

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No: 50-546/78-08; 50-547/78-08

Docket No: 50-546; 50-547

License No. CPPR-170; CPPR-171

Licensee: Public Service of Indiana
1000 East Main Street
Plainfield, IN 46168

Facility: Marble Hill Generating Station Units 1 and 2

Inspection At: Marble Hill Site, Jefferson County, IN

Inspection Conducted: November 6-9, 1978

Inspectors: *E. R. Schweibinz*
E. R. Schweibinz

12-27-78

E. J. Gallagher
E. J. Gallagher

12/22/78

K. R. Naidu
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12/26/78

Other Accompanying Personnel: R. L. Spessard

Approved By: *D. W. Hayes*
D. W. Hayes, Chief
Projects Section

12/28/78

Inspection Summary

Inspection on November 6-9, 1978 (Reports No. 50-546/78-08; 50-547/78-08)

Areas Inspected: Reactor pressure vessel (RPV), steam generators and RPV head handling QA records; cadweld inspection and associated records; earth work activities; earth work procedures and quality records; containment structural steel quality records; containment structural steel welding records; containment structural steel welding activities; containment structural steel work activities; safety related structures quality records; safety related structures welding records; and safety related embedments records. This inspection involved a total of 65 inspector-hours onsite by three NRC inspectors. Results: Of the 11 areas inspected, no items of noncompliance or deviations were found in nine areas; two apparent items of noncompliance were identified in two areas (Infraction - failure to follow procedures in the handling of NSSS equipment - Section 1, Paragraph 2; Infraction - failure to provide adequate inspection of cadwelding activities - Section 2, Paragraph 1 a, b, and c).

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DETAILS

Persons Contacted

Public Service of Indiana (PSI)

- *R. M. Brown, Construction Project Engineer
- *F. R. Hodges, Manager Quality Assurance
- *R. S. Peterson, Quality Assurance Supervisor
- *J. M. Coffman, QC Engineer - Civil
- *T. L. McLarty, QC Engineer - Mechanical
- *W. A. Muensterman, Senior Construction Field Engineer
- *D. L. Shuter, QC Engineer
- *J. Cook, Construction Engineering - Nuclear

Newberg - Marble Hill

- *T. L. Kueck, Quality Assurance Supervisor

Whalen-Chilstrom

- *R. W. Noyes, Quality Assurance Supervisor

U. S. Testing Laboratory

- *D. Lanham, Supervisor.

The inspectors also contacted and interviewed other licensee and contractor personnel, including craftsmen, QA/QC, technical and engineering staff members.

*Denotes those attending the exit meetings.

Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (546/78-05-01; 547/78-05-01) It was previously reported that inadequate receipt inspection checklists were being used to inspect incoming safety related structural components. The checklists have since been revised incorporating quantitative acceptance criteria. The inspector reviewed the receipt inspection report dated October 30, 1978, which documents the receipt inspection of Category 1 structural steel manifests 1 through 5, 10982 and determined that unsatisfactory conditions were identified in detail. The document also identifies that Field Corrective Action Reports (FCAR) 401, and 415 were written to document the nonconformances. Review of the FCARs indicates that discrepancies were identified in detail and corrective action to be taken is being awaited from Inland Ryerson, the manufacturer. This item is considered resolved.

(Open) Unresolved Item (546/78-06-01; 547/78-06-01) Inadequate information was available during the current inspection. The licensee is awaiting a reply from Inland Ryerson the supplier of safety related structural components. This item remains open.

Functional or Program Areas Inspected

Details of functional or program areas inspected are documented in Section I, II and III as follows:

Section 1

Prepared by E. R. Schweibinz
Reviewed by D. W. Hayes, Chief
Projects Section

1. Site Tour

A site tour was conducted for familiarization with the layout of the site and observation of construction activities in progress.

No items of noncompliance or deviations were identified during this tour.

2. Review of Procedures and Records Associated with the Handling of the Reactor Pressure Vessel (RPV), the Steam Generators and the RPV Head - Unit 1

The company that has the contract for moving and handling of the NSSS components is AycocK, Inc.

The reactor pressure vessel, two steam generators, and the reactor pressure vessel head were observed to be stored onsite. The following quality assurance procedures and site surveillance reports were reviewed for their compliance with Regulatory Guide 1.38 which endorses ANSI N45.2.2 for the handling of the above items.

<u>Quality Assurance Procedure No.</u>	<u>Revision</u>	<u>Approved On</u>	<u>Title</u>
QAX-6	O-B	October 10, 1978	Off-Loading RPV
QAX-7	O-B	October 10, 1978	Off-Loading Steam Generators
QAX-8	O-B	October 10, 1978	Off-Loading Pressurizer
QAX-9	O-B	September 27, 1978	Load Testing of Jack Tower
QAX-10	O-A	October 5, 1978	Off-Loading of RPV Heads

QAX-14	O-A	October 10, 1978	Inspection, Maintenance, and Operation of Crawler Cranes, Truck Cranes, and Rigging Equipment
QAX-15	O-A	October 11, 1978	Load Testing Truck and Crawler Crane for Off-Load of NSSS Components

Site
Surveillance
Report No.

Activity

Dated

0929785035	Load Testing of Jack Tower	September 27, 1978
1018785014	Material Handling (Special lifts)	October 13, 1978
1025785011	Off loading reactor pressure vessel (handling)	October 17, 1978
1027785017	Off load steam generators	October 27, 1978
1106785037	Material handling - load test	October 12, 1978

Except as follows, no items of noncompliance or deviations were identified.

- a. Site Surveillance Report 0929785035 indicated that a scheduled surveillance was performed on the load testing of the jack tower in accordance with the attached checklist and procedure No. QAX-9. One deviation was noted in the findings, that the jacking mechanisms did not have a certification onsite. A field corrective action request (FCAR) No. 329 was written on September 27, 1978 to address the discrepancy that Aycock could not produce the manufacturers certifications on the hydraulic jacks used. The following discrepancies were noted during review of the site surveillance checklists:

- (1) Item No. 2 states "Is the hoisting mechanism certified?" The comment states that the certification is not onsite. The reference listed is ANSI N45.2.2 subdivision 7.3.1 which requires that hoisting equipment used for handling shall be certified by the manufacturer. The certification shall indicate the various parameters for the maximum load to be handled.

- (2) Item No. 3 states "Does the hoisting mechanism need to be rerated or modified for the special lift?" The comment in answer to this question was "Load test for reactor lift." The reference is ANSI N45.2.2 subdivision 7.3.4 which requires "For special lifts, hoisting equipment may be rerated, or modified and rerated, upon approval by the manufacturer or if the manufacturers specifications are not available the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determination shall be documented and recorded appropriately. Rerated equipment shall be given a dynamic load test over the full range of the lift by using a test weight at least equal to the lift weight. A dynamic test includes raising, lowering and traversing the load in contrast to a static test where the test weight may be increased incrementally with no movement." Regulatory Guide 1.38 further requires "In lieu of this requirement, the test weight used in temporarily rerating hoisting equipment for special lifts in accordance with the provisions of subdivision 7.3.4 should be at least equal to 110% of the lift weight."

Since the manufacturers certifications for the hoisting mechanism were not available on the site, the hoisting equipment did need to be rerated. The appropriate answer to the question of item 3 would have been yes.

- (3) Item No. 4 states "Is the rerating being done in accordance with manufacturers specifications or under the direction of a qualified engineer?" Reference is the same as above, ANSI N45.2.2 subdivision 7.3.4 The comment for this question states "NA" (Not applicable). When rerating equipment this item is applicable.

- (4) Item No. 5 states "Verify that the rerated piece of equipment is given a dynamic load test at least equal to the lift weight." The reference is ANSI N45.2.2 subdivision 7.3.4. Comment "Load test for reactor lift". The column NA is checked which is inappropriate. In addition Item No. 5 is inappropriate in that per the requirements of Regulatory Guide 1.38 the dynamic load test should be at least equivalent to 110% of the lift weight. Also the load test should be performed for the heaviest piece of equipment being lifted, not the reactor pressure vessel. The steam generators each weigh more than the reactor pressure vessel.
- (5) Although the scale used to determine the weights of each of the test blocks that weighed between 20,000 pounds and 22,000 pounds was calibrated to determine its accuracy the scale was not calibrated in the range of 62,000 pounds through 64,000 pounds to determine the accuracy of the block "A" test weights. Therefore, an accurate determination of the actual weights for the two type block "A" weights was not made.
- (6) Although the jacking structure appears to be properly rerated for the lift of the reactor pressure vessel (actual weight of the block "A" test weights not yet determined) a similar rerating was not performed for the steam generator lifts. The weight of the reactor pressure vessel is approximately 331 tons, with the weight of each steam generator being approximately 342.5 tons. The requirements of ANSI N45.2.2 subdivision 7.3.4 which require "rerated equipment shall be given a dynamic load test over the full range of the lift" were not met for the lifting of the steam generators. The weight of the reactor pressure vessel and the steam generators are different and the position of the suspension beams and the jacks are also different. This would require two separate test lifts to be performed.
- (7) The following Aycock drawings which were associated with the unloading operation were not signed by a Sargent and Lundy engineer to indicate that they had been properly reviewed.

<u>Drawing No.</u>	<u>Revision No.</u>	<u>Date</u>
MHR-1	3	9/25/78
MHR-2	3	9/23/78
MHR-4	1	9/25/78
MHR-8	7	9/25/78
MHR-10	4	9/25/78

- b. Site surveillance report 1106785037 dated October 12, 1978, for material handling - load test was reviewed and presented as documentation of the surveillance of the load test performed prior to lifting reactor vessel head. This surveillance report did not indicate the equipment or the activity that was under surveillance. It indicated that a crane was given dynamic load test but did not indicate which crane.

The conditions described in Paragraph 2.a and Paragraph 2.b above is an item of noncompliance with 10 CFR 50, Appendix B, Criterion V. (546/78-08-01)

Section II

Prepared by E. J. Gallagher
Reviewed by R. L. Spessard, Chief
Engineering Support
Section I

1. Observation of Cadweld Inspection and Associated Records for Containment Building Unit 1

The inspector observed selected completed and in-process work activities for "B" and "T" type cadwelds. "B"-type cadwelds are being used to splice reinforcing steel to structural steel embedded plate anchorage for the secondary shield wall inside the Unit 1 containment building at elevation 377' while the "T" type vertical cadwelds are used to splice reinforcing bars in the exterior wall of the containment building. The following specific observations were made:

- a. The inspector chose four completed "B" type cadwelds identified as F685-11, F701-24, F685-11 and F682-11 which had been inspected and accepted by U.S. Testing and requested a reinspection to verify if the void area of the cadweld filler metal was within the allowable. The results of that reinspection indicated that two of the four cadwelds had excessive void area for that particular size cadweld sleeve; specifically, the results are as follows:

<u>Cadweld ID</u>	<u>Void Area Measured</u>	<u>Void Area Allowed</u>
*F693-3 (#18)	5.44 sq. in.	2.65 sq. in.
*F685-11 (#18)	3.20 sq. in.	2.65 sq. in.
F682-11 (#18)	2.43 sq. in.	2.65 sq. in.
F701-2 (#11)	0.85 sq. in.	1.50 sq. in.

*NOTE: F693-3 and F685-11 exceed the allowable void area.

It was further determined by a review of the quality records for the above identified cadwelds that a computation of the void area had not been performed. The space provided on the records indicated N/A (not applicable) since the QC inspection had determined through visual examination that the filler metal met the requirements.

- b. It was determined that the QC inspector performing the measurement and computation of the void area did not fully understand the mechanics of arriving at the proper void area. This is based on the observation that the QC inspector performed the reinspection and determined the void area to be 7.24 sq. in. for F693-3 and 5.89 sq. in. for F685-11. These values were later corrected to the values shown in subparagraph a.
- c. The Quality Control Procedure QCP-11, Rev. 1, form QCP 11.3 used as the inspection checklist did not include the requirement to inspect for general porosity which is a requirement of the S&L cadweld specification BY/BR/MCS, Section 5.3.2, Rev. 1, dated July 5, 1978.

This failure to provide adequate inspection of the cadwelding installation as indicated in the above subparagraphs a through c is considered an item of noncompliance with 10 CFR 50, Appendix B, Criterion X, as described in Appendix A of the report transmittal letter. (546/78-08-02)

- d. The inspector observed tensile testing of "B" type sister splice for splice Nos. CC745 (8 and 9) and qualification splice Q751 (1 and 2) being performed by U.S. Testing. The results of the tests indicated the strength exceeded the minimum tensile requirement of 90,000 psi in accordance with specification BY/BR/MCS and regulatory guide 1.10 for mechanical splices for reinforcing bars.
- e. The inspector observed "B" type cadwelds No. F685-6, CC622-1, CC745-16, F688-8 and F685-6 which had been inspected and identified as rejected due to apparent visual examination failure. The cadwelds are to be repaired in accordance with the manufacturer's repair procedure which is being developed and qualified.
- f. The inspector observed cadwelders identified as "L" and "EE" perform in-process cadwelding of sister splices to be tensile tested. The cadwelds observed being fabricated were identified by L749 (9 and 10) and EE750 (10 and 11). The inspector determined the operations to be performed according to the instructions and that the sleeves passed visual examinations.
- g. The powder and materials used to perform cadwelding were observed to be stored in a dry environment according to manufacturer requirements.

- h. A review of nonconformance reports relative to cadwelding was performed. U.S. Testing initiated ICAR Nos. 13 and 17 and Whalen-Chilstrom initiated NCR Nos. 6, 15, 16, 23 and 25. The nonconformances were properly identified and dispositioned to prevent further occurrence.

The licensee representatives indicated that the following corrective action was in process to correct the deficiencies noted:

- (1) Institute a complete reinspection of each completed and previously inspected cadweld to verify acceptability in accordance with specification requirements.
- (2) Institute a training session to demonstrate quality control inspection items to verify conformance requirements for cadwelding.
- (3) Give each QC inspector a training quiz to compute void area in filler metal.
- (4) Use reject identification tags to more clearly identify unacceptable cadwelds instead of using crayon markers.

One item of noncompliance was identified as previously described.

2. Observation of Earthwork Activities

The inspector observed backfill placement, testing and inspector activities for the Essential Service Water pipeline at elevation 396'. A vibratory roller and vibratory hand tampers were being used for compaction of the graded crushed stone material specified for this area. The material was being installed in a maximum 10 inch lift thickness in accordance with S&L specification Y-2722, Division 3.

The inspector also observed U.S. Testing perform the following in-place density tests and determined that the tests were performed according to applicable ASTM standards:

- a. D-1556 - "Density of soil in-place by Sandcone Method."
- b. D-2922 - "Density of soil in-place by Nuclear Method."

The required in-place density for this area is 85% relative density according to testing specification Y-2850, Division 3 (Earthwork). The results of the initial test using D-2922 method failed to meet the required 85% relative density, in that, the density was determined to be 83.3%. The vibratory roller proceeded to provide more compactive energy to the lift and a retest was performed. The results of the retest indicated a relative density of 91.1% which proved acceptable.

A second density test was observed in another area of the same lift. The testing specification requires a minimum of two tests per lift. This test indicated an in-place density of 132.9 lbs per cubic feet with a required density of 130.8 lbs per cubic feet to pass the 85% relative density requirement for the material presently being used.

A sandcone density test according to D-1556 was taken to correlate the result with the nuclear density method of D-2922. This is required a minimum of once per working shift to verify the nuclear density gauge is operating properly within specified tolerances. The sandcone test was being performed using calibrated sandcone No. 236.

No items of noncompliance were identified.

3. Review of Earthwork Procedures and Quality Records

The inspector reviewed the following procedure and specification being used to implement the testing and placement activities relative to earthwork:

- a. Sargent & Lundy specification Y-2722, Division 3 (Earthwork).
- b. Sargent & Lundy Testing Services procedure Y-2850, Division 3, (Earthwork), Section 302.

The testing and inspection procedure and specification included necessary requirements for compaction, in-place relative density, test methods and material to be used in appropriate areas of the plant fill.

Nonconformance reports initiated by G. K. Newberg and Associates Nos. 213, 203 and 181 were reviewed and determined to include proper identification of the deficiency and resolution based on engineering evaluation and corrective action to prevent further occurrence.

No items of noncompliance were identified.

Section III

Prepared by K. R. Naidu
Reviewed by R. L. Spessard, Chief
Engineering Support
Section 1

1. Review of Containment Structural Steel Quality Records - Unit 2

The inspector reviewed the pertinent material and quality records associated with penetration insert plates 78A, 72A, 68A and 69A and liner plates 47A, 48A and 47B and determined that the documents indicate that the quality requirements were met in the following areas:

- a. Shop Release for Shipment Checklists (SRSC) indicates the following:
- (1) SRSC sequence 12 dated June 21, 1978 indicates that eight 47A type plates were received on site with no shipping damage.
 - (2) SRSC sequence 21 dated August 10, 1978 indicates that eight 47B type plates were received on site with no shipping damage.
 - (3) SRSC sequence 22 dated August 8, 1978 indicates that two 48A type plates were received onsite with no shipping damage.
 - (4) SRSC sequence 48 dated August 22, 1978 indicates that one 78A type insert plate was received onsite with no shipping damage.
 - (5) SRSC sequence 42 dated August 22, 1978 indicates that one 72A type insert plate was received onsite with no shipping damage.
 - (6) SRSC sequence 46 dated August 22, 1978 indicates that one 68A type insert plate was received onsite with no shipping damage.

- (7) SRSC sequence 47 dated August 22, 1978 indicates that 69A type insert plate was received onsite with no shipping damage.
- b. The plates were installed to CBI drawings No. 3, Revision 8 and No. 4, Revision 5.
 - c. Record drawing table sheets indicate that the quality requirements were met.
 - d. Records of the inspection personnel indicate that they were qualified to perform inspections.

No items of noncompliance were identified.

2. Review of Containment Structural Steel Welding Records - Unit 2

The inspector reviewed relevant records for welds identified as girth seams 1-2, 2-3 and vertical seams 2Q, 3P and 1L identified on record drawings R17, Revision 3 and R18, Revision 3. Records reflect work accomplishment in the following areas:

- a. Record Drawing Table Sheets No. 12, 13, 14 and 16 indicate verification of joint identification, fitup clearance, welder and weld material. Furthermore, the following information is furnished.
 - (1) Weld Procedure Specifications E-6010/5, Revision D and E-7018/5, Revision 2 were used.
 - (2) Final weld was checked and determined acceptable.
 - (3) Visual and magnetic particle tests were performed on the welds according to CBI procedures VTP-(5-4492/5)-4B, Revision 1 and MTIN, Revision 0.
 - (4) The relevant NDE reports were indicated.
- b. The qualifications of welders identified by initials RG and WDM were reviewed and determined to be current. The spot Radiograph Test Report on welder identified as WDM was reviewed and determined acceptable. Report No. 4 dated October 23, 1978 identifies that a one foot length of seam identified as 1-2-1M was examined according to CBI radiograph

procedure RT-2N and identifies no unacceptable indications. The inspector reviewed the radiographs and concurred with the evaluations.

No items of noncompliance were identified.

3. Observation of Containment Structural Steel Welding Activities - Units 1 and 2

The inspector observed the following welding activities in progress and determined that applicable requirements were being met in the following areas:

a. Unit 1 Containment Roof

- (1) Several completed welds and one welding activity were observed. Welder performing the weld was qualified to the WPS.
- (2) The welders were identified on drawing R-30, Revision 1 titled Record Drawing for Roof Air Seams.
- (3) WPS-E-6010-54492/5, Revision 0, and WPS-E-7018-54492/5, Revision 2 were used for weldrods type E-6010 and E-7018, respectively.
- (4) Weldrod types E-6010 and E-7018 were being used; weldrod was being carried in pouches; depleted weldrod was being discarded in dispensers.
- (5) Weldrod burnoff rates were being measured to verify that welding variables were within specified limits. The inspector witnessed burnoff rates being verified on one welder. Additionally, the inspector made independent determinations of burnoff rates for welders selected at random, and the findings were acceptable.
- (6) Storage of weldrod appeared to be adequate; the type of weldrod stored in the weldrod oven was provided on the front of the oven. The temperature of the weldrod inside the oven was verified with a tempstick and determined to be within acceptable limits.
- (7) The roof plates were adequately supported; surveys were performed to verify conformance of the shape of the dome; instances where the levels were deficient were adequately

identified. A radial sweep board was used to verify curvature. Areas where additional weld pickups were required to cover removal of temporary attachments were identified with a marker.

b. Unit 2 Rings 7-8 and 8-9

- (1) The inspector observed several welders working in rings 7-8 and 8-9.
- (2) The welders who performed the welding were qualified to the WPS and were identified on drawing R-17 and R-18.
- (3) WPS-E-6010-54492/5, Revision 0, and WPS-E-7018-54492/5, Revision 2 were used for weldrods type E-6010 and E-7018, respectively.
- (4) Weldrods type E-6010 and E-7018 were being used; weldrod was being carried in pouches; depleted weldrod was being discarded in dispensers.
- (5) Weldrod burnoff rates were being measured to verify that welding variables were within specified limits. The inspector witnessed burnoff rates being verified on the two types of weldrod being used and concurred with the QC inspector that they were within specified limits.

No items of noncompliance were identified.

4. Observation of Containment Structural Steel Work Activities - Units 1 and 2

The inspector observed the following activities relative to the installation of the containments 1 and 2 being performed by Chicago Bridge and Iron (CBI) and determined that work and inspection procedures were being met in the following areas:

a. Unit 2 Containment Rings 1 through 3

- (1) Shop Release for Shipment Checklist (SRSC) sequences 12 and 15 dated July 20 and 25, 1978 indicate that 16 pieces of containment liner plate identified as 47A were received on site without any shipping damage. An authorized CBI shop QA representative signed the SRSC indicating that all the quality requirements were met.

- (2) The liner plates had been installed as per drawings R-17 and R-18, titled "Record Drawing Rings 1 through 9, 0-180° and 180°-0°."
- (3) Testing and NDE activities were complete as indicated on SIMS Form 6-76, sheets 11 and 12. No unacceptable indications were identified.
- (4) Storage of liner plate not being installed was observed to be adequate.

b. Unit 1 Containment Roof Plates

- (1) SRSC sequence 103 dated June 21, 1978 indicate that 10 pieces each of 318-1R and 318-1L were received on site without any shipping damage. An authorized CBI shop representative signed the SRSC indicating that the liner plates met all the quality requirements.
- (2) The liner plates had been installed according to drawing R-30, Revision 1 titled "Record Drawing for Roof Air Seams."
- (3) Testing and NDE activities were in progress.
- (4) Storage of liner plate not being installed was observed to be adequate.

5. Review of Safety Related Structures Quality Records - Units 1 and 2

The inspector reviewed the quality records relative to the installation of the Fuel Transfer Canal (FTC) and Spent Fuel Storage Pool (SFSP) and determined that the documents indicate that the quality requirements were met in the following areas:

a. Fuel Transfer Canal

- (1) SRSC shipment No. 2 dated May 16, 1978 indicates that 12 pieces of piece mark 111-3, 12 pieces of piece mark 111-4, 8 pieces of 111-5, 1 piece of 111-7 and several other liner plates were received on site without any shipping damage. An authorized CBI shop QA representative signed the SRSC indicating that all the quality requirements were met.

- (2) The liner plates were installed according to drawing R-3, Revision 1 titled Record Drawing for North Half of East Wall of Fuel Transfer Canal.
- (3) Testing and NDE activities were complete as indicated on the MHPL form sheet 5. No unacceptable indications were identified.

b. Spent Fuel Storage Pool

- (1) SRSC shipment No. 5 dated June 13, 1978 indicates that several pieces of liner plate types 167-5, 163-1, 163-2 and 164-1 were received on site without any shipping damage.
- (2) The liner plates were installed according to drawing R-11, Revision 1 titled Record Drawing of North Wall of Spent Fuel Storage Pool.
- (3) Testing and NDE activities were complete as indicated on the MHPL form sheet 1. No unacceptable indications were identified.

No items of noncompliance were identified.

6. Review of Safety Related Structures Welding Records - Units 1 and 2

The inspector reviewed the welding records relative to the FTC and SFSP liner plates and determined that the records establish that the quality requirements were met in the following areas:

a. Fuel Transfer Canal

Marble Hill Pool Liner (MHPL) form sheet 13 documents that the following inspections were performed on joints 2AA, 2BB, 2CC, 2DD, 2LE, 2FF, 2GG, 2HH, 2JJ and 2KK.

- (1) Identification of the joint, welder, material and ferrite content locations were verified.
- (2) Fitup was checked; weldrod type E-309-15 was used.
- (3) Weld Procedure Specification (WPS) E-309/5-4492/3, Revision 1 was used.

- (4) No heat treatment was specified.
- (5) Final weld was checked.
- (6) Vacuum Box Tests were performed according to CBI procedure VTP-(5-4492/5)-4B, Revision 1.
- (7) Liquid Penetrant testing was performed according to CBI procedure PTIN, Revision 0.
- (8) Ferrite content was examined in a location on joint 2CC with a severn-gauge.

No unacceptable indications were identified in the test reports.

No items of noncompliance were identified.

7. Review of Safety Related Embedments Records - Units 1 and 2

The inspector reviewed the records relative to the thickened bottom embedment assemblies (C4) and jet deflector assemblies, (C10, C11) for Units 1 and 2. These embedments were manufactured by CBI. The records reflect work accomplishment in the following areas:

- a. Receipt Inspection Checklist (RIC) No. 0926785069 dated June 5, 1978 indicates that embedments C-10 were received without any shipping damage. RIC No. 0926785067 dated February 13, 1976 indicates that embedments type C-11 were received without any shipping damage.
- b. Metallurgical test reports from United States Steel Company (USS) indicate that the material conformed to the relevant ASTM specification. The results of the Charpy 'V' notch tests at -15⁰F were furnished. The conditions under which the material was stress relieved were provided.
- c. Ultrasonic Test (UT) report certifies that a 4" x 50" x 219" plate was examined according to ASTM-A-435-75 and WTP-016-74 procedure and identifies no adverse indications.
- d. Weldrod, used during fabrication, conformed to AWS A5.23-76, ASME SFA 5.23 specifications and CBI specifications WMS-122, Revision 0 and QAS-312, Revision 6.

- e. Final welds were examined according to Magnetic Particle examination procedure MTIN, Revision 0. Yoke method using Y5 type magnaflux machine, with gray particles and 6" prod. ring was utilized. No adverse indications were identified.

No items of noncompliance were identified.

8. Review of Procurement Specifications

The inspector reviewed the following specifications to ascertain the adequacy of quality requirements, applicable codes and inspection criteria. The following comments were provided.

- a. Instrumentation cable (Safety Category 1) - Specification Y-2852.
- b. 8KV and 5KV power cables (Safety Category 1) - Specification Y-2851.

The inspector has no comments on the above two specifications at this time.

- c. New and spent fuel storage racks-Specification Y-2743.

The following comments were made by the inspector:

- (1) Paragraph 301.2 states that carbon steel supports may be provided. Precautions to preclude carbon steel contamination are required.
- (2) Paragraph b7 on page 3-7 states "Spacing between fuel assemblies shall be minimized while staying within the criticality regulations defined in b3 above." Paragraph b3 on page 3-7 does not provide criticality regulations.
- (3) Paragraph 304 on page 3-11 titled inspections and tests does not appear to cover the requirements for cavity weldment seal welds in the encapsulated spent fuel tubes which are a part of the spent fuel storage racks.

The licensee indicated that information for items (1), (2) and (3) would be obtained. This is considered an unresolved item. (546/78-08-03; 547/78-08-01)

No items of noncompliance were identified.

Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Section 3, Paragraphs 8.c.(1), (2), and (3) of the details section of this report.

Exit Meeting

The inspector met with the site staff representative (denoted in the Persons Contacted paragraph) at the conclusion of the inspection on November 8, and November 9, 1978. The inspectors summarized the scope and findings of the inspection including the two apparent items of noncompliance identified in Section 1, Paragraph 2 and Section II, Paragraph 1 of the Details section of this report. The licensee acknowledged the findings.