 5

To: T. V. Sarma Report No. TMI-2/6/8510074 Rev. 0
Project QA Engineer Date: September 17, 1985 6170-85-652

Supplier: Nuclear Energy Services Site: TMI-2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. 016172 C/O No. 1
Spec No. - Rev. No. -

Fabricated at: Same as Above.
Address: PQA No. - B/A No. 220060

Date of Visit: Sept. 3-6 & 9-12, 1985 Vendor No. 26106-001

Activity Items: Personnel Contacted:
Defueling Canisters A. E. Smith - Bechtel Sr. Quality Rep.
L. Ludwig - NES QA Manager

Purpose of Visit:
Perform Final Inspection and Documentation Review for completed Canisters.

Summary of Visit:
Partial Visual and Dimensional Inspection was performed with Bechtel PQAR for one (1) Filter and one (1) Fuel Canister and was considered conditionally acceptable. Although documentation packages for four (4) completed Filter Canisters are incomplete, TMI-2 management has authorized shipment of these four canisters to TMI-2 for use in training and testing only. Completed documentation packages, still to be reviewed by Bechtel and GPUN/QA, will follow within two weeks. See body of report for details.

Results of surveillance were X Satisfactory Unsatisfactory

Action Required:
By Bechtel - Review and evaluate the potential metallurgical consequences of the extensive re-weld repairs of the same areas of the lower head to shell circumferential seam weldments.

No. of Nonconformance Reports Issued None

Final Report Prepared by: D. M. Kierpa 9/17/85
QA Surveillance Rep. Date
D. M. Kierpa

Reviewed by: J. D. Bansch 9/18/85
GPUN - Supv. Surveillance & Controls Date
J. D. Bansch

Concurrence: C. J. Paczolt 9/26/85
Manufacturing Assurance Manager Date
C. J. Paczolt

Distribution: See attached.

For GPUN use only
Rev. 0
Date
Location All Plants
0652N/36

Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention- Lifetime

DISTRIBUTION - TMI-2

B. W. Alatary - QA Engineering Manager, Corp.
J. E. Kunkel - Director, Procurement Section
L. H. Lillien - Manager, TMI Contracts
J. F. Marsden - QA Engineering Manager
C. T. Schrock - Manager, HQ Procurement Office
J. C. Solakiewicz - QA Engineering & Systems Mgr., OC
J. E. Tietjen - QA Program Receiving Supervisor
Vendor File - For Data Entry/CARIRS-HQ
R. P. Warren - Plant Engineering Director, Acting
D. M. Kierpa - QAE ✓

The writer visited NES Manufacturing, Greensboro, North Carolina on September 3-6 and 9-12, 1985. The purpose of these visits was to perform final inspection and documentation review for completed canisters with the Bechtel PQAR. Bechtel has the prime responsibility for surveillance for this procurement in accordance with the Bechtel QS Plan H-15737-101A (Q), Revision 1.

At the present time, eighty one (81) canisters remain at this facility. All other canister fabrication has been transferred by Bechtel to other suppliers. The following is a brief status of the remaining canisters at NES.

CANISTER STATUS

	<u>FUEL</u>	<u>FILTER</u>	<u>KNOCKOUT</u>
Total Qty.	35	18	28
Remaining at NES			
In Fab.	33	14	28
Fab./Insp. Complete	*2	*4	0

*Completed canister serial numbers are as follows:

	<u>FUEL</u>		<u>FILTER</u>			
S/N	D-102	D-103	F-401	F-402	F-403	F-404
NB #	Not Yet	Assigned	616	617	619	618
Weld Seam						
ID #	26P2	82P1	45P2	43P1	11P2	140P2

Lower head to shell circumferential seam welding continues to be a significant problem at NES. Approximately 50% of the canisters have had weld repairs made on this seam. Also, extensive re-weld repairs of the same areas of the seam have occurred, and in some cases, the fourth repair on the same area is in progress. This situation was briefly discussed with Mr. B. Bain, Bechtel M&QS representative at NES. Bechtel M&QS should review and evaluate the potential metallurgical consequences of this situation as soon as possible.

The NES R. T. procedure supplement described in the writer's report #TMI-2/5/8510074 has been verbally approved with comment by Bechtel. The following actions are still outstanding regarding this procedure supplement.

1. Cross-reference procedure supplement to PTL R. T. procedure previously approved by Bechtel.
2. Since the indications described in this supplement are generic to all radiographed circumferential seams, each reader sheet must be revised to reference this document.

The following verbal agreements have been reached with Bechtel engineering and MQS regarding the lower head rust condition described in the writer's report #TMI-2/3/8510074.

1. For the six (6) canisters noted above which are complete, the rust will be mechanically cleaned and removed by NES. Should this rust re-appear at TMI, it will be addressed at that time.
2. The remaining heads at NES will be mechanically cleaned with all accessible rust removed. An iron contamination test will then be performed on each head. Following this, a nitric acid bath will be used to passivate the O.D. surface of each head.
3. For all heads shipped from NES to B&W and J. Oat, a similar process to #2 above will be required. Bechtel will formally advise these two vendors of their responsibility in this matter.

The following is a summary of the partial visual and dimensional inspection performed on one (1) fuel and one (1) filter canister in conjunction with Mr. A. Smith, Bechtel, PQAR.

Filter Canisters S/ N F403
Drawing 1154018

ATTRIBUTE

- Overall Length 149-3/4 + - 1/4
- Max. Connector Weight 3.200" maximum. No tolerance!
- SHL Wall Thickness .219 Min.
- Straightness 14-5/16" Perfect Cylinders, Total Length, Dwg. Note #13.
- Dwg. Note Requires Circ. Seam to be Ground Flush w/125 RMS Finish.

RESULTS

Accept.
Inlet - 3.207- per verbal agreement reached with Bechtel engineering, this "as built" dimension is acceptable.
Outlet - Accept.

Accept.
Scheduled to be verified on September 13, 1985 prior to shipment.

Lower Hd. to SHL. circ. seam is in "as-welded" condition - per verbal agreement reached with Bechtel engineering, if the aforementioned perfect cylinder inspection is successful, this "as built" condition will be acceptable.

Drawing 1150959

- Grapple Port
- 2.125" Dia.
- 3-1/8" Dia.
- 2-3/8" Depth
- 8° Angle
- * 13/16" Dim.
- * 1/8" x 45° Champher.
- * 3/8" + 1/16" Radius
- * All port locations & size

Accept.
Accept.
Accept.
Accept.

*These dimensions were verified as acceptable per review of NES inspection records and traveller signoffs.

ATTRIBUTES

- Overall Length 150" Max.
- SHL Wall Thickness .219 Min.
- Straightness 14-5/16" Perfect Cylinder, Total Length, Note #13.
- Drawing Note Requires Circ. Seam to be Ground Flush w/125 RMS Finish.

RESULTS

Scheduled to be verified on September 13, 1985 prior to shipment.

Accept.

Scheduled to be verified on September 13, 1985 prior to shipment.

Lower Hd. to SHL. Circ. Seam is in "as-welded" condition per verbal agreement reached with Bechtel engineering, if the aforementioned perfect cylinder inspection is successful, this "as-built" condition will be acceptable.

Drawing 11500989, Revision 3 NOTE: Bechtel/NES are in the process of verifying that the latest drawing revision was used to fabricate these bulkheads.

- Connector Port
- 2" Dim.
 - 1-1/8" Depth
 - 2" Dia. Counterbore
 - 2-1/8" Depth
 - Grapple Port
 - 2.125" Dia.
 - 3-1/8" Dia.
 - 2-3/8" Depth
 - 8° Angle
 - * 13/16" Dim.
 - * 1/8" x 45° Champher
 - * 3/8" x 1/16" Radius
 - * All port locations & size

Accept.
Accept.
Accept.
Accept.

Accept.
Accept.
Accept.
Accept.

* These dimensions were verified as acceptable per review of NES inspection records and traveller signoffs.

(Mr. T. Demmitt, TMI-2 Deputy Director has authorized shipment of the four (4) filter canisters noted above to TMI for purposes of training and testing with the following activities incomplete.

1. Bechtel Material Verification Audit at NES for the canisters is still open, with resolution of software - related QA problems still outstanding.
2. NES documentation packages are incomplete, and will not be included with the shipment. Bechtel and GPUN/QA will review these documentation packages at NES before they are forwarded to TMI.

During this surveillance visit, Mr. A. E. Bradford, EG&G/Idaho, QA Representative, was in attendance at NES. Mr. Bradford reviewed the progress of the Bechtel Material Verification Audit on the four (4) filter canisters and two (2) fuel canisters noted above. Also, he interfaced with the writer regarding the status and results of the inspection/testing and NDE on these completed canisters.

Mr. Bradford will provide Bechtel representatives at NES with the results of his visit during an exit meeting scheduled for September 13, 1985.



GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054-1149
(201) 263-6500
TELEX 136-482
Writer's Direct Dial Number:

201-299-2026

August 28, 1985
6170-85-501

Bechtel North American Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20877-154

Attention: Mr. T. V. Sarma, Project QA Engineer, Location 2D4

Gentlemen:

SUBJECT: GPUN QA SURVEILLANCE REPORT #TMI-2/5/8510074
NES MANUFACTURING, GREENSBORO, NORTH CAROLINA
SURVEILLANCE VISIT OF AUGUST 14-16, 1985

Enclosed please find a copy of the subject surveillance report for your use and record.

As stated in the report results of the surveillance were satisfactory. However, action by Bechtel is required related to evaluating the NES/PTL R. T. procedure supplement as described in the body of the report.

If you have any questions related to the report or if we can be of any assistance, please feel free to call at your convenience.

Very truly yours,

J. D. Bansch
Supervisor, Surveillance & Controls

JDB: :hm

Attachment

0674N/1

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 4

To: T. V. Sarma Report No. TMI-2/5/8510074 Rev. 0
Project QA Engineer Date: August 28, 1985 6170-85-585

Supplier: Nuclear Energy Services Site: TMI-2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. 016172 C/O No. 1
Spec No. - Rev. No. -

Fabricated at: Same as above.
Address: PQA No. - B/A No. 220060

Date of Visit: August 14-16, 1985 Vendor No. 26106-001

Activity Items: Personnel Contacted:
Defueling Canisters A. E. Smith - Bechtel Sr. Quality Rep.
L. Ludwig - NES QA Manager

Purpose of Visit:
Observe Canister Hydro-Testing and review Circumferential Seam Radiographs with Bechtel PQAR.

Summary of Visit:
Witness of one (1) Fuel Canister Hydro-Test with Bechtel PQAR was found acceptable. Also, a sample of Circumferential Seam Radiographs were reviewed with the Bechtel PQAR, with questionable linear indications observed. See body of report for details.

Results of surveillance were X Satisfactory ___ Unsatisfactory

Action Required:
By Bechtel...Evaluate NES/PTL R. T. Procedure supplement as described in the body of this report.

No. of Nonconformance Reports Issued None

Final Report Prepared by: D. H. Kierpa 8-28-85
QA Surveillance Rep. Date
D. M. Kierpa

Reviewed by: J. D. Bansch 8/28/85
GPUN - Supv. Surveillance & Controls Date
J. D. Bansch

Concurrence: C. J. Paccolt 8/28/85
Manufacturing Assurance Manager Date
C. J. Paccolt

Distribution: See attached.

For GPUN use only
Rev. 0
Date
Location All Plants
0652N/8
Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention- Lifetime

The writer visited NES Manufacturing, Greensboro, North Carolina on August 14-16, 1985. The purpose of this visit was to observe canister hydrotesting and review circumferential seam radiographs with the Bechtel PQAR. Bechtel has the prime responsibility for surveillance for this procurement in accordance with the Bechtel QS Plan H-15737-101A (Q) Revision 1.

The following canister testing operation was witnessed by the writer in conjunction with Bechtel PQAR A. Smith in accordance with approved procedure noted below and was considered acceptable.

Canister Type & SN	Test	Procedure	Results
Fuel 25P2	Hydro-Test	NES 84091-HTP-0, Rev.2	Acceptable

All testing was performed using calibrated measuring and test equipment.

Additionally, it was verified, by review of traveller signoffs, that the Bechtel radiography review for lower head to shell circumferential seam welds has been completed for canister 25P2.

A review was made of sample of canister lower head to shell circumferential seam radiographs with Mr. A. Frevold, Bechtel PQAR, R. T. Level II. Radiographs of weld #3, for canisters 19P1, 38P2 and 49P1 were reviewed in accordance with PTL procedure QC-RT-1, revision 13, approved by Bechtel, with the following questionable linear indications observed.

The radiographs of these three welds exhibited, in certain views, suspect linear indications normally of the type associated with discontinuities in the root pass of the weld. Unfortunately, due to the geometric configuration of these canisters, visual examination of the I. D. surface of these welds is impossible. At this time, Mr. L. Ludwig, NES QA Manager and Mr. R. Dovicsak, PTL R. T. Level III produced a sectioned specimen of a weldment which is essentially identical to the lower head to shell circumferential weld in question. Visual examination of the specimen weld I.D. performed by the writer and Mr. Frevold revealed internal convexity and bead rollover which appeared in the sample radiograph of this specimen as linear indications of a similar type as those observed in the actual circumferential seam radiographs in question. Based on this review, the following suggestions were made by the writer to the Bechtel, NES, and PTL representatives.

1. Archive this sample specimen and its radiograph.
2. Prepare technique sheet and reader sheet for this sample radiograph.
3. NES/PTL must prepare a generic R. T. procedure supplement, for Bechtel review and approval, describing the aforementioned specimen, its radiograph, visual examination of the specimen weld I.D., and subsequent film interpretation as well as the specimen radiographs' relationship to the actual canister circumferential seam weldments.
4. Review actual canister circumferential seam weldment R. T. reader sheets to note internal convexity and bead rollover, as applicable.

It should be noted that resolution of this problem is a prerequisite for shipment of these canisters.

The following additional information was obtained and/or discussed during this surveillance visit.

1. Mr. A. Smith's surveillance activities are now being supported by Bechtel PQAR Mr. J. Garner on a temporary basis, as required by the workload at NES.
2. The writer was advised that the recent ASME survey conducted at NES resulted in no findings being issued, and all ASME stamps in NES' possession being renewed.
3. The transfer of materials for the thirty (30) fuel canisters from NES to J. Oat is in progress. (See the writers surveillance report #TMI-2/1/8510102 for the details of the ASME code problem for the lower head sub-assemblies for these canisters.)
4. The following is a brief status of the ongoing Bechtel Material Verification Audits at NES.
 - o Rack #2 - essentially complete and acceptable. Rack shipment is scheduled for August 19, 1985.
 - o Shields/Collars/Trolley - 90% complete. A list of open items has been presented to NES for response.

- o Canister material still to be transferred to J. Oat (for thirty fuel canisters only) - essentially complete.
 - o First of each type of canisters fabricated at NES - not yet started.
5. J. Oat and B&W Lynchburg have been verbally awarded contracts for additional canisters to be transferred from NES. Firm quantities are not available at this time.
 6. Mr. A. Smith, Bechtel PQAR, was advised that based on previous successful hydro-test/integrity testing of fuel and/or filter canisters, testing of the few canisters tentatively scheduled for the week of August 19, 1985, may be witnessed by Bechtel without GPUN/QA participation. However, Bechtel is still obligated to notify GPUN/QA for witness of final inspection of any canisters and any testing after week of August 19, 1985.



GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054-1114
(201) 263-6500
TELEX 136-482
Writer's Direct Dial Number:
201-299-2026

August 7, 1985
6170-85-507

Bechtel North American Power Corporation
15740 Shady Grove Road
Gaithersburg, MD 20877-154

Attention: Mr. Larry McAnallen
Location 2A4

SUBJECT: GPUN-QA SURVEILLANCE PARTICIPATION
TMI-2 DEFUELING

Gentlemen:

This is to advise that GPUN/QA wishes to be notified of the scheduled start of the following operations at the applicable supplier.

Notification should be as far in advance as possible so GPUN /QA can make arrangements to be present with the Bechtel representative during witnessing of the specified hold point activity.

<u>Supplier</u>	<u>Commodity</u>	<u>Hold Point Operations</u>
Joseph Oat Corporation Camden, NJ	Defueling Canisters	H-2 Pressure Test H-3 Canister Check-out Test H-5 Final Inspection

Note: The GPUN/QA representative will review completed UT reports and accepted radiographic film on the first canister during visit to witness the pressure test. Subsequent review will be at GPUN/QA option.

GPUN/QA reserves the right to add or delete operations to be witnessed. Witnessing of repeat operations after the first operation will be based on first operation results, TMI receipt inspection results or specific requests from GPUN TMI personnel.

Very truly yours,

J. D. Bansch
Supervisor, Surveillance & Controls

JDB:CJP:hm

cc: Attached

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 4

To: T. V. Sarma Report No. TMI-2/4/8510074 Rev. 0
Project QA Engineer Date: August 6, 1985 6170-85-506

Supplier: Nuclear Energy Services Site: TMI-2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. 016172 C/O No. 0
Spec No. - Rev. No. -
Fabricated at: Same as above.
Address: PQA No. - B/A No. 220060

Date of Visit: July 29 - August 1, 1985 Vendor No. 26106-001

Activity Items: Personnel Contacted:
Defueling Canisters A. E. Smith - Bechtel Sr. Quality Rep.
L. Ludwig - NES QA Manager

Purpose of Visit:
Observe Canister Hydro-Testing and review Circumferential Seam Radiographs with Bechtel PQAR.

Summary of Visit:
Witness of one (1) Fuel Canister Hydro-Test and one (1) Filter Canister Hydro-Test and Integrity Test with the Bechtel PQAR were found acceptable. Also, a sample of circumferential seam radiographs previously evaluated by the Bechtel PQAR were reviewed, with the writer concurring with the Bechtel's film interpretation. See body of report for details.

Results of surveillance were X Satisfactory ___ Unsatisfactory

Action Required:

None

No. of Nonconformance Reports Issued None

Final Report Prepared by: D. M. Kierpa 8.7.86
QA Surveillance Rep. Date
D. M. Kierpa

Reviewed by: J. D. Bansch 8/7/85
GPU - Supv. Surveillance & Controls Date
J. D. Bansch

Concurrence: C. J. Paczolt 8/7/85
Manufacturing Assurance Manager Date
C. J. Paczolt

Distribution: See attached.

For GPUN use only
Rev. 0
Date
Location All Plants

Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention- Lifetime

DISTRIBUTION - TMI-2

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J. E. Kunkel - Director, Procurement Section
L. H. Lilien - Manager, TMI Contracts
J. F. Marsden - QA Engineering Manager
C. T. Schrock - Manager, HQ Procurement Office
J. C. Solakiewicz - QA Engineering & Systems Mgr., OC
J. E. Tietjen - QA Program Receiving Supervisor
Vendor File - For Data Entry/CARIRS-HQ
R. P. Warren - Plant Engineering Director, Acting
B. E. Ballard - Manager, TMI QA Mod./Ops.
D. L. Hosking - Unit 2 QA Project Engineer
N. C. Kazanas - Director, Quality Assurance
D. M. Kierpa - QAE
R. D. Wells - Licensing Engineer, TMI
R. L. Wayne - Manager, QA Design & Procurement

The writer visited NES Manufacturing, Greensboro, North Carolina on July 29 through August 1, 1985. The purpose of this visit was to observe canister hydrotesting and review circumferential seam radiographs with the Bechtel PQAR. Bechtel has the prime responsibility for surveillance for this procurement in accordance with Bechtel QS Plan H-15737-101A (Q) Revision 1.

A review was made of a sample of canister lower head to shell circumferential seam radiographs previously evaluated by Mr. A. Frevold, Bechtel QAR, R.T. Level II. The following radiographs, in accordance with PTL procedure QC-RT-1, Revision 13, approved by Bechtel, were reviewed, with the writer's film interpretation in agreement with that of Bechtel's PQAR, Mr. Frevold.

Canister Type & SN	Weld I.D.	Exposure #	Density	Remarks
Filter-45P2	45P2-RTW-3	0-1	Acceptable	PTL (NES Subcontractor will reshoot. " " "
		1-2	Unacceptable	
		2-3	Unacceptable	
		3-0	Acceptable	
Filter- 140P2	140P2-RTW-3	0-1	Acceptable	PTL (NES Subcontractor) will reshoot.
		1-2	Acceptable	
		2-3	Acceptable	
		3-0	Unacceptable	
Filter-47P1	47P1-RTW-3	0-1 (R-1)	Acceptable	Linear indication, incomplete pene- tration. Film rejected. Weld repair and re- shoot required.
		1-2 (R-1)	Acceptable	
		2-3	Acceptable	
		3-0	Unacceptable	

Additionally, it was verified, by review of traveller signoffs, that the Bechtel radiography review for lower head to shell circumferential seam welds has been completed for the following canisters; 26P2 and 43P1.

The following canister testing operations were witnessed by the writer in conjunction with Bechtel PQAR's R. Ferguson and A. Smith in accordance with the approved procedures noted below and were considered acceptable.

Canister Type & SN	Test	Procedure	Results
Filter-43P1	Hydro-test	NES 84091-HTP-F,Rev.1	Acceptable
Filter-43P1	Integrity Test	Pall Trinity T-652,Rev.D	Acceptable
Fuel-26P2	Hydro-test	NES 84091-HTP-0,Rev.2	Acceptable

All testing was performed using calibrated measuring and test equipment.

Note: Regarding use of "Leak Tec" soap bubble solution as specified in the aforementioned hydro-testing procedures, the following agreement was reached with NES QC personnel, Bechtel PQAR's, and the writer. Application of the soap bubble solution (for detection of possible leakage if air was entrapped in the canister) on all canister weldments and mechanical connections would occur after the forty-five (45) minute hydro-test "hold" time had elapsed, but while still maintaining a test pressure of 225 PSIG. This sequence of events would eliminate the potential of masking any leakage which might occur during hydrotesting. The writer recommended to Mr. P. Dedlani, Bechtel material verification audit team leader, that Bechtel re-review these procedures for the possible formal incorporation of the aforementioned clarification.

The following additional information was obtained and/or discussed during this surveillance visit.

1. Mr. A. Smith advised the writer that the GPUN/QA technical and editorial comments on the PTL Ultrasonic Test Reports for the canister shell to bulkhead circumferential seam weldments have been incorporated into revised reports. These will be available for review during the next GPUN/QA surveillance visit to NES Manufacturing.
2. The Bechtel material verification audit for Rack #2 (on which fabrication is complete) is currently in progress. Also, the material verification audit for the first of each type defueling canister is scheduled to commence week of August 5, 1985. Mr. P. Dedlani was advised that GPUN/QA wishes to be apprised of the results of these audits prior to the shipment of these items from NES Manufacturing. Additionally, the writer recommended that Mr. Dedlam suspend the Bechtel audit activities at NES during the ASME survey, presently scheduled for August 5-7, 1985. This would allow NES QA/QC personnel to concentrate their efforts on the accomodation of the ASME survey team without any other distractions.
3. Material at NES, designated for transfer to Joseph Oat for thirty (30) fuel canisters, is currently being readied for shipment.

4. NES commitment to increase their QA/QC staff at this facility has been met by the assignment of two QA Engineers and four additional QC Inspectors from their Danbury office.
5. The writer was advised by PQAR Mr. A. Smith that effective Friday, August 2, 1986, his full-time surveillance support at NES from PQAR Mr. R. Ferguson will be terminated. The writer expressed concern at this reduction of Bechtel surveillance personnel at NES in light of the fact that the actual in process fabrication and inspection/testing activities during this surveillance visit were extensive and potential PQAR support of the Material Verification Audit Team could impact on time available to perform actual surveillance activities. Mr. L. McAnallen, Bechtel Project Surveillance Coordinator advised the writer via telecon on August 1, 1985, that although Mr. Ferguson would no longer be in residence at NES, Mr. Smith would continue to be supported on an "as needed" basis by Mr. A. Frevold for R.T. film review.
6. Based on a request from Mr. L. McAnallen, the following is a restatement of GPUN/QA holdpoints for the defueling canisters at NES Manufacturing.

Reference: Quality Surveillance Plan #15737-027 (101AQ)

Surveillance Activity

- H-3 Pressure Test - each canister type - 1st operation plus 20% of remaining units.
- H-4 Canister Checkout Test - filter canister. 1st operation plus 20% of remaining units.
- H-7 Final Inspection - each canister.

Notification should be as far in advance as possible so GPUN/QA can make arrangements to be present with the Bechtel representative during witnessing of the specified hold point activity.

GPUN/QA reserves the right to add or delete operations to be witnessed. Witnessing of repeat operations after first operation will be based on first operation results, TMI Receipt Inspection results or specific requests from GPUN TMI personnel.



GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054-1149
(201) 263-6500
TELEX 136-482
Writer's Direct Dial Number:

201-299-2025

July 16, 1985
6170-85-456

Bechtel North American Power Corporation
15740 Shady Grove Road
Gaithersburg, MD 20877-154

Attention: Mr. T. V. Sarma, Project QA Engineer
Location 2D4

Gentlemen:

SUBJECT: GPUN/QA SURVEILLANCE REPORT TMI-2/3/8510074
NUCLEAR ENERGY SERVICES, GREENSBORO, NORTH CAROLINA

Enclosed please find a copy of the subject surveillance report for your action and record.

As stated in the report GPUN/QA would like a copy (for information) of the Bechtel surveillance of July 5, 1985, describing Mr. Frevold's radiographic film review of canister circumferential seam welds at NES.

If you have any questions on the above or the report, please feel free to contact the undersigned at your convenience.

Very truly yours,

John D. Bansch
Supervisor, Surveillance & Controls

CJP
JDB:DMK:CJP:hm

Attachments

0540N/1

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 4

To: T. V. Sarma Report No. TMI-2/3/8510074 Rev. 0
Project QA Engineer Date: July 12, 1985 6170-85-454

Supplier: Nuclear Energy Services Site: TMI-2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. 015172 C/O No. 0
Spec No. - Rev. No. -

Fabricated at: Same as above.
Address: PQA No. - B/A No. 220060

Date of Visit: July 8-10, 1985 Vendor No. 26106-001

Activity Items: Personnel Contacted:
Defueling Canisters A. E. Smith - Bechtel Sr. Quality Rep.
L. Ludwig - NES QA Manager

Purpose of Visit:
Observe Canister Hydro-testing with Bechtel PQAR. Review Bechtel/NES responses to QA related concerns noted in the writers previous surveillance report of June 19, 1985.

Summary of Visit:
Canister hydro-testing was postponed due to problems with the canister circumferential seam radiographs. Bechtel/NES responses to previously reported QA related concerns were reviewed and discussed. A brief status of canister storage racks, transfer shield, and collars was also obtained. See body of report for details.

Results of surveillance were Satisfactory X Unsatisfactory

Action Required:
By Bechtel - Provide, for GPUN/QA information, a copy of the Bechtel surveillance report of July 5, 1985, describing Mr. Frevold's radiographic film review of canister circumferential seam welds at NES.

No. of Nonconformance Reports Issued None

Final Report Prepared by: D. M. Kierpa 7-12-85
QA Surveillance Rep. Date
D. M. Kierpa

Reviewed by: C. J. Paczolt for 7/12/85
GPUN + Supv. Surveillance & Controls Date
J. D. Bansch

Concurrence: C. J. Paczolt 7/12/85
Manufacturing Assurance Manager Date
C. J. Paczolt

Distribution: See attached.

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Date
Location All Plants
0247N/49

Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention- Lifetime

The writer visited Nuclear Energy Services (NES), Greensboro, North Carolina on July 8-10, 1985. The purpose of this visit was to observe canister hydro-testing and review Bechtel/NES responses to QA-related concerns noted in the writer's previous surveillance report of June 19, 1985. Bechtel has the prime responsibility for surveillance for this procurement in accordance with Bechtel QS Plan H-15737-101 A (Q) Revision 1.

Hydro-testing of the canisters scheduled for this surveillance visit was postponed due to the following reasons. As noted in the writer's surveillance report of June 19, 1985, numerous problems appeared to exist regarding the canister circumferential seam radiographs. These problems were investigated by Bechtel during their formal R. T. film review, conducted by Mr. A. Frevold, Bechtel, R.T. Level II, on July 5, 1985. The following is a summary of problems detected by Mr. Frevold and those previously noted by the writer.

1. Radiographs are not sorted or filed by weld.
2. Radiographic reports are not issued by weld.
3. Repairs are not traceable to original reports and/or radiographs.
4. Conam (NES' NDE subcontractor) R. T. procedure is not approved by Bechtel, with the following Conam R. T. report problems noted.
 - Lack of signature and identification of radiographer.
 - Shooting sketch not included with report.
 - Exposure data and material identification missing.
 - Reference to acceptance/rejection criteria is confusing
 - Penetrameter placement is questionable.
5. PTL (NES' other NDE subcontractor) R. T. procedure has been approved by Bechtel. However, the same problems as noted in item 1 through 4 above exist on the PTL circumferential seam radiographs.
5. R. T. location marker are "ink marked" on the canisters. Permanent R. T. location markers (either etched or stamped) are required.
7. NES has not addressed the subject of code nameplate stamping for NDE requirements; i.e., "R. T." would not represent the actual NDE performed on the canister.
8. No one individual at NES is in control of the subcontracted radiographic operations, with no evidence available indicating that NES has reviewed the film and reports to verify uniformity and procedural compliance, prior to presentation to Bechtel for review.

A meeting was held regarding circumferential seam NDE problems (both U.T. and R.T.) on Tuesday, July 9, 1985, with the following personnel in attendance.

D. M. Kierpa	GPUN/QA
A. E. Smith	Bechtel Sr. QAR
L. Ludwig	NES QA Manager
F. Sugar	NES G. M. (part-time attendance)
R. Doviscak	P.T.L. R.T. and U.T. Level III.

1. NES/PTL agreed to revise U.T. report for canister circumferential seam welds (shell to bulk head weld) in accordance with GPUN/Bechtel comments.
2. NES will delegate responsibility for all radiography to P.T. L. P.T.L. will reshoot, after receiving formal authorization from NES, all circumferential seam radiographs previously shot by Conam. This would be accomplished using the P.T.L. procedure and certified personnel previously reviewed and approved by Bechtel. P.T. L. will also file, colate, and organize all reports and film, filing radiographs for one weld per envelope, one weld per report, and assuring traceability to the specific weld seam through the use of permanent R.T. location markers.
3. NES will seek clarification from Bechtel as to correct code nameplate stamping relative to NDE requirements.
4. At this time, the writer advised Bechtel and NES personnel that GPUN/QA would review a sample of these radiographs after Bechtel acceptance at NES prior to shipment of these canisters.

NOTE: The writer was advised via telecon from Mr. P. Bradbury, Bechtel Task Manager, on July 9, 1985, that per his conversations with our Mr. B. Ballard, inclusion of a set of radiographs in the documentation package to be sent with canister shipment would not be required, making double loading of film cassettes unnecessary. Alternate means for GPUN to obtain these radiographs at a later date are now being investigated.

The following additional QA-related information was obtained regarding the canisters at NES.

1. Continuation of USNRC inspection at NES, originally scheduled for week of July 8, 1985, has been postponed, with no new date presently established.
2. NES' "U" stamp certificate of authorization expires on August 9, 1985. The required ASME re-survey is presently scheduled for week of August 4, 1985.

3. The writer accompanied Mr. A. Smith, Bechtel PQAR to observe his inprocess visual examination of several canisters in various stages of fabrication in the NES outside yard. The following surface condition was observed.

On seven (7) of the fifteen (15) canisters examined, extensive areas of rust exist on the circumference of the straight flange section of the lower head, type 304L, stainless steel material adjacent to the circumferential seam weld. Mr. Smith will document this condition in his next surveillance report, and verbally advise Bechtel MQS personnel at the Gaithersburg office as soon as possible.

During this surveillance visit, the writer obtained the following brief status of the balance of GPUN/Bechtel orders at NES. TP-007954 C/N 008. Bechtel Quality Surveillance Plan #5737-2C-406 (Q), Fuel Canister Storage Racks. Rack # 84-075-01 is essentially complete. However, a Bechtel QSDR (Quality Surveillance Deficiency Report) issued relative to sub-standard weld quality and workmanship is still open. Resolution and close-out of the QSDR is a pre-requisite to shipment of this rack.

Also, the Bechtel material verification audit in progress for the racks, with problem areas was detected relative to completion of required liquid penetrant examinations. Completion of this audit and close-out of the previous Bechtel audit finding is still outstanding.

TC-015180 C/N 001. Bechtel Quality Surveillance Plan # 15737-2M-067 (N). Canister transfer shields and collars. Load testing of the handling trolley is presently scheduled for July 11, 1985. This test will be witnessed by the Bechtel PQAR, and will be performed in accordance with NES Procedure 83A1595, Revision 0, entitled "TMI-2 Canister Handling Trolley Load Test Procedure." This procedure has been approved by Bechtel. Also, the writer observed, in conjunction with the Bechtel PQAR, the following liquid penetrant examination.

TRANSFER SHIELD OUTER WALL ASSEMBLY, FLANGE TO SHELL WELD
NES TRAVELLER #004157, P/N 83E1504-2-901
NES PROCEDURE QIP-PT-V, REVISION 0, WITH SUPPLEMENT 85008 P.T., REVISION A - approved by Bechtel.

The results of this examination were acceptable, with P.T. material and personnel certifications previously reviewed and found acceptable by Bechtel.

It should be noted that the surveillance effort of Mr. A. Smith, resident PQAR at NES, is now being supported by additional Bechtel PQAR personnel. Mr. R. Ferguson has now been assigned to temporary residency at NES. Also, Mr. A. Frevold, an R. T. Level II PQAR based in the Charlotte area, will provide further assistance in the area of R. T. film review when required.



GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054-1149
(201) 263-6500
TELEX 136-482
Writer's Direct Dial Number:

201-299-2026

June 20, 1985
6170-85-404

Bechtel North American Power Corporation
15740 Shady Grove Road
Gaithersburg, MD 20877-154

Attention: Mr. T. V. Sarma, Project QA Engineer
Location - 204

Subject: GPUN QA Surveillance Report #TMI-2/2/8510074
Nuclear Energy Services, Greensboro, NC 6-10, 6-14-85

Gentlemen:

Enclosed please find a copy of the subject surveillance report for action and record.

As stated in the report results of the surveillance were unsatisfactory.

GPUN - QA requires your written response describing disposition and corrective action taken or planned.

Upper QA Management of GPUN has discussed these problems with Bechtel Project Management and has requested submittal of a corrective action plan.

Very truly yours,

John D. Bansch
Supervisor - Surveillance and Controls

JDB:CJP:DMK:rws

0503N/1

DISTRIBUTION - TMI-2

B. W. Alatary - QA Engineering Manager, Corp.
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C. T. Schrock - Manager, HQ Procurement Office
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J. E. Tietjen - QA Program Receiving Supervisor
Vendor File - For Data Entry/CARIRS-HQ
R. P. Warren - Plant Engineering Director, Acting
D. M. Kierpa - QAE
J. D. Bansch - Supervisor, Surveillance & Controls

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 5

To: T. V. Sarma Report No. TMI-2/2/8510074 Rev. 0
Project QA Engineer Date: June 19, 1985

Supplier: Nuclear Energy Services Site: TMI -2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. 016072 C/O No. 0
Spec No. Rev. No.
Fabricated at: Same as above
Address: PQA No. B/A No. 220060

Date of Visit: June 10-14, 1985 Vendor No. 26106-001

Activity Items: Personnel Contacted:
Defueling Canisters See Attachment

Purpose of Visit:

Observe canister hydro-testing and integrity testing with Bechtel PQAR.
Review NDE results of canister circumferential welds.

Summary of Visit:

This surveillance visit revealed numerous QA related problems in the areas of NDE and hydro-testing. Also a USNRC inspection conducted concurrently with the writers surveillance visit revealed numerous NES and Bechtel QA deficiencies as described in an inspection status meeting of June 14, 1985.

Results of surveillance were Satisfactory x Unsatisfactory

Action Required:

Bechtel action items are delineated in the body of this report.

No. of Nonconformance Reports Issued None

Final Report Prepared by: Jim P. Bansch Date 6/20/85
QA Surveillance Rep. Date
D.M. Kierpa

Reviewed by: Jim P. Bansch Date 6/20/85
GPUN - Supv. Surveillance & Controls Date
J. D. Bansch

Concurrence: C. J. Racolt Date 6/21/85
Manufacturing Assurance Manager Date
C. J. Racolt

Distribution: See attached.

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Date
Location All Plants
Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention Lifetime

0503N/3

DISTRIBUTION - TMI-2

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J. E. Tietjen - QA Program Receiving Supervisor
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R. P. Warren - Plant Engineering Director, Acting
D. Hosking - Unit 2 Project QA Engineer
N. C. Kazanas - Director, Quality Assurance
B. E. Ballard - Manager, QA Mod./Ops., TMI

0503N/4

The writer visited Nuclear Energy Services (NES), Greensboro, NC on June 10-14, 1985. The purpose of this visit was to observe canister hydro-testing and integrity testing and review NDE results of canister circumferential welds in conjunction with Bechtel's QA representative, Mr. A Smith. Bechtel has the prime responsibility for surveillance for this procurement in accordance with Bechtel QS Plan #15737-101A(Q) rev. 1.

The following QA related problems in the area of NDE and hydro-testing were identified during this visit. These problems were reviewed at length during meetings conducted with the following Bechtel personnel;

A.E. Smith	SR. QAR (resident at NES)
A.N. Frevold	QAR (substituted for Mr. Smith during his one (1) day vacation.)
L.J. McAnallen	PSQS
T.I. Gillespie	QA Mgr., Projects

I. The writer's review of Pittsburgh Testing Laboratory's U.T. report for examination of the fuel canister circumferential closing seam revealed the following areas of concern. (Note: PTL is NES's NDE sub-contractor.)

- The sketch provided does not adequately represent the complexity of this weld joint or define examination starting point
- The "special note" describing joint geometry and configuration requires clarification and more precise terminology.
- Equipment identification, including transducer size and angle are misleading and in some cases, in error.
- Test parameters for straight beam examination are vague.
- Calibration block description is inadequate.

In general the inadequacies of this report in its present form would make repeatability of this examination impossible and raised doubts as to the validity and Code compliance of the examination. It should be noted that the NRC NDE consultant, Mr. J. Holm, concurred with these concerns.

BECHTEL RESPONSE: The Bechtel representatives concurred, in general with the writers concerns, and scheduled a meeting with the PTL/U.T Level III, Mr. R. Dovicsak to provide clarification. During this meeting, Mr. Dovicsak agreed to revise and reformat this U.T. report to address all of the aforementioned concerns, if he receives NES authorization to do so. It should be noted that based on conversations with Mr. Dovicsak and proposed report revisions, I feel more confident that this U.T. examination meets code and contract requirements. Also, Bechtel will continue to witness these U.T. examinations. Bechtel was further advised that the revised U.T. reports would be reviewed by GPUN during our next visit to NES.

II. The writers review of the status of R.T. of canister circumferential seams revealed the following problems:

- Visual examination of the canisters revealed a lack of circumferential seam identification marking of any kind. This marking is essential to maintaining R.T. film to weld seam traceability.
- R.T. location markers were "ink marked" on the canisters. Code requires permanent location markings, either etched or stamped.
- Apparently, some of this sub-contracted R.T. has been performed by PTL with the balance performed by Conam. (Approximately ten canisters' circumferential seams have been radiographed.) At the present time, only PTL's R.T. procedure has been approved by Bechtel with NDE personnel certifications also reviewed. Conam's R. T. procedure is unavailable and not submitted to Bechtel for approval. Also, NDE personnel certifications for Conam personnel have not been reviewed by Bechtel. Based on "ink marked" location markers being located on the head side of the circumferential seam for Conam radiographs and on the shell side of the circumferential seam for PTL radiographs, it appears as if a different R. T. technique may have been used.
- To date, no circumferential seam radiographs have been reviewed by Bechtel. It is the writer's opinion that since the Bechtel representative has been in residency at NES for many months, R.T. film should be reviewed as soon as possible after the completion of the radiography. Should Bechtel's review of this film now require weld repair or reshoot for incorrect techniques, this would be difficult, if not impossible.
- At the present time, NES has not addressed the subject of Code nameplate stamping for NDE requirements, (i.e., "R.T." would not represent the actual NDE performed on each canister).

BECHTEL RESPONSE: Bechtel acknowledges that R.T. film review prior to hydro-test and installation of internals would be preferred. However, due to late receipt of a densitometer by NES, lack of permanent marking of location markings on shells, film has not yet been reviewed.

III. The writer witnessed "attempted" hydro-testing of filter canister s/n 140.P2. The following problems were encountered;

- Range of pressure gauge was not in accordance with NES approved hydro-test procedure. This procedure requires a 0-500 PSIG gauge, while in actuality, a 0-600 PSIG gauge was used.

- Hydro-test water analysis per Bechtel specification requirements has not yet been received by NES. However, this filter hydro-test was allowed to proceed.

- NES hydro-test procedure, approved by Bechtel, requires the canister to be pressurized to 225 PSIG and held for 30 minutes. After several attempts, this pressure was unable to be maintained for thirty minutes. Approximately 4-5 PSIG pressure drop was noted. This was probably caused by air being trapped in the canister.

BECHTEL RESPONSE: - NES hydro-test procedure will be revised to reflect the actual gauge used during the test. This procedure will be resubmitted to Bechtel for approval.

Bechtel recognizes that water sample analysis should have been completed prior to hydro-test. However, since the one canister was already filled with water before it was realized that water analysis was incomplete, the test was allowed to proceed.

IV. Upon reviewing the Bechtel specification which delineates documentation to be included with shipment, it was noted that only radiographic reader sheets are required, and not the actual film. Bechtel was advised to clarify this requirement with GPUN, to determine whether or not the R.T. film is actually required to be included with the shipment.

V. Approximately sixty(60) Supplier Deviation Disposition Requests (SDDR's) have been issued to date on this contract. Bechtel has previously been advised of GPUN's concerns over excessive SDDR's issued to NES.

Concurrent with this surveillance visit, a USNRC inspection of NES was being conducted. The writer attended a meeting on June 14, 1985 at which time the NRC presented the status of their inspection activities completed to date, and provided a tentative schedule for the completion of their inspection (a roster of meeting attendance is attached to this report).

The following is a brief summary of NRC concerns presented at this status meeting:

- NES housekeeping, materials cleaning, storage and handling are inadequate. Specific examples are, end caps missing from pipe, materials stored unprotected outside, damaged poison tubes, etc.
- Lack of material traceability for non pressure parts such as baffles and skirts.
- Lack of segregation and/or tagging of non-conforming materials.
- R.T. review of longitudinal seams of Bechtel supplied pipe manufactured by Armco revealed possible traceability problems between the radiographs and the actual pipe welds. Also, it appears that repairs have been made to the longitudinal seam welds and are not noted on the film or the reader sheets. The writer and the Bechtel QAR were asked to review the film in question and concurred that a problem does appear to exist which requires more investigation. NRC will complete their review of this film on June 15-16, 1985.
- An uncontrolled procedure supplement for poison tube loading/marking is in use in the plant. Additionally, this document, marked "sample" has the Bechtel QAR's signature written on the forms by an NES employee.
- NES evaluation of suppliers has been inadequate, or in some cases not performed.
- NES has not been performing detailed receipt inspection of Bechtel supplied material.
- Bechtel evaluation of suppliers, such as Armco, appears to be inadequate.
- Welding is not being performed in accordance with approved welding procedures. Specifically, voltages observed were outside of the parameters specified in the welding procedure specification.

The NRC indicated that this inspection would continue at NES in approximately two weeks, with an inspection team spending another week at the facility.



GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054-1149
(201) 263-6500
TELEX 136-482
Writer's Direct Dial Number:
201-299-2026

May 1, 1985
6170-85-287

Bechtel North American Power Corporation
15740 Snady Grove Road
Gaitnersburg, Maryland 20877-154

Attention: T. V. Sarma, Project QA Engineer
Location 204

Gentlemen:

SUBJECT: GPUN/QA SURVEILLANCE REPORT #TMI-2/1/8510074
NUCLEAR ENERGY SERVICES, GREENSBORO, N.C. APRIL 18, 1985

Enclosed please find a copy of subject surveillance report for your information and record.

The pressure test operation originally scheduled by NES was not performed due to fabrication and welding problems related to the circumferential shell to bulkhead welds.

GPUN/QA representative will review items listed in the report during next visit to witness the pressure test operation.

Very truly yours,



J. D. Bansch
Supervisor, Surveillance & Controls


JDB:CJP:hm

Attachments

0405N/1N

GPU Nuclear Corporation is a subsidiary of General Public Utilities Corporation

GPU NUCLEAR
SURVEILLANCE REPORT
PAGE 1 OF 3

To: T. V. Sarma Report No. TMI-2/1/8510074 Rev. -
Project QA Engineer Date: April 25, 1985

Supplier: Nuclear Energy Services Site: TMI-2
Address: 101 Swing Road
Greensboro, NC 27409 P.O. No. TC-016072 C/O No. 0
Spec No. - Rev. No. -

Fabricated at: Same as Above.
Address: PQA No. - B/A No. 220060

Date of Visit: April 18-19, 1985 Vendor No. 26106-001

Activity Items: Defueling Canisters Personnel Contacted:
A. E. Smith - Bechtel Sr. Quality Rep.
R. C. Himmelspach - Bechtel Area Supv.
T. Harmon - NES Project Engineer

Purpose of Visit:
Perform interim surveillance activities on Defueling Canisters with Bechtel QA Representative.

Summary of Visit:
This surveillance visit revealed numerous QA related problems in fabrication, NDE, welding, and procedures. See body of report for details.

Results of surveillance were Satisfactory X Unsatisfactory

Action Required:

By NES... - Develop a plan for the successful NDE of the Fuel Canister Shell to bulkhead circumferential seam which will meet contract and code requirements.

By Bechtel... - Formally evaluate the need for a procedure for installation and inspection of the fuel canister cement type lining. Provide an explanation for the inordinately high number of SDDR's thirty-two (32) issued to date.

No. of Nonconformance Reports Issued None

Final Report Prepared by: D. M. Kiernan 9-25-85
QA Surveillance Rep. Date

Reviewed by: J. B. Bansch 4/25/85
GPU Supv. Surveillance & Controls Date
J. B. Bansch

Concurrence: R. J. Blum 4/26/85
for Manufacturing Assurance Manager Date
C. J. Paczolt

Distribution: See attached.

For GPU use only
Rev. 0
Date
Location All Plants

0247N/71

Rec. No.
RecType 002.03
Form No. 7207.01 3-1
Retention- Lifetime

DISTRIBUTION - TMI-2

B. W. Alatary - QA Engineering Manager, Corp.
J. E. Kunkel - Director, Procurement Section
L. H. Lillien - Manager, TMI Contracts
J. F. Marsden - QA Engineering Manager
C. T. Schrock - Manager, HQ Procurement Office
J. C. Solakiewicz - QA Engineering & Systems Mgr., OC
J. E. Tietjen - QA Program Receiving Supervisor
Vendor File - For Data Entry/CARIRS-HQ
R. P. Warren - Plant Engineering Director, Acting
D. Hosking - TMI-2 QA Engineer
~~D. M. Kierpa - QA~~
J. D. Bansch - Supervisor, Surveillance & Controls

The writer visited Nuclear Energy Services (NES), Greensboro, North Carolina on April 18-19, 1985. The purpose of this visit was to observe various interim surveillance activities on the defueling canisters for Three Mile Island, Unit Two in conjunction with Bechtel's QA representative, Mr. A. Smith. Bechtel has the prime responsibility for surveillance for this procurement.

Upon arrival at NES, the writer met with Mr. A. Smith, Bechtel QAR. Mr. Smith has been in residency at NES throughout fabrication and testing completed thusfar, for a time period of approximately four months. The major items on this order are, seventy-seven (77) fuel canisters, thirty-nine (39) filter canisters, and one hundred and thirty-four (134) knock down canisters. Mr. Smith maintains complete surveillance files for this order, containing all available documents, reports, welding procedures, NDE procedures and certifications, and drawing and procedure approvals. The required surveillance activities applicable to this order are outlined in Bechtel Q.S. Plan #15737-2M -101A(Q).

Based on discussions with Mr. Smith and the writer's own observations and reviews, the following QA related problems were identified.

1. For the first five (5) fuel canisters, preliminary "information only" radiographs of the shell to bulkhead circumferential seam welds revealed incomplete penetration and lack of fusion, with these welds to be completely ground out and rewelded in their entirety. Also, on one of these canisters, radiography of the shell to/lower head circumferential seam weld revealed a temporary fixture plate had been inadvertently left in the vessel by NES. This circumferential seam weld will be ground out, with the plate removed, and the seam rewelded.
2. At the present time, there is no firm plan in effect by NES for the successful NDE of the fuel canister shell to bulkhead circumferential seam. It appears that complete coverage of this seam using radiographic examination is impossible due to internal configuration and cement lining. Also, ultrasonic examination of this seam will be extremely difficult due to the same reasons.
3. There is no NES procedure in effect for the installation and inspection of the cement type lining for the fuel canisters. For the first five (5) canisters, it appears that no environmental parameters were checked or recorded during cement pouring. Also, there are no provisions for inspection of the lining for voids or cracks.

4. To date, Mr. Smith has issued thirty-two (32) Supplier Deviation Disposition Requests (SDDR's) on this contract. Considering that fabrication on this contract is less than 30% complete, this seems to be an inordinately high number.

At the conclusion of this surveillance visit, a brief meeting was held with Mr. Smith and Mr. R. Himmelsbach, Bechtel's Area Supervisor, to discuss these aforementioned concerns. Based on this discussion, the following actions are required.

By NES... - Develop a plan for the successful NDE of the fuel canister shell to bulkhead circumferential seam which will meet contract and code requirements.

By Bechtel... - Formally evaluate the need for a procedure for installation and inspection of the fuel canister cement type lining. Provide an explanation for the inordinately high number of SDDR's, thirty-two (32) issued to date.

0247N/73

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

RECEIVED

MAY 08 1985

TMI-2
Bechtel Job 15737

TIG:TVS:kc

Enclosure: As Stated

cc: Mr. L. Ludwig w/1

Mr. F. Sugar
Page 2
May 6, 1985

Bechtel North American Power Corporation

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 **AUDITOR** T. V. Sarma (ATL)
☐ **ENGINEERING** ☐ **CONSTRUCTION** ☒ **OTHER** (NES Manufacturing) W. C. Gund
W. D. County (CPUN)

**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 <i>T. V. Sarma</i>	DATE <i>5/6/85</i>	PGAM/PGAE <i>E. J. Gillespie</i>	DATE <i>5/6/85</i>
-------------------------------	-----------------------	-------------------------------------	-----------------------

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

<u>P.O.</u>	<u>Item</u>	<u>Supplier</u>
4564	Shield Castings	O.G. Kelley Inc.
4588	SS Pipe	Keystone

2. NES Job No. 84075 - Canister Storage Racks

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

3. NES Job No. 84091 - Defueling Canisters

<u>P.O.</u>	<u>Item</u>	<u>Supplier</u>
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 canisters 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 (Withhold) 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 withhold 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 examiner (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 verified 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 4/25/85		THREE MILE ISLAND NUCLEAR STATION UNIT 2 QUALITY ASSURANCE DEPARTMENT PROCEDURES MANUAL QUALITY ASSURANCE FINDING JOB NO. <u>15737</u>	QAF NO. 1 PAGE <u>1</u> OF <u>2</u>
Description of Audit/Surveillance NES Material Control/Nonconforming Items		Auditor 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 <input checked="" type="checkbox"/> FIELD <input type="checkbox"/> 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 L. Ludwig		SCHEDULED COMPLETION DATE 6-1-85	
ACTION TAKEN			
RESPONSE SUBMITTED BY (TITLE)		SIGNATURE	
VERIFICATION ACTIONS BY QA		DATE	
QA VERIFICATION BY (TITLE)		SIGNATURE	
		DATE	



THREE MILE ISLAND NUCLEAR STATION

UNIT 2

QUALITY ASSURANCE DEPARTMENT
PROCEDURES MANUALQUALITY ASSURANCE FINDING
(Continuation Sheet)

JOB NO. 15737

QAF NO

1

DATE

4/25/85

AUDIT NO NES-85-02

PAGE 2 OF 2

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 4/25/85		THREE MILE ISLAND NUCLEAR STATION UNIT 2 QUALITY ASSURANCE DEPARTMENT PROCEDURES MANUAL QUALITY ASSURANCE FINDING JOB NO. <u>15737</u>	QAF NO. 2 PAGE <u>1</u> OF <u>2</u>
Description of Audit/Surveillance		Auditor:	
NES Qualification of Inspection, Examination and Testing Personnel		T. V. Sarma	
Where Found NES Manufacturing Shop	Discussed With L. Ludwig, QA Manager	SURVEILLANCE AUDIT NO. <u>NES-85-02</u>	
Reference Document NES/Selampco Nuclear QA Program & Policy Procedures Manual		TYPE OF AUDIT <input checked="" type="checkbox"/> FIELD <input type="checkbox"/> OFFICE	
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. <div style="text-align: right;">(Continued)</div>			
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 L. Ludwig		SCHEDULED COMPLETION DATE 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 4/25/85		THREE MILE ISLAND NUCLEAR STATION UNIT 2 QUALITY ASSURANCE DEPARTMENT PROCEDURES MANUAL QUALITY ASSURANCE FINDING JOB NO. <u>15737</u>	QAF NO. 3 PAGE <u>1</u> OF <u>2</u>
Description of Audit/Surveillance NES/Control of Measuring and Test Equipment		Auditor W. C. Gund	
Where Found Gage Crib/Inspection Area	Discussed With L. Ludwig, QA Manager	SURVEILLANCE AUDIT NO. <u>NES-85-02</u> TYPE OF AUDIT <input checked="" type="checkbox"/> FIELD <input type="checkbox"/> 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. <div style="text-align: right;">(Continued)</div>			
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 L. Ludwig		SCHEDULED COMPLETION DATE 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****DAF NO 3 DATE 4/25/85****AUDIT NO. ES-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 ADMINISTRATIVE DATA

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

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	
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



REPORT OF AUDIT

SUPPLIER QUALITY PROGRAM

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PART I - AUDIT ADMINISTRATIVE DATA AND AUDIT SUMMARY (Continued)

4. Audit Meeting Data:

	NAME	MEMBER STATUS (Auditor, Observer, or Technical Specialist)	PROJECT/AREA OR DIVISION OFFICE	*ATTENDANCE		
				A	B	C
B E C H T E L	T. I. GILLESPIE	AUDIT TEAM LEADER	EASTERN POWER DIV QA	✓	✓	✓
	P. KUNGER	TECH. SPECIALIST	EPD DESIGN ENGR.	✓	✓	✓
	T. McKEARNEY	" "	EPD MFGS MGR	✓	✓	✓
	L. J. McANALLEN	AUDITOR	EPD PSQS	✓	✓	✓
	R. MARSHALL	AUDITOR	SFMO ATL		✓	✓
O T H E R S						
S U P P L I E R	NAME	POSITION				
	M. KAPLAN	PRESIDENT		✓	✓	
	R. KAPLAN	GENERAL MGR		✓		
	J. BENCKERT	Q.C. MGR		✓	✓	

5. Audit Scope and Summary: (**)

SCOPE		QUALITY ELEMENT	FINDING	SCOPE		QUALITY ELEMENT	FINDING
YES	NO			YES	NO		
X		1. Organization	S	X		11. Test Control	
X		2. Quality Assurance Program	S	X		12. Control of Measuring and Test Equipment	S
X		3. Design Control	S	X		13. Handling, Storage and Shipping	S
X		4. Procurement Document Control	S	X		14. Inspection, Testing and Operating Status	S
X		5. Instructions, Procedures and Drawings	S	X		15. Nonconforming Items	S
X		6. Document Control	S	X		16. Corrective Action	
X		7. Control of Purchased Material, Equipment and Services	S	X		17. Quality Assurance Records	S
X		8. Identification and Control of Material, Parts, and Components	S	X		18. Audits	S
X		9. Control of Special Processes	APA-1 X			19. Special Audit Requirements	
X		10. Inspection	S				

*ATTENDANCE:

A-At Pre-Audit Meeting
B-At Entrance Meeting
C-At Exit Briefing

**AUDIT FINDING CODE:

S-Satisfactory
X-Program Deficiency
N/A-Not Applicable

**REPORT OF AUDIT
SUPPLIER QUALITY PROGRAM
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AUDIT FINDING REPORT.
PSQ-395

AUDIT FINDING REPORT NO. <u>1</u>	DATE <u>7-11-85</u>	NAME OF EVALUATOR(S) <u>T. A. McHEARN</u>
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1. SUPPLIER: JOSEPH DAT CORP CAMDEN N.J.2. CHECKLIST AUDIT ITEM NO: IX-13. CONTROLLING DOCUMENT(S): (Quality manual, Procedure, Spec. references) QA MANUAL4. REQUIREMENT: (Quote or paraphrase the controlling document, i.e. Section, paragraph) QA Manual Para 4.2.2 -

The Weld and Heat Sketch Record Sheet attached to the Shop Traveler is used to record the identification of Russian Assembly & Weld Material. This welding procedure is used for each joint. The consumables used and the welding identification for each joint. The Traveler refers to a drawing which specifies a welding procedure is applicable for each specific joint

5. FINDING: (Describe the deficiency in detail, i.e. What? How many? Numbers? When?) Shop Order 2470 - Aug. 27601

and Companion Aug 27603 provide a selection of 4 welding procedures for attaching the Nozzles to the Head - WP's 4303, 5302, 7303 & 8301. These are listed on this shop.

A review of the Weld and Heat Sketch Record Sheet attached to the Traveler indicates the weld joint was made using WP's 4303 and 8303. WP 8303 is a "JOB" approved procedure but not specifically listed in the drawing as being applicable to this joint. Weld Nos 344 and 345 are designated as attaching the nozzles to the Head.

6. IMPACT ON QUALITY: (List direct and potential impact on quality of material)

There is no specific quality impact on this job since the procedure used is "JOB" approved and qualified to conform to the governing parameters of the joint i.e. P Number, gauge, filler metal, position etc. A potential problem exists if a non-JOB approved procedure or one not qualified for the application was used.

7. RECOMMENDED CORRECTIVE ACTION: (Actions recommended are suggested methods only and not contractually binding. Specific action to be taken to resolve the finding is left to the discretion of the supplier.) When procedures other than those listed are required, revise the drawing to provide for their use.J. Dat has initiated a drawing Rev. to list WP 8303 - 7-11-85 Finding Closed.

8. AUDIT FINDING DISCUSSED WITH:

a. Supplier Management Representative: Name: J. BENCHART Position: QC Mgr

b. Assigned Bechtel Quality Representative: Name: _____ Date: _____

9. SUPPLIER AGREES TO COMPLETE CORRECTIVE ACTION BY (Date): CORRECTIVE ACTION Completed 7-11-85 COMPLETION ☒ RESPONSE ☐10. RESTRICTION IMPOSED AS A RESULT OF THIS FINDING a) Type Restriction: N/A b) Project(s) Affected: N/A



SUPPLIER QUALITY PROGRAM AUDIT CHECKLIST PSQ-396 A

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1) AUDIT ITEM NO	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
	1 ORGANIZATION		5 X N/A	
1-1	Responsibility and Authority for Attaining and Verifying Quality Ref: <u>QAM Sect 1.0</u>	a. Verify that the organization chart (scheme) depicts the current operating structure of the company. Focus attention on functional responsibilities, levels of authority and lines of communication for the management, direction and execution of the quality program. <u>Verified the operating structure of the company by reviewing the current organization chart in the QAM Rev's. Discussed with QC Mgr.</u>	S	<u>Reviewed Organization Chart and determined that there was independence and organizational freedom of the Quality group with all entities within the company. A review of correspondence and audits indicates direct access to the proper levels of management.</u>
1-2	Responsibility for Quality Assurance Program Management and Direction Ref: <u>QAM Sect 1.0</u>	a. Verify the position and relationship of the following persons: <u>John Benckert</u> (Name of person who heads quality program) <u>QC Manager</u> (Title) <u>Con Kaplan</u> (Name of person quality head reports to) <u>General Mgr</u> (Title) b. Request for and review written evaluation reports on the effectiveness of the overall quality program submitted by the person in charge of the quality program or as appropriate, internal audit reports. Check reports for distribution to senior management of the company. <u>Verified written evaluation reports of the effectiveness of the quality program via internal audit reports and distribution to senior management.</u>		<u>b) Reviewed internal audits for assessment of Quality Program as follows: QAM- Sect II 3/30/83 QAM- Sect III 4/28/85; QAM- Section II 5/2/85; QAM- Section II 5/1/82. All of the above audits were transmitted to the General Manager & Cognate Mgr.</u> <u>a) Reviewed DA # 2479-6/25/85, DA # 2774-12/21/84, DA # 2887-6/27/85. The above were properly analyzed, dispositioned and where applicable, corrective action taken.</u>
1-3	Independence of Personnel Performing Verification Action Ref: <u>QAM Sect 1.0</u>	a. Verify that quality personnel performing verification actions (tests, inspections etc.) have authority and organizational freedom to identify quality problems, initiate, recommend or provide solutions to problems, verify implementation of solutions and control further processing of nonconformances until proper dispositioning has occurred. Audit techniques: "Questioning of quality personnel and review of related documents is recommended." <u>Verified via discussion with the QC Manager and discussion notes (DR) review.</u>		<u>Signature V. L. Gillespie Date 7/15/85</u>



**SUPPLIER QUALITY PROGRAM
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1) AUDIT ITEM NO	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
	II QUALITY ASSURANCE PROGRAM		S & N/A	
11-1	Management Review of Quality Program Status and Adequacy Ref <u>QAM Sect 1.0</u>	<p>a. Verify functional managers review actions of the quality program for which they have prime responsibility for execution</p> <p>b. Review documentation submitted by responsible managers on quality activities or internal audit reports, for evidence of implementation</p> <p><u>VERIFIED FUNCTIONAL MGR REVIEW OF THE QUALITY PROGRAM BY REVIEW OF AUDITS FOR EVIDENCE OF IMPLEMENTATION</u></p> <p><small>Verify implementation of the indoctrination and training program. Examine training records for evidence of personnel proficiency levels, type of training and methods of instruction.</small></p> <p><u>VERIFIED BY REVIEW OF IFT PROCEDURE FOR AUDITORS. ALSO REVIEWED TRAINING RECORDS.</u></p>	S	<p><u>REVIEWED THE FOLLOWING INTERNAL AUDIT REPORTS & EVIDENCE OF CLOSURE</u></p> <p><u>Report # QAM SECT II 3-30-83</u></p> <p><u>QAM SECT II 5-3-82</u></p> <p><u>QAM SECT II 10-27-83</u></p> <p><u>ACT V 5-15-8</u></p>
11-2	Revision Control Through a Controlled System Ref <u>QAM Sect 1.0</u>	<p>a. Verify implementation of the system in use for the control and distribution of the quality program (manual and procedures) to include changes</p> <p>b. Review changes (revisional) and check for review and approval actions. Check on requirement for customer acceptance prior to implementation</p> <p>c. Verify that quality program manual currently in use in the facility is the same revision and date as the copy accepted by Bechtel</p> <p><u>VERIFIED QAM MANUAL CONTROL AND DISTRIBUTION, REVISION CONTROL AND MANUAL ACCEPTED BY BECHTEL IS CURRENT.</u></p>		<p>a) <u>REVIEWED PROCEDURE SP-15 FOR TRAINING AND QUALIFICATION OF AUDITORS. REVISION 1 3-11-81</u></p> <p><u>REVIEWED RECORDS OF QUALIFICATION</u></p> <p><u>John BENCKERT - CERTIFIED AS AUDIT TEAM LEADER - 7/15/81</u></p> <p><u>Joy RUMBLE - CERTIFIED AS AUDIT TEAM LEADER 6/1/81.</u></p> <p><u>REVIEWED MASTER DISTRIBUTION LIST WITH MANUALS & QC MANAGERS CARD INDEX FILE QAM</u></p> <p><u>B-1 - M. KAPLAN</u></p> <p><u>B-2 - R. KAPLAN</u></p> <p><u>B-3 - J. BENCKERT</u></p> <p><u>REVIEWED EXTERNAL DISTRIBUTION B-34. THIS SYSTEM IS UNDER CONTROL</u></p>
				<p>Signature <u>F. J. Sullivan</u> Date <u>7/15/85</u></p>



SUPPLIER QUALITY PROGRAM
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AUDIT ITEM NO.	QUALITY ELEMENT & REFERENCES	STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	RESULTS	SUMMARY OF INVESTIGATION
	IN DESIGN CONTROL			
III-1	Translation of Design Requirements into Design Documents. Ref. <u>QAM 2.2.10</u> <u>2.2.13</u> <u>2.2.14</u> <u>2.2.15</u>	<ul style="list-style-type: none"> Examine engineering specifications, drawings, instructions and procedures for inclusion of applicable technical requirements. NOTE: Requirements are based on contract requirements and applicable codes and standards referenced therein. Concurrent with the above, check for inclusion of applicable quality requirements. <p><u>Examined Bid document review drawings, Mfg. Specs. and Bills of material to verify inclusion of technical and quality requirements.</u></p>	<p>S</p>	<p><u>Examined following documents relation to Job No. 2470, Heat Exchanger -</u></p> <ul style="list-style-type: none"> <u>- Bid document review of P.O., Specs, DWGs stamped for signatures.</u> <u>- Dwg. D7601, Rev. 3, 5 ECO's against it, Dwg. Revised to Rev. 4</u> <u>- Checked BOM 7604 original</u> <u>Checked revision 8; added revision to item No. 85</u> <u>Items revised on BOM</u>
III-2	Control of Deviations from Design Requirement and Quality Standards Ref. <u>QAM 2.2.11</u> <u>2.2.17</u>	<ul style="list-style-type: none"> Verify implementation of the system governing control of deviations from design requirements and quality standards. Check that deviations are properly identified, documented and subjected to review and approval actions. <p><u>Verified by review of Engineering Change Order, Hold and release notices.</u></p>	<p>V</p>	<ul style="list-style-type: none"> <u>- Checked Engineering hold notice (H-0143) against Dwg. D7603 rev. 3</u>
III-3	Identification and Control of Design Interfaces Ref. <u>---</u> <u>---</u>	<ul style="list-style-type: none"> Verify implementation of the system governing control of design interfaces. Check documentation for evidence of coordination and the review, approval, release and distribution by organizations or departments involved. <p><u>No design interface involved for this procurement.</u></p>	<p>NA</p>	<ul style="list-style-type: none"> <u>Distributed by Lee Uq 3/25/85</u> <u>Release Notice (R-0143) 4/2/85</u> <u>- Checked Dwg. No. D7601</u>
III-4	Independent Verification of Design Adequacy Ref. <u>QAM 2.2.10</u>	<ul style="list-style-type: none"> Verify implementation of the system in use to verify or check the adequacy of design. Review records for evidence that the verification or checking process is performed by individuals or groups other than those who performed the original design. <p><u>Verified by examination of Fabrication drawings, Meeting Notes and appropriate revisions, Sign Offs.</u></p>	<p>\$</p>	<ul style="list-style-type: none"> <u>Preliminary Fab dwg.</u> <u>Meeting notes for fabrication dwg.</u> <u>Checked for incorporation of meeting notes into dwg.</u> <u>Dwg. finalized.</u>
III-5	Control of Design Changes Ref. <u>QAM 2.2.11</u> <u>2.2.17</u>	<ul style="list-style-type: none"> Cross reference Audit Item No. III-2. Examine documentation to verify that design changes, including held changes, were made by design control measures commensurate with those applied to the original design. Check changes to assure that they were reviewed and approved by the same organization that performed the original review and approval, or as applicable, other designated responsible design organization. <p><u>Reviewed Engineering Change orders and drawings to verify that revisions are subjected to the same review/approval cycles as originals.</u></p>	<p>V</p>	<ul style="list-style-type: none"> <u>- Checked the Attachments for individual BOM item</u> <u>- Checked Engineering Letter # 29 outlining function of Project Engineer</u> <u>Outlining procedures within the realm of PE's responsibility.</u>
			Signature <u>frh/kunjeer</u>	Date <u>7/10/85</u>



SUPPLIER QUALITY PROGRAM AUDIT CHECKLIST PSQ-396 A

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1) AUDIT ITEM NO	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION																				
	IV PROCUREMENT DOCUMENT CONTROL		S X N/A																					
IV-1	Inclusion of All Applicable Requirements in Procurement Documents	<p>Examine supplier procurement documents (P.O., M/R, specifications, etc.) for inclusion of specific technical and quality requirements. To include those quality requirements and controls that must be further extended to subcontractors and suppliers.</p> <p>NOTE: Requirements are based on contract requirements and applicable codes standards and specifications referenced therein. (For standard catalog items, supplier may be using internal "code" system to identify requirements.)</p>	S	<p>REVIEWED THE FOLLOWING P.O.'S</p> <table border="1"> <thead> <tr> <th>P.O.</th> <th>SUPPLIER</th> </tr> </thead> <tbody> <tr> <td>17265</td> <td>TRENT TUBE</td> </tr> <tr> <td>15772</td> <td>LUKENS GEN. INDR.</td> </tr> <tr> <td>15767</td> <td>" " "</td> </tr> <tr> <td>15764</td> <td>JESSOP STEELS</td> </tr> <tr> <td>15762</td> <td>GUYON ALLOY INC.</td> </tr> <tr> <td>17501</td> <td>J.E. DOOLEY</td> </tr> <tr> <td>17504</td> <td>CAPPELO</td> </tr> <tr> <td>17666</td> <td>RAMBALL TEST LAB</td> </tr> <tr> <td>17616</td> <td>PENNA. WELD SUPPLY</td> </tr> </tbody> </table> <p>THE ABOVE LISTED P.O.'S ARE CONTAINED ON B/M 7604 C.O. #8.</p>	P.O.	SUPPLIER	17265	TRENT TUBE	15772	LUKENS GEN. INDR.	15767	" " "	15764	JESSOP STEELS	15762	GUYON ALLOY INC.	17501	J.E. DOOLEY	17504	CAPPELO	17666	RAMBALL TEST LAB	17616	PENNA. WELD SUPPLY
P.O.	SUPPLIER																							
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17501	J.E. DOOLEY																							
17504	CAPPELO																							
17666	RAMBALL TEST LAB																							
17616	PENNA. WELD SUPPLY																							
IV-2	Release and Control of Procurement Documents	<p>Verify implementation of the system used to control and release procurement documents. Examine documents for review and approvals required prior to release.</p>	S																					
	Rel <u>3.1.1</u>	<p>VERIFIED REVIEW AND SIGN-OFF OF B/M AND P.O.'S BY REQUIRED PERSONS.</p>																						
IV-3	Changes Controlled as Original Procurement Documents	<p>Examine changes (revisions) to procurement documents to verify that controls exercised were the same as that applied to the original procurement documents.</p>	S																					
	Rel <u>3.1.8</u>	<p>VERIFIED BY REVIEW OF B/M AND P.O. THAT REVISIONS TO PROCUREMENT DOCUMENTS WERE CONTROLLED AS ORIGINAL.</p>		<p>NOTE: THE SUPPLIER STATED THAT WHEN PURCHASING NON CODE SAFETY RELATED MATERIALS ARE ORDERED TO A PROGRAM APPROVED BY J. OATS.</p>																				
			Signature <u>J. McAnallen</u>	Date <u>7/12/85</u>																				



SUPPLIER QUALITY PROGRAM
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5-sep-68 Dats Corp.
Supplier Camden, N.J.

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2) AUDIT ITEM NO.	3) QUALITY ELEMENT & REFERENCES	4) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	5) RESULTS	6) SUMMARY OF INVESTIGATION
V-1	V INSTRUCTIONS, PROCEDURES AND DRAWINGS Documented Description of Activities Affecting Quality	a Auditing of this criterion requires the efforts of the entire audit team - with each auditor focusing his attention on those activities within his assigned area of audit responsibility	S	Reviewed the following drawings and verified availability in Engineering, Fabrication, and Q.C. office. (262470)
V-2	Compliance with Documented Description	b Each auditor should 1) Verify that written procedures and/or plans referenced in the quality program are in fact established, documented and in use in the facility		D-7601, Rev. 1 - Assembly
V-3	Inclusion of Acceptance Criteria in Prescribed Documents	2) Verify that instructions, procedures and/or drawings used for both work performance and verification action include qualitative characteristics for determining satisfactory performance and quantitative dimensions, tolerances and operating limits criteria. Focus attention on those documents used for quality verification actions (inspections, test control)		D-7602, Rev. 4 - Tube P-Hex + Baffle Detail
	NOTE: Lead Auditor will instruct all auditors on this criterion and require each to provide input on those deficiencies that relate directly to the sub-elements indicated above	c Lack of compliance to procedures, instructions and/or drawings within a certain activity of the facility is a program deficiency to that specific quality element and not this quality element		D-7603, Rev. 5 - Details, Nozzles & Partial Section
	Lead Auditor will consolidate input and formulate the necessary reports	d Program deficiencies in this quality element will normally form the basis for an Audit finding		P-7612, Rev. 3 - U-Tube Support
Ref	Q.A. Manual Sections 2, 3, 4, 5, 6, 10, and 11	This element was verified by Review of Drawings, Procedures, and Travelers at various work stations in the office and factory Review verified that documents contained quantitative and qualitative acceptance criteria or referenced documents containing those criteria		C-7600, Rev. 4 - Outline
				Reviewed the following procedures and verified availability in Engineering, Fabrication, and Q.C. office.
				Q.C. 2470-10, Rev. 0 - L.P. Examination
				Q.C. 2470-20, Rev. 0 - RT Examination
				Q.C. 2470-30, Rev. 2 - Bubble Test, Tube-Tubed
				Q.C. 2470-40, Rev. 2 - Hydrostatic Test
				Q.C. 2470-60, Rev. 0 - Visual Exam. of Welds
				Q.C. 2470-90, Rev. 0 - As-Built Dim. Inspect
				Q.C. 2471-60, Rev. 0 - Visual Exam. of Welds
				JP 2470 + JP 2471-2L, Rev. 1, Packaging + Shipping
				JP 2470-1, Rev. 1 - Cleaning
				JP 2470-61, Rev. 2 - Weld Repair
				JP 2471-1, Rev. 2 - Cleaning
				Additional items verified available at work stations are Weld Proc. + Knowledge listed in Quality Elements IV + V.
				Signature <u>Robert M. Whelan</u> Date <u>7/1/68</u>

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 Supplier T. OATS

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1) AUDIT ITEM NO	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
	VH CONTROL OF PURCHASED MATERIAL EQUIPMENT AND SERVICES		S R N/A	
VH-1	Conformance of Purchased Items and Services to Procurement Documents Ref: <u>3.2</u> <u>3.1.2</u>	a. Verify that written procedures for this activity are available and in use <u>VERIFIED BY REVIEW OF QAM</u>	S	REVIEWED SECTIONS OF THE QUALITY ASSURANCE MANUAL AS FOLLOWS: SECT. 5 PROCUREMENT AND RECEIPT OF MATERIAL. SECT. 10 AUDITS
VH-2	Evaluation and Selection of Subcontractors, Suppliers, or Manufacturers Ref: <u>10.2</u>	a. Verify implementation of the system used for the selection and evaluation of sub-contractors suppliers or manufacturers. NOTE: System may include the use of historical quality performance data, source surveys or audits or source qualification program. Program for critical audits should meet the requirements of Quality element XVIII b. Examine related documentation to verify that evaluations were performed prior to award of contracts and at the specified frequency. Check the qualifications of personnel performing the evaluations (surveys and audits) <u>VERIFIED BY REVIEW OF QUALIFIED SUPPLIER LIST AND SURVEY REPORTS.</u>	S	REVIEWED QSL DATED 6/1/85 VERIFIED QUALIFICATION RECORDS FOR THE FOLLOWING SUB-VENDORS: PENNA. WELDING AUDIT 2/15/85 RAMBALL TEST LAB 5/15/85 RYERSON INC. 2/15/85 LUKENS GEN. ENG. QSC-217 GUYAN ALLOY QSC-205 JESSOP STEEL CO QSC-301 GULFSCO AUDIT 4/7/84 TRAENT TUBE QSC-229 GULFALLOY QSC-22; TIGRA PIPE QSC-467 CAPITAL PIPE QSC-206 TELEDYNE-MILKAY QSC-242 VERIFIED MATERIAL AND RIRs FOR THE FOLLOWING: SHOP ORDER NO ITEM PO J-2472 22 17971 Signature <u>T. McQuillen</u> Date <u>7/12/85</u>
VH-3	Source Inspection or Audit Ref: <u>10.2</u>	a. Verify implementation of the system for source inspection or audit, as necessary to assure quality of an item (may not be necessary when quality of item (s) can be verified by review of test reports, receipt inspection, or other means b. Program for lower tier audits should meet basic requirements of quality element XVIII <u>VERIFIED BY REVIEW OF QSL AND SURVEY REPORTS.</u>	S	
VH-4	Inspection of Purchased Items on Receipt Ref: <u>3.2</u>	a. Verify implementation of the system used for receiving inspection by reviewing related documents, or as appropriate, observing the operation — points of audit 1) Receiving checks incoming shipments to requirements of the purchase order, referenced specification, or applicable drawings 2) Material accepted on test reports or statements of conformance are subject to verification tests 3) Receiving inspection records indicate acceptance of material, or rejection of material with reasons therefor 4) Rejected material is identified and controlled 5) Inspected items controlled and identified from material awaiting inspection 6) Inspection personnel are qualified <u>REVIEWED RECEIPT INSPECTION REPORTS TO P.O. VERIFIED IDENTIFICATION AND CONTROL OF REJECTED MATERIAL.</u>	S	



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1) AUDIT ITEM NO.	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION																																																
	VII CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES (Cont'd)		S. E. N/A																																																	
VN-5	Documented Evidence of Conformance. Ref: <u>3.2.5</u>	a As required by customer contract or referenced codes, standards and specifications therein, verify that supplier or subcontractor generated documents (drawings, quality manuals, certifications, test results and inspection data for completeness, acceptability and conformance to contract requirements) were submitted and approved prior to acceptance of material. <u>VERIFIED BY REVIEW OF P.O.'S</u> <u>AND MTRs AND CoC FOR REVIEW</u> <u>AND SIGN OFF.</u>	S	<table border="1"> <thead> <tr> <th>SHOP ORDER NO.</th> <th>ITEM</th> <th>P.O.</th> </tr> </thead> <tbody> <tr> <td>J-2472</td> <td>51</td> <td>17971</td> </tr> <tr> <td>"</td> <td>52</td> <td>"</td> </tr> <tr> <td>8104</td> <td>62</td> <td>18299</td> </tr> <tr> <td>"</td> <td>6</td> <td>18537</td> </tr> <tr> <td>8102</td> <td>79A</td> <td>18260</td> </tr> </tbody> </table> <p>REVIEWED THE FOLLOWING RIR AND MTRs.</p> <table border="1"> <thead> <tr> <th>SHOP ORDER No</th> <th>ITEM</th> <th>RIR</th> </tr> </thead> <tbody> <tr> <td>2470</td> <td>1A</td> <td>1879</td> </tr> <tr> <td></td> <td>5</td> <td>1526</td> </tr> <tr> <td></td> <td>6</td> <td>1529</td> </tr> <tr> <td></td> <td>7B</td> <td>1881</td> </tr> <tr> <td></td> <td>11</td> <td>1537</td> </tr> <tr> <td></td> <td>25</td> <td>1296</td> </tr> <tr> <td></td> <td>35</td> <td>5483</td> </tr> <tr> <td></td> <td>47E</td> <td>124</td> </tr> <tr> <td>✓</td> <td>82</td> <td>0790</td> </tr> </tbody> </table>	SHOP ORDER NO.	ITEM	P.O.	J-2472	51	17971	"	52	"	8104	62	18299	"	6	18537	8102	79A	18260	SHOP ORDER No	ITEM	RIR	2470	1A	1879		5	1526		6	1529		7B	1881		11	1537		25	1296		35	5483		47E	124	✓	82	0790
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VN-6	Assessment of Supplier Quality Related Activities Ref: <u>10.2.11</u>	a Request for and review documentation to verify that the functions for the control of quality of purchased material, equipment or services by lower tier suppliers/manufacturers is assessed at intervals consistent with importance, complexity, quality of the item, or customer requirements b Reference Audit Item No. VII-2, VII-3 and VII-4 as applicable <u>REFER TO ELEMENT CHECKLIST</u> <u>ITEMS VII-2, VII-3, VII-4</u>	S																																																	

Signature: SP McAnally Date: 7/12/95

AUDIT ITEM NO	QUALITY ELEMENT & REFERENCES	STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	RESULTS	SUMMARY OF INVESTIGATION
VIII-1	VII IDENTIFICATION AND CONTROL OF MATERIAL PARTS AND COMPONENTS Establishment and Maintenance of Item Identification and Control Ref: <u>4.3.3</u> <u>4.3.2</u> <u>3.2.6.</u> <u>4.1.2</u>	a. Examine items on the floor, or related documentation to verify implementation of the system used for identification of material, parts and/or components NOTE Identification system may include the use of HEAT NUMBER SERIAL NUMBER OR OTHER MEANS 1) Check to ensure markings have not caused a detrimental effect on material 2) Check Items subdivided for transfer of markings to each part <u>VERIFIED BY REVIEW OF MATERIAL IN DISASSEMBLY IN PRODUCTION</u> b. Verify implementation of the system used to control material, parts and/or components Points of audit: 1) Handling and storage methods used to prevent damage, contamination or loss 2) Control of items awaiting inspection and/or test results, and items that have been rejected 3) Identification and acceptance status of items of production (batch, lot, part, etc.) is maintained throughout all phases of manufacture. <u>VERIFIED BY REVIEW OF ITEMS IN PRODUCTION AND SHOP TRAVERSE</u>	S S R N/A	Checked components on Ship Cadna 2470 - FOR IDENTIFICATION AND MARKING ALL COMPONENT WITHIN MATERIAL SHOWN ON MARKED. MARKING MATERIAL CERTIFIED BY THE MANUFACTURER TO BE ACCEPTABLE TRANSFERRED. GUSSET PLATES SUBDIVIDED FROM HEAT # D8426-4A. ALL LOGICALLY MARKED. MATERIAL GRADING S.O. 2470 showed no handling damage - Traveller indicated STATUS OF WEAR AND LISTED HEAT AND OTHER IDENTIFICATIONS AS APPLICABLE
VIII-2	Traceability of Items Ref: <u>4.3.2</u> <u>4.3.2.</u>	a. Examine items on the floor, or related documentation, to verify implementation of the system used for traceability of material, parts or components b. Verify that material is traceable to specific chemical/physical analysis, statements of conformance, test documents, purchase order, or other documents <u>VERIFIED BY REVIEW OF MATERIAL IN PRODUCTION AND RECORDS OF MATERIAL CERTIFICATION</u>		Checked material identification on the following components S.O. 2470 THING - Vessel Head - LUBANS Steel - HT# D7837-1HA " 6 - Shell Plates - " " - HT# D8426-4A " Gussets " " " " 10 - Nozzle - Fluoban Epoxy - 14664-W 8 - Flange - A.C.E.G. Hath checked to CONTRS - CONTRS verified by J.DAT all acceptable with Spec. Signature <u>P.H. HARRIS</u> Date <u>7-11-85</u>

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IX-1	1X. CONTROL OF SPECIAL PROCESSES Establishment of Process Controls and Qualification of Personnel, Procedures and Equipment	a. Determine applicable special processes and verify that implementation is being accomplished under controlled conditions in accordance with contract requirements or codes, standards and specifications referenced therein. Points of audit: 1) Welding (Verify the following): a) Procedure qualified and approved, as required b) Welders' qualifications current and on file c) Welding filler material controlled, properly disbursed and traceable d) Rework records maintained 2) Heat Treat (Verify the following): a) Procedures qualified and approved, as required b) Control charts/records in use and maintained c) Verify calibration of: 1. temperature measuring equipment 2. chart/recording equipment d) Verify calibration of furnaces when furnace temperature indicators are used to verify part temperature 3) Nondestructive Examination (Verify the following): a) Procedures qualified and approved, as required b) Personnel qualification records in accordance with SNT-TC-1A or other standards c) Personnel qualifications current and on file d) Records of NDE performed available 4) Other special processes (specify requirements and methods of verification)	S. E. N/A X HT NA * - X S	REVIEWED Weld Map. 503470-N221a to Head & 1/2 H ₂ #344 & 345. DISCREPANT FROM MATL. MAP. N21, WARDNAS, 4.1111 PAIR. AND WELDING GENSUMBLING. W/111111 #385556 QUALIFIED FOR MATL. & PROCESS, TRAINING QUALIFICATION AND 3 MONTH PROCESS VERIFICATION. CHECKED 3 lots of FILLER MATERIAL. MATL. & PROCESS FURNACE CERTIFICATES LIST, RECORDS, STORED AND ISSUED. ACCORDANCE WITH PROGRAM REQUIREMENTS. TWO (2) WELDING PROCEDURES USED #4303 & 8303 W/500 JOB APPROVED. PROC. 4303 WAS SHOWN ON DWG D7601 AS APPLICABLE TO THE SPECIFIC JOINT. PROC. 8303 WAS NOT LISTED AS APPLICABLE TO THE JOINT. *SEE Audit FINDING REPORT No. 1 REVIEWED NDE PROC'S: QC 2470-10 REV 0 PT, QC 2470-60 REV 0 VT & QC 2470-20 REV 0 RT ALL COMPLY WITH ASME II. THE PT PROC WAS QUAL. # FOR TEMP RANGE & OTHER THAN STANDARD. QUAL. WAS ACCEPTABLE AND REVIEWED BY ANE. R.T. Film PROCESS 2470-B- W121 VIEWS 1-2 THRU 12-1 WERE REVIEWED - REPROD. & REPROD. 2 REPROD. - REPROD. FILM CORRECTLY IDENTIFIED CALIBRATION FILM STRIP AVAILABLE TO SNT COMMITTEE. TRAINING QUAL. F. A. J. BARRACAT, C. L. BARRACAT, W. BARRACAT. REVIEWED - ALL IN ACCORDANCE WITH PROGRAM REQUIREMENTS Signature: <i>[Signature]</i> Date: 7-11-85
Rel: 5.1.2 5.1.3 5.1.5		Visited by REVIEW OF WORK IN PROGRESS and RECORDS		
Rel: 5.4 5.4.2		Not Applicable		
Rel: 5.2.1 5.2.5 5.2.4 5.2.5		REVIEWED PROC. & PERSONNEL QUALIFICATIONS		
Rel:		N/A		



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X-1	Establishment and Execution of Inspection Program Ref: <u>Q.A. Manual</u> <u>Section 4</u>	<p>a. Verify implementation of the inspection program in use by the supplier to verify his company's performance to documented instructions, procedures and drawings. NOTE: The program should cover those work operations necessary to assure quality points of audit:</p> <p>1) In-process inspections (Fabrication and Assembly) 2) Final Assembly and Inspection</p> <p><u>Verified by review of Shop Travelers for inclusion or reference to inspection criteria.</u></p>	<p>S</p>	<p>Reviewed the Following Shop Travelers:</p> <p><u>For Job #2470 (ASME III, Class 142)</u></p> <p><u>J-2470-Tubesheet, Rev. 1</u></p> <p><u>J-2470-Nozzle A+B, Rev. 1</u></p> <p><u>J-2470-Bonnet + Head Assy, Rev. 1</u></p> <p><u>J-2470-Final Assembly, Rev. 1</u></p> <p><u>For Job #2471 (ASME III, Class 142)</u></p> <p><u>AW31 N45.2/10CFR50 App. B</u></p> <p><u>J-2471-A3, Rev. 0 - Module Rack Assy</u></p> <p><u>J-2471-D1, Rev. 0 - " "</u></p> <p><u>J-2471-A5, Rev. 0 - " "</u></p> <p><u>J-2471-pump 1/10s</u></p> <p><u>Dismissed QA/QC independence and authority with Q.A. Mgr.</u></p> <p><u>Reviewed the following inspection Procedures referenced in the above Shop Travelers:</u></p> <p><u>JP-2471-1, Rev. 2-Cleaning Proc. for Boosted Ed. Fuel Tanks.</u></p> <p><u>QC-2471-20, Rev. 0-Visual Exam of Welds</u></p> <p><u>JP-2471-21, Rev. 1-Machining, Packaging and Shipping Proc.</u></p> <p><u>Procedures listed in Quality Element V.</u></p>
X-2	Independence of Inspectors Ref: <u>Statement of Policy and Q.A. Manual Sect. 1</u>	<p>a. Question personnel and review related documentation to verify that personnel performing verification actions are other than those who perform the activity being inspected and that they do not report directly to the supervisors who are responsible for the work being inspected</p> <p><u>Verified by Discussion with Q.A. Mgr. and review of Statement of Policy and Organization chart in Q.A. Manual.</u></p>		
X-3	In-Process and Final Inspections Ref: <u>Q.A. Manual</u> <u>Section 4</u>	<p>a. Cross reference Audit Item No. X-1. Check work or inspection instruction (shop traveler, processing plans, etc.) in use for inclusion of the following minimum data, as applicable:</p> <p>1) Function to be performed and sequence of operations 2) Inspection Points and/or Hold Points 3) Specifications to be used, to include drawing numbers and revisions applied 4) Definition of acceptance criteria 5) Material, tools, gages and inspection equipment used 6) Workmanship criteria to include characteristics to be inspected (dimensions, tolerances, operating limits)</p> <p>b. Check inspection equipment used for current calibration status.</p> <p>c. Check qualifications of inspection personnel per QA Program requirements</p> <p><u>Verified by review of Shop Travelers, Inspection Procedures, Calibration stickers, and personnel qualifications.</u></p>		

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Signature Robert M. Stansfield Date 7/10/95



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	XI TEST CONTROL		S & N/A	
XI-1	Establishment and Execution of Test Program Ref: <u>QAM 5.3</u>	a. Verify implementation of the test program in use by the supplier. NOTE: Tests may include prototype qualification tests, proof tests, pre-operational tests and operational tests. Specific requirements may be contained in customer contract or referenced codes, standards and specifications therein. <u>Verified by Review of Test Procedures</u>	S ↓	<u>Reviewed Procedure QC-2470-40 for Hydrotest Procedure.</u> <u>Test for Shell side and Tube side pressurization.</u> <u>Reviewed Test Report</u> <u>Equipment used were listed</u> <u>Specification reference listed</u> <u>Special criteria was also listed.</u> <u>Witness and inspector signed off.</u>
XI-2	Inclusion of Test Requirements, Acceptance Criteria and Test Conditions in Test Documents Ref: <u>QAM 5.3</u>	a. Examine test documents in use for the following minimum data: 1) Acceptance criteria 2) Tools, gages and test equipment to be used 3) Specifications, drawing numbers and revisions to be applied 4) Details on the methods and tests to be performed 5) Characteristics to be tested and checked 6) Inspection and/or Hold Points b. Check test equipment used for current calibration status c. Check qualifications of test personnel, per QA Program requirements <u>Verified by Review of Test Reports.</u>		<u>Reviewed Procedure QC-2470-30 for Bubble Testing to Tubesheet joints & Corresponding Test Report</u> <u>Equipment used were listed; Spec/Procedure reference listed; special criteria was also listed; Witness and inspector signed off.</u>
XI-3	Documentation and Evaluation of Test Results Ref: <u>QAM 5.3</u>	a. Examine test records and verify inclusion of the following minimum data: 1) Identity of the test, type test conducted, and person performing the test 2) Procedure/instruction used for the test 3) Acceptance standards and test results 4) Final acceptance b. Verify that test results are reviewed by responsible authority <u>Verified by Review of Test Reports.</u> <u>Verified by appropriate information, data filled out, reviewed and accepted by responsible parties.</u>		

Signature

John Kuyew

Date:

7/10/85



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			3, 5, 6, 7	<i>Printed on carbon and available for use as the primary recording device was checked. Here, # J1-0-1", J14-0-1", J16-4-5" & J14-0-1" Record show no deviation from acceptable. Meas. checked on Standard Mils & 1/16" - Documentation Transferable to NBS. Pressure Gauge # 11-0-600" & # 58-0-600" were in use on the floor - Records available show no deviation from acceptable. gauges checked before and after use. Gauges checked on Dead Weight Tester # 13884 which was within tolerance to NBS. These checked indicate compliance with published schedule. Above applicable. Students and Taps are old to reflect data in calibration and due to and variety of precise pressure calibrated for use on various checks on measuring and testing devices minimizes the risk of wear being accepted with recalibrated equipment. National Tech. are not involved in the calibration system. Page # 1503 Rev. 3 and 022470-40 Rev. 2 indicate compliance with program requirements.</i>
XR-1	Calibration and Control of Measuring and Test Equipment Ref <u>6.1.1</u> <u>6.1.2</u> <u>6.1.4</u> <u>6.1.5</u>	a Verify implementation of the system in use for the calibration and control of measuring and test equipment. Points of audit: 1) Written procedures available and in use for calibration of items 2) Tools, gages and test equipment identified with date calibrated, date due for next calibration, and the serial number for other ends) 3) Employee owned tools and gages used for acceptance purposes subject to the same controls as company owned tools 4) Tools gages and test equipment in the calibration system subject to mandatory recall 5) Checkout and accountability system for items in use <u>Validated by check of equipment</u> <u>(Tools, gages) and records</u> b Examining calibration records and verify inclusion of the following minimum data: 1) Item identity number, name and location 2) Frequency of calibration and the applicable procedure used for the calibration 3) The date calibrated and date due the next calibration 4) The name of the person(s), or subcontractor, performing the calibration <u>Verified by review of Records</u>		
XR-2	Maintenance and Control of Standards Ref <u>6.1.3</u>	a Examining the standards used and verify traceability to the National Bureau of Standards, or other recognized standards b As applicable, examine documentation to verify that subcontractor performing the calibration service is a recognized testing agency <u>Validated by check of standards and records</u>		
XR-3	Evaluation of Discrepant Material and Affected Items Ref <u>6.1.3</u>	a Verify implementation of the system in use to evaluate the validity of previous inspection or test results, and the acceptability of items previously inspected or tested, when equipment is found to be out of calibration <u>Validated by Review of Records</u>		

Signature

J. A. Fitzgibbon

Date 7-11-55



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21	QUALITY ELEMENT & REFERENCES	STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	RESULTS	SUMMARY OF INVESTIGATION
21	22	23	24	25
21	22	23	24	25
XIII-1	Control of Handling, Storage and Shipping Ref: Q.A. Manual Section 11	<p>a) Verify implementation of the system in use for the control of handling, storage and shipping. NOTE: Control measure should be directed toward preventing damage, deterioration and loss of material. Specific points of audit include assuring the measures taken are in accord with the customer contract requirements.</p> <p>1) Handling <u>Verified by witnessing handling operations in use in shop.</u></p> <p>2) Shipping <u>Verified by review of procedures and by examination of fuel rack prepared for shipment.</u></p> <p>3) Storage</p> <p>a) Written procedures for the control and issuance of material available and in use</p> <p>b) Status indicators on material in storage</p> <p>c) Control of items (Q list, commercial, rejected, inspected)</p> <p>d) Storage areas (rooms) restricted to authorized personnel, as required</p> <p><u>Verified by examination of material in storage.</u></p>	S	<p>Handling practices witnessed in the shop including use of slings, spreader bars, and welding tips were adequate to prevent damage to in-process assemblies.</p> <p>Reviewed the following Cleaning, Packaging and Shipping procedures and verified compliance on Spot Fuel Rack 2471-A3 being prepared for shipment during this audit. JP-2471-1, Rev. 2 - Cleaning Proc. JP-2471-21, Rev. 1 - Marking, Packaging and Shipping Proc.</p> <p>Material in storage was verified to be adequately identified and protected from loss or damage.</p>
XIII-2	Control of Cleaning, Preservation and Packaging. Ref: Q.A. Manual Section 11	<p>a) Verify implementation of the system in use for marking and labeling items for packaging, shipment and storage. NOTE: Markings should provide identity, instructions for the maintenance and preservation of the shipment, and as applicable special control measures for handling critical items.</p> <p>b) Check procedures used to inspect and test special handling tools and equipment, as applicable.</p> <p><u>Verified by review of procedures and by examination of Fuel Rack prepared for shipment.</u></p>		



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	XIV INSPECTION, TEST & OPERATING STATUS		S. A. N/A	
XIV-1	Indication of Inspection and Test Status Ref: <u>Q.A. MANUAL</u> <u>Section 4</u>	a. Verify implementation of the system used to assure that the acceptability of items subjected to inspection and tests are known throughout manufacturing Points of audit 1) Means to identify inspection and test status of items (Status Indicators) NOTE: Status indicators may include physical location and tags, markings, shop traveler, stamps or inspection records 2) Procedure for control of status indicators, including authority for application and removal <u>Verified by Review of Shop Travelers.</u>	S	<u>Verified that the following Shop Travelers indicated both the acceptability and the current inspection/test status of the sub-assemblies to which they were attached.</u> <u>J-2471-A3, Rev. 0- Module Rack A;</u> <u>J-2471-A5, Rev. 0- " " "</u> <u>J-2471-D1, Rev. 0- " " "</u> <u>J-2470B, Rev. 1, Nozzle A+B</u> <u>J-2470B, Rev. 1, Bonnet + Head Assy</u> <u>J-2470B, Rev. 1, Final Assembly</u>
XIV-2	Indication of Operating Status Ref: <u>Not</u> <u>Applicable</u>	a. Verify implementation of the means in use for indicating the operating status of systems and components to prevent inadvertent operation. NOTE: This may also include the use of tags, or other marking means. <u>Not Applicable to this commodity.</u>		N/A
			Signature: <u>Robert M. Marshall</u> Date: <u>11/11/85</u>	



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XV-1	XV. NONCONFORMING MATERIALS, PARTS OR COMPONENTS Control of Nonconforming Items, Processes and Activities Ref: <u>QAM</u> <u>SECT 9.0-15</u>	a. Verify that documented procedures are available and in use to control items, services or activities which do not conform to requirements <u>VERIFIED by REVIEW OF PROCEDURE SP-1551 & QAM</u>	<u>S</u>	<u>REVIEWED PROCEDURE'S QAM SECTION 9.0 NON-CONFORMITIES & CORRECTIVE ACTION & SP-1551</u>
XV-2	Identification, Documentation and Segregation of Nonconforming Items Ref: <u>QAM</u> <u>SECT 9.0</u>	a. Examine documentation to verify implementation of the system in use to identify document and segregate nonconforming items to prevent unauthorized use or shipment <u>VERIFIED by REVIEW OF HOLD TAG & DEVIATION NOTICES</u>		<u>a) REVIEWED Deviation Notices Job 2470 A, DN 2735; Job 2471 DN 2479; Job 2469-2A DN 2736</u>
XV-3	Disposition of Nonconforming Items Ref: <u>QAM</u> <u>SECT 9.0</u>	a. Verify implementation of the system in use for the review, acceptance, rejection, repair or rework of nonconforming items. NOTE: Material accepted by a material review activity should be identified as to its acceptance and the authorizing acceptance documentation. Review actions for the following categories of accepted nonconforming items must be approved by appropriate authority: Use as is, Repair, and Rework. <u>VERIFIED by REVIEW OF HOLD TAG, Deviation Log & Corrective Action</u>		<u>a) REVIEWED HOLD TAG ON SYSTEM HEAT EXCHANGER SHELL. HOLD TAG #2469-3A. REVIEWED TRAVELER, Deviation, Deviation Log. REVIEWED CORRECTIVE ACTION & SIGN OFF by ENGINEERING on 7/10/85.</u>
XV-4	Inspection of Repaired or Reworked Items Ref: <u>QAM</u> <u>SECT 9.0</u>	a. Examine documentation and verify that repaired and reworked items are reinspected in accordance with applicable procedures <u>VERIFIED by REVIEW OF DEVIATION NOTICES</u>		<u>c) REVIEWED the following Deviation Notices and Procedures: DN 2479 Job 2471 FIELD RACK DN 2735 Job 2470 TUBE SHEET DN 2736 Job 2469-4 Shell Baffle</u>
XV-5	Extension of Nonconformance Reporting Ref: <u>QAM</u> <u>SECT 9.0</u>	a. Cross reference audit item No. XVI.4. Request for and review written reports on nonconformances to verify notification is provided to affected organizations and subcontractors, suppliers and manufacturers <u>VERIFIED The ABOVE IN ACCORDANCE WITH PROCEDURE SP 1551</u>		<u>ALL REINSPECTED ACCORDING TO PROCEDURE DN 2725 - Job 2470 A - Submitted supplier NONCONFORMANCE to customer SNR 8/15/85</u>
XV-6	Maintenance of Nonconformance Records Ref: <u>QAM</u> <u>SECT 9.0</u>	a. Verify supplier's maintenance of nonconforming data. Points of audit: 1) Documentation verifying acceptability of nonconforming items with disposition or repair. Use As Is maintained on file. 2) Description of accepted change, repair method, waiver or deviation which denotes "as built" condition maintained on file. 3) Review and analysis of repetitive deficiencies for determining cause and measures to preclude recurrence. <u>VERIFIED The ABOVE</u>		<u>REVIEWED "REPAIR" USE AS IS documentation QAM 9.2.2 Requires REVIEW OF CORRECTIVE ACTIONS EVERY MONTHS & DN'S EVERY 6 MONTHS REVIEWED SEVERAL EXAMPLES</u> Signature <u>T. J. Sullivan</u> Date <u>7/15/85</u>



SUPPLIER QUALITY PROGRAM AUDIT CHECKLIST PSQ-396 A

Supplier JOSEP4 ONT

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1) AUDIT ITEM NO	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
	XVI CORRECTIVE ACTION		S.E.N.I.A	
XVI-1	Identification and Correction of Conditions Adverse to Quality Ref: <u>QAM</u> <u>SECT 10</u>	a Review documentation to verify the system in use to identify, report and correct conditions adverse to quality, such as failures, deviations, defective material and equipment and other nonconformances. Points of audit include checking date of reports, time to complete actions, and "open" items. <u>VERIFIED BY REVIEW OF DOCUMENTATION</u>	S	<u>CORRECTIVE ACTION REVIEW OF THE FOLLOWING DEVIATION NOTICES FOR PERIOD 8/1/84 THROUGH 2/11/85 DN 2308, 2319, 2758, 3382, 3498, 2309, 2320, 2760, 3475. AS A RESULT OF REVIEW ALL CONDITIONS ADVERSE TO QUALITY WERE PROPERLY IDENTIFIED, REVIEWED AND VERIFIED THAT THE QC MANAGER REVIEWS ON A REGULAR BASIS - DEVIATION NOTICES - 6 MONTHS, INTERNAL AUDIT REPORTS - 12 MONTHS, CORRECTIVE ACTION REPORTS - 12 MONTHS. REVIEWED DN 2876 - 6/11/85 & DN 3469 - 2A - 3/21/85. ALL REQUIREMENTS FOR IDENTIFICATION, COMMENTS TO DETERMINE CAUSE AND CORRECTIVE ACTION TAKEN WERE SATISFACTORY.</u>
XVI-2	Determination of Causes of Adverse Quality Conditions Ref: <u>QAM</u> <u>SECT 10</u>	a Request for and review documentation to verify implementation of the system in use to determine the causes of significant conditions adverse to quality and the corrective action taken to preclude repetition. <u>VERIFIED BY REVIEW OF DN'S AND CORRESPONDENCE</u>		<u>Q) VERIFIED COMPLIANCE TO SP-1551 NOTIFICATION OF CUSTOMER.</u>
XVI-3	Documentation and Reporting of Corrective Actions Ref: <u>QAM</u> <u>SECT 10</u>	a Examine documentation (corrective action reports) and check for the following minimum data: 1) Identification and description of the deficiency 2) Comments on the analysis to determine the cause of the deficiency 3) Corrective actions taken, to include a review and approval by responsible authority to indicate the adequacy of the action. <u>VERIFIED THE ABOVE BY REVIEW OF DN'S.</u>		<u>DN 2735 SUBMITTED SUPPLIER NCR REPORT TO CUSTOMER ON 1/8/85 NOTIFYING OF TUBG HOLE LIGAMENTS. REVIEWED NCR REPORT TO CUSTOMER *KAPL-169-219 REVEN WRITTEN ON 4/25/85</u>
XVI-4	Extension of Corrective Action Controls to Subcontractors and Suppliers Ref: <u>QAM</u> <u>SECT 10</u>	a Cross reference audit item No's VII-2 and XV-5. Verify implementation of the system in use to extend corrective action requirements to subcontractors, suppliers or manufacturers and other affected organizations. Audit technique: Review of documentation. <u>VERIFIED BY REVIEW OF PROCEDURE SP-1551 & DN'S</u>		<u>SIGNATURE T.D. JILLIARD Date 7/15/85</u>



**SUPPLIER QUALITY PROGRAM
AUDIT CHECKLIST
PSQ-396 A**

Supplier Joseph Oats

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1) AUDIT ITEM NO	2) QUALITY ELEMENT & REFERENCES	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
	QA QUALITY ASSURANCE RECORDS		S X N/A	Examined Checklist for Lifetime Record file for Job 2470
XVR-1	Preparation and Maintenance of Quality Assurance Records Ref: <u>QAM Sect. 7.0</u>	a. Verify that written procedures are available and in use for the maintenance of quality assurance records <u>Verified Procedures for maintenance of records are available and in use for QA records.</u>	S ↓	<u>Examined records in Record Storage Vault as follows</u> <u>Specification & purchasing documents</u> <u>Design calculations</u> <u>Bill of Materials</u> <u>NDE Procedures</u> <u>Test Reports</u> <u>Vendor Survey & Audit reports</u>
XVR-2	Identification of Types of Records Ref: <u>QAM Sect. 7.0</u>	a. Examine quality assurance file to verify record maintenance on the following (NOTE: Specific requirements may be outlined in customer contract) Inspection and test records, Reports of audit, Quality related procedures and instructions, Personnel qualifications and certifications, Material analysis reports, Statements of conformance, Operating Logs, etc. <u>Verified by review of records in Storage Vault</u>		<u>Examined storage area (vault) & file cabinets. The records are readily retrievable identifiable and available. The storage area is adequate: Fire proof cabinets environmentally qualified for storage</u>
XVR-3	Retrievability of Records: Ref: <u>QAM Sect. 7.0</u>	a. Verify that quality assurance records are readily retrievable, identifiable and available for review by authorized personnel. <u>Verified by selection of documentation</u>		
XVR-4	Retention of Records Ref: <u>QAM Sect. 7.0</u>	a. Concurrent with the above checks verify that records are maintained in facilities that provide protection against environmental effect, damage and loss, and that requirements for storage, transmittal and retention are established in accordance with customer contract requirements or codes and standards referenced therein <u>Verified by Examination of storage vault facilities and active files.</u>		
			Signature <u>[Signature]</u>	Date <u>7/11/85</u>

BECHTEL

SUPPLIER SURVEY

SUMMARY AND RECOMMENDATIONS

PSQ-391

SUPPLIER (NAME)	ADDRESS (CITY/STATE)
Joseph Oat Corporation	2500 Broadway, Drawer 10, Camden, NJ

X. SURVEY RESULTS/RECOMMENDATIONS

1) RESULTS			
ITEM NO.	ACTIVITY	FINDINGS (✓)	
		SATISFACTORY	UNSATISFACTORY
III	MANPOWER CAPABILITY	X	
IV	COMMODITY/MATERIAL	X	
V	CONTRACTS, OLD/NEW	X	
VI	FACILITY/WORK AREAS	X	
VII	SHIPPING	X	
VIII	MANUFACTURE CAPABILITY	X	
IX	QUALITY ASSURANCE	X	

2) RECOMMENDATIONS:

- ☒ APPROVAL as a Bechtel Source for:
- ☒ Principal item surveyed
 - ☒ Material/Commodity shown below
- Spent Fuel Racks

☐ DISAPPROVAL as a Bechtel source for the item surveyed.

BASIS FOR RECOMMENDATION(S):

Based on observations of the supplier's shop equipment, inprocess activities, records, and an audit of the quality program implementation, this supplier is recommended.

SIGNATURE OF SURVEY TEAM LEADER

H McAnallen

DATE

7/16/85

ATTACHMENTS ☒ PSQ-391G
☒ PSQ-391 M (Mechanical)
PSQ-391 E (Electrical)
☒ PSQ-396R
☒ Other (Specify) 396A w/checklists

REVIEW/APPROVAL ACTION:

- ☒ Concur with above recommendations
- ☐ Do not concur with above recommendations
- Supplier is ☒ Approved with comments
- ☐ Disapproved

* (Attach rationale for change in recommendations)

DISTRIBUTION PSQ Central File, SFO

Originating Office

(Identify)

NAME (SIGNATURE)

TITLE

DATE

Joseph L. Keckhan
Technical Services
Supv.

7/23/85

MANUFACTURING AND QUALITY CONTROL PSQ-391 G

I. GENERAL

SUPPLIER Joseph Oat Corporation		ADDRESS (CITY/STATE) 2500 Broadway, Drawer 10, Camden, NJ	
ZIP CODE 08104	AREA CODE 609	TELEPHONE 541-2900	NAME OF SURVEY TEAM MEMBER(S): T. Gillespie (QA) ATL P. Kunjeer PE - B. Marshall SQA L. McAnallen PSQS T. McKerney M&QS
JOB CHARGE(S) 15737	DATE OF SURVEY 7/10, 11/85		
COMMODITY/MATERIAL SURVEYED (COMPLETE DESCRIPTION) Defueling Canisters		M/R OR SPECIFICATION NO. 15737-2M-101J	Q-LISTED ITEM YES X NO
TYPE SURVEY (CHECK ONE OR MORE) <input checked="" type="checkbox"/> FACILITY/MANUFACTURING CAPABILITY <input checked="" type="checkbox"/> QUALITY PROGRAM EVALUATION: <input type="checkbox"/> SUMMARY REVIEW ONLY (SECTION IX OF THIS FORM) <input checked="" type="checkbox"/> IN DEPTH REVIEW TO SPECIFIED QUALITY REQUIREMENTS (SUPPLEMENTAL CHECKLIST)			

II. KEY MANAGEMENT PERSONNEL IN ADMINISTRATION, ENGINEERING, PRODUCTION, QUALITY ASSURANCE AND QUALITY CONTROL

TITLE	NAME	CONTACTED DURING SURVEY	
		YES	NO
President	Martin Kaplan	X	
V. P., Engineering	Kris Singh	X	
General Manager	Ron Kaplan	X	
Prod. Control Manager	Jay Murphy		X
Quality Control Manager	John Benckert	X	
Asst. Q.C. Manager	Chuck Leonard		X
Contract Administrator	Joy Reader		X

III. PRESENT MANPOWER CAPABILITY

DEPARTMENT/CLASSIFICATION	1ST SHIFT	2ND SHIFT	3RD SHIFT	UNION AFFILIATION
Shop Production	37	19		Local 19, AFL Sheet & Metal Workers
Engineers	7			None
Draftsmen	4			None
Quality Assurance	1 *			None
Quality Control **	3 *	0		None
Shop Inspectors	2			None

* Operate in same function

SURVEY TEAM COMMENTS:

Supplier has sufficient manpower and has committed to a larger work force if required by workload. Quality verification activities are performed by Quality Control Personnel.

* Includes John Benckert

** Committed to an increase of 1 person

MANUFACTURING AND QUALITY CONTROL PSQ-391 G

IV. COMMODITY/MATERIAL

PRINCIPAL ITEMS MANUFACTURED/SUPPLIED

DESCRIPTION	SIZE MAXIMUM - MINIMUM	PRODUCTION CAPACITY
High Density Spent Fuel Racks	See Comments	See Comments
Heat Exchangers		
Pressure Vessels		
Welded Fabrications		

SURVEY TEAM COMMENTS: Size of units fabricated is controlled by customer requirements
and production capacity is dependent upon type of work and complexity of item.

V. OLD/NEW CONTRACTS

1) PREVIOUS BECHTEL CONTRACTS

PURCHASE ORDER NO.	PROJECT NAME	MATERIAL/COMMODITY DESCRIPTION	YEAR COMPLETED
11917-3-M-070B	Korea	ASME VIII Turbine Bldg. HX	4/81
15737-TC-022106	TMI	Test Cannisters	6/85

2) MAJOR WORK CURRENTLY IN PROCESS OR COMMITTED

CUSTOMER	MATERIAL/COMMODITY DESCRIPTION	QUANTITY	SCHEDULED COMPLETION DATE
Commonwealth ED	High Density Spent Fuel Racks	39 Racks	7/83
Wash. Public Pwr.	High Density Spent Fuel Racks	32 Racks	4/83
MS Pwr. & Light	High Density Spent Fuel Racks	17 Racks	10/83
SMUD	High Density Spent Fuel Racks	11 Racks	11/83
Bechtel	Heat Exchangers (Savannah River)		

3) NUMBER OF YEARS EXPERIENCE IN THE MANUFACTURING AND/OR SUPPLYING OF NUCLEAR SAFETY RELATED ITEMS: 15 Yrs. NUCLEAR

SURVEY TEAM COMMENTS: Discussions with supplier personnel found that supplier has had a
varied background of different commodities which were constructed to standards consistent
with ASME & 10CFR50, App. B.

MANUF. STURING AND QUALITY C NTROL

PSQ-391 G

VI. FACILITY/WORK AREAS

1) TOTAL OPERATING SPACE 105,000		INDOORS (SQ. FT.) 105,000		OUTDOORS (SQ. FT.) --	
2) BUILDING BAYS 4					
NUMBER	LENGTH (FEET)	WIDTH (FEET)	CRANE CAPACITY	UNDERHOOK HEIGHT (FEET)	
A	360	100	2/15 ton	20	
B	400	112	2/60 ton	50	
A2	250	45	1/15 ton	50	
B2	250	50	--	--	

3) DESCRIBE CLEAN ROOM, OR OTHER RESTRICTED ACCESS FACILITIES

Bldg. B2 used as required for clean area

SURVEY TEAM COMMENTS: Shop area has sufficient size and adequate crane capacity.

VII. SHIPPING DATA

TYPE	SERVICED BY
RAIL X	Conrail
TRUCK X	
WATER X	
AIR X	

SURVEY TEAM COMMENTS: Supplier is located in a metropolitan area and has access to all modes of transportation. Shop is serviced by rail spur and pier to waterway (Delaware River) extends from shop.

VIII. MANUFACTURING DATA

REFER TO ATTACHED PSQ-391M (MECHANICAL) OR PSQ-391E (ELECTRICAL) CHECKLIST.

BECHTEL

SUPPLIER SURVEY
MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)

FOR USE WITH PSQ 391G, SUPPLIER SURVEY, MANUFACTURING AND QUALITY CONTROL

SUPPLIER (NAME) Joseph Oat Corporation		ADDRESS (CITY/STATE) 2500 Broadway, Drawer 10, Camden, NJ	
COMMODITY/MATERIAL SURVEYED Defueling Canisters		NAME OF SURVEY TEAM MEMBERS L. J. McAnallen, PSQS	DATE 7/10, 11/85

I. CODE CONSTRUCTION

1) ASME CODE CERTIFICATES OF AUTHORIZATION (ATTACH COPIES TO THIS REPORT):

SECTION	STAMP/CERTIFICATION	EXPIRATION DATE
N Class 1, 2, 3, MC	1488	8/23/88
NPT Class 1, 2, 3, MC	1489	8/23/88
NA Class 1, 2, 3	1577	8/23/88
Sec. VIII "U" Stamp	184	12/12/85

2) NATIONAL BOARD INSPECTION AGENCY:
Hartford Steam Boiler

3) OTHER:

API _____
AWS Yes _____
TEMA Yes _____
OTHER (SPECIFY) ANSI N45.2, 10-CFR-50 Appx B _____

SURVEY TEAM COMMENTS: After discussions with supplier and reviews of various documents, it was ascertained that supplier can procure items which comply with above codes and standards.

II. TOOLS AND EQUIPMENT

1) PRINCIPAL MACHINE TOOLS:

DESCRIPTION BY TYPE	QUANTITY	SIZE OF CAPACITY
See attached fact sheet	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)

2) PRINCIPAL METAL FORMING AND CUTTING EQUIPMENT:
DESCRIPTION BY TYPE

QUANTITY

SIZE OR CAPACITY

See attached fact sheet

3) TESTING EQUIPMENT:
TYPE

NO.

DESCRIPTION

CAPACITY

CALIBRATION

Hydrostatic

2

Pneumatic Pumps

6000 lbs.

yes

Pneumatic

1

Compressor

100 lbs.

yes

Helium Leak

Outside Vendor

Halogen Leak

Outside Vendor

Tensile

Outside Vendor

Bend

Outside Vendor

Impact

Outside Vendor

Hardness

1

Ames Portable

yes

Other

(specify)

4) OTHER PRINCIPAL EQUIPMENT

See attached fact sheet.

SURVEY TEAM COMMENTS: Observations of facility and equipment reveals general housekeeping satisfactory and that equipment appears to be maintained and in working condition.

MANUFACTURING DATA CHECKLIST

PSQ-391 M (MECHANICAL)

III. SPECIAL PROCESSES

1) WELDING EQUIPMENT AND PERSONNEL:

	NO OF MACHINES	NUMBER OF QUALIFIED WELDERS		
		ASME IX	AWS	OTHER (SPECIFY)
SHIELDED METAL ARC	See attached	25		
GAS TUNGSTEN ARC	fact sheet	10		
GAS METAL ARC		10		
FLUX CORED ARC		10		
SUBMERGED ARC		3		
ELECTROSLAG				
ELECTROGAS				
PLASMA ARC				
ELECTRON BEAM				

METALS AND ALLOYS NORMALLY WELDED: c/s, s/s, CuNi, AlBr, Titanium

SURVEY TEAM COMMENTS: Review of welder qualifications and procedure qualification confirm
adequate personnel and control of processes.

2) MELTING AND HEAT TREATING FURNACES:

TYPE	MAX TEMP.	CAPACITY	AUTOMATIC OR MANUAL	
			RECORDER	CONTROLLER
Outside Vendor				

SURVEY TEAM COMMENTS: All heat treating and brazing when required is subcontracted to
qualified supplier on the approved vendor list.

RECEIVED

SUPPLIER SURVEY

MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)

3) NON DESTRUCTIVE EXAMINATIONS (NDE):

a - NDE PERFORMED BY:

☐ SUPPLIER (ALL OR PARTIAL) PT, MT by Oat
☐ SUBCONTRACTOR (NAME/LOCATION) RT by Eastern Testing. Oat is currently in process of procurement of its own x-ray equipment

b - NDE PROCEDURES

METHOD	PROCEDURE DESIGNATION		*I.D.	REV	DATE
MT - PROD	--				
MT - COIL	--				
MT - YOKE	QC-50	Written	PER	Contract	
PT - SOLVENT REMOVABLE	QC-10	Written	PER	Contract	
PT - POST EMULSIFYING	--				
UT - ANGLE BEAM	--				
UT - STRAIGHT BEAM	--				
RT - X-RAY	QC-20	Written	PER	Contract	
RT - GAMMA RAY	QC-20	Written	PER	Contract	
ET - EDDY CURRENT					

*ENTER "S" FOR SUPPLIER; "S/C" FOR SUBCONTRACTOR

c - NDE PERSONNEL QUALIFICATIONS/TESTING EQUIPMENT

METHOD	PERSONNEL QUALIFICATION			DESCRIPTION OF TEST EQUIPMENT
	SNT-TC-1A LEVEL 1	SNT-TC-1A LEVEL 2	SNT-TC-1A LEVEL 3	
MT	-	1	1	Magnaflux Y5 & Y6 yoke
PT	0	2	1	Turco solvent removable
UT	-	-	-	
RT	-	1	1	Vendor's equipment
ET				

SURVEY TEAM COMMENTS: Verified that NDE procedures are available and in use. Check of equipment verified that equipment is currently calibrated as noted on calibration stickers.

Updated

FACT SHEET



JOSEPH OAT CORPORATION
CHEMICAL ENGINEERING & FABRICATORS
NUCLEAR POWER COMPONENTS

Sheet 1 of 6
December 10, 1982

JOSEPH OAT CORPORATION
2500 Broadway, Drawer #10
Camden, New Jersey 08104
(609) 541-2900

Field Office:
JOSEPH OAT CORPORATION
New York Office
153 Bedell Avenue
Hempstead, New York 11550
(516) 483-0863

Trading continuously since 1788.

A privately owned corporation with no affiliation public or private.

GENERAL INFORMATION

JOSEPH OAT CORPORATION is a designing, fabricating, and engineering company primarily devoted to the Nuclear and Chemical Industries. Our product lines include heat exchangers, vessels, and complete liquid radwaste treatment systems, including evaporators, demineralizers, new and Spent Fuel Storage Racks.

JOSEPH OAT CORPORATION is qualified to furnish construction to the following ASME Codes:

	<u>STAMP NO.</u>	<u>EFFECTIVE</u>	<u>EXPIRES</u>
"Pressure Vessel	#184	11/29/82	12/12/85
"N" Stamp Classes 1,2,3, & MC Vessels	#1488	9/13/82	8/23/85
"NPT" Classes 1,2,3, MC Vessel Parts & Components & Supports	#1409	9/13/82	8/23/85
"NA" Shop Assembly of Class 1, 2 & 3 Components, Appurtenances - Piping Subassemblies & Component Supports	#1577	9/13/82	8/23/85

Credit information will be furnished upon request.

Our manufacturing location is: JOSEPH OAT CORPORATION
Drawer #10, 2500 Broadway
Building A & B
South Jersey Port Corporation
Camden, New Jersey 08104

Inquiries should be sent to the attention of Mr. Edward S. Marinock, Vice-President of Sales, at our Camden office, or John S. Shannon, Asst. Marketing Manager at our New York office.



COMPANY OFFICIALS

President	Martin Kaplan
Vice-President	Maurice Holtz
General Manager	Ronald Kaplan
Vice-President Engineering	Dr. K. Singh
Chief Engineer	Michael Holtz
Production Control Mgr.	Jay Murphy
Plant Superintendent	F.R. Gavin
Quality Control Manager	John Benckert ✓
Vice President of Sales	Edward S. Marinock
Purchasing Agent	Al Gates

SCOPE OF WORK

Engineering, design, and fabrication of all types of distillation, evaporation, drying, heat transfer, pressure vessels, and equipment listed in our brochure, with all necessary guarantees.

All fabrication procedures conforming to ASME Specifications, covering Section III (Nuclear), Section VIII, and TEMA Standards. All welding performed by Code Qualified Welders.

UNION AFFILIATION

Sheet Metal Workers Local 19

INSPECTION AGENCY FOR CODE CONSTRUCTION

The Hartford Steam Boiler Inspection & Insurance Company
Suite 444, Valley Forge Executive Mall Building
Post Office Box 504
Wayne, Pennsylvania 19087

METALS USED IN FABRICATION

All alloys covering every grade of stainless steel; carbon steel; all nonferrous materials, including nickel and monel; high alloy materials such as incoloy, carpenter 20, hastelloy; all clad materials; and titanium, titanium-clad, and zirconium.



SHOP FACILITY

"A" Building - 100 ft. x 360 ft. "A2" Building - 45 ft. x 250 ft.

"B" Building - 112 ft. x 400 ft. "B2" Building - 50 ft. x 250 ft.

Total square feet of working area -- 105,000

LIFTING CAPACITY

"A" Bay - 2/15 ton bridge-type crane, cab operated with 20 foot under hook, plus
Jib cranes of 1 to 3 ton capacity.

"A2" Bay - 1/15 ton bridge-type crane, cab operated with 50 foot under hook

"B" Bay - 2/60 ton bridge-type cranes, cab operated with 15 ton auxiliary on same
bridge, with 50 foot under hook

"B2" Bay - No crane

Floors - Reinforced concrete; 40% of floors are with leveling surface rails for
precision fabrication.

MANUFACTURING EQUIPMENT

Shears: 3/8" capacity

Power Squaring Shear: 1" x 10'

Saw, Do-All: 20" throat (1)

2 - Linde Plasma Burner Type PT-5

Clad 1½" thk., 2" solid

8 Abrasive Cut-Off Saw, cut to 1" pipe

Auto. Flame Cutting: 4" carbon steel

22" Abrasive Cut-Off Saw Hydraulic

operated, cut to 8" pipe - 4" round stock

Brake: ½" capacity - 6'2" width, 6" stroke

Pyramid Rolls: 1 set 1½" max. plate - 18" min. ID x 120" width

Welders:

4 each Lincoln, Shield Arc, current range 1 to 600 amps

6 each Linde, 300 amp, AC-DC range, 1 to 300 amps

6 each Linde, 500 amp, DC range, 1 to 500 amps

1 each Linde, Submerged Arch Overlay Assembly with hot wire feed,
automatic turntable

2 each Panjiris Submerged Arc - 14' x 14' boom, 60' track, electrically
controlled, fully automatic

3 each Linde, 500 amp, DC range, 1 to 500 amps

1 each Linde, 650 amp, DC range, 1 to 650 amps

6 each Linde, 500 amp, DC range, 1 to 500 amps

1 each Linde, 300 twin amp, DC range, 1 to 300 amps

4 each Linde, 300 amp, DC range, 1 to 300 amps

3 each Linde, MIG units

5 each Westinghouse, 300 amp, DC, TIG

2 each Phoenix Dry-Rod Ovens, Type 300, adj. thermostat control 100° to
550°F - capacity 350 lbs. of 18" rod

1 each Linde VI - 800 amp - Submerged Arc

1 Miller syncrowave 300 AC-DC gas tungsten arc or shield metal arc welder

1 Miller coolmate 12 circulating system

1 Jetline side carriage with 20' track special sequence control and single
heliarc torch

4 Miller Tig Rigs welding control for Miller 300 amp power supply

4 Miller gold star 300 ss power source 300 amp

2 Jetline seam welders with 16 ft. mandrells with double torch carriages,
air and mechanical clamping, w/2 heliarc torches

4 Miller coolmate 12 circulating systems for cooling torch & mandrel



- Rolls: 4 sets Power turning, 8 ton capacity
1 set Power turning, 60 ton capacity, Ransome Model CPR
1 set Power turning, 150 ton capacity, Ransome Model CPS
3 sets Power turning, 30 ton capacity, Ransome -
2 additional sets of idlers which can sustain up to 45
1 set Power turning, 17 ton capacity, Pandjiris
2 sets Power turning, 30 ton capacity, Pandjiris
2 sets Power turning, 45 ton capacity, Pandjiris
1 set Power turning, 20 ton capacity
1 set Power turning, 10 ton capacity
1 set Power turning, 5 ton capacity

Plus many sets of manual type rolls

- 4 each 24,000 lbs. Welding Positioners, power driven
2 each 16,000 lbs. Welding Positioners, power driven
2 each 1,000 lbs. Welding Positioners, power driven
1 each 48" diameter, Inert Gas Controlled Atmosphere, Welding Chamber
1 Pandris automatic head stock-tail stock positioners with 360" rotation
460 volt 3 phase

Machine Tools

1 each Baffle Deburrer - fully automatic

- Radial Drill Presses - 1 each 3-1/2 ft. reach, 10" col., #5 Morse Taper
1 each 4 ft. reach, Ikeda, 12" col., #5 Morse
2 each 5 ft. x 15" col., Speedmaster, #5 Morse
1 each 7 ft. x 14" col., #5 Morse
1 each 7 ft. x 16" col., #5 Morse
2 each 8 ft. reach, Carlton, 19" Col., #6 Morse
1 each 5 ft. reach, Carlton, 15" Col., #5 Morse
1 turret lathe - #2A Warner Swasey serial #853, 921 22" swing
4" hole threading gear box automatic feeds
1 Cincinnati #3 vertical milling machine, 14" x 60" table,
5 h.p. motor, 3 way automatic feed
1 Roger's 210" table capacity knife, grinder, 5 h.p.

Vapool Systems - 3 each 75 CFM at 100 psi with 12 gallon tank

Threaders - 3" max. pipe - 1" max. bolt size

Lathes - 1 each Lodge & Shipley, 20" over ways, 24" over rails, 5 ft. long
1 each American, 20" over ways, 24" over rails, 10 ft. long

Boring Mill - 1 each Colburn 54" table, 36" working height under heads - 2
cutting heads
1 each Horiz. 84" table, 60" working height under heads - 2
cutting heads
1 each Horiz. 100" table, 72" working height under heads - 2
cutting heads
2 each Bullard 42" Table, 36" working height under heads - 1



SCCELLANEEOUS

each Oliver-Adrian drill sharpener
each Oliver Adrian drill grinder

ONDESTRUCTIVE TESTING EQUIPMENT

1 - Andrex, portable, 180 KV, 1" penetration
1 - G.E. Type H-2 Halogen Leak Detector
1 - Model 100 Son Tector, portable for air test of vessels
1 - Bacharach, Purge Kit to check oxygen content when welding gas back-up
Turco Liquid Penetrant Inspection Kit, nonaqueous type
Magnetic Particle Inspection, magnaflux yoke type, 110 volt
Test Plugs from 2" to 10" ips pipe

TESTING FACILITIES

1 - Demineralizer, Model MM4, Serial No. 51966. Exchange capacity 47,000 grains.
Maximum blow rate 11.6 gallons per minute. To produce water of 2000,000 OHM
quality:

Hydrostatic - 6,000 psig

Air - 3,500 psi

2 each - Hasket Liquid Pumps, 8,000 psi capacity, oil or water

Air Compressors - 1 each 75 HP, 300 CFM, Worthington Mono Rotor, 100 psi
1 each 60 HP, 240 CFM, Worthington Mono Rotor, 100 psi
1 each 125 HP, 640 CFM, Worthington Mono Rotor, 110 psi

TUBE EXPANDING EQUIPMENT

4 each Wilson Tube Expanding Machines air operated, torque controlled.

MATERIAL LIMITATIONS

MAXIMUM THICKNESS

Carbon Steel	4"
Ferritic Stainless Steel (400 series)	2-1/2"
Austenitic Stainless Steel (300 series)	3-1/2"
Clad	3-1/2"
Nickel	2-1/2"
Nickel Alloy	2-1/2"
Copper	2-1/2"
Silicon Bronze	2-1/2"
Hastelloy B,C.	2-1/2"
Titanium, Zirconium, etc.	1-1/2"

We also work with silver.



Sand Blasting Facility: 1 - Portable Vacu-Blast Model OP
1 - Portable Empire Model 1105

TRANSPORTATION

Truck Lines - All major trucking companies that service the Philadelphia, Pennsylvania area.

Railroad - Spur line into both bays continuing onto pier. Serviced by Penn-Central and Jersey Central Railroads.

Waterway - Pier extends from shop with 350 ton lifting capacity. Waterway is the Delaware River.

ENGINEERING SERVICE

The Engineering Department, headed by Dr. K.P. Singh, consists of Chemical and Mechanical Engineers with specialized education and industrial experience in a variety of disciplines; namely applied mechanics, heat transfer, and transport phenomena. Oat engineers are extensively experienced in ASME nuclear code design, pressure vessel stress analysis using the latest finite element techniques, seismic analysis, piping flexibility analysis, elevated temperature effects, and thermal fatigue evaluation. Oat's Engineering Department has designed and analyzed hundreds of nuclear heat exchangers and special purpose pressure vessels.

Process equipment includes heat exchangers, evaporators, degasifiers, demineralizers, and the many various holding and processing vessels required in a nuclear power plant.

In collaboration with Philadelphia area university professors, Oat Engineer's provide a consulting service in the name of THERMAC Associates, a division of Joseph Oat Corporation. This arrangement broadens our expertise over a very wide scope of industrial technology. Every consultant is an expert in his specialty.

Joseph Oat Corporation is a member of Heat Transfer Research, Incorporated; our Engineers and Consultants are active in the professional societies; our facilities include fast in-house batch computer terminals with direct line access to the most powerful computers in America.

QUALITY CONTROL SYSTEM

Oat's quality control system, approved by ASME Survey Team for ASME Section III (all classes) and Section VIII, conforms to 10CFR50 Appendix B, and ANSI N45.2.



SUPPLIER SURVEY

PAGE 1 OF 4

MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)ATTACHMENT 7
(4410-85-L-0210)
23 Pages

FOR USE WITH PSQ-391G, SUPPLIER SURVEY, MANUFACTURING AND QUALITY CONTROL

SUPPLIER (NAME)	Babcock & Wilcox Co.	ADDRESS (CITY/STATE)	
Commercial Nuclear Fuel Plant		P. O. Box 11646, Lynchburg, Virginia	24506
COMMODITY/MATERIAL SURVEYED:	Defueling Canister	NAME OF SURVEY TEAM MEMBERS	DATE
		L. J. McAnallen	8/6/85

I. CODE CONSTRUCTION

1) ASME CODE CERTIFICATES OF AUTHORIZATION (ATTACH COPIES TO THIS REPORT):

SECTION	STAMP/CERTIFICATION	EXPIRATION DATE
III	2660	January 4, 1988
III	NPT/2660-1	January 4, 1988
VIII	S/19902	December 5, 1987
VIII	U/19903	December 5, 1987
VIII	U2/19904	December 5, 1987

2) NATIONAL BOARD INSPECTION AGENCY:

The Hartford Steam Boiler Inspection and Insurance Company

3) OTHER:

API _____

AWS _____

TEMA _____

OTHER (SPECIFY) _____

SURVEY TEAM COMMENTS: Code certifications attached.

II. TOOLS AND EQUIPMENT

1) PRINCIPAL MACHINE TOOLS:

DESCRIPTION BY TYPE	QUANTITY	SIZE OF CAPACITY
CNC Milling Horz. and Vert.	4	24" x 24"
Manual Knee Type Mills, Vert. and Horiz.	10	24" x 72" Max.
Boring Mill Horz. 5"	1	48" x 8' Travel
Lathes, Automatic and CNC	4	10" x 24"
Lathes, Manual	8	24" x 86" Max. or 18"x120"
Laser Welding - CNC Controlled	1	1200 Watt

MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)

2) PRINCIPAL METAL FORMING AND CUTTING EQUIPMENT:		QUANTITY	SIZE OR CAPACITY
DESCRIPTION BY TYPE			
Plate Shear		1	1/4" x 8'
Forming		1	10 Ga. x 8'
Gas Burning, Automatic		1	2"
Gas Burning, Manual		2	3"
Cabinet and Portable Blasting Equipment		2	36" x 16" x 48"

3) TESTING EQUIPMENT:		NO.	DESCRIPTION	CAPACITY	CALIBRATION
TYPE					
Hydrostatic		2	Incore, Plugs Test Fixtures	4,000 psi	3 months
Pneumatic					
Helium Leak		2	Veeco MS-90 Equipment	1 x 10 ⁻¹⁰	Yearly 5.1 x 10 ⁻⁸
Halogen Leak					
Tensile		1	Baldwin Tensile Machine	120,000 lbs.	Yearly
Bend		2	ASME Fixtures	055- 036 Thickness	As Required
Impact					
Hardness		1	Rockwell Tester	15T to RC	Prior to Use
Other (specify)					

4) OTHER PRINCIPAL EQUIPMENT:

SURVEY TEAM COMMENTS: 1) The largest pump available to hydrostatically test the canisters has a 2 gal. capacity. 2) The supplier does not have facilities to machine shell pipe on completed canisters.

MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)

III. SPECIAL PROCESSES

1) WELDING EQUIPMENT AND PERSONNEL:

	NO. OF MACHINES 4	NUMBER OF QUALIFIED WELDERS		
		ASME IX None	AWS	OTHER (SPECIFY)
SHIELDED METAL ARC				
GAS TUNGSTEN ARC	10 (1)	3 (2)	---	20 (to program 09-1212)
GAS METAL ARC				
FLUX CORED ARC				
SUBMERGED ARC				
ELECTROSLAG				
ELECTROGAS				
PLASMA ARC				
ELECTRON BEAM				

METALS AND ALLOYS NORMALLY WELDED: Stainless Steel, Inconel, Zirconium Alloys, Aluminum

SURVEY TEAM COMMENTS: (1) 10 machines are in service; 3 more are in storage. The supplier can make 5 available for the canister fabrication.

(2) B&W expects to qualify 2 more welders to ASME for the canister fabrication.

2) MELTING AND HEAT TREATING FURNACES:

TYPE	MAX. TEMP.	CAPACITY	AUTOMATIC OR MANUAL	
			RECORDER	CONTROLLER
<u>Controlled Atmosphere</u>	<u>2400° F.</u>	<u>24" x 36" x 16"</u>	<u>Automatic</u>	

SURVEY TEAM COMMENTS: _____

MANUFACTURING DATA CHECKLIST
PSQ-391 M (MECHANICAL)

3) NON-DESTRUCTIVE EXAMINATIONS (NDE):

a - NDE PERFORMED BY:

☒ SUPPLIER: (ALL OR PARTIAL) _____
☒ SUBCONTRACTOR: (NAME/LOCATION) Not available

b - NDE PROCEDURES:

METHOD	PROCEDURE DESIGNATION	*I.D.	REV.	DATE
MT - PROD	_____	_____	_____	_____
MT - COIL	_____	_____	_____	_____
MT - YOKE	_____	_____	_____	_____
PT - SOLVENT REMOVABLE	<u>QC-702 Liquid Penetrant ADD-1</u>	<u>S</u>	<u>4</u>	<u>2/20/85</u>
PT - POST EMULSIFYING	_____	_____	_____	_____
UT - ANGLE BEAM	_____	_____	_____	_____
UT - STRAIGHT BEAM	<u>QC-704 UT of Tubes</u>	<u>S</u>	<u>2</u>	<u>10/23/81</u>
RT - X-RAY	<u>QC-722 Radiographic</u> <u>QC-719 Radiographic</u>	<u>S&C</u>	<u>0</u>	<u>9/6/84</u> <u>4/13/82</u>
RT - GAMMA RAY	_____	<u>SC</u>	_____	_____
ET - EDDY CURRENT	_____	<u>SC</u>	_____	_____

*ENTER "S" FOR SUPPLIER; "S/C" FOR SUBCONTRACTOR

c - NDE PERSONNEL QUALIFICATIONS/TESTING EQUIPMENT

METHOD	PERSONNEL QUALIFICATION			DESCRIPTION OF TEST EQUIPMENT
	SNT-TC-1A LEVEL 1	SNT-TC-1A LEVEL 2	SNT-TC-1A LEVEL 3	
MT	_____	_____	_____	_____
PT	_____	<u>2</u>	<u>1*</u>	<u>Magnaflux/Solvent Removable</u>
UT	<u>2</u>	<u>1</u>	<u>1*</u>	<u>Sonic Instruments</u>
RT	<u>1</u>	<u>1</u>	<u>1*</u>	<u>Norolco MG-300, 300kv</u>
ET	_____	_____	_____	_____

SURVEY TEAM COMMENTS: * B&W has one man certified level III in PT, UT and RT.

BECHTEL

SUPPLIER SURVEY

**MANUFACTURING AND QUALITY CONTROL
PSQ-391 G**

I. GENERAL

SUPPLIER Babcock & Wilcox Company Commercial Nuclear Fuel Plant		ADDRESS (CITY/STATE) P. O. Box 11646, Lynchburg, Virginia							
ZIP CODE 24506	AREA CODE (804)	TELEPHONE 522-5538	NAME OF SURVEY TEAM MEMBER(S): T. Gillespie, (QA) ATL. P. Kunjeer, DE R. Marshall, SQA L. McAnallen, PSQS T. McKearney, M&QS						
JOB CHARGE(S) 15737-027	DATE OF SURVEY 8/6/85								
COMMODITY/MATERIAL SURVEYED (COMPLETE DESCRIPTION) Defueling Canisters		M/R OR SPECIFICATION NO. 15737-2M-101K	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">Q-LISTED ITEM</th> </tr> <tr> <th style="width:50%;">YES</th> <th style="width:50%;">NO</th> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">-</td> </tr> </table>	Q-LISTED ITEM		YES	NO	X	-
Q-LISTED ITEM									
YES	NO								
X	-								
TYPE SURVEY (CHECK ONE OR MORE) <input checked="" type="checkbox"/> FACILITY/MANUFACTURING CAPABILITY <input checked="" type="checkbox"/> QUALITY PROGRAM EVALUATION: <input type="checkbox"/> SUMMARY REVIEW ONLY (SECTION IX OF THIS FORM) <input checked="" type="checkbox"/> IN DEPTH REVIEW TO SPECIFIED QUALITY REQUIREMENTS (SUPPLEMENTAL CHECKLIST)									

II. KEY MANAGEMENT PERSONNEL IN ADMINISTRATION, ENGINEERING, PRODUCTION, QUALITY ASSURANCE AND QUALITY CONTROL

TITLE	NAME	CONTACTED DURING SURVEY	
		YES	NO
Plant Manager	R. A. Alto	X	
Manager, Quality Assurance	W. T. Engelke	X	
Manager, Major Supplier Q.A.	J. Ficor	X	
Manager, Specialty Manufacturing	C. A. Moore	X	
Manager, Production and Materials Control	B. W. Pugh	X	
Manager, Inspection Operations	K. L. Harris	X	
Manager, Data Evaluation	J. L. Brown	X	
Manager, Manufacturing	D. V. Ferree		X

III. PRESENT MANPOWER CAPABILITY

DEPARTMENT/CLASSIFICATION	1ST SHIFT	2ND SHIFT	3RD SHIFT	UNION AFFILIATION
Shop Production	53	15		None
Engineers	9			None
Draftsmen	--			None
Quality Assurance	11			None
Quality Control)	Included			None
Shop Inspectors)	23			None

SURVEY TEAM COMMENTS: _____

MANUFACTURING AND QUALITY CONTROL PSQ-391 G

IV. COMMODITY/MATERIAL

PRINCIPAL ITEMS MANUFACTURED/SUPPLIED		
DESCRIPTION	SIZE MAXIMUM - MINIMUM	PRODUCTION CAPACITY
Nuclear Fuel Assemblies	---	700 MTU/YR
Nuclear Control Rod Assemblies	---	N/A
ASME Code Components	Up to 24" x 16'	N/A

SURVEY TEAM COMMENTS: _____

V. OLD/NEW CONTRACTS

1) PREVIOUS BECHTEL CONTRACTS

PURCHASE ORDER NO.	PROJECT NAME	MATERIAL/COMMODITY DESCRIPTION	YEAR COMPLETED
NOTE: No direct Bechtel contracts, however, B&W - CNFP fabricated in the canister handling tooling for GPU (TMI-II)			1985

2) MAJOR WORK CURRENTLY IN PROCESS OR COMMITTED

CUSTOMER	MATERIAL/COMMODITY DESCRIPTION	QUANTITY	SCHEDULED COMPLETION DATE
DOE	Evacuation/Backfill Mechanism	2	August 15, 1985
NAVY	Handling Tooling (Navy Nuclear)	12	October 7, 1985
8 Electrical	Nuclear Fuel Assemblies, Control		
Utilities	Components and Incore Detectors		Continuing thru 2004

3) NUMBER OF YEARS EXPERIENCE IN THE MANUFACTURING AND/OR SUPPLYING OF NUCLEAR SAFETY RELATED ITEMS:

SURVEY TEAM COMMENTS: _____

RECEIVED

SUPPLIER SURVEY

MANUFACTURING AND QUALITY CONTROL

PSQ-391 G

VI. FACILITY/WORK AREAS

1) TOTAL OPERATING SPACE	INDOORS (SQ. FT.) 56,000	OUTDOORS (SQ. FT.) 40,000
--------------------------	--------------------------	---------------------------

2) BUILDING BAYS

NUMBER	LENGTH (FEET)	WIDTH (FEET)	CRANE CAPACITY	UNDERHOOK HEIGHT (FEET)
Bay #1	675'	60'	(2) 5-ton, (1) 2-Ton	20'
Bay #2	300'	60'	None	N/A

3) DESCRIBE CLEAN ROOM, OR OTHER RESTRICTED ACCESS FACILITIES

Clean room approximately 25 x 30 equipped to provide Class "B" nuclear clean parts. Assembly room approximately 35' x 60' Class B. The entire plant is basically a "Clean Area."

SURVEY TEAM COMMENTS: South end of Bay #1 will be used for canister fabrication; approximately 6000 sq. ft. This area contains (1) 5-ton crane.

A pit 5 ft. x 18 ft. x 14ft. deep is available to facilitate filter loading.

VII. SHIPPING DATA

TYPE	SERVICED BY
RAIL	
TRUCK X	Six (6) commercial truck lines
WATER	
AIR X	Lynchburg Airport - Piedmont and American

SURVEY TEAM COMMENTS:

VIII. MANUFACTURING DATA

REFER TO ATTACHED PSQ-391M (MECHANICAL) OR PSQ-391E (ELECTRICAL) CHECKLIST.



REPORT OF AUDIT

SUPPLIER QUALITY PROGRAM

PSQ-396 A

Supplier BABCOCK & WILCOXPAGE 2 OF 3

PART I - AUDIT ADMINISTRATIVE DATA AND AUDIT SUMMARY (Continued)

4. Audit Meeting Data:

	NAME	MEMBER STATUS (Auditor, Observer, or Technical Specialist)	PROJECT/AREA OR DIVISION OFFICE	*ATTENDANCE		
				A	B	C
B E C H T E L	T. I. GILLESPIE	AUDIT TEAM LEADER	EASTERN POWER DIV. QA	✓	✓	✓
	P. KUNGEER	TECH. SPECIALIST	EPD DESIGN ENGR.	✓	✓	✓
	T. McKEARNEY	" "	EPD M&QS MGR	✓	✓	✓
	A. J. McANALLEN	AUDITOR	EPD PSQS	✓	✓	✓
	R. MARSHALL	" "	SFMO ATL		✓	✓
O T H E R S						
S U P P L I E R	NAME	POSITION				
	R. A. ALTO	PLANT MGR		✓	✓	
	C. A. MOORE	MGR. SPECIALTY MANU.		✓	✓	
	W. T. ENGELKE	Q. A. MGR.		✓	✓	
	J. L. BROWN	MGR. DATA EVALUATION		✓	✓	
	K. L. HARRIS	MGR. INSP. OPER		✓	✓	

5. Audit Scope and Summary: (**)

SCOPE		QUALITY ELEMENT	FINDING	SCOPE		QUALITY ELEMENT	FINDING
YES	NO			YES	NO		
✓		1. Organization	S	✓		11. Test Control	S
✓		2. Quality Assurance Program	S	✓		12. Control of Measuring and Test Equipment	S
✓		3. Design Control	S	✓		13. Handling, Storage and Shipping	S
✓		4. Procurement Document Control	AFR-1 X	✓		14. Inspection, Testing and Operating Status	S
✓		5. Instructions, Procedures and Drawings	S	✓		15. Nonconforming Items	S
✓		6. Document Control	S	✓		16. Corrective Action	S
✓		7. Control of Purchased Material, Equipment and Services	S	✓		17. Quality Assurance Records	S
✓		8. Identification and Control of Material, Parts, and Components	S	✓		18. Audits	S
✓		9. Control of Special Processes	S			19. Special Audit Requirements	
✓		10. Inspection	S				

*ATTENDANCE:

A-At Pre-Audit Meeting
B-At Entrance Meeting
C-At Exit Briefing

**AUDIT FINDING CODE:

S-Satisfactory
X-Program Deficiency
N/A-Not Applicable



REPORT OF AUDIT
SUPPLIER QUALITY PROGRAM
PSQ-396 A

Supplier BABCOCK & WILCOX

PAGE 3 OF 3

B. PART I-AUDIT ADMINISTRATIVE DATA AND AUDIT SUMMARY (Continued)

5. Audit Scope and Summary (Continued):

a. Comment on areas of the quality program observed to be functioning exceptionally well: _____

b. The Quality Assurance Program elements examined by this audit were found to be effectively implemented with the following exceptions:

AUDIT TEAM PERFORMED A FULL SCOPE AUDIT AT
BABCOCK & WILCOX, LYNCHBURG, VA.

THE AUDIT INVESTIGATION REVEALED ONE
DEFICIENCY AS IDENTIFIED IN AUDIT FINDING AFR #1
AND SUMMARIZED BELOW:

ELEMENT IV AFR #1

PROCUREMENT DOCUMENTS FAILED TO PASS ON
THE REQUIREMENT TO IMPOSE REGULATION
96-295 ON THE VENDORS.

c. Restrictions imposed/recommended

1) Hold on release of material/equipment for shipment:

NONE

2) Control measures on further processing of selected activities:

NONE

PROJECT CONCURRENCE
ON RESTRICTION
5c 2) ABOVE:

NAME

NA

PROJECT

DATE

ATTACHMENTS
AUDIT
FINDING
REPORTS

SIGNATURE OF AUDIT TEAM LEADER

DATE

AUDIT FINDING REPORT
PSQ-395

1 OF 2

AUDIT FINDING REPORT NO. #1	DATE 8/7/85	NAME OF EVALUATOR(S) L. J. McANALLEN
--------------------------------	----------------	---

1. SUPPLIER: BABCOCK & WILCOX, LYNCHBURG, VA2. CHECKLIST AUDIT ITEM NO: IV PROCUREMENT DOCUMENT CONTROL3. CONTROLLING DOCUMENT(S): (Quality manual, Procedure, Spec. references) QAM FOR COMMERCIAL NUCLEAR FUEL PLANT REV 12 2/14/84

4. REQUIREMENT: (Quote or paraphrase the controlling document, i.e. Section, paragraph)

SECT. 4.2 QUALITY ASSURANCE SHALL VERIFY THAT
PROCUREMENT DOCUMENTS ... ARE COMPLETE WITH RESPECT TO
TECHNICAL AND QUALITY REQUIREMENTS.

SECT. 4.3.1 THE PURCHASED MATERIALS LIST SHALL BE REVIEWED
BY DATA EVALUATION FOR CONFORMANCE WITH THE APPLICABLE CONTRACT

5. FINDING: (Describe the deficiency in detail, i.e. What? How many? Numbers? When?)

THE PROCUREMENT AUTHORIZATION 774540 REV 4 ON ORDER
SC-975 REQUIRED IMPOSITION OF REGULATION 96-295
FOR ALL ITEMS PURCHASED. THIS REQUIREMENT WAS
NOT INCORPORATED ON THE PURCHASED MATERIAL LIST
FOR THE FUEL CANISTER GRAPPLE ASSEMBLY. THE
PHL WAS REVIEWED AND SIGNED BY DATA EVALUATION^W
THIS RESULTED IN NUMEROUS PURCHASE ORDERS BEING
ISSUED WHICH DID NOT IMPOSE REGULATION 96-295.

6. IMPACT ON QUALITY: (List direct and potential impact on quality of material)

NO DIRECT IMPACT.

POTENTIAL EXISTS FOR FAILURE TO PASS ON TECHNICAL
AND QUALITY REQUIREMENTS WHICH COULD IMPACT
PRODUCT QUALITY.

7. RECOMMENDED CORRECTIVE ACTION: (Actions recommended are suggested methods only and not contractually binding. Specific action to be taken to resolve the finding is left to the discretion of the supplier.)

- 1) REVIEW SC-975 AND EVALUATE IMPACT OF NONCONFORMANCE.
- 2) REVIEW OTHER ORDERS FOR SIMILAR NONCONFORMANCES.
- 3) REVIEW WITH PROCUREMENT AND DATA EVALUATION PERSONNEL.

8. AUDIT FINDING DISCUSSED WITH:

a. Supplier Management Representative: Name: R. A. ALTO Position: CNFP PLANT MGR.b. Assigned Bechtel Quality Representative: Name: NONE Date:9. SUPPLIER AGREES TO COMPLETE CORRECTIVE ACTION BY (Date): 9/6/85 COMPLETION ☒ RESPONSE ☐

10. RESTRICTION IMPOSED AS A RESULT OF THIS FINDING

a) Type Restriction: NONE
 b) Project(s) Affected: NONE

SUPPLIER QUALITY PROGRAM
CONTINUATION SHEETPAGE 2 OF 2Supplier: BABCOCK & WILCOX LYNCHBURG, VADate: 8/7/80Continuation Sheet for:
(Check Applicable Box)☐ PSQ-391, Summary & Recommendations☐ PSQ-396 A, Supplier Quality Program Audit☐ PSQ-391 - _____
(specify)☐ PSQ-396 R, Supplier Quality Program Review☐ PSQ-395-0, Program Omission No. _____☒ PSQ-395, Audit Finding Report No. 1

4) CONT'

PROCUREMENT AUTHORIZATIONS

5) P.O. CHECKED WHICH DID NOT IMPOSE REG. 96-295
WERE 974713 PC, 974730 PC, 974799 PC, 974793 PC,
974881 PC, 974806 PC, 974795 PC.

7) THE NEED TO ACCURATELY PASS ON AND CHECK
FOR TECHNICAL AND QUALITY REQUIREMENTS.



SUPPLIER QUALITY PROGRAM
AUDIT CHECKLIST
PSQ-390 A

Supplier Bechtel & Wilcox
Page 1 of 20

1) AUDIT ITEM NO.	2) QUALITY ELEMENT & REFERENCE	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
1-1	Responsibility and Authority for Attaining and Verifying Quality Ref <u>QAM SEC VIII SEC 4</u>	a. Verify that the organization chart (scheme) depicts the current operating structure of the company. Focus attention on functional responsibilities, levels of authority and lines of communication for the management, direction and execution of the quality program. <u>VERIFIED BY REVIEW OF ORGANIZATION CHARTS AND DISCUSSION WITH QA MANAGER</u>	S	<u>NEW ORGANIZATION CHARTS WERE ISSUED ON 5/15/81. THE CHARTS ADEQUATELY REFLECT ON FUNCTIONAL RESPONSIBILITIES, LEVELS OF AUTHORITY, AND LINES OF COMMUNICATION. THE CHARTS ARE IN PROCESS OF BEING INCLUDED IN QAM 08-1212 & QAM SEC VIII.</u>
1-2	Responsibility for Quality Assurance Program Management and Direction Ref <u>QAM SEC VIII SEC 4</u> <u>6.1.5.2</u>	a. Verify the position and relationship of the following persons: <u>WIT ENGELKE</u> <u>MGR QA</u> (Name of person who heads quality program) (Title) <u>R.A. ALTO</u> <u>PLANT MGR</u> (Name of person quality head reports to) (Title) b. Request for and review written evaluation reports on the effectiveness of the overall quality program submitted by the person in charge of the quality program or as appropriate, internal audit reports. Check reports for distribution to senior management of the company. <u>VERIFIED BY REVIEW OF MISC. ACTIVITY REPORTS & MEETING MINUTES</u>	S	<u>REVIEWED MONTHLY ACTIVITY REPORTS TO PLANT MGR (ALTO) ALSO REVIEWED CORRECTIVE ACTION REPORTS. TATERNAL & SUPPLIER AUDITS. THE ABOVE ADEQUATELY SUMMARIZE THE QA PROGRAM TO MANAGEMENT. REPORTS ARE DISTRIBUTED TO THE PLANT MGR, MGR FUEL & SPECIALTY MANUFACTURING AND OTHER COGNIZANT SUPERVISION BY THE QA MANAGER WIT ENGELKE. VERIFIED BY DISCUSSION WITH VARIOUS QA PERSONNEL THAT FREEDOM TO IDENTIFY QUALITY PROBLEMS HAS OBTAINED. REVIEWED COMPONENT DISCREPANCY REPORTS (CDR) AND CONTRACT VARIATION APPROVAL REQUESTS.</u>
1-3	Independence of Personnel Performing Verification Action Ref <u>QAM SEC VIII SEC 4</u> <u>6.1.5-6.1.5.2</u>	a. Verify that quality personnel performing verification actions (tests, inspections, etc.) have authority and organizational freedom to identify quality problems, initiate recommend or provide solutions to problems, verify implementation of solutions and control further processing of nonconformances until proper dispositioning has occurred. Audit techniques - Questioning of quality personnel and review of related documents is recommended. <u>VERIFIED BY REVIEW OF DOCUMENTATION AND DISCUSSION WITH PERSONNEL</u>	S	

Signature T. D. Sullivan Date 8/12/81



II-1 ALLOT ITEM NO	II-2 QUALITY ELEMENT & REFERENCES	II-3 STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	II-4 RESULTS	II-5 SUMMARY OF INVESTIGATION
II-1	<p>II-1 QUALITY ASSURANCE PROGRAM</p> <p>Management Review of Quality Program Status and Adequacy</p> <p>Ref QAM SEC VIII</p> <p>6-1-5-2</p> <p>6-1-5-3-6-1-5-4</p> <p>6-1-5-5-6-1-6</p>	<p>a. Verify functional managers review actions of the quality program for which they have prime responsibility for execution</p> <p>b. Review documentation submitted by responsible managers on quality activities or internal audit reports, for evidence of implementation</p> <p>VERIFIED BY REVIEW OF MONTHLY ACTIVITY REPORTS, INTERVIEW AUDITS, CORRECTIVE ACTION COMMITTEE MEETING MINUTES. SUMMARY OF CORRECTIVE</p>	<p>S</p> <p>REVIEWED INTERVIEW & VERBOS AUDITS</p> <p>FAFAS - AUDIT, REPORTS 85-1, 85-2. ALSO REVIEWED MONTHLY ACTIVITY REPORTS JULY 1985 TO PRESENT. FIRST SPECIALTY MGR. ALSO REVIEWED JUNE 1985 MAY 24, 1985. APPROX. 12, 1985. ACTIVITY REPORTS. THE ABOVE IS AN SUMMARY OF VARIOUS DISCREPANCIES AND FINDINGS.</p>	<p>REVIEWED INTERVIEW & VERBOS AUDITS</p> <p>FAFAS - AUDIT, REPORTS 85-1, 85-2. ALSO REVIEWED MONTHLY ACTIVITY REPORTS JULY 1985 TO PRESENT. FIRST SPECIALTY MGR. ALSO REVIEWED JUNE 1985 MAY 24, 1985. APPROX. 12, 1985. ACTIVITY REPORTS. THE ABOVE IS AN SUMMARY OF VARIOUS DISCREPANCIES AND FINDINGS.</p>
II-2	<p>Indoctrination and Training Program</p> <p>QAM-09-1212</p> <p>Ref QAM SEC VIII</p> <p>QC-1416</p>	<p>a. Verify implementation of the indoctrination and training program. Examine training records for evidence of personnel proficiency levels, type of training and methods of instruction</p> <p>VERIFIED BY REVIEW OF INDOCTRINATION AND TRAINING OF CNFP QUALITY AUDIT PERSONNEL</p> <p>QAM SEC VIII & QC PROCEDURE QC-1416</p>	<p>S</p> <p>REVIEWED INDOCTRINATION & TRAINING OF PERSONNEL FOR PROFICIENCY. ALSO REVIEWED INDOCTRINATION & TRAINING OF AUDIT PERSONNEL. R.S. FICKER, K.L. GRAHAM AND G.L. TIBBS</p>	<p>REVIEWED INDOCTRINATION & TRAINING OF PERSONNEL FOR PROFICIENCY. ALSO REVIEWED INDOCTRINATION & TRAINING OF AUDIT PERSONNEL. R.S. FICKER, K.L. GRAHAM AND G.L. TIBBS</p>
II-3	<p>Revised and Distributed Through a Controlled System</p> <p>Ref QAM SEC VIII</p> <p>SEC 2</p> <p>QAM-09-1212</p> <p>SEC 0</p>	<p>a. Verify implementation of the system in use for the control and distribution of the quality program (manual and procedures) to include changes</p> <p>b. Review changes (revisions and check for review and approval actions. Check on requirement for customer acceptance prior to implementation</p> <p>c. Verify that quality program manual currently in use in the facility is the same revision and date as the copy accepted by Bechtel</p> <p>VERIFIED BY REVIEW OF LOGS, ACKNOWLEDGEMENT SHEETS AND ASSURANCE OF CURRENT REVISION WITH THAT SUBMITTED</p>	<p>S</p> <p>REVIEWED IMPLEMENTATION OF MANUAL CONTROL & DISTRIBUTION. REVIEWED REVISIONS AND APPROVAL ACTIONS AND CUSTOMER ACCEPTANCE MANUALS WERE CURRENT WITH THOSE PRESENTED.</p> <p>REVIEWED LOG FOR SECIT WITH MANUAL. ACKNOWLEDGEMENT SHEETS. 11/2/84 11/5/84 - 11/11/85 - 2/1/85 - 3/1/85</p> <p>REVIEWED TRANSMITTALS & ACKNOWLEDGEMENT SHEETS FOR MANUAL 10-9-1212. 11/2/84 FOR JAVIS DISC - MANAGEMENT SYSTEMS - REV 12.</p> <p>Signature: [Signature] Date: 5/1/85</p>	<p>REVIEWED IMPLEMENTATION OF MANUAL CONTROL & DISTRIBUTION. REVIEWED REVISIONS AND APPROVAL ACTIONS AND CUSTOMER ACCEPTANCE MANUALS WERE CURRENT WITH THOSE PRESENTED.</p> <p>REVIEWED LOG FOR SECIT WITH MANUAL. ACKNOWLEDGEMENT SHEETS. 11/2/84 11/5/84 - 11/11/85 - 2/1/85 - 3/1/85</p> <p>REVIEWED TRANSMITTALS & ACKNOWLEDGEMENT SHEETS FOR MANUAL 10-9-1212. 11/2/84 FOR JAVIS DISC - MANAGEMENT SYSTEMS - REV 12.</p> <p>Signature: [Signature] Date: 5/1/85</p>



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21	QUALITY ELEMENT AND REFERENCES	STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	RESULTS	SUMMARY OF INVESTIGATION
III-1	III-1 DESIGN CONTROL Translation of Design Requirements into Design Documents Ref: <u>QAM 09-1212</u> <u>Section 3</u> <u>Section No. 5</u> <u>ASME VIII Manual</u>	a. Examine engineering specifications, drawings, instructions and procedures for inclusion of applicable technical requirements. NOTE: Requirements are based on contract requirements and applicable codes and standards referenced therein. <u>Examined Bid document review drawings,</u> <u>Bills of materials (BoM) to verify inclusion of</u> <u>technical and quality requirements.</u>	S	Examined CVAR SC239 for job SC-475 incorporating Component Discrepancy Report (Form 251) 3910, 3907, 3906, 3909, 3911, 3912 and 3914. Discrepancy listed, Disposition stated. Approval date required stated. As stated per proc. QC 1423, Rev 3 CVAR SC-247 for job SC-975 incorporating CDE's 3964, 3953, 3966 and 3970. Discrepancy listed, Disposition stated As per Proc.
III-2	Control of Deviations from Design Requirement and Quality Standards Ref: <u>QAM 09-1212</u> <u>Section 3</u> <u>ASME Manual</u> <u>Section No. 5</u>	a. Verify implementation of the system governing control of deviations from design requirements and quality standards. Check that deviations are properly identified, documented and subjected to review and approval actions. <u>Verified by review of Contract Variation</u> <u>Approval Requests (CVAR)</u>	S	Reviewed BoM for SC912, checked Purchase order checklist, Discrepancies were listed As per Procedure QC1402, Rev. 2
III-3	Identification and Control of Design Interfaces Ref: <u>N/A</u>	a. Verify implementation of the system governing control of design interfaces. Check documentation for evidence of coordination and the review, approval, release and distribution by organizations or departments involved. <u>No Design Interface involved for this</u> <u>procurement.</u>	N/A	Reviewed BoM for SC975 10CFR 21 requirements listed on P.O. P.O. Checklist checked and signed off. (P.O. No 974 799PC)
III-4	Independent Verification of Design Adequacy Ref: <u>QAM 09-1212</u> <u>Section 3</u> <u>ASME Manual</u> <u>Section No. 5</u>	a. Verify implementation of the system in use to verify or check the adequacy of design. Review records for evidence that the verification or checking process is performed by individuals or groups other than those who performed the original design. <u>Verified by examination of Fabrication drawings,</u> <u>appropriate P.O. revisions and Signoffs.</u>	S	Reviewed BoM for SC975 10CFR 21 requirements listed on P.O. P.O. Checklist checked and signed off. (P.O. No 974 799PC)
III-5	Control of Design Changes Ref: <u>QAM 09-1212</u> <u>Section 3</u> <u>ASME Manual</u> <u>Section No. 5</u>	a. Cross reference Audit Item No III-2. Examine documentation to verify that design changes, including field changes, were made by design control measures commensurate with those applied to the original design. Check changes to assure that they were reviewed and approved by the same organization that performed the original review and approval, or as applicable, other designated responsible design organization. <u>Reviewed contract variation Approved</u> <u>Requests and P.O. revisions to verify that</u> <u>revisions are subjected to the same review/</u> <u>approval cycle as originals.</u>	S	Reviewed BoM for SC975 checked P.O. 974996. 10CFR 21 requirements listed. Supplier not on Approval list. Was added on P.O. Checklist, and suggesting corrective action to be taken. Corrective action was taken to add the supplier on approved vendor list.
			Signature <u>P. Bhujar</u> Date <u>8/08/13</u>	



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	IV PROCUREMENT DOCUMENT CONTROL		S. A. N/A	
IV-1	Inclusion of All Applicable Requirements in Procurement Documents Ref <u>09-1212</u> <u>SECT 4.2</u> <u>4.3.2</u> <u>4.3.3</u>	a. Examine supplier procurement documents (P.O., M/R, specifications, etc.) for inclusion of specific technical and quality requirements, to include those quality requirements and controls that must be further extended to subcontractors and suppliers. NOTE: Requirements are based on contract requirements and applicable codes standards and specifications referenced therein. (For standard catalog items, supplier may be using internal "code" system to identify requirements.) <u>VERIFY BY REVIEW OF PURCHASE MATERIAL LIST (PML), PURCHASE REQUISITION, AND P.O. THAT TECHNICAL AND QUALITY REQUIREMENTS ARE PASSED ON.</u>	<u>X</u> <u>AFR-1</u>	<u>VERIFIED INCLUSION OF TECHNICAL AND QUALITY REQUIREMENTS THROUGH THE FOLLOWING DOCUMENTS:</u> <u>SHOP ORDER - SC-975</u> <u>DRWG. 1155231E REV 4</u> <u>PURCHASE AUTHORIZATION 774540 REV 0, 1, 2, 3, 4</u> <u>PML FOR - FUEL CANISTER GRAPPLE ASSEMBLY;</u> <u>CENTER POINT GRAPPLE ASSEMBLY; STAGING HANDLE, LONG.</u> <u>PURCHASE REQUISITION P.O.</u> <u>SC-975-47 974739-PC</u> <u>- 65 974881 PC</u> <u>- 63 974806 PC</u> <u>- 42 974793 PC</u> <u>- 28 974795 PC</u> <u>- 02 974713 PC</u> <u>- 10 974713 PC</u> <u>- 27 974799 PC</u>
IV-2	Release and Control of Procurement Documents Ref <u>09-1212</u> <u>SECT. 4.3.1</u> <u>4.3.3</u>	a. Verify implementation of the system used to control and release procurement documents. Examine documents for review and approvals required prior to release. <u>REVIEW PML AND P.O. FOR DATA EVALUATION REVIEW.</u>	<u>S</u>	
IV-3	Changes Controlled as Original Procurement Documents Ref <u>09-1212</u> <u>SECT 4.2</u>	a. Examine changes (revisions) to procurement documents to verify that controls exercised were the same as that applied to the original procurement documents. <u>VERIFY BY REVIEW OF PML, PR AND P.O. THAT CHANGES WERE CONTROLLED THE SAME AS ORIGINAL.</u>	<u>S</u>	
			Signature <u>A. McAnallen</u> Date <u>8/7/85</u>	

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VI-1	Release and Control of Documents Ref: 09-1212 QAM Section 5 Section VIII QAM Sect. 5	IF THE SUPPLIER OPERATES THIS FUNCTION ON A CENTRALIZED BASIS, AUDIT AS FOLLOWS: a. Verify that document control procedures are available and in use b. Examine distribution system used and verify that records indicate what documents have been issued and to whom, and that obsolete documents are controlled and dispositioned Verified by review of Procedures, Procedure Matrix Listings, Plan Lists, and Document Control Vouchers. c. Examine selected quality documents and verify that reviews for adequacy and approval by authorized personnel have been accomplished Verified by review of drawings and procedures.	S	Reviewed the following procedures: QC-1410, Rev. 0 - Prep, Approval & Dist. of Quality Admin. and Operative Procedures PC-1330, Rev. 6 - Prep. & Approval of CNFP Admin. & Operative Procedures QC-1425, Rev. 8 - Dist. of CNFP QC/QA Documents QC-1421, Rev. 1 - Review & Approval of Drawings, Specifications, and Procedures. MA-1200, Rev. 12 - Dist. of CNFP Mfg. Eng. Documents. Reviewed Procedure Matrix Listings & Plan Lists for QC, Admin. and Operative Procedures. Reviewed Document Control Vouchers: Page of QC Procedures dtd 7/5/85 Operative Procedure dists dtd 4/17/85 3/12/85, 4/1/85, 5/8/85, 6/5/85 & 6/20/85 Admin Procedures dists dtd 12/1/84, 12/13/84, 1/17/85, 1/31/85, 4/1/85 & 5/8/85 File Page of Mfg. Eng. Admin & O.P. Procedures dtd 6/20/85 Reviewed drawings, procedures, and Applicable Documents Lists listed in Quality Element 8.
VI-2	Review and Approval of Documents by Authorized Personnel Ref: 09-1212 QAM Sections 5 & 6 Section VIII QAM Sect. 5	NOTE: If this function is not under centralized control, check as a minimum, the inspection and test documents for latest revisions		
VI-3	Changes Controlled as Original Documents Ref: 09-1212 QAM Sections 5 & 6 Section VIII QAM Sect. 5	NOTE: Lead Auditor will instruct all Auditors on this criterion and require each to provide input on those deficiencies that relate directly to the sub-elements shown above Responsible Auditor for this criterion will consolidate data and formulate necessary reports		



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AUDIT ITEM NO.	QUALITY ELEMENT & REFERENCES	STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	RESULTS	SUMMARY OF INVESTIGATION
VII-1	VA CONTROL OF PURCHASED MATERIAL AND SERVICES Conformance of Purchased Items and Services to Procurement Documents Ref <u>09-1212</u> <u>SECT 7.7</u>	a. Verify that written procedures for this activity are available and in use <u>VERIFIED WRITTEN PROCEDURE</u> <u>IN QAM</u>	S	<u>QAM 09-1212 SECT. 7.7</u>
VII-2	Evaluation and Selection of Subcontractors, Suppliers, or Manufacturers Ref <u>09-1212</u> <u>SECT 7.3.1</u>	a. Verify implementation of the system used for the selection and evaluation of sub- contractors suppliers or manufacturers. NOTE System may include the use of historical quality performance data, source surveys or audits or source qualifica- tion program. Program for external audits should meet the requirements of Quality element XVIII b. Examining related documentation to verify that evaluations were performed prior to award of contracts and at the specified frequency. Check the qualifications of per- sonnel performing the evaluations (surveys and audits) <u>VERIFY THROUGH REVIEW OF</u> <u>P.O., APPROVED VENDOR LIST,</u> <u>VENDOR AUDITS AND AUDITOR QUALIFICATIONS</u>	S	<u>VERIFIED BY REVIEW OF</u> <u>APPROVED VENDOR LIST AND</u> <u>VENDOR FILES FOR THE</u> <u>FOLLOWING VENDORS</u> <u>SUNN COIL SPRING WORKS 8/10</u> <u>CADMET CORP 4/10</u> <u>DYNAMET INC 2/15</u> <u>CONRAO SPRING CO. 9/84</u> <u>VIRGINIA METAL SERVICES *</u> <u>DIBERT VALVE *</u> <u>METAL GOODS *</u> <u>* ON APPROVED VENDOR LIST</u> <u>WITHOVT AUDIT BASED ON</u> <u>RECEIPT INSPECTION AND</u> <u>MATERIAL OVERSHEEN.</u>
VII-3	Source Inspection or Audit Ref <u>09-1212</u> <u>SECT 7.5</u>	a. Verify implementation of the system for source inspection or audit as necessary to assure quality of an item (may not be necessary when quality of item (a) can be verified by review of test reports, receipt inspection or other means b. Program for lower tier audits should meet basic requirements of quality element XVIII <u>VERIFY THROUGH REVIEW OF SOURCE</u> <u>AUDIT REPORTS AND/OR MATERIAL</u> <u>COMPONENT RELEASES.</u>	S	<u>QUALIFICATION OF AUDITOR</u> <u>R.J. FAICKER COVERED UNDER</u> <u>ELEMENT II-2.</u>
VII-4	Inspection of Purchased Items on Receipt Ref <u>09-1212</u> <u>SECT 7.6</u>	a. Verify implementation of the system used for receiving inspection by reviewing re- lated documents, or as appropriate, observing the operation - points of audit 1) Receiving checks incoming shipments to requirements of the purchase order, referenced specification, or applicable drawings 2) Material accepted on test reports or statements of conformance are subject to verification tests 3) Receiving inspection records indicate acceptance of material, or rejection of material with reasons therefor 4) Rejected material is identified and controlled 5) Inspected items controlled and identified from material awaiting inspection 6) Inspection personnel are qualified <u>VERIFY THROUGH REVIEW OF</u> <u>MATERIALS/COMPONENT RELEASE</u>	S	

Signature Mike Arnold Date 8/7/85



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	VII-CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES (Cont'd)		S. E. N/A													
VII-3	Documented Evidence of Conformance QAM Ref <u>09-1212</u> <u>SECT 7.6.1</u>	a As required by customer contract or referenced codes, standards and specifications therein, verify that supplier or subcontractor generated documents (drawings, quality manuals, certifications, test results and inspection data for completeness, acceptability and conformance to contract requirements) were submitted and approved prior to acceptance of material. <u>VERIFY THROUGH REVIEW OF</u> <u>MATERIAL/COMPONENT RELEASE</u>	<u>5</u>	<u>REVIEWED THE FOLLOWING</u> <u>MATERIAL/COMPONENT</u> <u>RELEASE.</u> <u>P.O. MATERIAL/COMPONENT RELEASE</u> <table><tr><td><u>974713</u></td><td><u>R-2327</u></td></tr><tr><td><u>974714</u></td><td><u>R-2564</u></td></tr><tr><td><u>974793</u></td><td><u>R-2430</u></td></tr><tr><td><u>974792</u></td><td><u>R-2441</u></td></tr><tr><td><u>974790</u></td><td><u>R-2463</u></td></tr><tr><td><u>974795</u></td><td><u>R-2525 REV</u></td></tr></table>	<u>974713</u>	<u>R-2327</u>	<u>974714</u>	<u>R-2564</u>	<u>974793</u>	<u>R-2430</u>	<u>974792</u>	<u>R-2441</u>	<u>974790</u>	<u>R-2463</u>	<u>974795</u>	<u>R-2525 REV</u>
<u>974713</u>	<u>R-2327</u>															
<u>974714</u>	<u>R-2564</u>															
<u>974793</u>	<u>R-2430</u>															
<u>974792</u>	<u>R-2441</u>															
<u>974790</u>	<u>R-2463</u>															
<u>974795</u>	<u>R-2525 REV</u>															
VII-8	Assessment of Supplier Quality Related Activities QAM Ref <u>09-1212</u> <u>SECT 7.4</u>	a Request for and review documentation to verify that the functions for the control of quality of purchased material, equipment or services by lower tier suppliers/manufacturers is assessed at intervals consistent with importance, complexity, quality of the item, or customer requirements. b Reference Audit Item No VII-2, VII-3 and VII-4 as applicable <u>REFER TO ELEMENT CHECKLIST</u> <u>ITEM VII-2, VII-3, VII-4</u>	<u>5</u>													

Signature: [Signature] Date: 8/2/85



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QUALITY ELEMENT & REFERENCES	STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	RESULTS	S. E. N. I. A.	SUMMARY OF INVESTIGATION
VIII-1 VIII IDENTIFICATION AND CONTROL OF MATERIAL PARTS AND COMPONENTS Establishment and Maintenance of Item Identification and Control Ref: <u>SECT 8, 09-1212</u> <u>QAM</u> <u>8.3</u> <u>8.4</u> <u>8.5</u>	<p>a. Examine items on the floor, or related documentation to verify implementation of the system used for identification of material, parts and/or components. NOTE: Identification system may include the use of HEAT NUMBER, SERIAL NUMBER OR OTHER MEANS.</p> <p>1) Check to ensure markings have not caused a detrimental effect on material.</p> <p>2) Check items subdivided for transfer of markings to each part.</p> <p><u>Verified by REVIEW OF MATL ON</u> <u>Floor being prepared.</u></p> <p>b. Verify implementation of the system used to control material, parts and/or components. Points of audit:</p> <p>1) Handling and storage methods used to prevent damage, contamination or loss.</p> <p>2) Control of items awaiting inspection and/or test results, and items that have been rejected.</p> <p>3) Identification and acceptance status of items of production (batch, lot, part, etc.) is maintained throughout all phases of manufacture.</p> <p><u>Verified by review of material</u> <u>on the shop floor and storage areas</u></p>	<p>S</p>		<p>Job No. SC 1013. Sublot No. Ribbed Plug Assy. Material checked. Serial No. Tinned Brass to Release Cards. Marking did not damage parts. There is no problem traceable to heat numbers of Brass since supplied by BSW Machine Parts Plant. Heat # 30 K 6 X K INCO 1 X 750. Heat # W 387-1 INCO 600.</p> <p>Material stored in a neat, orderly manner. Items received neither packaged to prevent contamination. Material checked was identified and route cards signed off to reflect status.</p>
VIII-2 Traceability of Items Ref: <u>SECT 8, 09-1212</u> <u>QAM</u> <u>8.4</u> <u>8.5 A, B, C, D</u> <u>Table 1</u>	<p>a. Examine items on the floor, or related documentation, to verify implementation of the system used for traceability of material, parts or components.</p> <p>b. Verify that material is traceable to specific chemical/physical analysis, statements of conformance, test documents, purchase order, or other documents.</p> <p><u>Verified by REVIEW OF DOCUMENTATION</u> <u>on Job SC 975-Geopole Mold Lower</u> <u>EXTENSION</u></p> <p><u>Verified by review of parts and</u> <u>documentation on SC 1013-Sublot</u> <u>Ribbed Plug Assy</u></p>			<p>Material maintained in bins 3042-6, new on Release Cards and Release numbers. Copy of CTR's and CTR inspection verification entered.</p> <p>Matl. maintained in bins 700 & X750 by review of Release Cards and Release No's 2023 2024 2025. Matl. No. unmarked. Matl. Serial by BSW Machine Parts Plant.</p> <p>Signature <u>C. A. McKeeney</u> Date <u>8-7-85</u></p>



IX-1	IX-2	IX-3	IX-4	IX-5	IX-6	IX-7	IX-8	IX-9	IX-10	IX-11	IX-12	IX-13	IX-14	IX-15	IX-16	IX-17	IX-18	IX-19	IX-20	IX-21	IX-22	IX-23	IX-24	IX-25	IX-26	IX-27	IX-28	IX-29	IX-30	IX-31	IX-32	IX-33	IX-34	IX-35	IX-36	IX-37	IX-38	IX-39	IX-40	IX-41	IX-42	IX-43	IX-44	IX-45	IX-46	IX-47	IX-48	IX-49	IX-50	IX-51	IX-52	IX-53	IX-54	IX-55	IX-56	IX-57	IX-58	IX-59	IX-60	IX-61	IX-62	IX-63	IX-64	IX-65	IX-66	IX-67	IX-68	IX-69	IX-70	IX-71	IX-72	IX-73	IX-74	IX-75	IX-76	IX-77	IX-78	IX-79	IX-80	IX-81	IX-82	IX-83	IX-84	IX-85	IX-86	IX-87	IX-88	IX-89	IX-90	IX-91	IX-92	IX-93	IX-94	IX-95	IX-96	IX-97	IX-98	IX-99	IX-100	IX-101	IX-102	IX-103	IX-104	IX-105	IX-106	IX-107	IX-108	IX-109	IX-110	IX-111	IX-112	IX-113	IX-114	IX-115	IX-116	IX-117	IX-118	IX-119	IX-120	IX-121	IX-122	IX-123	IX-124	IX-125	IX-126	IX-127	IX-128	IX-129	IX-130	IX-131	IX-132	IX-133	IX-134	IX-135	IX-136	IX-137	IX-138	IX-139	IX-140	IX-141	IX-142	IX-143	IX-144	IX-145	IX-146	IX-147	IX-148	IX-149	IX-150	IX-151	IX-152	IX-153	IX-154	IX-155	IX-156	IX-157	IX-158	IX-159	IX-160	IX-161	IX-162	IX-163	IX-164	IX-165	IX-166	IX-167	IX-168	IX-169	IX-170	IX-171	IX-172	IX-173	IX-174	IX-175	IX-176	IX-177	IX-178	IX-179	IX-180	IX-181	IX-182	IX-183	IX-184	IX-185	IX-186	IX-187	IX-188	IX-189	IX-190	IX-191	IX-192	IX-193	IX-194	IX-195	IX-196	IX-197	IX-198	IX-199	IX-200	IX-201	IX-202	IX-203	IX-204	IX-205	IX-206	IX-207	IX-208	IX-209	IX-210	IX-211	IX-212	IX-213	IX-214	IX-215	IX-216	IX-217	IX-218	IX-219	IX-220	IX-221	IX-222	IX-223	IX-224	IX-225	IX-226	IX-227	IX-228	IX-229	IX-230	IX-231	IX-232	IX-233	IX-234	IX-235	IX-236	IX-237	IX-238	IX-239	IX-240	IX-241	IX-242	IX-243	IX-244	IX-245	IX-246	IX-247	IX-248	IX-249	IX-250	IX-251	IX-252	IX-253	IX-254	IX-255	IX-256	IX-257	IX-258	IX-259	IX-260	IX-261	IX-262	IX-263	IX-264	IX-265	IX-266	IX-267	IX-268	IX-269	IX-270	IX-271	IX-272	IX-273	IX-274	IX-275	IX-276	IX-277	IX-278	IX-279	IX-280	IX-281	IX-282	IX-283	IX-284	IX-285	IX-286	IX-287	IX-288	IX-289	IX-290	IX-291	IX-292	IX-293	IX-294	IX-295	IX-296	IX-297	IX-298	IX-299	IX-300	IX-301	IX-302	IX-303	IX-304	IX-305	IX-306	IX-307	IX-308	IX-309	IX-310	IX-311	IX-312	IX-313	IX-314	IX-315	IX-316	IX-317	IX-318	IX-319	IX-320	IX-321	IX-322	IX-323	IX-324	IX-325	IX-326	IX-327	IX-328	IX-329	IX-330	IX-331	IX-332	IX-333	IX-334	IX-335	IX-336	IX-337	IX-338	IX-339	IX-340	IX-341	IX-342	IX-343	IX-344	IX-345	IX-346	IX-347	IX-348	IX-349	IX-350	IX-351	IX-352	IX-353	IX-354	IX-355	IX-356	IX-357	IX-358	IX-359	IX-360	IX-361	IX-362	IX-363	IX-364	IX-365	IX-366	IX-367	IX-368	IX-369	IX-370	IX-371	IX-372	IX-373	IX-374	IX-375	IX-376	IX-377	IX-378	IX-379	IX-380	IX-381
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SUPPLIER QUALITY PROGRAM
AUDIT CHECKLIST
PSQ-396 A

Babcock + Wilcox
Supplier Lynchburg, VA

Page 11 of 20

1) AUDIT ITEM NO.	2) QUALITY ELEMENT & REFERENCE	3) STANDARD QUALITY REQUIREMENTS AND AUDIT GUIDELINES	4) RESULTS	5) SUMMARY OF INVESTIGATION
X-1	Establishment and Execution of Inspection Program Ref 09-1212 QAM Section 10 Section VIII QAM Section 9	a. Verify implementation of the inspection program in use by the supplier to verify his company's performance to documented instructions, procedures and drawings. NOTE: The program should cover those work operations necessary to assure quality points of audit. 1) In-process inspections (Fabrication and Assembly) 2) Final Assembly and Inspection <i>Verified by Review of Route Cards, Applicable Document Lists (ADLs), and Drawings</i> b. Question personnel and review related documentation to verify that personnel performing verification actions are other than those who perform the activity being inspected and that they do not report directly to the supervisors who are responsible for the work being inspected. <i>Verified by discussion with QA/QC personnel and by review of 09-1212 QAM Statement of Policy and Sect. 2.</i> c. Cross reference Audit Item No. X-1. Check area or inspection instruction (shop traveler, processing plans, etc.) in use for inclusion of the following minimum data, as applicable: 1) Function to be performed and sequence of operations 2) Inspection Points and/or Hold Points 3) Specifications to be used, to include drawing numbers and revisions applied 4) Definition of acceptance criteria 5) Material, tools, gages and inspection equipment used 6) Workmanship criteria to include characteristics to be inspected (dimensions, tolerances, operating limits) d. Check inspection equipment used for current calibration status. e. Check qualifications of inspection personnel per QA Program requirements <i>Verified by Review of Route Cards, Specifications, Drawings, ADLs, and QC Inspector Qualification Records and by examination of tools in use to verify current calibration status.</i>	S	Reviewed the following Route Cards and associated ADLs, Specifications and Drawings: SC-1033 (Route Card not yet issued) ADL 21-1101854-03 Spec. 06-1101523-06 Draw. 135444, Rev. 1 Train, Moving Backing R. SC-1044 Route Card # 9667-01 ADL 21-1153161-00 QA Data Sheet 22-1153162-00 Draw. 1138917C, Rev. 6 Rolled Flange BB-0002 Route Card # 9110-03 Reduction Order # 85-538 Drawing 134518C, Rev. 7 End Cap - MAB End Cap Inspection Report Form 00R-243. Rev. 10 and Proc. 00-526, Rev. 3 BB-0028 Route Card No. 9656-09 Draw. 02-110460402E, Rev. 2 - Cable Support Assy. Asyle Inspection Data Set, 7/20/191-A Discussed QA/QC independence with production supervisor with: TL Wilcox - Chief Inspector JL Brown - Data Eval. Supv. (Cont. Next page) Signature <i>Ruth Wilcox</i> Date <i>8/7/85</i>
X-2	Independence of Inspectors Ref 09-1212 QAM Sect. 05 Statement of Policy Sect. 2.			
X-3	In-Process and Final Inspections Ref 09-1212 QAM Section 10 Section VIII QAM Sect. 9			



GPU Nuclear Corporation
Post Office Box 480
Route 441 South
Middletown, Pennsylvania 17057-0191
717 944-7621
TELEX 84-2386
Writer's Direct Dial Number:
(717) 948-8321

October 17, 1985
43005-85-0317

Mr. H. M. Burton
Manager, TMI-2 Programs Division
EG&G Idaho
P.O. Box 88
Middletown, PA 17057

SUBJECT: Hydraulic Fluid/Catalyst Poison Tests

- References: 1. J. O. Henrie and J. N. Apel, Evaluation of Special Safety Issues Associated with Handling the Three Mile Island Unit 2 Core Debris, GEND-051 (June 1985).
2. Interoffice Correspondence, F. R. Standerfer (GPUNC) to H. M. Burton (EG&G Idaho), "Request For Additional Canister Catalyst Testing," (11 October 1985).

Dear Mr. Burton:

This letter is to confirm our verbal test materials list and priorities provided to EG&G Idaho and RHO personnel for laboratory tests involving the catalytic recombiner materials (reference 1) as requested in reference 2.

The tests are to ascertain the "poisoning" effect, if any, that these hydraulic fluids may have on the catalytic recombining capacity. These test data are to answer bounding questings regarding if these hydraulic fluids adversely impact the catalytic capacity. Written documentation is requested within two weeks. Consequently, we request that the bounding tests include only two (2) concentrations for each of the hydraulic fluids:

1. The undiluted hydraulic fluids and,
2. A 2 volume percent mixture of the hydraulic fluids with simulated reactor coolant system (RCS) fluid. Note, the volume percent mixture has been changed from that in reference 2. The simulated RCS fluid is to be demineralized water which contains 5200 ppm B (via boric acid) and buffered with sodium hydroxide to a pH = 7.6.

The hydraulic fluids on which we request you to carry out these bounding tests are:

1. A 25/75 volume percent mixture of borate ester and UCON WS-34, respectively. The Borate Ester and UCON WS-34 fluids will be supplied and you will prepare the 25/75 volume percent mixture.

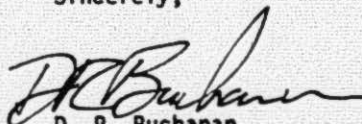
- The approximate molecular weight of the borate ester is stated to be 600 g/gmole and the viscosity = 60 S.U.S. (100°F).

Houghto-Safe-620

Houghto-Safe 620 is essentially a three-component mixture of water, ethylene glycol, and a high molecular-weight, water soluble polyglycol. The approximate percentages of these components in the mix are: Water, 40%; ethylene glycol, 40%; and polyglycol, 15%. Additionally, the fluid will contain up to 5% additives designed to impart corrosion protection, metal passivation, anti-wear properties, friction coefficient reduction, etc. The major components of the additive package are amine soaps of fatty acids. These amines can be generally classified as short-chain alkyl and/or alkanol amines. The package will also contain a very small quantity (less than 0.01%) of an aromatic nitrogen compound. It contains no sulfur, halogen, phosphorous or heavy metal elements.

We request verbal communication with EG&G Idaho/GPU Technical Staff regarding test procedures and measurements. We also request verbal reports as soon as test data becomes available with formal written report(s) to follow.

Sincerely,



D. R. Buchanan
Task Leader
Reactor Disassembly and Defueling

DRB/VFB/lz

cc: Manager, Site Engineering - R. E. Gallagher
Deputy Manager, Recovery Programs - C. W. Hultman
Manager, Recovery Programs - W. H. Linton
Site Operations Director - S. Levin
Director, Licensing & Nuclear Safety - R. E. Rogan
Director, TMI-2 - F. R. Standerfer

15737-2-M101A-00025-01

ATTACHMENT 9
(4410-85-L-0210)
6 PagesProcess Inspection of Boron
Carbide Pellets

Nuclear Energy Services

BECHTEL NORTH AMERICAN POWER CORPORATION		JOB NO. 15737	
SUPPLIER DOCUMENT REVIEW STATUS			
STATUS NO.			
1 <input checked="" type="checkbox"/>	Work may proceed		
2 <input type="checkbox"/>	Revise and resubmit. Work may proceed subject to incorporation of changes indicated.		
3 <input type="checkbox"/>	Revise and resubmit. Work may not proceed.		
4 <input type="checkbox"/>	Revise not required. Work may proceed.		
<small>Permission to proceed does not constitute acceptance or approval of design details, calculations, and/or test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.</small>			
Reviewed	CIVIL	E/CS	M/PF
	-	-	<i>JS</i>
By <i>SE Sturley</i>		DATE <i>9/18/85</i>	

EPD-13743 Rev. 10/84

ADVANCED
REFRACTORY TECHNOLOGIES, INC.

QUALITY ASSURANCE OPERATING PROCEDURES

Copy: _____

Page: 1 of _____

Original Issue Date: April 10, 1985

Latest Revision Date: _____

Approved By: _____

HNB (ES)

Title: Process Inspection of Boron Carbide
Pellets

NES/SELAMCO

1. DEFINITIONS

- 1.1 Mix Lot - A mix lot is defined as a quantity of boron carbide powder which has been blended together in a single container. A number is assigned to each mix lot and recorded in the blending log book.
- 1.2 Pellet Lot - A pellet lot is defined as that quantity of pellets produced from a portion (or all of) a mix lot, processed under a consistent set of parameters, and fired in the same sintering run. The number of pellets in a sinter lot is not to exceed 15,000 pellets. The sinter lot number or identification shall be comprised the powder blend number followed by the specific sintering run for that powder blend, i.e., Sinter Lot N88-9 would be the ninth sintering run of pellets from Powder Blend N88.
- 1.3 Supplier Lot - A lot of powder purchased by ART all of which was processed at the same time under the same set of conditions.

2. CONTROL OF MEASURING AND TEST EQUIPMENT

Measuring and test equipment used during the production of pellets shall consist of weighing balances, micrometers and vernier calipers.

- 2.1 Each working day the Process Control Inspector shall verify that all measuring and testing equipment used during the production of pellets are within scheduled calibration dates. The date calibrated and the due date of the next calibration shall be displayed on each item of inspection, measuring, and test equipment or tools.

If any measuring or testing equipment does not display a valid label showing the date calibrated and the due date of the next calibration, the inspector shall place a DO NOT USE tag on the item and report the condition on the Daily Inspection Report ART-0027.

TITLE: Process Inspection of Boron Carbide
Pellets
NES/Selamco

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- 2.2 A dialy operational check shall be performed on all balances used in the production process.
- 2.2.1 A certified balance shall be used in the determination of pressed densities in the production of boron carbide pellets. The balance shall be checked using certified weights on a daily basis. These checks shall be recorded in the balance log book which shall be maintained in the balance area. If deviation from the stated accuracy (latest certificate of calibration) is found the inspector shall attach a DO NOT USE tag and notify the Quality Assurance Manager.
- 2.2.2 The Ohaus beam balance shall be used for weighing boron carbide for the powder lots. The balance shall be checked using certified weights of 1000; 2500, 5500 gram values. These checks shall be recorded in the balance log book which shall be maintained in the balance area. If deviation from the stated accuracy (latest certificate of calibration) of the balance is found the inspector shall attach a DO NOT USE tag and notify the Quality Assurance Manager.
- 2.3 A daily operational check shall be performed on all micrometers used in the production process.
- 2.3.1 Micrometers shall be used during the determination of pressed densities in the production of boron carbide pellets. An operational check shall be performed for each micrometer on a daily basis. The zero setting of each micrometer shall be checked and adjusted if necessary by the inspector. Each micrometer shall be checked at 0.600 inch location using a certified grade A+ steel gage block. If the micrometer checks within 0.0002 inch of the standards the inspector shall record on the manufacturing route card that the micrometer is approved for use. If the micrometer does not check within 0.0002 inch of the standards, it shall be removed from the production area and replaced with an approved micrometer.
3. CLEANLINESS
- 3.1 Cross Contamination
- 3.1.1 Only one concentration or contract of powder or pellets may be processed at a work station at any time. Equipment, containers, and process area shall be thoroughly cleaned after completion of each "concentration" of powder or pellets. The Quality Assurance Inspector shall verify on form ART-0029 that this has been accomplished.

TITLE: Process Inspection of Boron Carbide
Pellets
NES/Selamco

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Original Issue Date: April 10, 1985

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3.1.2 Manufacturing route cards shall be used to maintain control of pellets.

3.1.3 The labeling, moving and storage of powder or pellets shall be under the direction of the process inspector.

3.2 Halogens

3.2.1 Clean cotton gloves shall be worn during all powder and pellet process operations.

3.2.2 The use of cleaning agents, solvents, and grinding lubricants containing halogens shall be avoided.

3.3 Foreign Materials

The pellets shall be inspected, handled, stored and packed by methods that will avoid the possibility of contamination by oil, grease, sand, packaging, or other foreign materials.

3.4 Plant, Equipment and Materials

Solvents, oils, grease, and other chemicals used for general shop maintenance shall be stored in an area separated from the production, assembly, inspection, and shipping area.

4. POWDER MIXING AND BLENDING

The Production Manager's office shall issue an instruction sheet, showing boron carbide weight calculations for each powder blend of each particle size, which shall be part of the blending log book.

4.1 Prior to weighing of the boron carbide powder for a powder lot the Production Manager or his delegate shall obtain and complete a manufacturing route card for each powder lot showing powder lot number and weight calculations of components to be used in the blending operation.

4.2 The operator shall verify on the manufacturing route card that the containers of boron carbide powders are labeled acceptable and their basic lot numbers recorded in the blending log.

4.3 Weighing of powder lot components for the blending operation shall be in accordance with Manufacturing Procedures ART-MP-0056.

TITLE: Process Inspection of Boron
Carbide Pellets
NES/Salamco

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Original Issue Date: April 10, 1985

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- 4.3.1 The operator shall verify on the manufacturing route card that operational checks have been performed on the Ohaus beam balance and that they are acceptable for use.
- 4.4 Powder mixing and blending operations shall be in accordance with Manufacturing Procedure ART-MP-0056.
- 4.4.1 The operator shall verify on the manufacturing route card that the components have been added.
- 4.5 If all phases of powder mixing and blending are acceptable the containers shall be identified with a label showing the powder lot number and concentration number. The inspector shall approve the label releasing the powder for use.

5. BORON CARBIDE PELLET PRESSING

The pressing of pellets shall be in accordance with Manufacturing Procedures ART-MP-0057.

NOTE: Only one contract of pellets may be in the pressing and sintering work station at any time. Clean cotton gloves shall be worn during the pressing and sintering operations.

- 5.1 Prior to pressing each pellet lot the operator shall verify on the manufacturing route card the following:
 - 5.1.1 That the powder is acceptable and released for pressing. Pellet lots shall not be mixed.
 - 5.1.2 The micrometers to be used are within calibration and operational checks have been performed per paragraph 2.3.1 and are acceptable for use.
 - 5.1.3 The balance is in calibration and operational checks per paragraph 2.2.2 have been performed and the balance is acceptable for use.
- 5.2 The operator shall at a minimum perform one check for each 500 pellets pressed. The initial check shall take place during the pressing of the first one hundred (100) pellets.
 - 5.2.1 If all phases of pellet pressing operations are complete, the pellets shall be released for bakeout.

TITLE: Process Inspection of Boron Carbide Pellets

NES/Selamco

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6. Bakeout of Boron Carbide Pellets

The pellets shall be baked out in accordance with Manufacturing Procedure ART-MP-0057.

7. Sintering of Boron Carbide Pellets

The pellets shall be sintered in accordance with Manufacturing Procedure ART-MP-0058.

8. Rework of Boron Carbide Pellets

Pellets which do not meet final dimensional requirements may be reworked by re-sintering according to ART-MP-0059. Pellets shall be assigned to rework manufacturing route cards and shall carry a (-2) designation on the sinter lot number.

15737-2-MIDIA-00023-03

INSPECTION OF FINISHED BORON CARBIDE PELLETS

NES MANUFACTURING

BECHTEL NORTH AMERICAN POWER CORPORATION				JOB NO. 15737	
SUPPLIER DOCUMENT REVIEW STATUS					
STATUS NO.					
1	<input checked="" type="checkbox"/> Work may proceed				
2	<input type="checkbox"/> Revise and resubmit. Work may proceed subject to incorporation of changes indicated				
3	<input type="checkbox"/> Revise and resubmit. Work may not proceed				
4	<input type="checkbox"/> Review not required. Work may proceed				
Permission to proceed does not constitute acceptance of addition of design details, calculations, analyses, test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations					
Reviewed:	CIVIL	E/CS	M/PF	NUC	
	-	-	R	2/5/85	
By	J. A. Staley		DATE	5/10/85	
EPD 13743 Rev 10/84					

ADVANCED
REFRACTORY TECHNOLOGIES, INC.

QUALITY ASSURANCE OPERATING PROCEDURES

Document Control No:

ART-QAAP-0077-D2

Copy:

Page: 1 of 5

Original Issue Date: April 10, 1985

Latest Revision Date: May 2, 1985

Approved By:

H. H. Blakely (K.R.)

Title: Inspection of Finished Boron Carbide
Pellets
NES/Selamco

Harvey H. Blakely
Quality Assurance

1. MATERIAL CONTROL

1.1 Identification

1.1.1 Mix Lot: A mix lot is a quantity of boron carbide powder and binder which has been blended together in a single container. A number is assigned to each mix lot and recorded in the blending log book.

1.1.2 Pellet Lot: A pellet lot is comprised of pellets produced from a portion of a powder blend and processed under a consistent set of parameters. The number of pellets in a pellet lot is not to exceed 15,000. The pellet lot number or identification shall be comprised of the mix lot followed by the specific processing run for that mix lot, e.g., Pellet Lot B88-9 would be the ninth processing run made from Mix Lot 888.

1.1.3 Stack: The quantity of finished pellets placed end to end required to form the length of boron carbide specified for a completed knock-out or filter canister tube.

1.2 Manufacturing Route Cards

1.2.1 Manufacturing route cards shall be used to maintain control of the pellets.

1.2.2 The mix lot and pellet lot numbers stated on the route card shall accompany the pellets through inspection, stacking, loading, and shipment.

1.3 Labeling and Moving

1.3.1 The labeling, moving, and storage of pellets shall be under direction of the Quality Assurance (QA) Inspector.

TITLE: Inspection of Finished Boron Carbide
Pellets
N.E.S.

Original Issue Date: April 10, 1985

Latest Revision Date: May 2, 1985

1.3.2 Types of Labels:

White - Used to identify pellets as to pellet lot and mix lot.
Green - Used to identify acceptable finished pellets
Yellow - Used to identify withheld pellets
Red - Used to identify rejected pellets.

1.4 Cleanliness

1.4.1. Only pellets made to the same specification shall be at an inspection work station at one time. The work station shall be cleaned after removing one contract and prior to receiving the next scheduled contract. The inspector shall verify on form ART-0029 that this has been accomplished.

1.4.2 Clean cotton gloves shall be worn during all inspection operations of pellets.

1.4.3 The pellets shall be inspected, handled, stored, and packed by methods that will avoid the possibility of contamination by oil, grease, sand, packaging, or other foreign materials.

2. DIMENSIONAL INSPECTION

2.1 Records

2.1.1 Final Density/Boron Inspection Report (ART-0309) for Sintered B4C Pellets for NES/Selamco, will be used to report the results of this inspection.

2.1.2 Material Review Work Sheet, ART-0040, will be used to report the condition of any pellet lot which is found to be rejectable.

2.1.3 Final results of this inspection, acceptable or rejectable, shall be recorded on the Inspection Status Report for NES/Selamco, ART-0211.

2.2 Sample Selection

2.2.1 Obtain sample in accord with Mil. Std. 105D Inspection level II multiple sampling plan, and ART form 0314 which meets a 95/95 confidence level of acceptance.

TITLE: Inspection of Finished Boron Carbide
(Pellets
NES/Selamco

Copy

Original Issue Date: April 10, 1985

Latest Revision Date: May 2, 1985

2.2.2 Additional samples, if needed, will be selected randomly as required.

2.3 Operational Check

2.3.1 All gages used for the dimensional inspection shall be checked before and after each pellet lot is inspected.

2.3.2 Micrometers and Vernier calipers shall be checked with .600" AA+ steel gage block prior to and after the inspection of each individual powder lot.

2.3.3 If any gage does not pass these checks, notify the QA Supervisor. Do not inspect pellets until all gages are acceptable to the checks described.

2.3.4 Repeat steps 2.3.1 through 2.3.2 after inspection of each pellet lot.

2.4 Required Dimensional Inspections

2.4.1 Length: Pellets shall be measured using calipers described in 4.1. Use form 0309 to record the length to the nearest thousand (.000).

2.4.2 The diameter shall be checked with go gages supplied by Customer. ID of gage shall be maximum acceptable diameter of pellet. The diameter check shall be a 100% inspection that will be performed at the sintering work station.

2.4.3 Weight: Pellets shall be weighed on a A163 Mettler balance to the nearest thousandth (.000). The balance shall be checked on a daily basis with the results being recorded in a log book.

2.4.4 Recheck gages as required per paragraph 2.3.2. If all the gages are acceptable, record on Final Density Inspection Sheet for Sintered B4C Pellets for NES/Selamco that the gages were checked after inspection and are acceptable. If one or more of the gages is not acceptable on recheck, notify the QA Supervisor, and reinspect the entire sample after the gage or gages have been corrected or replaced with acceptable gages.

TITLE: Inspection of Finished Boron Carbide
(Pellets
NES/Selamco

Copy

Original Issue Date: April 10, 1985

Latest Revision Date: May 2, 1985

3. SELECTION OF CHEMICAL TEST SAMPLES

The chemical test samples shall be the randomly selected inspection sample which was used for dimensional inspection. Select the following samples and place in appropriate, pre-labeled bottles.

- 3.1 Boron Analysis: (5) five pellets selected from each pellet lot of the respective mix lot will be accumulated and submitted in a pre-labeled bottle "Boron Test Pellet Lot No. ____." The results of the analyses shall be averaged and the average value used to calculate B-10 density per paragraph 4.4.

- 3.2 Density as per paragraph 4.

- 3.3 Two (2) isotopic analyses shall be made of each lot of B4C Powder used to manufacture the pellets. In the event the powder supplier can certify that the boron carbide was made from natural boron, only one overcheck analysis will be required per purchased powder lot.

4. BORON DENSITY DETERMINATION

- 4.1 Measuring and test equipment used in determining the shall consist of a Mettler H-20, or equivalent, analytical balance, a 0-1 inch micrometer with 0.000 graduations, and a 0-6 inch or 0-9 inch Vernier caliper, with .001 inch dial graduations.

- 4.2 The balance must display a label which shows it to be within the scheduled calibration dates. Prior to weighing the selected pellets from a powder lot, perform an operational check. If deviation from the stated accuracy (latest certificate of calibration) of the balance is found, the inspector shall attach a "DO NOT USE" tag and notify the QA Manager.

- 4.3 The micrometer or caliper must display a label which shows it to be within the scheduled calibration dates. Prior to measuring the selected pellets from a pellet lot, perform an operational check on the caliper or micrometer. The zero setting shall be checked and adjusted if necessary by the inspector.

TITLE: Inspection of Finished Boron
Carbide Pellets
NES/Selamco

Copy

Original Issue Date: April 10, 1985

Latest Revision Date: May 2, 1985

- 4.4 To assure compliance with the level required boron density in NES/Selamco 0085 Y, Energy Products Department will calculate B-10 density as follows:

$$\frac{(\% \text{ B-10 in Powder})(\text{Sample Weight})(\% \text{ B of Powder Lot})}{\text{Sample Length}}$$

- 4.5 The minimum value of the confidence shall meet or exceed NES/Selamco 0085Y, Section 4.1 or the pellet lot shall be rejected.
5. Five archive samples shall be selected for and sent to the customer from each pellet lot that passes both dimensional and chemical inspections.

NEL STANDARD 1050

INSPECTION LEVEL II

MULTIPLE SAMPLING PLAN

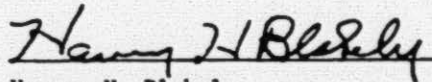
LOT SIZE	LETTER CODE	AQL	FIRST SAMPLE			SECOND SAMPLE			THIRD SAMPLE			FOURTH SAMPLE			FIFTH SAMPLE			SIXTH SAMPLE			SEVENTH SAMPLE		
			SAMP SIZE	ACC	REL	SAMP SIZE	ACC	REL	SAMP SIZE	ACC	REL	SAMP SIZE	ACC	REL	SAMP SIZE	ACC	REL	SAMP SIZE	ACC	REL	SAMP SIZE	ACC	REL
281/500	M	1.0	80	0	4	80	1	6	80	3	8	80	5	10	80	7	11	80	10	12	80	13	14
501/1200	M	1.0	80	0	4	80	1	6	80	3	8	80	5	10	80	7	11	80	10	12	80	13	14
1201/3200	K	0.65	32	0	2	32	0	3	32	0	3	32	1	4	32	2	4	32	3	5	32	4	5
3201/10000	L	1.0	50	0	4	50	1	5	50	2	6	50	3	7	50	5	8	50	7	9	50	9	10

ART-0314-00

June 21, 1985

699 HERTEL AVE.
BUFFALO, NY 14207
716/875-4091

Advanced Refractory Technologies, Inc. certifies that the neutron absorber pellets identified on the accompanying loading sheets meet all the specifications of NES Manufacturing, Technical Document 0394Y which is part of P. O. 04789-84091. ✓



Harvey H. Blakely
Manager, Quality Assurance

W.O. #84091
P.O. #S-04789
(1155233 D)
6-27-85



BECHTEL
354

Advanced Refractory
Technologies, Inc.

15737-2-N7101A-00031-02

ATTACHMENT 12
(4410-85-L-0210)
3 Pages

Poison Tube Loading Procedure

NES Manufacturing

BECHTEL NORTH AMERICAN POWER CORPORATION		JOB NO. 15737	
SUPPLIER DOCUMENT REVIEW STATUS			
STATUS: <input checked="" type="checkbox"/> 1			
2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/>			
1 <input checked="" type="checkbox"/> Work may proceed 2 <input type="checkbox"/> Review and resubmit. Work may proceed subject to incorporation of changes indicated. 3 <input type="checkbox"/> Review and resubmit. Work may not proceed. 4 <input type="checkbox"/> Review not required. Work may proceed.			
Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.			
Reviewed	CIVIL	E/CS	M/PF
	—	—	R
By	DATE		
<i>P. H. King</i>	6/03/95		

EPD-13743 Rev. 1084

TITLE POISON TUBE LOADING PROCEDURE

1.0 PURPOSE

1.1 To define an acceptable Poison Tube Loading Procedure for the Defueling Canisters for the TMI-2 Nuclear Power Plant.

2.0 SCOPE

2.1 This procedure will cover Poison Tube Loading for the Knockout and Filter Canisters.

2.2 Two sizes of Poison Pellets will be loaded: 1.955" O.D. x 2.0" long; .770" O.D. x 1.0" long.

2.3 Two lengths of 2.125 diameter tube will be loaded with the 1.955 diameter pellets.

3.0 EQUIPMENT

3.1 Clean work area.

3.2 Bucks to support poison tubes in line with loading tray.

3.3 "V" shaped loading tray supported on bucks.

0 PROCEDURE

4.1 Place poison tube with one end plug welded in place on loading bucks.

4.2 Select appropriate package of poison pellets for size and length of tube and load into loading tray. All of pellets from package must be placed in tray.

4.3 Slide pellets into poison tube: horizontal.

4.4 Quality Control to verify all pellets installed and complete C of C for each pipe filled. If necessary add one or more B4C Spacers to fill tube within $\frac{1}{2}$ " of its fill length.

4.5 Place end plug in tube and secure per applicable traveler.

[illegible]

POISON TUBE LOADING
C OF C

ART	DESCRIPTION	POISON TUBE

[illegible]

Bechtel North American Power Corporation

Engineers — Constructors

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



October 18, 1985

Mr. B. E. Ballard
Manager, TMI QA Modifications/Operations
Three Mile Island Unit 2
P.O. Box 480
Middletown, PA 17057

TMI-2 Project, Job No. 15737
Completed Checklists Rev.
2 for Filter Canisters F-401,
F-402, F-403 and F-404
File 15737-85-086

Dear Mr. Ballard:

We are enclosing herewith for your review and use the verified checklist for Filter Canisters F-401, F-402, F-403, and F-404.

Please note that we have prepared one Checklist package for all four canisters. Previously there was a separate Checklist package for each canister.

If you have any questions, please advise.

Very truly yours,

A handwritten signature in dark ink, appearing to read "T. I. Gillespie". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

T. I. Gillespie
QA Manager, Projects

WCL:ajj

Attachment: Filter Canisters Checklist for F-401, F-402, F-403 and F-404.

cc: F. R. Standerfer, w/1
T. F. Demmitt, w/o
W. H. Linton, w/o
~~C. H. Williams~~, w/1
N. C. Kazanas, w/o
P. Bradbury, w/o
S. A. Bernsen, w/1
R. L. Rider, w/o
T. V. Sarma, w/1
A. Stowe, w/1
H. J. Porter, w/o
T. A. McKearney, w/o

**Filter Canister
Checklist Package
Index**

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

1. Checklist Verification Summary pages (22 pages)

2. Materials (M) Checklists (Note 1)

<u>Checklist</u>	<u>Drawing No.</u>	<u>Subject</u>
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 ₄ C 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	1154044	Inlet Outlet/Coupler

3. Fabrication (F) Checklist (F-1 & F-2 Note 2, all others Note 1)

<u>Checklist</u>	<u>Drawing No.</u>	<u>Subject</u>
F-1	1154018F	Assembly (Note 2)
F-2	1154020E	Subassembly (Note 2)
F-3	1150959D	Upper Head
F-4	1154045D	Lower Head - Catalysts

Note 1: One Material Checklist applies to F-401, F-402, F-403 and F-404.

Note 2: Separate Checklists for F-401, F-402, F-403 and F-404.

Filter Canister
Checklist Package
Index
(Cont.)

3. Fabrication (f) Checklist (Cont.)

<u>Checklist</u>	<u>Drawing No.</u>	<u>Subject</u>
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 (Note 2)

<u>Checklist</u>	<u>Drawing No.</u>	<u>Subject</u>
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)

<u>Item No.</u>	<u>Subject</u>
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
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(Cont.)

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.
5. Catalyst Inspection.

CHECKLIST COMPLETION FORMAT

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

T-401

Revision Index Page




Revision	Date	Description
0	10-2-85	Issued for comment.
1	10-10-85	Revised several index and checklist pages to incorporate administrative corrections of typo items and to incorporate comments from GPU QA.
2	10-13-85	Reissued, for configuration control purpose, all pages of the checklists packages and identified as Revision 2. Also revised checklist pages M-6B page 1, M-7 page 1, M-16 pages 1 and 2, F-3 page 1, F-3 page 2, F-4 page 2, F-8 page 1, F-8 page 2.

CANISTER CHECKLIST

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Rev. 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

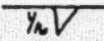
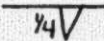
DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		DIM. 149 $\frac{3}{4}$ + $\frac{1}{4}$ (12' - 5 $\frac{3}{4}$ ")	Refer to Fabrication Checklist F-1	Verified
	2		DIM. 3.200 Typ Max	↓	↓
	3		Weld - Upper Head	Refer to Welding & WDE Checklist W-1	Verified
			 Weld 1	↓	↓
	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

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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  Weld 1	Refer to Welding And NDE Checklist W-2	Verified
	4		Weld - Zone F-4  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	↓

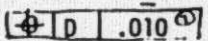


CANISTER CHECKLIST

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	1		DIM. $6 \frac{1}{4}^{\circ}$ Zone B-7	Refer to Fabrication Checklist F-3	Verified
	2		DIM. 90° Zone C-6		
	3	2	DIM. $.750 + .005$ 	(Continued on Next Sht)	Verified
	4		Weld - Zone D-5	Refer to Welding & NDE Checklist W-3	
			 Weld 1		
	5		Weld - Zone C-4		
			 Weld 2		
	P/N 3	1	Plug 1150957B	(Continued on Next Sheet) 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	

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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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

CANISTER CHECKLIST

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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	<i>verified</i> 
	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	
	A		SDDR 2-M101A-20	Programmatic Only	
	B		SDDR 2-R200C-3	Programmatic Only	

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN- TITY	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

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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	<i>verified</i> ↓ Verified ↓
	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	
	A		SDDR 2-M101A-20	Programmatic Only	
	B		SDDR 2-R200C-3	Programmatic Only	

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D REV. 1	1		DIM. 14.093 O.D. 13.969 Zone C-6	Refer to Fabrication Checklist F-5	Verified
	2		DIM. 3/8 Zone C-8	↓	↓
	3		DIM. 3/16 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**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C REV. 1	1		DIM. 14.062 DIA. 13.969 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

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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



CRISTER CHECKLIST

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN- TITY	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. $\frac{3}{4}$ Zone C-7	↓	↓
	3		DIM. $1\frac{3}{8}$ Zone C-4	(Continued on Next Sht.)	↓
	4		Weld Zone D-7  Weld 1	Refer to Welding & NDE Checklist W-4	Verified
	5		Weld - Zone D-4  Weld 2	↓ (Continued Below)	↓
	P/N 2	1	Tube 2" 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 ₄ C 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

MASTER CHECKLIST

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F-403 F-401
F 404 Rev. 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D REV. 5 (Cont'd)	Note 10		Pellets Loaded Within $\frac{1}{4}$ " of the Tube Fill Length.	See Fabrication Checklist F-8	Verified
	A		SDDR 2-M101A-12	Programmatic Only	

WINISTER CHECKLIST

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F-404

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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

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D REV. 3	1		DIM. <u>4.500</u> R Zone D-7	Refer to Fabrication Checklist F-10	Verified
	2		DIM. <u>4.800</u> Zone C-6		
	3		DIM. 14.083 DIA. <u>14.093</u> Zone B-6		
	4		DIM. 13.437 ^{+0.015} _{-0.000} DIA. Zone A-6		
	5		DIM. 3 ⁷ / 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. .375 DIA. f. 2 ³ / ₈		
	8		DIM. 2.625 DIA. Thru 2 ¹ / ₄ NPT (Typ 2 Plcs) <u>⊕ A6 6.206</u> Zone C-4		
	P/N 1	-	Filter Canister Upper Head 1150958D	Refer to Material Checklist M-9	Verified

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CHECKLIST

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN- TITY	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

**CANISTER
CHECKLIST**

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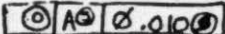
F-401

F-403

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044C REV. 2	1		DIN. 2.218 2.223 DIA. Thru  Zone B-4	Refer to Fabrication Checklist F-11	Verified

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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

**CANISTER
CHECKLIST**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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

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CHECKLIST**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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

CANISTER
CHECKLIST

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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

MASTER
CHECKLIST

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D Rev. 1	P/N 1		<p>Canister Lower Head Material:</p> <p>ASME SA-479 or SA-240 type 304L or type 316L stainless steel</p> <p>LOWER HEAD</p>	<p><u>MATERIALS</u></p> <p>1. Purchase Order (P.O.)</p> <p>a. ANSI M45.2 requirements identification</p> <p>b. Identification of Part 21 applicability</p> <p>c. Is Source/Receipt Inspection identified</p> <p>d. Identification of Document submittals.</p> <p>2. Suppliers</p> <p>a. Included on Qualified Source List</p> <p>b. Evidence of Audit/Survey</p> <p>c. Evidence of Auditor Certifications</p> <p>3. Receipt Inspection (RI)</p> <p>a. Documented approval of RI requirements</p> <p>b. CMTRs/C of Cs review</p> <p>c. Other P.O. required documents review</p>	<p>Bchtel P.O. TC-016160-3</p> <p>This MATERIAL was supplied by GPU NUCLEAR, INC. (Bchtel North American Power Corp.)</p> <p>Therefore checklist items 1, (P.O.) and 2. (suppliers) are not applicable to NES.</p> <p>3. Receipt Inspection:</p> <p>• NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. (See comment No. 1)</p> <p>• CMTR for HEAT # 20800 Allied Metals, Inc. for lower heads in F401, F 402, F 403 and F 404.</p> <p>• No other documents required to be submitted. Therefore, no review of documents required.</p>

*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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D Rev. 1	P/N 1			<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<p>• Receiving Inspector Certification acceptable.</p> <p>• No NCRs written for Receipt Inspected material. See Attachment 1 item 5</p> <p>• See comment 1</p> <p>• See comment 1</p> <p>• Document submittals stamped by QC Inspector, (See Comment 1)</p> <p>4 Traveler NO. <u>003697</u></p> <p>★ Receipt inspected by Selamco No. 2 on 2-12-85</p>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150940A Rev. 2	1		Recombiner Catalyst Pellet: Requirements defined in 6 notes. CATALYST	<u>MATERIALS</u> 1. Purchase Order (P.O.) a. ANSI M45.2 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/Survey 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 Corr., 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

Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1	P/N 1	1	Skirt 1150944C Material ASTM A-312 Grade 304L or Grade TP 316L Stainless Steel Pipe	<u>MATERIALS</u> 1. Purchase Order (P.O.) a. ANSI M45.2 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. 341f58. 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 canisters:

 s/n F-401 (Shell s/n 43P2)
 s/n F-404 (Shell s/n 140P2)
 s/n F-403 (Shell s/n 11P2)

**CANISTER (FILTER)
CHECKLIST (Materials) (M-3)**

Serial No. F-402
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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)	<u>MATERIALS</u> 1. Purchase Order (P.O.) a. ANSI M45.2 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/Survey 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.

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150945C Rev. 1	P/N 1			<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<p>Receiving Inspector Certification acceptable.</p> <p>No NCRs written for Receipt Inspected material. See Attachment 1, item 5</p> <p>See comment 1</p> <p>See comment 1</p> <p>Document submittals stamped by QC Inspector. (See Comment 1) *</p> <p>Traveler NO. <u>003568</u></p> <p>*Receipt inspected by Selamco No. 2</p>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D 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 M45.2 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/Survey c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CTRs/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 M 45.2 requirements identified (For resolution see Attachment 1, Item 4) . Part 21 identified on PO . Receipt Inspection Performed at NES. . CTR 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 check list also applies to canisters:

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

SHELL S/N 43P1

MASTER (FILTER)
CHECKLIST (Materials) (M-5)

Serial No. P-402

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5				<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<p>• Receiving Inspector Certification acceptable.</p> <p>• No NCRs written for Receipt Inspected material. See Attachment 1, item 5</p> <p>• See comment 1</p> <p>• See comment 1</p> <p>• Receiving copy of the PO stamped by QC Inspector Receipt inspected by Selanco No 2</p> <p>4. Traveler NO. 003662 Poison Tube Assy</p>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS.

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION MAT'L
11509490 Rev. 5	P/N 3	1	Bottom end plug material: ASTM A-479 or A-276, Type 316L Stainless Steel Bar	MATERIALS	P.O.: S03941-2-3 Dupont Steel
	P/N 4	1	Top End Plug Material: ASTM A-479 or A-276 Type 316L Stainless Steel Bar	<ol style="list-style-type: none"> Purchase Order (P.O.) <ol style="list-style-type: none"> ANSI M45.2 requirements identification Identification of Part 21 applicability Is Source/Receipt Inspection identified Identification of Document submittals Suppliers <ol style="list-style-type: none"> Included on Qualified Source List Evidence of Audit/Survey Evidence of Auditor Certifications Receipt Inspection (RI) <ol style="list-style-type: none"> Documented approval of RI requirements CHTRs/C of Cs review Other P.O. required documents review 	<ol style="list-style-type: none"> NO ANSI M 45.2 requirements identified (For resolution see Attachment 1, Item 4) Part 21 identified on PO Receipt Inspection Performed at NRS. CHTR submittal identified on PO Suppliers: <ul style="list-style-type: none"> Supplier included on NRS AVL dated 8-2-85 AVL indicates that this supplier was approved based on the history of Receipt Inspection by NRS and is ASME Certified Receipt Inspection: <ol style="list-style-type: none"> NRS Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements Item No. 2, on PO-S-3141, CHTRs Arco, Inc., Heat No. 626532. Insp by Selanco 2 Item No. 3, on PO-S-3141, CHTR from Slater Steel Heat No. 86949 Insp. by Selanco 2 No other documents required to be submitted. Therefore the review of documents required.

* This checklist also applies to canisters:

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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<p>• Receiving Inspector Certification acceptable.</p> <p>• No NCRs identified on the Receipt Inspection Report. See Attachment 1, item 5</p> <p>• On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)</p> <p>• Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)</p> <p>• Receiving copy of the PO stamped by QC Inspector Selanco No 2,</p> <p>• Traveler NO. <u>003662</u></p>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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/Survey 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 a. NO ANSI N 45 2 requirements identified (For resolution see Attachment 1, Item 4) b. Part 21 applicability not included in the P.O. (For Resolution see Attachment 1, Item 3) c. Receipt Inspection Performed at NRS. d. N/A on PO however C of C submitted 2. Suppliers: a. No, at time of PO placement. NCR No.176 documents nonqualified sources now on qualified source list. b. K & C Machine was post qualified (audited) on 6/85. K & C Machine is now qualified c. Yes. 3. Receipt Inspection: a. NRS Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. b. C of C, Insp. by Selamito 2 c. 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 canisters:

 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

Rev. 2

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. <u>003662</u>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5	P/N 5	A/R	B ₄ C Pellet Material: ASTM C-750 Type 2 Boron Carbide	<u>MATERIALS</u> 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/Survey c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CTRs/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: a. Yes, Included on NES Corp. List dated 9/16/85 b. 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. c. Yes. 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements. • C/C and special processes from Advanced NES stamp Sel. mco 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 003662 references P.O. S04789 which is correct					

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev 2

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 Selanco 2 4 Traveler NO. 003662 & 004096

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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 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/Survey 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.: 03941-4 SUPPLIER: Dubose Stell, Roseboro NC . 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 8-2-85 . AVL indicates that this supplier is approved based on the history of Receipt Inspection by NES and ASME Certification. 3. Receipt Inspection: . NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements . Yes, CMTR, stamped by Belamco 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

IISTER (FILTER) CHECKLIST (Materials) (H-8A)

Serial No. F-402

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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

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 M45.2 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 M 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 requ red to be submitted. Therefore, q review of documents required.
* This checklist also applies to canisters: 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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION FAB
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 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. 003778

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509580 Rev. 3	P/N 1	--	Filter Canister Upper Head Material: ASME SA-240 Type 316L or Type 304L Stainless Steel Plate	<u>MATERIALS</u> 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/Survey 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 CPU 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 canisters:

s/n F-01 (Shell s/n 45P2)
 s/n F-04 (Shell s/n 140P2)
 s/n F-03 (Shell s/n 11P2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION																																	
11509580 Rev. 3				<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<ul style="list-style-type: none"> Receiving Inspector Certification acceptable. No NCRs written for Receipt Inspection 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 <p>* Inspected by Selamco No.2 & No. 5</p>																																	
				<p>The following is a list of CMTRs and C of Cs:</p> <table border="1"> <thead> <tr> <th>Item</th><th>Date</th><th>Origin</th></tr> </thead> <tbody> <tr> <td>C of C</td><td>2/21/85</td><td>Guyon Alloys, Inc.</td></tr> <tr> <td>C of C</td><td>1/16/85</td><td>Guyon Alloys, Inc.</td></tr> <tr> <td>C of C</td><td>2/25/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>C of C</td><td>1/18/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>C of C</td><td>5/23/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>C of C</td><td>5/23/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>CMTR</td><td>8/22/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>CMTR</td><td>7/15/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>CMTR</td><td>4/25/85</td><td>Jessop Steel, Co.</td></tr> <tr> <td>CMTR</td><td>6/26/85</td><td>Jessop Steel, Co.</td></tr> </tbody> </table> <p>Heat Nos: 20933, 21090, 33577, 35579, 20794, 20840, 33578</p>	Item	Date	Origin	C of C	2/21/85	Guyon Alloys, Inc.	C of C	1/16/85	Guyon Alloys, Inc.	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	8/22/85	Jessop Steel, Co.	CMTR	7/15/85	Jessop Steel, Co.	CMTR	4/25/85	Jessop Steel, Co.	CMTR	6/26/85	Jessop Steel, Co.	
Item	Date	Origin																																				
C of C	2/21/85	Guyon Alloys, Inc.																																				
C of C	1/16/85	Guyon Alloys, Inc.																																				
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	8/22/85	Jessop Steel, Co.																																				
CMTR	7/15/85	Jessop Steel, Co.																																				
CMTR	4/25/85	Jessop Steel, Co.																																				
CMTR	6/26/85	Jessop Steel, Co.																																				

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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	<u>MATERIALS</u> 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/Survey c. Evidence of Auditor Certification 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 <u>SUPPLIER: Brown Boveri</u> • 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 Selamco 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)

2(-)

SHELL S/N 43P1

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

Serial No. F-402

Page 2 of 2

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150972A Rev. 1	1		Silicon - Coated recombimer catalyst requirements defined in 6 notes.	<u>MATERIALS</u> 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/Source c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CNTRs/C of Cs review c. Other P.O. required documents review	TC-016181 Bechtel P.O. TC-018139 This MATERIAL was supplied by CPU 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 AREC See memo 2 • No other documents required to be submitted. Therefore, no review of documents required.
* This checklist also applies to canisters: a/n F-401 (Shell a/n 45P2) a/n F-404 (Shell a/n 140P2) a/n F-403 (Shell a/n 11P2)					

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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/Survey 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.: S04291-5 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 distributor. • 1 3. Receipt Inspection: • NES Policies and Procedures Manual, Q-12 includes Receipt Inspection requirements • C of C Air Products inspected by Selanco 2 • No other documents required to be submitted. Therefore, no review of documents required.
* This check list 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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154097A Rev. 2				<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<p>• Receiving Inspector Certification acceptable.</p> <p>• No NCRs identified on Receiving Report (See Attachment 1, Item 5)</p> <p>• On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)</p> <p>• Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)</p> <p>• Receiving copy of the PO stamped by QC Inspector Selanco 2</p> <p>6. Traveler NO. <u>003821</u></p>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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	<u>MATERIALS</u> 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/Survey 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 RU 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 distributor. 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 canisters:

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

Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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 M45.2 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/Survey c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CNTRs/C of Cs review c. Other P.O. required documents review	P.O.: S04291-2 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 PU 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 distributor. 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 canisters: 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

Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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	<u>MATERIALS</u> 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/Survey c. Evidence of Auditor Certifications 3. Receipt Inspection (RI) a. Documented approval of RI requirements b. CNTRs/C of Cs review c. Other P.O. required documents review	P.O.: S04291-3 <u>SUPPLIER: Air Products Co. Cummings GA</u> . 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 distributor. . 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

Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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 M45.2 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/Survey 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 PU 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 distributor. 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 canisters: 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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154114A Rev. 0				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) . Receiving copy of the PO stamped by QC Inspector Selanco 2, . Traveler NO. <u>003820</u>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044 Rev. 2	P/N 1	1	DIM 2.218 Dia 2.223 THRU  ZONE B-4 Inlet/outlet Coupler	MATERIALS 1. Purchase Order (P.O.) a. ANSI M45.2 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/Survey 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	B & B Hose & Rubber, Co.; P.O. S-04293, item 2 • Not specified by Nes in P.O. • Not specified by NES in P.O. See Attachment 1, item 4 See Attachment 1, item 3 • Source inspection not specified by NES in P.O.; NES performed receipt inspection • Yes, Item 3. (compliance certification) • 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. • Policy procedures manual, Q-12 • Yes, 3.1. PT coupling Cr. to B.B. Rubber, inspected by Selimco 2 • No other documents required to be submitted. Therefore, no review of documents required.

* This checklist also applies to canisters:

 s/n F-401 (Shell s/n 43P2)
 s/n F-404 (Shell s/n 140P2)
 s/n F-403 (Shell s/n 11P2)

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

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Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044 Rev. 2				<p>3. (Continued)</p> <p>d. Inspector's Certification</p> <p>e. Identification and Disposition of NCRs</p> <p>f. Calibration of Inspection Equipment</p> <p>g. Dimensional Inspection</p> <p>h. Documented RI and acceptance of the material for further use</p> <p>4. Verify Release to Shop</p>	<p>• Receiving Inspector Certification acceptable.</p> <p>• No NCRs identified on the Receipt Inspection Report. See Requests (REQ)</p> <p>• REQ 750, Cleared 2-18-85</p> <p>• REQ 318, cleared 5-7-85</p> <p>• On the Receipt Inspection Record tools/ gages used are not recorded (For resolution see Attachment 1, Item 1)</p> <p>• Dimensional Inspection not specifically documented on RI Records (For resolution see Attachment 1, Item 2)</p> <p>• Yes, accepted by Selanco 2 as P.O. item 2</p> <p>4 Yes Traveler 003840</p>

CANISTER
CHECKLIST (FABRICATION)(F-1)

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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 $\frac{3}{4}$ ")	1. Issuance of Material for next operation (release to shop)	1. Yes, Traveler 003842
	2		DIM. 3.200 Typ (MAX.)	2. Identification of latest approved drawings on Traveller	2. Yes, Traveler 003842
	3 Note 13		Envelope of Canister Within Perfect Cylinder of 14 $\frac{15}{16}$ " DIA. Ref. Traveler 003842	<u>IN PROCESS INSPECTIONS</u> 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)	3.a Not applicable 1) See Item 5.C on Page 2 2) See Item 5.C on Page 2 3) See Item 5.a on Page 2 4. Not applicable to the items being verified.

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CHECKLIST (FABRICATION)(F-1)

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1.		Dim. 149 ^{3/4"} + ^{1/4"} - ^{1/4"}	5. Dimensional Inspection	<p>a. Item 1 inspected by Selamco 6 on 5-20-85 and by RDH on 6/4/85; Items 2 & 3 inspected by RDH on 9/14/85. The inspector's qualifications are satisfactory.</p> <p>b. Yes, see Attachment 1, Item 7.</p> <p>c. Yes, Traveler 003842 for Items 1, 2 and 3 has applicable requirements.</p> <p>No NCRs written against items 1, 2 and 3. See Att. 1, Item 5.</p> <p>None written for Items 1, 2 and 3. See Attachment 1, Item 6.</p> <p>Yes, Traveler 003842</p>
	2		Dim 3.200 (Typ) (Max)	a. Qualification of Inspectors	
	Note 13		14 5/16" Cylinder	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	

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		DIM. $149\frac{3}{4}" + \frac{1}{4}"$ ($12' - 5\frac{3}{4}"$)	1. Issuance of Material for next operation (release to shop)	1. Yes, Traveler 003840
	2		DIM. 3.200 Typ (MAX.)	2. Identification of latest approved drawings on Traveller	2. Yes, Traveler 003840
	Note 13		Envelope of Canister Within Perfect Cylinder of $14\frac{15}{16}"$ DIA. REF: Traveler 003840	<u>IN PROCESS INSPECTIONS</u> 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)	3. Not applicable 1) See Item 5.c on Page 2 2) See Item 5.c on Page 2 3) See Item 5.a on Page 2 4. Not applicable to the items being verified.

SHELL S/N 43P1

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Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		DIM 149 $\frac{3}{4}$ + $\frac{1}{4}$	5. Dimensional Inspection	
	2		DIM 3.200	a. Qualification of Inspectors	a) Item 1 was QC inspected by RDH on 6/4/85, and Selamco 6 on 5-10-85
	Note 13		Cylinder of 14 $\frac{5}{16}$ "	b. Use of calibrated equipment	Selamco 6 on Master Selamco QA Issuance Log Item 2 and 3 inspected on 9-14-85
				c. Evidence of inspection and acceptance to required criteria	b) Yes, see Attachment 1, Item 7.
				6. Identification, Control, and Disposition of NCRs	c) Yes, Traveler 003840 for items 1, 2 and 3
				7. Implementation of SDDRs	6. No NCRs written against items #1, 2 and 3. See Attachment 1, Item 5.
				8. Assembly Inspection	7. Not applicable to items #1, 2 and 3 See Attachment 1, Item 6.
					8. Traveler 003840

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		DIM. $149\frac{3}{4}" \pm \frac{1}{4}"$ (12' - $5\frac{3}{4}"$)	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 $14\frac{1}{2}"$ DIA.	<u>IN PROCESS INSPECTIONS</u>	
				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)	

**CANISTER
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		Dim. 149 ^{3/4} + _{1/4} "	5. Dimensional Inspection	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

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5	1		Dim. 149 ^{3/4} _{+1/4}	5. Dimensional Inspection	
				a. Qualification of Inspectors	a) RDH is qualified for inprocess and final inspection - See NES 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	Yes, Traveler 003839
				6. Identification, Control, and Disposition of NCRs	None written against the items being verified.
				7. Implementation of SDDRs	None written for any of the items being verified.
				8. Assembly Inspection	Yes, Traveler 003839

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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	1. Issuance of Material for next operation (release to shop)	Traveler 003751
	2		DIM. $1'' \pm \frac{1}{16}''$ Zone C-4	2. Identification of latest approved drawings on Traveller	Yes, Traveler 003751
				<u>IN PROCESS INSPECTIONS</u>	
			Filter canister sub-assembly	3. Machining Operations	
				a. Supplier performed - (Refer to Material Checklist)	a. Not applicable
				b. If NES performed -	b. See Sheet 2
				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	
				a. Welding	
				b. NDE	
				c. Visual Examination	
				(Refer to Welding & NDE Checklist)	Not applicable to the item being verified.

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		Dim. 1 $\frac{1}{4}$ \pm 1/16"	5. Dimensional Inspection	
	2		Dim. 1" \pm 1/16"	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 4 was on NES Master Log at the time on the inspection. The inspector's qualifications are satisfactory b. Tools/gauges calibrated. See Attachment 1, item 7 c) Yes, on Traveler 003751 However, dimension on traveler is not in accordance with Dwg. SDDR 73 written and approved. NCR 197; closed. See Attachment 1, Item 5. Yes, SDDR 73 - approved See Attachment 1, Item 6. Yes, see Traveler 003842 Dimensions shown in operation 100 on Traveler 003751 showed 1 1/8" and 1 1/8" instead 1 1/4" and 1" as required by the drawing. NCR 197 and SDDR 73 were written and closed.

SHELL S/N 43P1

**CANISTER
CHECKLIST (FABRICATION)(F-2)**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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	1. Issuance of Material for next operation (release to shop)	Yes, Traveler 003753
	2		DIM. $1" \pm \frac{1}{16}"$ Zone C-4	2. Identification of latest approved drawings on Traveller	Yes, Traveler 003753
			Filter Canister Subassembly	<p align="center"><u>IN PROCESS INSPECTIONS</u></p> <p>3. Machining Operations</p> <p>a. Supplier performed - (Refer to Material Checklist)</p> <p>b. If NES performed -</p> <p>1) Identification of Requirements</p> <p>2) Inspection and Acceptance for further use</p> <p>3) Certification of Inspectors</p> <p>4. Welding Operations</p> <p>a. Welding</p> <p>b. NDE</p> <p>c. Visual Examination (Refer to Welding & NDE Checklist)</p>	<p>Not Applicable to the items being verified</p> <p align="center">↓</p> <p>1) See item 5.c on Page 2</p> <p>2) See item 5.c on Page 2</p> <p>3) See Item 5.a on page 2</p> <p>Not applicable to the items being verified</p> <p align="center">↓</p>

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		DIM $1\frac{1}{8}$ " \pm $\frac{1}{16}$ "	5. Dimensional Inspection	a) Selamco inspector $\diamond 3$ is qualified for inprocess inspection per the NES QA issuance log
	2		DIM 1" \pm $\frac{1}{16}$ "	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	b) Tools/gauges calibrated. See Attachment 1, Item 7. c) Yes, on traveler 003753 However, the dimensions on the traveler do not agree with the drawing (NCR 197 written) 6. NCR 197 closed. See Att. 1, Item 5. 7. Yes, SDDR 73-approved. See Att. 1, Item 6. 8. Yes traveler 003840 The traveler specifies dimensions of 1" and $1\frac{1}{8}$ " in place of $1\frac{1}{2}$ " and 1", respectively as required by the drawing.

Shell S/N 11P2

**CANISTER
CHECKLIST (FABRICATION) (F-2)**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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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	1. Issuance of Material for next operation (release to shop)	Yes, Traveler 003754
	2		DIM. $1" \pm \frac{1}{16}"$ Zone C-4	2. Identification of latest approved drawings on Traveller	Yes, Traveler 003754
				<u>IN PROCESS INSPECTIONS</u>	
				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)	

**CANISTER
CHECKLIST (FABRICATION)(F-2)**

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Serial No.**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		Dm. $1\frac{1}{4}" \pm 1/16"$	<p>5. Dimensional Inspection</p> <p>a. Qualification of Inspectors</p> <p>b. Use of calibrated equipment</p> <p>c. Evidence of inspection and acceptance to required criteria</p> <p>6. Identification, Control, and Disposition of NCRs</p> <p>7. Implementation of SDDRs</p> <p>8. Assembly Inspection</p>	<p>a) Selamco 3 is qualified for inprocess inspection per NES QA issuance log.</p> <p>b) Tools/gauges calibrated. See Attachment 1, Item 7.</p> <p>c) Yes, Traveler 003754 the dimensional criteria on Traveler 003754 is not in accordance with drawing (see below)</p> <p>NCR 197 written for Item 5.C, above; NCR 197 - open. See Att. 1, Item 5.</p> <p>Yes SDDR 73 - approved. See Att. 1, Item 6.</p> <p>Yes, Traveler 003838</p> <p>Traveler 003754 requires dimensions of $1\frac{1}{8}"$ and $1\frac{1}{8}"$ instead of $1\frac{1}{4}"$ and $1"$ (NCR 197 written) as required at the drawing.</p>

SHELL S/N 140P2

**CANISTER
CHECKLIST (FABRICATION) (F-2)**

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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	1. Issuance of Material for next operation (release to shop)	Yes, Traveler 003741
	2		DIM. $1" \pm \frac{1}{16}"$ Zone C-4	2. Identification of latest approved drawings on Traveller	Yes, Traveler 003741
				<u>IN PROCESS INSPECTIONS</u>	
				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)	

**MANISTER
CHECKLIST (FABRICATION)(F-2)**

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Serial No.**

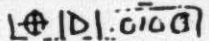
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DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	1		Dim. $1\frac{1}{4}" \pm 1/16"$	5. Dimensional Inspection	Yes, Selamco 2 is on Master QA issuance log.
	2		Dim $1" \pm 1/16"$	a. Qualification of 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	Tools/gauges are calibrated See Attachment 1, Item 7. Yes, on Traveler 003741 The dimensional criteria on Traveler 003741 is not in accordance with Drawing (See Below) NCR 197 written for item 5.C, above; NCR 197-open Yes, SDDR 73-approved Yes, Traveler 003839 Traveler 003741 requires dimensions of $1\frac{1}{8}"$ and $1\frac{1}{8}"$ instead of $1\frac{1}{4}"$ and $1"$ (NCR 197 written) as required by the drawing.

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	1		DIM. 6 $\frac{1}{4}$ " 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 The drawing revision conflict was resolved by the note added to the TVR on 4/85 requiring "Add more Englehard Catalyst if required to fill" and SDDR No. 2-M101-99.
	3	2	DIM. .750" + .005" 	<u>IN PROCESS INSPECTIONS</u>	3. a) Not applicable b) see below items 1 and 3
	Note 3		Add Catalysts (P/Ns 4 & 6) in Portions Specified Prior to Welding of Screen Assy. Filter Canister upper Head weldment	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	1) Yes. TVR 003778, verified 2) Yes. TVR 003778, verified 3) Yes. Selamco ② performed final inspection
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)				4. Welding Operations a. Welding b. NDE c. Visual Examination (Refer to Welding & NDE Checklist)	4. Refer to welding & NDE checklist No. W-3, in each canister verification package, accept.

SHELL S/N 43P1

MASTER
CHECKLIST (FABRICATION)(F-3)

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	1		DIM 6 1/4"	5. Dimensional Inspection	
	2		DIM 90°	a. Qualification of Inspectors	a. Selamco Inspectors 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, 2-M101-99, closed. See Attachment 1, Item 6.
				8. Assembly Inspection	8. <ul style="list-style-type: none"> • 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
					*Related NCR No. 245 and SDDR No. 68 closed, 8/22/85.
					See comment no. 5.

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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 <u>IN PROCESS INSPECTIONS</u> 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 (She) 1 S/N 45P2) S/N F402 (She) 1 S/N 140P2) S/N F403 (She) 1 S/N 11P2)		

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154045D REV. 5	Note 2		Add Catalysts	<p>5. Dimensional Inspection</p> <p>a. Qualification of Inspectors</p> <p>b. Use of calibrated equipment</p> <p>c. Evidence of inspection and acceptance to required criteria</p> <p>6. Identification, Control, and Disposition of NCRs</p> <p>7. Implementation of SDDRs</p> <p>8. Assembly Inspection</p>	<p>a. Selamco Inspectors on the Master Selamco QA Issuance Log.</p> <p>b. Tools/gauges calibrated. See Attachment 1, Item 7.</p> <p>c. Yes, TVR 3697.</p> <p>6.* NCR-245 closed 8-22-85. See Attachment No. 1, item 5.</p> <p>7.* SDDR 68 (NES NO.), Bechtel NO. 2M-101A 68 closed-----8-22-85. See Attachment 1, Item 6.</p> <p>8. TVR 003697</p> <p>* See comment no. 5.</p>

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D REV. 1	1		DIM. 14.093 O.D. T3.969 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. $\frac{3}{8}$ Zone C-8	2. Identification of latest approved drawings on Traveller	2. Yes
	3		✓ DIM. $\frac{5}{16}$ MIN. Zone B-5	<u>IN PROCESS INSPECTIONS</u>	
	4		✓ DIM. 2 $\frac{3}{4}$ Zone B-4 Canister Lower Head	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	3. see below a. 14.093 T3.969, $\frac{3}{8}$, $\frac{5}{16}$ MIN Performed on PO NO. TC-016160-3, which was Bechtel supplied material.
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)	4. Welding Operations a. Welding b. NDE c. Visual Examination (Refer to Welding & NDE Checklist)	1. Yes, 2 $\frac{3}{4}$, on TVR 3690. 2. Yes on TVR 3690 3. Yes Selamco 2 4. Not applicable to Item 4 in "Description"

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DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150917D REV. 1	1		DIM. 14.093 13.969	5. Dimensional Inspection	
	2		DIM. $\frac{3}{8}$	a. Qualification of Inspectors	a. Selamco Inspector ② on the master Selamco QA Issuance Log.
	3		DIM. $\frac{5}{16}$ Min	b. Use of calibrated equipment	b. Tools/gauges calibrated. See Attachment 1, Item 7.
	4		DIM. 2 $\frac{3}{4}$	c. Evidence of inspection and acceptance to required criteria	c. Yes. TVR 003690
				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)

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1	1		Dim. 14.062 Dia. 13.969 Zone B-3	1. Issuance of Material for next operation (release to shop)	TVR 003570 Det ¹
	2		Dim. 4-1/2 Zone D-2 Filter and knockout canister skirt	2. Identification of latest approved drawings on Traveller <u>IN PROCESS INSPECTIONS</u> 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)	2. Yes. TVR 003570 a. Not applicable b. see below 1. Yes, for 4 1/2, TVR 003570 1. Yes, for 14.062 / 13.969 • TVR 003570 2. Yes, for 4 1/2, TVR 003570 Yes, for 14.062 / 13.969 • TVR 003570 3. Yes, for 4 1/2, 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. No welding operations were performed not applicable

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)

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150944C Rev. 1	1		DIM. 14.062 DIA. T3.969	5. Dimensional Inspection	5.
	2		DIM. 4 1/2	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. Yes. TVR 003570 6. No NCRs on TVR. See Attachment 1, Item 5. 7. None. See Attachment 1, Item 6. 8. TVR-003778 Assy. Note material supplied by Bechtel - see M-3.

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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 <u>IN PROCESS INSPECTIONS</u> 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)	1. TVR 003568 TVR 003450 2. Yes. Rev. 0, on TVR 003568 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 + .093 TVR 3450 1. Yes, for 14.00 - .031 TVR 3568 + .093 TVR 3450 2. Yes for 14.00 - .031 TVR 3568 3. Yes 4. Welding is not part of this "Description" review.
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 1P2)			

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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 <ul style="list-style-type: none"> 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. Selanco Inspector (9) on the Master Selanco 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.
				Heat No 240910 240910 341158 240910	Assembly TVR 003751 (45P2) 003753 (43P1) 003741 (140P2) 003754 (11P2)

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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 03662, Tube Assy, 1150949, Rev. 4 Assy TVR 04096: A, B, C, D. Tube Assy, 1150949-1, Rev. 5
	2		Dim. 3/4 Zone C-7	2. Identification of latest approved drawings on Traveller	Det'l TVR 003563-Tube, 1150949-2, Rev. 4 Det'l TVR 003553-Plug, 1150949-3, Rev. 3
	3		Dim. 1-3/8 Zone C-4	<u>IN PROCESS INSPECTIONS</u> 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	2. Yes, Assembly is to TVRs 04096, A, B, C, & D which are Rev. 5... Work performed on TVRs 3662, 3563, 3553 is per Rev. 5 requirements.
	Note 10		Pellets loaded within 1/4" of the tube fill length		a. Yes, on Mat's checklist No. M-6 for DIM 3/4 PO 4337 b. Below 1. Yes, DIM 136 1/8 + 1/16, TVR 003563 1. Yes DIM 1 3/8 + 1764, TVR 003553 2. Yes, Dim 136, TVR 003563 2. Yes. Dim 1 3/8 TVR 003553 3. Yes, Dim 136 1/8, <u>Sel 2</u> 2-11-85 3. Yes, Dim 1 3/8, <u>Sel 2</u> 1-15-85
This Checklist also applies to Canister:				4. Welding Operations a. Welding b. NDE c. Visual Examination (Refer to Welding & NDE Checklist)	4. See Welding Checklist ↓
S/N F401	(Shell)	S/N 45P2)			
S/N F404	(Shell)	S/N 40P2)			
S/N F403	(Shell)	S/N 11P2)			

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	1		Dim. 136 1/8" \pm 1/16"	5. Dimensional Inspection	
	2		Dim. 3/4"	a. Qualification of Inspectors	a. Yes, Selamco Inspectors 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. 125 and 126, closed. 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)
					*Also, SDDR 2-M101A-12 closed by NES 5/22/85.

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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. .999 Dia. .997 Plug, Det. 3	2. Identification of latest approved drawings on Traveller	Not applicable - machining done by vendor (K+C Machine Co, Inc)
This Checklist also applies to Canister:				<u>IN PROCESS INSPECTIONS</u>	
S/N F401 (Shell S/N 45P2) S/N F404 (Shell S/N 140 P2) S/N F403 (Shell S/N 11P2)				3. Machining Operations	Yes, P.O. S04337, Item 8 see Material Checklist M-8
				a. Supplier performed - (Refer to Material Checklist)	
				b. If NES performed -	Not applicable, see item 2, above
				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)	

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150957B Rev. 1	1		Dim. 1"	5. Dimensional Inspection	5. Not applicable, refer to material checklist ↓ 6. No NCRs written against the plug. See Att. 1, Item 5. 7. Not applicable, no SDDRs were written for the plugs. See Attachment 1, Item 6. 8. Yes, traveler 003778 for 140P2, 45P2, 43P1, 11P2
	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 7. Implementation of SDDRs 8. Assembly Inspection	

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150958D Rev. 3 Upper Head	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
	3		Dim. 14.083 Dia. 14.093 Zone B-6	<u>IN PROCESS INSPECTIONS</u> 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)	
	4		Dim. 13.437 ± 0.015 Dia. 0.000 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 Type 2 Places Zone C-4 0 A 5 0.020 5		

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509580 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	
UPPER HEAD				6. Identification, Control, and Disposition of NCRs	
This checklist also applies to Canister:				7. Implementation of SDDRs	
S/N F401 (Shell S/N 45P2)				8. Assembly Inspection	
S/N F404 (Shell S/N 140P2)					
S/N F403 (Shell S/N 11P2)					8. TVR-003778 for 43P1, 45P2, 140P2, 11P2

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044C Rev. 2	1		Dim. 2.218 Dia. 2.223 thru  Zone B-4 Inlet/Outlet Coupler	1. Issuance of Material for next operation (release to shop) 2. Identification of latest approved drawings on Traveller <u>IN PROCESS INSPECTIONS</u> 3. Machining Operations <ul style="list-style-type: none"> a. Supplier performed - (Refer to Material Checklist) b. If NES performed - <ul style="list-style-type: none"> 1) Identification of Requirements 2) Inspection and Acceptance for further use 3) Certification of Inspectors 4. Welding Operations <ul style="list-style-type: none"> 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 the items being reviewed as part of this 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 1 P2)					

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154044C Rev. 2			Inlet/Outlet Coupler	5. Dimensional Inspection <ul style="list-style-type: none"> 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)

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154Q18F REV. 5	3		Weld - Upper Head 	<u>WELDING</u> <ul style="list-style-type: none">Verify Qualification and approval of WPS utilizedVerify welder qualification for WPS utilizedVerify filler material control and disbursalVerify by a review of traveller that the correct WPS was utilizedVerify calibration (affixed sticker and calibration record) of AMP meter on welding machine <u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none">Verify the following activities were performed using latest approved procedure <ul style="list-style-type: none">a. Fit-up Inspectionb. Cleanliness Inspectionc. Correct items were weldedd. Minimum Preheat temperaturee. Maximum Interpass temperaturef. NDE (in process)g. Inspection/Examination personnel certified	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding. <ul style="list-style-type: none">*WPS-001 Rev. B, is approvedWPS-004, Rev. O, is approved*Welders are qualified^aWelder no's 24,39,40Filler Material is controlled/dispursedThe correct WPS was utilizedThe welding machines are calibrated.NCR 192 for one missing record was satisfactorily closed out. <u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none">Fit up by Selamco InspectorFit up witnessed by BechtelSupplier 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 weldersNDE is not required (N/R)I & E is not applicable (N/A) as NDE is not required * See Page 4
	4		Weld - Lower Head 		
	5		Weld - Drain Tube To Upper Head 		
			Weld 3		

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DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No <u>6</u> RT & UT procedures are approved by Bechtel RT & UT not required in process PT by Selamco No <u>3 & 4</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to (PTL) Pittsburgh testing laboratory 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

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

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Rev. 2

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<p>* LIQUID PENETRANT EXAMINATION</p> <p>Verify the following requirements/activities</p> <p>a. Latest approved PT procedure used</p> <p>b. Personnel qualified to perform the examination</p> <p>(1) Review PT personnel education, training and work history records, including current eye examination.</p> <p>c. PT materials utilized are acceptable materials and certificates of compliance are available for review</p> <p>d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)</p> <p>e. PT material batch numbers recorded on traveller</p>	<p>* LIQUID PENETRANT EXAMINATION</p> <p>*Latest approved procedure was used</p> <p>Personnel qualified Selamco QC- <u>3</u> Selamco QC <u>4</u></p> <p>*Personnel, education, training and eye examination are acceptable</p> <p>PT materials are acceptable C of C(s) are available</p> <p>PT materials comply to project specification</p> <p>*Batch no's are acceptable Batch no's used are: PENETRANT URESKO H233 REMOVER 1520 DEVELOPER 1522</p>

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>4,6</u> • *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).

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			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESKO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/D		QIP VT/O	QIP-PT- V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002 W-003
5	X	X	X	4	X	X	X	X(SEB/RM)	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
	X	X	X	6	X	X	X	X(GT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-006
15	X	X	X	7	X	X	X	X(RAS/NG) Note 2	PC# 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# S04200 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 HT# 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# 04829R308L					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


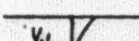
NOTES:

1. • Mr. Gary Talley Symbol No. 6
L II, PT&T, 5-8-85 to 5-31-95
- Mr. Steve Detrich Symbol No. 6
L II, PT&T, 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.

W-021
W-022
W-023
W-024
W-025
W-026
Note 3

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	3		Weld - Zone D-12	<u>WELDING</u> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> *WPs-001 Rev. B, is approved WPS-004, Rev. O, is approved *Welders are qualified Welder no's 21,22,40 Filler Material is controlled/dispursed. The correct WPS was utilized The welding machines are calibrated
	4		 Weld 1 Weld - Zone F-4  Weld 2		
				<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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) for in-process. I & E is not applicable (N/A) as * NDE is not required * See Page 4

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No. <u>3</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>3</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QG-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

Rev. 2

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> *Latest approved procedure was used • Personnel qualified Selamco QC- <u>3</u> • *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: <u>PENTRANT 84J044</u> <u>REMOVER 84F047</u> <u>DEVELOPER 85A015</u>

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

FILTER
Serial No. F-401
Page 4 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

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

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

Rev. 2

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			QC TNSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RM)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-004
14	X	X	X	6	X	X	X	X(GT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/ING) Note 2	PC# S04243 HT# 6259-57		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-007
21	X	X	X						PO# S04202 HT# 41039		1586		84-T-044	W-008
22	X	X	X						PO# S03854 HT# 48291					W-009
23	X	X	X						PO# S03854 HT# 57731					W-010
24	X	X	X						PO# S04056 HT# 49586					W-011
25	X	X	X						PO# S04631/04816 HT# 4740-57					W-012
27	Renumbered to NO. 40								PO# S04819 HT# 5250-0076					W-013
28	X	X	X						PO# S04819 HT# 7621-57					W-014
30	X	X	X						PO# S04819 HT# D4829R308L					W-015
32	X	X	X						PO# S01885 HT# 3932-57					W-016
39	X	X												W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019



NOTES:

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

Note 3

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4	4		Weld - Zone D-5  Weld 1	WELDING <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<p>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</p> <ul style="list-style-type: none"> *WPs-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's <u>22,23,25,39</u> 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)	<p>IN PROCESS INSPECTION/ EXAMINATION</p> <ul style="list-style-type: none"> 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 	<p>IN PROCESS/INSPECTION/EXAMINATION</p> <ul style="list-style-type: none"> 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) 	<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> *Visual Examination by Selamco No 4 RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco Welder and weld no.(s) are identified
				<u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p> 	<u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>*Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing laboratory via procedures; PTL-QC-RT-1, PTL-QC-UT-1</p> <p>Personnel qualified: Selamco. L. Ludwig, Level III Selamco No. 6</p> <p>Personnel Education: Training & Eye exam are acceptable</p>

CENTER
CHECKLIST

(Welding & NDE) (W-3)

FALCON

Serial No. F- 402

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION									
1150959D REV. 4				<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities<ul style="list-style-type: none">a. Latest approved PT procedure usedb. Personnel qualified to perform the examination<ul style="list-style-type: none">(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 reviewd. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)e. PT material batch numbers recorded on traveller	<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> *Latest approved procedure was used• Personnel qualified• *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:<table><tr><td>85B066</td><td>85A015</td><td>85C003</td></tr><tr><td>83H041</td><td>84L010</td><td>84F057</td></tr><tr><td>83A051</td><td>84DG24</td><td>84T044</td></tr></table>	85B066	85A015	85C003	83H041	84L010	84F057	83A051	84DG24	84T044
85B066	85A015	85C003												
83H041	84L010	84F057												
83A051	84DG24	84T044												

CHECKLIST

(Welding & NDE) (W-3)

FILTER
Serial No. F-401
Page 4 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. 4 _____ • *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).

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

Rev. 2

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			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
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/NG) 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# S04202 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# 49536					W-012
25	X	X	X						PO# S04631/04816 HT# 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

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.



Note 3

CALCULATOR
CHECKLIST (Welding & NDE) (W-4)

FILTER
 Serial No. F- 401
 Page 1 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	4		Weld - Zone D-7  Weld 1	<u>WELDING</u>	*Details on the attached <u>MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</u> . *WPs-001 Rev. B, is approved WPS-004, Rev. O, is approved . *Welders are qualified Welder no's <u>22,30</u> . Filler Material is controlled/ disbursed. . The correct WPS was utilized . The welding machines are calibrated
	5		Weld - Zone D-4  Weld 2	<ul style="list-style-type: none"> 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 	
	Note 5		PT in accordance with ASTM E165	<u>IN PROCESS INSPECTION/ EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Fit up by Selamco <u>2</u> 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>4</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing laboratory 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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> <p>Verify the following requirements/activities</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> <ul style="list-style-type: none"> • *Latest approved procedure was used • Personnel qualified Selamco QC- <u>4</u> • *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: <u>H233</u> <u>H295</u> <u>H305</u> _____ _____ _____

MASTER
CHECKLIST (Welding & NDE) (W-4).

FILTER
Serial No. F-
Page 4 of 4

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified • *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).

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

Rev. 2

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 MES Greensboro, N.C.

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMN)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	PO-S-04707		H-244		85-G-003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	HT-5382-308		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/NG) Note 2	PO# S011687 HT# 25131		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04243 HT# 6259-57		H-271		84-D-024	W-007
21	X	X	X						PO# S04056 HT# 19481		1586		84-T-044	W-008
22	X	X	X						PO# S04205 HT# 41059					W-009
23	X	X	X						PO# S03854 HT# 48291					W-010
24	X	X	X						PO# S03854 HT# 57731					W-011
25	X	X	X						PO# S04056 HT# 49586					W-012
27	Renumbered to NO. 40								PO# S04631/04816 HT# 4740-57					W-013
28	X	X	X						PO# S04819 HT# 5250-0076					W-014
30	X	X	X						PO# S04819 HT# 7621-57					W-015
32	X	X	X						PO# S04819 HT# D4829R308L					W-016
39	X	X							PO# S01885 HT# 3932-57					W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019

NOTES:




1. Mr. Gary Talley Symbol No. 6
L II, PT&T. 5-8-85 to 5-31-95
2. Mr. Manfred Grell Symbol No. 7
L II, PT&T as of 7-22-85
3. Mr. Rick A. Sellers Symbol No. 7
L II, PT&T, from 4-24-85 to 5-31-85

3. All the welding machines were calibrated into 1986.

Note 3

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154Q18F REV. 5	3		Weld - Upper Head  Weld 1	<u>WELDING</u> <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<u>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</u> <ul style="list-style-type: none"> *WPS-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's 24, 25, 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		
				<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Interpass temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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. Tank 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

* See Page 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No. <u>6</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>6</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

S. ELL
SERIAL NO. 43PI

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

FILTER
Serial No. F-402
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved PT procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (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 	<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> *Latest approved procedure was used • Personnel qualified Selamco QC- <u>3</u> Selamco QC <u>6</u> • *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: <u>PENETRANT URESKO H233</u> <u>REMOVER 1520</u> <u>DEVELOPER 1522</u>

SHELL
SERIAL No 43P1

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

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> • Verify the following requirements/activities a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>6</u> • *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).

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.

Rev. 2

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RM)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G6031	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/NG) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-0577	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-0241	W-007
21	X	X	X						PO# S04205 HT# 41039		1586		84-T-044	W-008
22	X	X	X						PO# S03854 HT# 48291					W-009
23	X	X	X						PO# S03854 HT# 57731					W-010
24	X	X	X						PO# S04056 HT# 49586					W-011
25	X	X	X						PO# S04631/0481 HT# 4740-57					W-012
27	Renumbered to NO. 40								PO# S04819 HT# 5250-0076					W-013
28	X	X	X						PO# S04819 HT# 7621-57					W-014
30	X	X	X						PO# S04819 HT# 14829R308L					W-015
32	X	X	X						PO# S01885 HT# 3932-57					W-016
39	X	X												W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019

NOTES:

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

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	3		Weld - Zone D-12	<u>WELDING</u> <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<p>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</p> <ul style="list-style-type: none"> *WPS-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's 22,23,25,39,40 Filler Material is controlled/ disbursed. The correct WPS was utilized The welding machines are calibrated
	4		Weld - Zone F-4 Weld 2		
				<u>IN PROCESS INSPECTION/ EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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

* See Page 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> Verify the following requirements/activities <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination (1) Review RT (or UT) personnel education, training and work history records including current eye exam. 	<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> *Visual Examination by Selamco No <u>3</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>3</u> Welder and weld no.(s) are identified <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> <p>Verify the following requirements/activities</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> <ul style="list-style-type: none"> • *Latest approved procedure was used • Personnel qualified Selamco QC-- <u>3</u> • *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)**

Serial No. F-402
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>3</u> • *Personnel, education, training and eye examination are acceptable • Not applicable for weld inspection o Continued from Page 1, Item b, Cleanliness The 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).

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

Rev. 2

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			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from UNRESO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QTP VT/O	QTP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002 W-003
5	X	X	X	4	X	X	X	X(SEB/RMD)	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/NG) Note 2	PC# 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 HT# 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

NOTES:

1. • Mr. Gary Talley Symbol No. 6
L II, PT&T. 5-8-85 to 5-31-95

• Mr. Steve Detrich Symbol No. 6
L II, PT&T. 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. 3
L II, PT&VT, from 4-24-85 to 5-31-85

3. All the welding machines were calibrated into 1986.



Note 3

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

FILTER
Serial No. F- 402
Page 1 of 4

Rev. 2

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	<u>WELDING</u> <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<p>*Details on the attached <u>MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</u></p> <ul style="list-style-type: none"> *WPs-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's <u>22,23,25,39</u> Filler Material is controlled/dispursed. 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)	<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No 4 RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing laboratory 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

**CAHISTER
CHECKLIST**

(Welding & NDE) (W-3)

FILTER

Serial No. F-402

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

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

**CANISTER
CHECKLIST** (Welding & NDE) (W-3)

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. 4 • *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).

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.

Rev. 2

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

NOTES:

1. * Mr. Gary Talley Symbol No. 6
L II, PT&T, 5-8-85 to 5-31-85
- * Mr. Steve Petrich Symbol No. 6
L II, PT&T, 7-22-85
2. * Mr. Manfred Grell Symbol No. 7
L II, PT&T 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.



Note 3

**CANISTER
CHECKLIST (Welding & NDE) (W-4)**

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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5	4		Weld - Zone D-7  Weld 1	<u>WELDING</u> <ul style="list-style-type: none"> 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 	<p>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</p> <ul style="list-style-type: none"> *WPS-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's <u>22,30</u> Filler Material is controlled/dispursed. 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	<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Fit up by Selamco <u>2</u> 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS F-402

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5				<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <ol style="list-style-type: none"> Review RT (or UT) personnel education, training and work history records including current eye exam. 	<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> *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 <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

Rev. 2

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

CANISTER
CHECKLIST

(Welding & NDE) (W-4)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified • *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).

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. Rev. 2

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMA)	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(IGT/SRD)	PO# S01587		H-220		84-L-010	W-006
19	X	X	X	7	X	X	X	Note 1 X(RAS/ING)	PC# S04243		H-295		84-F-057	W-007
20	X	X	X	8	X	X	X	Note 2 X(LL)	HT# 6259-57		H-271		84-D-024	W-008
21	X	X	X						PO# S04056		1586		84-T-044	W-009
22	X	X	X						HT# 19481					
23	X	X	X						PO# S04205					W-010
24	X	X	X						HT# 41039					
25	X	X	X						PO# S03854					W-011
27	Renumbered to NO. 40								HT# 48291					
28	X	X	X						PO# S03854					W-012
30	X	X	X						HT# 57731					
32	X	X	X						PO# S04056					W-013
39	X	X							HT# 49586					
40	Renumbered to NO. 28								PO# S04631/04816					W-014
41	X	X	X						HT# 4740-57					W-015
									PO# S04819					W-016
									HT# 5250-0076					
									PO# S04819					W-017
									HT# 7621-57					
									PO# S04819					W-018
									HT# D4829R308L					
									PO# S01885					W-019
									HT# 3932-57					

NOTES:

1. Mr. Gary Talley Symbol No. 6
L II, PT&T. 5-8-85 to 5-31-95




Mr. Steve Detrich Symbol No. 6
L II, PT&T. 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.

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	<u>WELDING</u> <ul style="list-style-type: none"> 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 AWP meter on welding machine <u>IN PROCESS INSPECTION/ EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Interpass temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding. <ul style="list-style-type: none"> *WPS-001 Rev. B, is approved WPS-004, Rev. O, 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 <u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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
	4		Weld - Lower Head  Weld 2		
	5		Weld - Drain Tube To Upper Head  Weld 3		

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No <u>6</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>3 & 4</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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)

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Serial No. F-403
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> *Latest approved procedure was used • Personnel qualified Selamco QC- <u>3</u> Selamco QC <u>4</u> • *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: <u>URESCO H 233</u> <u>REMOVER 1520</u> <u>DEVELOPER 1522</u>

CANISTER
CHECKLIST

(Welding & NDE) (W-1)

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Serial No. F-403
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>3,4,6</u> • *Personnel, education, training and eye examination are acceptable • Not applicable for weld inspection <ul style="list-style-type: none"> o Continued from Page 1, Item b, Cleanliness <p>The Bechtel Resident Inspector has performed surveillance for cleanliness; also several travelers document the Resident Inspector's inspection for cleanliness.</p> o Continued from Page 1, Item c, The correct items were welded. <p>The correct items are documented on the traveler(s).</p>

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.

Rev. 2

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		OYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RM)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/NG) Note 2	PG# SG-243 HT# 6259-57		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-007
21	X	X	X						PO# S04202 HT# 41039		1586		84-T-044	W-008
22	X	X	X						PO# S03854 HT# 48291					W-009
23	X	X	X						PO# S03854 HT# 57731					W-010
24	X	X	X						PO# S04056 HT# 49586					W-011
25	X	X	X						PO# S04631/04816 HT# 4740-57					W-012
27	Renumbered to NO. 40								PO# S04819 HT# 5250-0076					W-013
28	X	X	X						PG# S04819 HT# 7621-57					W-014
30	X	X	X						PO# S04819 HT# D4829R308L					W-015
32	X	X	X						PO# S01885 HT# 3932-57					W-016
39	X	X												W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019

NOTES:

1. • Mr. Gary Talley Symbol No. 6
L II, PT&T. 5-8-85 to 5-31-95

• Mr. Steve Detrich Symbol No. 6
L II, PT&T. 7-22-85

2. • Mr. Manfred Grell Symbol No. 7
L II, PT&T as of 7-22-85

• Mr. Rick A. Sellers Symbol No. 7
L II, PT&T, from 4-24-85 to 5-31-85

3. All the welding machines were calibrated into 1986.

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	3		Weld - Zone D-12	<u>WELDING</u> <ul style="list-style-type: none"> 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 AHP 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. O, is approved *Welders are qualified Welder no's 21, 22, 40 Filler Material is controlled/dispursed. The correct WPS was utilized The welding machines are calibrated
	4		Weld - Zone F-4 Weld 2		
				<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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

* See Page 4

CANISTER
CHECKLIST

(Welding & NDE) (W-2)

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No. <u>3</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>3</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved PT procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (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 	<ul style="list-style-type: none"> • <u>LIQUID PENETRANT EXAMINATION</u> *Latest approved procedure was used • Personnel qualified Selamco QC- <u>3</u> • *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: <ul style="list-style-type: none"> <u>Penetrant 84J044</u> <u>Remover 84F057</u> <u>Developer 85A015</u>

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

FILTER
Serial No. F-403
Page 4 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>3</u> • *Personnel, education, training and eye examination are acceptable • Not applicable for weld inspection <ul style="list-style-type: none"> 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).

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

Rev. 2



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			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QTP VT/O	QTP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PQ-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMB)	PQ-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/ING) Note 2	PC# S04243 HT# 6259-57		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-007
21	X	X	X						PO# S04056 HT# 19481		1586		84-T-044	W-008
22	X	X	X						PO# S01200 HT# 41039					W-009
23	X	X	X						PO# S03854 HT# 48291					W-010
24	X	X	X						PO# S03854 HT# 57731					W-011
25	X	X	X						PO# S04056 HT# 49586					W-012
27	Renumbered to NO. 40								PO# S04631/04816 HT# 4740-57					W-013
28	X	X	X						PO# S04819 HT# 5250-0076					W-014
30	X	X	X						PO# S04819 HT# 7621-57					W-015
32	X	X	X						PO# S04819 HT# D4829R308L					W-016
39	X	X							PO# S01885 HT# 3932-57					W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019

NOTES:

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

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	<u>WELDING</u> <ul style="list-style-type: none"> • 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 AWP meter on welding machine 	<p>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</p> <ul style="list-style-type: none"> • *WPS-001 Rev. B, is approved • WPS-004 Rev. O, is approved • *Welders are qualified • Welder no's <u>22,23,25,39</u> • Filler Material is controlled/dispursed. • 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)	<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> • Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> 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 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> • 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <ol style="list-style-type: none"> Review RT (or UT) personnel education, training and work history records including current eye exam. 	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No 4 RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing laboratory via procedures; PTL-QC-RT-1, PTL-QC-UT-1 Personnel qualified: Selamco. L. Ludwig, Lev:1 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									
1150959D REV. 4				<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities<ul style="list-style-type: none">a. Latest approved PT procedure usedb. Personnel qualified to perform the examination<ul style="list-style-type: none">(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 reviewd. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)e. PT material batch numbers recorded on traveller	<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u><ul style="list-style-type: none">• *Latest approved procedure was used• Personnel qualified• *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:<table><tr><td>85B066</td><td>85A015</td><td>85C003</td></tr><tr><td>83H041</td><td>84L010</td><td>84F057</td></tr><tr><td>83A051</td><td>84D024</td><td>84T044</td></tr></table>	85B066	85A015	85C003	83H041	84L010	84F057	83A051	84D024	84T044
85B066	85A015	85C003												
83H041	84L010	84F057												
83A051	84D024	84T044												

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selasco no. 4 • *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).

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

Rev. 2



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

NOTES:

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	4		Weld - Zone D-7  Weld 1	<u>WELDING</u> <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<u>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</u> <ul style="list-style-type: none"> *WPs-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's <u>22,30</u> Filler Material is controlled/dispursed. 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	<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Fit-up by Selamco <u>2</u> 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <ol style="list-style-type: none"> Review RT (or UT) personnel education, training and work history records including current eye exam. 	<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> *Visual Examination by Selamco <ul style="list-style-type: none"> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. 4 Welder and weld no.(s) are identified <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcon tracted to PTL Pittsburgh testing laboratory 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

Rev. 2

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION												
11509490 Rev. 5				<p>• <u>LIQUID PENETRANT EXAMINATION</u></p> <p>Verify the following requirements/activities</p> <p>a. Latest approved PT procedure used</p> <p>b. Personnel qualified to perform the examination</p> <p>(1) Review PT personnel education, training and work history records, including current eye examination.</p> <p>c. PT materials utilized are acceptable materials and certificates of compliance are available for review</p> <p>d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)</p> <p>e. PT material batch numbers recorded on traveller</p>	<p><u>LIQUID PENETRANT EXAMINATION</u></p> <p>• *Latest approved procedure was used</p> <p>• Personnel qualified Selamco QC- <u>4</u></p> <p>• *Personnel, education, training and eye examination are acceptable</p> <p>• PT materials are acceptable C of C(s) are available</p> <p>• PT materials comply to project specification</p> <p>• *Batch no's are acceptable Batch no's used are:</p> <table><tr><td><u>H233</u></td><td><u>H295</u></td><td><u>H305</u></td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr></table>	<u>H233</u>	<u>H295</u>	<u>H305</u>	_____	_____	_____	_____	_____	_____	_____	_____	_____
<u>H233</u>	<u>H295</u>	<u>H305</u>															
_____	_____	_____															
_____	_____	_____															
_____	_____	_____															

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5				<p>• <u>VISUAL EXAMINATION</u></p> <p>Verify the following requirements/activities</p> <p>a. Latest approved procedure used</p> <p>b. Personnel qualified to perform the examination</p> <p>(1) Review visual examination personnel education, training and work history records, including current eye examination.</p> <p>c. Calibrated inspection tools were utilized</p>	<p>• *Procedure used is acceptable</p> <p>• *Personnel qualified</p> <p>• *Personnel, education, training and eye examination are acceptable</p> <p>• Not applicable for weld inspection</p> <p>o Continued from Page 1, Item b, Cleanliness</p> <p>The Bechtel Resident Inspector has performed surveillance for cleanliness; also several travel documents document the Resident Inspector's inspection for cleanliness.</p> <p>o Continued from Page 1, Item c, TI correct items were welded.</p> <p>The correct items are documented on the traveler(s).</p>

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.

Rev. 2




Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QTP VT/O	QTP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-M-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMM)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD)	PO# S011687		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	Note 1 X(RAS/NG)	PC# S04243		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	Note 2 X(LL)	HT# 6259-57		H-271		84-D-024	W-007
21	X	X	X						PO# S04056		1586		84-T-044	W-008
22	X	X	X						HT# 19481					W-009
23	X	X	X						PO# S04282					W-010
24	X	X	X						HT# 41039					W-011
25	X	X	X						PO# S03854					W-012
27	Renumbered to NO. 40								HT# 48291					W-013
28	X	X	X						PO# S03854					W-014
30	X	X	X						HT# 57731					W-015
32	X	X	X						PO# S04056					W-016
39	X	X							HT# 49586					W-017
40	Renumbered to NO. 28								PO# S04621/04816					W-018
41	X	X	X						HT# 4740-57					W-019
									PO# S04819					W-020
									HT# 5250-0076					W-021
									PO# S04819					W-022
									HT# 7621-57					W-023
									PO# S04819					W-024
									HT# D4829R308L					W-025
									PO# S01885					W-026
									HT# 3932-57					W-027

NOTES:

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154Q18F REV. 5	3		Weld - Upper Head 	<u>WELDING</u> <ul style="list-style-type: none"> Verify Qualification and approval of WPS utilized Verify welder qualification for WPS utilized Verify filler material control and disbursement 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 	<u>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</u> <ul style="list-style-type: none"> *WPS-001 Rev. B, is approved WPS-004, Rev. O, is approved *Welders are qualified Welder no's 24,39,40 Filler Material is controlled/ disbursement. The correct WPS was utilized The welding machines are calibrated
	4		Weld - Lower Head 		
	5		Weld - Drain Tube To Upper Head		
			 Weld 3		
				<u>IN PROCESS INSPECTION/ EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up inspection Cleanliness inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> 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 (NIA) as NDE is not required

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *Visual Examination by Selamco No. <u>6</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>3 & 4</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to (PTL) Pittsburgh testing laboratory via procedures; FTL-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)

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Serial No. F-404
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<p>• <u>LIQUID PENETRANT EXAMINATION</u></p> <p>Verify the following requirements/activities</p> <p>a. Latest approved PT procedure used</p> <p>b. Personnel qualified to perform the examination</p> <p>(1) Review PT personnel education, training and work history records, including current eye examination.</p> <p>c. PT materials utilized are acceptable materials and certificates of compliance are available for review</p> <p>d. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)</p> <p>e. PT material batch numbers recorded on traveller</p>	<p>• <u>LIQUID PENETRANT EXAMINATION</u></p> <p>• *Latest approved procedure was used</p> <p>• Personnel qualified Selamco QC- <u>3</u> Selamco QC <u>4</u></p> <p>• *Personnel, education, training and eye examination are acceptable</p> <p>• PT materials are acceptable C of C(s) are available</p> <p>• PT materials comply to project specification</p> <p>• *Batch no's are acceptable Batch no's used are: <u>PENETRANT URESO H233</u> <u>REMOVER 1520</u> <u>DEVELOPER 1522</u></p>

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154018F REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> 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 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>3,4,6</u> • *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).

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.

Rev. 2

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & MT NOS.	PT Certs from URESO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QTP VT/O	QTP-PT- V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002 W-003
5	X	X	X	4	X	X	X	X(SEB/RMA)	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(IGT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-006
19	X	X	X	7	X	X	X	X(RAS/ING) 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# S04202 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 HT# 4740-57					W-013
27	Renumbered to 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

NOTES:


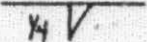
1. • Mr. Gary Talley Symbol No. 6
L II, PT&VT. 5-8-85 to 5-31-85
- Mr. Steve Detrich Symbol No. 6
L II, PT&VT. 7-22-85
2. • Mr. Manfred Grell Symbol No. 7
L II, PT&VT as of 7-22-85
- Mr. Rick A. Sellers Symbol No. 7
L II, PT&VT, from 4-24-85 to 5-31-85
3. All the welding machines were calibrated into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

Note 3

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2	3		Weld - Zone D-12	WELDING <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<p>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</p> <ul style="list-style-type: none"> *WPS-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's 2, 21, 22, 38, 40 Filler Material is controlled/ disbursed. The correct WPS was utilized The welding machines are calibrated
	4		Weld - Zone F-4  Weld 1  Weld 2		
				IN PROCESS INSPECTION/ EXAMINATION <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	IN PROCESS/INSPECTION/EXAMINATION <ul style="list-style-type: none"> 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
					* See Page 4

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 2				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> * Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> * <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> * Visual Examination by Selamco No <u>3</u> RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco No. <u>4</u> Welder and weld no.(s) are identified <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> * <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> * Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

F-404

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION												
1154020E REV. 2				<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities<ul style="list-style-type: none">a. Latest approved PT procedure usedb. Personnel qualified to perform the examination<ul style="list-style-type: none">(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 reviewd. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)e. PT material batch numbers recorded on traveller	<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> • *Latest approved procedure was used• Personnel qualified Selamco QC- <u>4</u>• *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: <table><tr><td><u>H233</u></td><td><u>H295</u></td><td><u>H305</u> URESKO</td></tr><tr><td><u>84J044</u></td><td><u>85C003</u></td><td><u>85A015</u> MAGNAFLUX</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr><tr><td>_____</td><td>_____</td><td>_____</td></tr></table>	<u>H233</u>	<u>H295</u>	<u>H305</u> URESKO	<u>84J044</u>	<u>85C003</u>	<u>85A015</u> MAGNAFLUX	_____	_____	_____	_____	_____	_____
<u>H233</u>	<u>H295</u>	<u>H305</u> URESKO															
<u>84J044</u>	<u>85C003</u>	<u>85A015</u> MAGNAFLUX															
_____	_____	_____															
_____	_____	_____															

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

FILTER
Serial No. F-404
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IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1154020E REV. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. <u>3 & 4</u> • *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).

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

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Rev. 2



Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QTP VT/O	QTP-PT- V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMA)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/ING) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-007
21	X	X	X						PO# S04205 HT# 41039		1586		84-T-044	W-008
22	X	X	X						PO# S03854 HT# 48291					W-009
23	X	X	X						PO# S03854 HT# 57731					W-010
24	X	X	X						PO# S04056 HT# 49586					W-011
25	X	X	X						PO# S04631/04816 HT# 4740-57					W-012
27	Renumbered to NO. 40								PO# S04819 HT# 5250-0076					W-013
28	X	X	X						PO# S04819 HT# 7621-57					W-014
30	X	X	X						PO# S04819 HT# D4829R308L					W-015
32	X	X	X						PO# S01885 HT# 3932-57					W-016
39	X	X												W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019

NOTES:

1. Mr. Gary Talley Symbol No. 6
L II, PT&T. 5-8-85 to 5-31-85
2. Mr. Manfred Greil Symbol No. 7
L II, PT&VT as of 7-22-85
3. 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.

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	<u>WELDING</u> <ul style="list-style-type: none"> • 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 AWP meter on welding machine <u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> • Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials Welding.</u> <ul style="list-style-type: none"> • *WPs-001 Rev. B, is approved • WPS-004 Rev. O, is approved • *Welders are qualified • Welder no's <u>22,23,25,39</u> • Filler Material is controlled/ disbursed. • The correct WPS was utilized • The welding machines are calibrated <u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> • 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
	5		Weld - Zone C-4  Weld 2		
	Note 2		PT in Accordance with ASME Sect. V, ART. 6 (1983 W/No Addenda)		

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> Verify the following requirements/activities <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <ol style="list-style-type: none"> Review RT (or UT) personnel education, training and work history records including current eye exam. 	<u>COMPLETED WELD VERIFICATION</u> <ul style="list-style-type: none"> *Visual Examination by Selamco No 4 RT & UT procedures are approved by Bechtel RT & UT not required PT by Selamco Welder and weld no.(s) are identified <u>NON-DESTRUCTIVE EXAMINATION</u> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

CHECKLIST

(Welding & NDE) (W-3)

FILTER

Serial No. F-404

Page 3 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUAN- TITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION									
1150959D REV. 4				<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> Verify the following requirements/activities<ul style="list-style-type: none">a. Latest approved PT procedure usedb. Personnel qualified to perform the examination<ul style="list-style-type: none">(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 reviewd. PT materials comply with the requirements of the project specifications for chemical content (contaminants, etc.)e. PT material batch numbers recorded on traveller	<ul style="list-style-type: none">• <u>LIQUID PENETRANT EXAMINATION</u> *Latest approved procedure was used• Personnel qualified• *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: <table><tr><td>85B066</td><td>85A015</td><td>85C003</td></tr><tr><td>83H041</td><td>84L010</td><td>84F057</td></tr><tr><td>83A051</td><td>84D024</td><td>84T044</td></tr></table>	85B066	85A015	85C003	83H041	84L010	84F057	83A051	84D024	84T044
85B066	85A015	85C003												
83H041	84L010	84F057												
83A051	84D024	84T044												

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150959D REV. 4				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified Selamco no. 4 • *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).

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.

Rev. 2

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMN)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X	X	5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	PO# S011687 HT# 25131		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/YG) Note 2	PO# S04243 HT# 6259-57		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PO# S04056 HT# 19481		H-271		84-D-024	W-007
21	X	X	X						PO# S04205 HT# 41039		1586		84-T-044	W-008
22	X	X	X						PO# S03854 HT# 48291					W-009
23	X	X	X						PO# S03854 HT# 57731					W-010
24	X	X	X						PO# S04056 HT# 49586					W-011
25	X	X	X						PO# S04631/04816 HT# 4740-57					W-012
	Renumbered to NO. 40								PO# S04819 HT# 5250-0076					W-013
28	X	X	X						PO# S04819 HT# 7621-57					W-014
30	X	X	X						PO# S04819 HT# D4829R308L					W-015
32	X	X	X						PO# S01885 HT# 3932-57					W-016
39	X	X												W-017
40	Renumbered to NO. 28													W-018
41	X	X	X											W-019

NOTES:

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



Note 3

CARTER
CHECKLIST (Welding & NDE) (W-4)

Serial No. F-404
Page 1 of 4

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5	4		Weld - Zone D-7  Weld 1	<u>WELDING</u> <ul style="list-style-type: none"> 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 AWP meter on welding machine 	<p>*Details on the attached MATRIX of approved/certified welding and NDE Procedures, Personnel & Materials <u>Welding</u>.</p> <ul style="list-style-type: none"> *WPa-001 Rev. B, is approved WPS-004 Rev. O, is approved *Welders are qualified Welder no's <u>22,30</u> Filler Material is controlled/dispursed. 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	<u>IN PROCESS INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Verify the following activities were performed using latest approved procedure <ol style="list-style-type: none"> Fit-up Inspection Cleanliness Inspection Correct items were welded Minimum Preheat temperature Maximum Interpass temperature NDE (in process) Inspection/Examination personnel certified 	<u>IN PROCESS/INSPECTION/EXAMINATION</u> <ul style="list-style-type: none"> Fit up by Selamco <u>2</u> Fit up witness⁴ 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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

Rev. 2

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
1150949D Rev. 5				<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> Verify the following activities were performed using the latest approved procedure: <ol style="list-style-type: none"> Visual Examination Radiographic (or Ultrasonic) Examination Liquid Penetrant Examination Welder and weld number identified on weld or on documentation, i.e. (weld map) <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <p>Verify the following requirements/activities</p> <ol style="list-style-type: none"> Latest approved RT (or UT) procedure used Personnel qualified to perform the examination <p>(1) Review RT (or UT) personnel education, training and work history records including current eye exam.</p>	<p><u>COMPLETED WELD VERIFICATION</u></p> <ul style="list-style-type: none"> *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 <p><u>NON-DESTRUCTIVE EXAMINATION</u></p> <ul style="list-style-type: none"> <u>RADIOGRAPHIC/ULTRASONIC EXAMINATION</u> <ul style="list-style-type: none"> *Procedures approved by Bechtel QC-RT, Rev. 13, QC-UT, Rev. 10 RT & UT subcontracted to PTL Pittsburgh testing laboratory 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

Rev. 2

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

IDENTIFICATION OF ATTRIBUTES, VERIFICATION REQUIREMENTS, AND VERIFICATIONS

DRAWING NO	ITEM NO	QUANTITY	DESCRIPTION	REQUIREMENT FOR VERIFICATION	VERIFICATION
11509490 Rev. 5				<ul style="list-style-type: none"> • <u>VISUAL EXAMINATION</u> Verify the following requirements/activities <ul style="list-style-type: none"> a. Latest approved procedure used b. Personnel qualified to perform the examination <ul style="list-style-type: none"> (1) Review visual examination personnel education, training and work history records, including current eye examination. c. Calibrated inspection tools were utilized 	<ul style="list-style-type: none"> • *Procedure used is acceptable • *Personnel qualified • *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).

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.

Rev. 2

Certified Welders Symbol	Weld Procedures			QC INSP Symbols	NDE Procedures		NDE Personnel Qual		Filler Metal PO & HT NOS.	PT Certs from URESCO BATCH NOS.			MAGNAFLUX CERTS Batch Nos.	Calibration Weld Mach. Serial Nos.
	NO. 001/A	NO. 002/B	NO. 004/C		QIP VT/O	QIP-PT-V/O	Level II VT	Level II PT(INT)		DYE	REMOVER	Developer		
2	X	X	X	1		X	X	X	PO-S-010587	H233	1386	1522	85-B-066	W-001
3	X	X	X	3	X	X	X	X(DCP)	HT-A4402R308	H294	1520	H251	83-H-041	W-002
5	X	X	X	4	X	X	X	X(SEB/RMD)	PO-S-04707		H-236	H305	83-A-015	W-003
12	X	X		5	X	X	X	X(DLS)	HT-5382-308		H-244		85-G-003	W-004
14	X	X	X	6	X	X	X	X(IGT/SRD) Note 1	PO# S011687		H-220		84-L-010	W-005
19	X	X	X	7	X	X	X	X(RAS/ING) Note 2	HT# 25131		H-295		84-F-057	W-006
20	X	X	X	8	X	X	X	X(LL)	PC# SG-243		H-271		84-D-024	W-007
21	X	X	X						HT# 6259-57				84-T-044	W-008
22	X	X	X						PO# S04056		1586			W-009
23	X	X	X						HT# 19481					
24	X	X	X						PO# S04205					W-010
25	X	X	X						HT# 41039					
27	Renumbered to NO. 40								PO# S03854					W-011
28	X	X	X						HT# 48293					W-012
30	X	X	X						PO# S03854					W-013
32	X	X	X						HT# 57731					W-014
39	X	X							PO# S04056					W-015
40	Renumbered to NO. 28								HT# 49586					W-016
41	X	X	X						PO# S04631/04816					W-017
									HT# 4740-57					W-018
									PO# S04819					W-019
									HT# 5250-0076					W-020
									PO# S04819					W-021
									HT# 7621-57					W-022
									PO# S04819					W-023
									HT# D4829R308L					W-024
									PO# S01885					W-025
									HT# 3932-57					W-026

NOTES:

1. • Mr. Gary Talley Symbol No. 6
L II, PT&T, 5-8-85 to 5-31-95

• Mr. Steve Detrich Symbol No. 6
L II, PT&T, 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.

Note 3

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 specialized 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 W45.2 Requirements not Identified

Imposition of ANSI W45.2 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 W45.2 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.)

Rev. 2

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.

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.

COMMENT NO. 1
PAGE TWO

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 CANISTERCOMMENT NO. 2
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.
2-R200C-03
2-R200C-7
2-R200C-8
2-M101A-2
2-M101A-5
2-M101A-12
2-M101A-13
2-M101A-15
2-M101A-16
2-M101A-17

SDDR NO.
2-M101A-20
2-M101A-39
2-M101A-41
2-M101A-45
2-M101A-48
2-M101A-53
2-M101A-57
2-M101A-58
2-M101A-65

SDDR NO.
2-M101A-68
2-M101A-71
2-M101A-72
2-M101A-73
2-M101A-75
2-M101A-76
2-M101A-77
2-M101A-79
2-M101A-80
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/repared.

NES Documents Reviewed

o Manufacturing Calibration Tool Record, Log

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

o 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.)

o Calibration Tags on Equipment and Tools

Types of equipment and tools reviewed included:

o 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 and final inspection are within their 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 Boveri 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.

**FILTER CANISTERS
COMMENT NO. 5
CATALYST INSPECTION**

The following data outlines NES operations, manufacturing and inspection of the catalysts from the time the catalysts were individually weighed and bagged to the time the bagged catalysts were inserted into cavities in the cannister upper and lower heads.

The two (2) types of catalyst were provided to NES as Customer (Bechtel) furnished material (CFM). The two types of catalysts are:

<u>Drawing No.</u>	<u>Drawing Title and Source</u>
1150940	Recombiner Catalyst (1/8" dia.) Purchased from: Engelhard Speciality Chemicals Div. Union M.J.
1150972	Silicon-Coated Recombiner CATALYST (1/4" Dia.) Purchased From: Atomic Energy of Canada Limited, Chalk River, Ontario.

The subject catalyst documents were receipt inspected and accepted by NES, the catalysts in bulk form were then forwarded to the storage area.

the chronology of events that occurred when the bulk catalysts were released from the storage area to be put into individual (Tare Containers) packages, weighed and inserted into the cannister upper and lower heads as follows:

2-25-85 - Traveler No. 003734 is issued.

This traveler (TVR) was issued to document the packaging and weighing of the two (2) bulk catalysts into 2000 individual packages. Each assembly has 5 grams of AECL in one package and 20 grams of ENGELHARD in another package. The two packages, a 5 gram & a 20 gram, were then tied together to form one assembly.

3-4-85 - Traveler 003697 is issued for the lower heads, Qty. 4

A review of the Traveler indicated that: individual assemblies of weighed catalysts were withdrawn from stores and each assembly of catalysts, was verified by NES QC. NES QC verified that the correct material was withdrawn from stores. The contents of each assembly was then placed into basket(s) in the lower ahead. This function was witnessed by the Resident Bechtel Inspector.

Also, NES QC performed 100% inspection on the completed lower heads. This provides assurance that manufacturing inserted the catalysts into the header baskets.

4-1-85 - Traveler 003778 is issued for the upper heads, Qty 4

A review of the Traveler indicated that individual assemblies of weighed catalysts is withdrawn from stores verified by QC, for insertion in the upper heads. The contents of two assemblies were then placed into the

cavity in the upper head. This function was witnessed by the Bechtel resident inspector for four heads and the NES QA manager also witnessed placement of the contents of the assemblies in two of the heads.

Also, NES QC performed 100% inspection on the completed upper heads. This provides assurance that manufacturing inserted the catalysts into the cavities in the heads.

6-17-85 NCR No. 245 is issued

NCR No. 245 was issued reporting that several QC and material control items on Traveler No. 003734 were not stamped. (Traveler No. 003734 is outlined above).

NCR No. 245 reports that:

1. Materials on sheet 1 of the Traveler not verified by QC.
2. No MC stamp for verification of materials released from stores.
3. No QC stamp for verification of materials released from stores.
4. No QC "First Article" inspection of the catalysts weights.
5. No QC verification of the inspection of the catalysts weights.
6. The Traveler does not have a signature or data for the task titled "Notify Source Inspection".
7. Changes were made on the traveler w/o QA approval.

7-10/31-85 - NCR 245 Mfg Review of the NCR for "Cause" and Corrective Action

The review determined that for item No.'s: 1, 2, 3, & 6 - Manufacturing supervision has been notified of their errors.

4 "First Article" inspection was performed (2-25-85) and is documented on traveler No. 003734 for operation steps 30 & 40.

5 The packaging, operation is not completed.

Although not documented in the above NES manufacturing response Traveler 003734, does contain a QC stamp; on the back of sheet 3 of the traveler documenting that QC also witnessed and accepted on 5-15-85 production weights of the catalysts.

7-31-85 - "Disposition Instructions"

NCR 245 "Disposition Instructions," are "Use-As-Is based upon Quality Control verifying operations 30 & 40 in final inspection stage. Twenty (20) sample packages to be verified"

8-1-85 - M.R.B. Rework Traveler No. 004514 is issued.

The Traveler documents that Material Control is to withdraw 20 random samples of catalyst assembly packages in stores and have QC weigh each of the two types of catalysts and log the weights.

QC 8-2-85 QC verified and accepted the weights in 20 assembly packages. The 20 AECL packages and the 20 Englehard packages contained the proper weight of catalyst.

8-21-85 SDDR No. 68 Issued to Bechtel Engineering

NES issued SDDR No. 68 to Bechtel Engineering reporting that: when recombiner catalyst was weighted and bagged from bulk supply individual inspection verification of weights was not performed."

8-22-85 - SDDR No. 68 Dispositioned by Bechtel Engineering

Bechtel Engineering dispositioned SDDR No. 68 as: "This SDDR is rejected. The deviation stated above is not a design deviation requiring engineering disposition, it is a deviation in the NES implementation of their QA Program."

8-22-85 - Bechtel QA review of NCR 245 and SDDR No. 68

Bechtel canister verification team on a conference tele-con discussed status/resolution of NCR No. 245 and SDDR No. 68 with Bechtel QA Management and the Bechtel Resident Inspector. The Bechtel resident inspector reported that he had witnessed and accepted on a periodic surveillance basis the weights of the catalyst packages, he further reported that he had also witnessed and accepted on a witness basis the inserting of the contents of the catalyst assemblies in the canister upper & lower heads. Based on the preceding data and SDDR #68 which indicated that the catalyst weights are correct, Bechtel concurred with NES disposition on the NCR "Use-As-Is".

8-22-85 - NES QA Closed NCR 245 & SDDR No. 68