

UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Construction Inspection

IE Inspection Report No. 050-358/76-07

Licensee: Cincinnati Gas and Electric Company
139 East 4th Street
Cincinnati, Ohio 45201

Zimmer Nuclear Power Station
Moscow, Ohio

License No. CPPR-88
Category: A

Type of Licensee: BWR (GE) 807 MWe
Type of Inspection: Routine, Unannounced
Dates of Inspection: August 17-20, 1976

Principal Inspector:

E. W. K. Lee
E. W. K. Lee

9/1/76
(Date)

Accompanying Inspector:

E. W. K. Lee for
W. J. Key

9/1/76
(Date)

Other Accompanying Personnel: None

Reviewed By:

E. L. Jordan
E. L. Jordan, Acting Chief
Reactor Operations and
Engineering Support Branch

9/2/76
(Date)

SUMMARY OF FINDINGS

Inspection Summary

Inspection on August 17-20, (76-07): Reviewed previously-identified enforcement and unresolved matters, contractors QA manual and procedures relative to installation of Reactor Vessel and Internals; QA/QC procedures relative to installation of containment penetrations and safety related components; quality records for installing safety related components, safety related structure, reactor coolant pressure boundary and safety related piping. Observed installation of safety related structure, reactor coolant pressure boundary and safety related piping. Six items of noncompliance were identified regarding training of personnel, control of welding material, inspection records, storage of piping, control of welding materials and calibration of welding rod ovens.

Enforcement Items

The following items of noncompliance were identified during the inspection:

A. Infractions:

1. Contrary to 10 CFR Part 50, Appendix B, Criterion II, indoctrination and training of Reactor Control, Inc. personnel performing activities affecting quality is not provided. (Paragraph 1, Section I, Report Details)
2. Contrary to 10 CFR Part 50, Appendix B, Criterion V, control of Reactor Control, Inc. welding material was not accomplished in accordance with procedure. (Paragraph 2, Section I, Report Details)
3. Contrary to 10 CFR Part 50, Appendix B, Criterion XIII, storage of Kaiser Engineers, Inc. piping in the drop area, prior to being taken into the containment building for installation, was not in accordance with storage procedures. (Paragraph 4, Section II, Report Details)
4. Contrary to 10 CFR Part 50, Appendix B, Criterion XIII, warehouse handling and storage of welding materials do not meet requirements. (Paragraph 1, Section II, Report Details)
5. Contrary to 10 CFR Part 50, Appendix B, Criterion XII, calibration of Chicago Bridge and Iron welding electrode heating ovens does not meet requirements. (Paragraph 2, Section II, Report Details)

B. Deficiency:

Contrary to 10 CFR Part 50, Appendix B, Criterion XVII, Kaiser Engineers, Inc. inspection records for the RHR heat exchanger I.D. No. E12-B001 neither identify the type of observation nor the results for the period between November 27, 1975 and April 13, 1976. (Paragraph 3, Section I, Report Details)

Licensee Action on Previously Identified Enforcement Item

Noncompliance Item Related to Document Control (IE Inspection Report No. 050-358/76-04

This item remains open, corrective action by the licensee is still in progress.

Other Significant Items

A. Systems and Components

Unresolved Item - Shielding Gas Flow

Weld data sheets indicate that shielding gas flow by Kaiser Engineers, Inc. was not in accordance with welding procedures. (Paragraph 3, Section II, Report Details)

B. Facility Items (Plans and Procedures)

1. Unresolved Item - RCI Audit Requirement

Specific audit requirements were unavailable at site. (Paragraph 4, Section I, Report Details)

2. Unresolved Item - RCI UT Procedure

Criteria stated in RCI UT Procedure No. RCI-UE-1 cannot be established. (Paragraph 5, Section I, Report Details)

3. Unresolved Item - RCI Visual Examination Procedure

The acceptance criteria in RCI Visual Examination Procedure No. VE-1 appears to be in conflict. (Paragraph 6, Section I, Report Details)

C. Managerial Items

None.

D. Noncompliance Identified and Corrected by Licensee

None.

E. Deviations

None.

F. Status of Previously Reported Unresolved Items

1. Pipe Hanger Installation Procedure (IE Inspection Report No. 050-358/76-06)

The inspector was informed that activity is in progress to obtain additional information from the manufacturer pertaining to the radiation resistance of the oil and gasket. This matter remains open and will be reviewed during a subsequent inspection.

2. Electrical Cable Test Data and Certifications (IE Inspection Report No. 050-358/76-06)

Not reviewed.

Management Interview

A. The following persons attended a management interview held at the conclusion of the inspection.

Cincinnati Gas and Electric Company (CG&E)

B. K. Culver, Principal Construction Engineer
R. P. Ehas, QA and Standards Engineer
J. H. Hoffman, QA and Standards Engineer
E. C. Pandorf, Principal QA and Standards Engineer
W. W. Schwiers, Field Project Engineer
J. F. Weisenberg, QA and Standards Engineer

Kaiser Engineers, Incorporated (KEI)

W. J. Friedrich, QA Manager
R. D. Sahlberg, Project Manager

B. Matters discussed and comments on the part of management, were as follows:

1. The inspectors stated QA/QC procedures and quality records relative to (1) containment penetrations, (2) reactor vessel internals installation, (3) safety related components and (4) safety related structures, were reviewed and determined to be acceptable. (Paragraphs 7, 8, 9, 10, 11 and 12, Section I, Report Details)
2. The inspectors stated the following noncompliance items were identified during the inspection:
 - a. Reactor Controls, Incorporated (RCI) QA manual does not provide indoctrination and training of personnel. (Paragraph 1, Section I, Report Details)
 - b. A portable electrode oven was not plugged in and approximately ten (10) type 309 coated electrodes were not in the portable oven. (Paragraph 2, Section I, Report Details)
 - c. KEI maintenance record sheet for the Residual Heat Removal Heat Exchanger does not indicate the type of observation or the result for period between November 27, 1975 to April 13, 1976. (Paragraph 3, Section I, Report Details)
 - d. Warehouse handling and storage of welding materials were not in accordance with KEI procedure. (Paragraph 1, Section II, Report Details)
 - e. CB&I welding rod ovens did not indicate calibration status. (Paragraph 2, Section II, Report Details)
 - f. Improper storage of piping in the pipe drop area prior to being moved into the containment. (Paragraph 4, Section II, Report Details)
3. The inspectors stated that the following items are considered to be unresolved and will be reviewed during a subsequent inspection:
 - a. Specific RCI audit requirements were unavailable at site. (Paragraph 4, Section I, Report Details)
 - b. Criteria stated in RCI UT procedure No. RCI-UE-1 can not be established. (Paragraph 5, Section I, Report Details)

- c. The acceptance criteria in RCI visual examination appears to be in conflict. (Paragraph 6, Section I, Report Details)
 - d. Complete CB&I personnel qualification records were unavailable at site. (Paragraph 5, Section II, Report Details)
 - e. Apparent discrepancy exists between welding records and procedure relative to gas flow rate. (Paragraph 3, Section II, Report Details)
4. The inspector stated that the previously reported unresolved item relative to pipe hanger installation procedure remains open and will be reviewed during a subsequent inspection.

REPORT DETAILS

Section I

Prepared by E. W. K. Lee

The following persons in addition to individuals listed under the Management Interview section of this report, were contacted during the inspection.

Kaiser Engineers, Incorporated (KEI)

C. Yohe, QA Inspection Supervisor
M. H. Davis, Assistant Warehouse Superintendent
W. Puckett, QC Inspector
C. Schroeder, Electrical QA Engineer
M. Franchuck, Mechanical QA Engineer
D. Kramer, Civil QA Engineer
D. Donovan, QC Inspector
C. Stanfield, Construction Engineer

Reactor Controls, Incorporated (RCI)

B. Crane, Site Manager
R. Kananon, QC Supervisor

Results of Inspection

1. Reactor Control, Incorporated (RCI) QA Manual

10 CFR Part 50, Appendix B, Criterion II, states, in part, that ". . . The program shall provide for indoctrination and training of personnel performing activities affecting quality. . . ."

Contrary to the above, RCI QA manual dated December 4, 1975, does not provide indoctrination and training of personnel. Furthermore, procedures relative to indoctrination and training of personnel were unavailable.

2. RCI Control of Welding Material

10 CFR Part 50, Appendix B, Criterion V, states, in part, that "Activities affecting quality shall be prescribed by documented instructions, procedures . . . and shall be accomplished in accordance with these instructions, procedures. . ." Furthermore, RCI Procedure No. ESP-1, Rev. 0, dated February 3, 1976, "Electrode Storage Procedure" states, in part, that "Electrodes

will be issued to the welders in portable ovens and will remain in the portable oven (must be plugged in) for the period of time he is using the particular electrodes."

Contrary to the above, the inspector observed that a portable oven (no identification number) located at the south side of the containment where welder was performing control rod drive to containment penetration weld was not plugged in. Also, approximately ten (10) type 309 coated electrodes were not in the portable oven.

3. KEI Maintenance Records

10 CFR Part 50, Appendix B, Criterion XVII, states, in part, that "Inspection and test records shall, as a minimum, identify . . . the type of observation, the results, the acceptability . . ."

Contrary to the above, KEI inplant maintenance record sheet for the Residual Heat Removal Heat Exchanger I.D No. E12-B001 does not indicate the type of observation or the result for period between November 27, 1975 to April 13, 1976.

4. RCI Audit Requirement

During a review of RCI QA manual dated December 4, 1975, the inspector noted that information relative to audit procedures, frequency, scope and purpose and qualifications and responsibilities of auditors was not specific. Upon questioning the contractor's personnel, the inspector was informed that QA audits are scheduled and performed by corporate personnel. The contractor agreed to obtain additional information relative to this matter. The inspector stated this matter is considered unresolved and will be reviewed during a subsequent inspection.

5. RCI UT Procedure

The inspector reviewed RCI UT Procedure No. RCI-UE-1, Rev. 1, dated September 17, 1975, "Ultrasonic Examination of Control Rod Drive Housing to Stub Tube Weldments" and questioned the following areas:

- a. What is the applicable code?
- b. How are the acceptance criteria established?
- c. How is the bias correction factor established?
- d. What are the RCI modifications for the reference standard?

The licensee's contractor agreed to obtain answers for the above. The inspector stated this matter is considered unresolved and will be reviewed during a subsequent inspection.

6. RCI Visual Examination Procedure

The inspector reviewed RCI visual examination Procedure No. VE-1, Rev. 0, dated December 20, 1974, and determined that paragraph 4 "requirements" and paragraph 5 "acceptance criteria" appear to be in conflict. The licensee's contractor agreed to investigate. The inspector stated that this matter is considered unresolved and will be reviewed during a subsequent inspection.

7. Observation of Containment Penetration Work Activities

The inspector observed piping penetration No. M-21, electrical penetration No. M-31 and personnel hatch and determined that those installed penetrations are protected from construction debris and physical damage.

8. Observation of Safety Related Structures Work Activities

- a. The inspector observed the installation of Essential Service Water Pump room structural steel at elevation 451'-5½" and determined activities in progress met the applicable requirements.
- b. The inspector reviewed the following documents and determined them to be acceptable:
 - (1) Receiving Inspection Plan dated August 8, 1975.
 - (2) Structural Steel daily inspection reports dated August 11, 12, 13, 16 and 17, 1976.
 - (3) Qualification of inspection personnel.

9. Review of Containment Penetration QA/QC Procedures

The inspector reviewed the following procedures relative to containment penetration activities and determined them to be acceptable:

- a. Chicago Bridge and Iron Company (CB&I) Procedure No. DCP-72-4336, Rev. 4, dated April 1, 1974, "Dimensional Control Procedure."
- b. CB&I Procedure No. LCI-72-4336, Rev. 0, dated December 12, "Lock Contract Instruction."
- c. CB&I Procedure No. LEI-72-4336, Rev. 0, dated December 12, 1973, "Test Equipment Installation Procedure."

- d. CB&I Procedure No. LLT-3B, Rev. 1, dated September 4, 1973, "Leakage Rate Test of Airlock."
- e. CB&I Procedure No. LOT-72-4336, Rev. 0, dated December 10, 1973, "Lock Overload Test Procedure."
- f. CB&I Procedure No. MTP-12B, Rev. 7, dated October 2, 1972, "Magnetic Particle Examination Procedure - Prod Method."
- g. CB&I Procedure No. MTP-13B, Rev. 7, dated September 14, 1972, "Magnetic Particle Examination Procedure - Yoke Method."
- h. CB&I Procedure No. PTP-(72-4336)-12B, Rev. 1, dated March 20, 1973, "Liquid Penetrant Testing Procedure - Solvent Removable."
- i. CB&I Procedure No. PTP-(72-4336)-10B, Rev. 1, dated March 20, 1973, "Liquid Penetrant Testing Procedure - Water Washable."
- j. CB&I Procedure No. RTP-(72-4336)-9B, Rev. 1, dated March 20, 1973, "Radiographic Examination Procedure for Welds."
- k. CB&I Procedure No. SHP-2B, Rev. 1, dated July 29, 1971, "Shop Storage, Handling and Shipping of Class MC and 2 Nuclear Material, Components and Parts."
- l. CB&I Procedure No. SHP-4B, Rev. 3, dated October 18, 1972, "Field Handling and Storage of Nuclear Material Components and Parts."
- m. CB&I Nuclear QA Manual, Division 4 "Construction," Section 4.0 "Material Control," Rev. 4, dated December 17, 1973.
- n. Kaiser Engineers, Inc. , (KEI) QACMI No. SM-4, Rev. 0, dated July 22, 1976, "Procedure for Release from Storage and Handling of Safety Special Piping and Piping Components Weighing over 1000 lbs."
- o. General Electric Company (GE) Document No. 22A2562, Rev. 1, dated December 12, 1973, "Field Erection of Main Steam Piping System."
- p. KEI, QA Procedure No. 19, Rev. 2, dated April 30, 1976, "System Audits."
- q. Conax Corporation Procedure No. IPS-109, dated March 11, 1976, "Installation and Maintenance Manual for Electric Penetration Assemblies."
- r. KEI QACMI No. G-3, Rev. 2, dated May 22, 1974, "Material Receiving and Warehousing Operations."

10. Review of Reactor Vessel Internals QA/QC Procedures

The inspector reviewed the following documents relative to Reactor Vessel Internals installation and determined them to be acceptable:

- a. Reactor Controls, Incorporated (RCI) Procedure No. PE-1, Rev. 4, dated November 17, 1975, "Penetrant Examination Procedure."
- b. GE Document No. 22A2547, Rev. 0, dated April 1, 1974, "General Instructions for Reactor Assembly."
- c. RCI Procedure No. WP-3, Rev. 2, dated May 16, 1975, "Welding Procedure for Stainless Steel to Stainless Steel for Reactor Pressure Vessel (RPV) internals installation."
- d. RCI Procedure No. WP-2, Rev. 2, dated May 16, 1975, "Welding Procedure for Stainless Steel to Mild Steel for RPV Internals Installation."
- e. RCI Procedure No. WP-4, Rev. 2, dated May 16, 1975, "Welding Procedure for Nickel-Chromium-Iron Material for RPV Internals Installation."
- f. RCI Procedure No. DBW-1, Rev. 3, dated May 17, 1976, "Procedure for correcting alignment by draw bead welding - Reactor Internals Installation."
- g. RCI Procedure No. WS-324, Rev. 1, dated February 11, 1976, "Jet Pump Holddown Bolt Keeper."
- h. RCI Procedure No. WP-300, Rev. 2, dated February 13, 1975, "Welding Procedure for Stainless Steel to Stainless Steel for Control Rod Drive Hydraulic System (CRDHS) Fabrication and Installation."
- i. RCI Procedure No. WP-200, Rev. 2, dated February 13, 1975, "Welding Procedure for Stainless Steel to Mild Steel for CRDHS Fabrication and Installation."
- j. RCI Procedure No. WP-6, Rev. 2, dated May 16, 1975, "Weld Repair Procedure."
- k. RCI Procedure No. WP-5, Rev. 2, dated May 16, 1975, "Welding Procedure for Stainless Steel to Nickel-Chromium-Iron for RPV Internals Installation."

- l. RCI Procedure No. WP-1, Rev. 1, dated May 16, 1975, "Welding Procedure for Mild Steel to Mild Steel for RPV Internals Installation."
 - m. RCI Procedure No. SW, Rev. 1, dated May 27, 1975; "Procedure to Control the Minimum Engagement in a Socket Weld Joint."
 - n. RCI Procedure No. RCI-FC-1, Rev. 1, dated May 5, 1975, "Ferrite Check of Austenitic Welds."
 - o. RCI Procedure No. RCI-CAL-1, dated June 8, 1976, "Control of Measuring, Examination and Test Equipment."
 - p. KEI Field Construction Procedure No. 2-204, Rev. 0, dated August 13, 1976, "Shroud Rigging and Transport."
11. Review of Safety Related Components QA/QC Procedures

The inspector reviewed following documents relative to activities associated with safety related components and determined them to be acceptable:

- a. KEI QACMI No. G-3, Rev. 2, dated May 22, 1974, "Material Receiving and Warehousing Operations."
- b. KEI QACMI No. R-1, Rev. 1, dated June 6, 1974, "Handling and Rigging General Requirements."
- c. KEI QACMI No. SM-2, Rev. 1, dated February 20, 1975, "General Requirement for in-plant Equipment Maintenance Storage."
- d. GE Document No. 22A2561, Rev. 0, dated December 15, 1972, "Field Erection of Reactor Recirculation System Piping and Equipment."

12. Review of Safety Related Components Quality Records

The inspector reviewed the following quality records and determined them to be acceptable.

- a. In storage maintenance records for Residual Heat Removal Heat Exchanger (I.D. E12-B001).
- b. In storage maintenance record for Valve No. IE-22F023.
- c. KEI Audit Report No. 529, dated May 12, 1976.
- d. KEI Audit Report No. 267, dated June 30, 1976.

REPORT DETAILS

Section II

Prepared by W. J. Key

Persons Contacted

In addition to personnel listed under the Management Interview section of this report the following persons were contacted.

Kaiser Engineers, Incorporated (KEI)

L. Schroeder, Quality Control Engineer
W. Puckett, Quality Assurance Inspector
T. Graves, Quality Assurance
F. Oltz, Document Control Coordinator
F. Miller, Welding Engineer
M. Low, Quality Assurance Inspector (NDE)
W. J. Ballmer, Quality Assurance Inspector
J. Deerwester, Senior Receiving Inspector

Chicago Bridge and Iron (CBI)

C. Wall, Welding and Quality Assurance Supervisor

Results of Inspection

1. KEI Control of Welding Material

10 CFR Part 50, Appendix B, Criterion XIII states, in part that, "Measures shall be established to control the handling; storage. . . of materials and equipment . . . in accordance with work and inspection instructions . . ." Furthermore, KEI procedure SPPM 3.3 requires that opened or damaged containers of low hydrogen electrode be segregated.

Contrary to the above, two (2) 50 lb. cans of 7018 electrodes located in the warehouse storage area were found to have been opened (holes) and several cans appeared to be damaged. None of the opened or damaged containers were segregated from materials to be issued.

2. CB&I Weld Rod Control

10 CFR Part 50, Appendix B, Criterion XII, states, in part that, "Measures shall be established to assure that tools, gages,

instruments . . . used in activities affecting quality are properly controlled, calibrated. . . ."

Contrary to the above, three (3) weld rod heating ovens, located in CBI weld rod issue room, are not identified with calibration stickers, nor is there a record to indicate that these units have ever been calibrated. When questioning the contractors personnel, the inspector was informed that there were no records of calibration on site.

3. KEI Shielding Gas Flow Rate

Welding procedure 3.1.22, Revision 1 requires a flow rate of shielding gas of 18 to 21 CFH. Procedure 3.1.36 Revision 1, requires a flow rate of 18 to 20 CFH.

All weld data sheets reviewed indicated a lower flow rate than required. Some more than the 10 percent, allowed by ASME code, which states that, "a decrease of 10 percent or more in the flow rate requires requalification of the procedure." The inspector was informed by the welding engineer that this would be changed. The inspector stated that he would consider this an unresolved item which will be reviewed during a subsequent inspection.

4. KEI Pipe Storage

Improper storage of piping was noted by the inspector, who brought this to the attention of the QA inspector. Action was taken in this area prior to the end of the inspection. The inspector stated that, no answer would be required from the licensee on this item of noncompliance.

5. Observation of Reactor Coolant Pressure Boundary Piping Work Activities

The inspector observed work on field weld RH 106, root pass; field weld M.S. D2, root pass; field weld, M.S. C2, completed weld; field weld C-1, root pass and two filler passes, and completed weld F.W.7 pipe to valve weld in the B loop of the main steam system. The inspector determined that piping being installed were in accordance with code requirements.

6. Observation of Safety Related Piping Work Activities

The inspector observed activities on the following Field Welds, RHR weld 203 fit-up; RHR weld 38, completed weld pipe to 16"

gate valve, weld HP 37, completed weld 10" pipe to tee, field welds of spool 36 to spool 33 and spool 33 to spool 41, in the steam supply header 36" line. The inspector determined activities to be in accordance with code requirements.

7. Review of Reactor Coolant Pressure Boundary and Safety Related Piping Quality Records

The inspector reviewed the weld data sheets on all welds selected for observation of work, material test reports, and weld history records from M. W. Kellogg on the following spools. No discrepancies were noted.

Spool No. 1-MS-01BA24-13

Spool No. 1-MS-01BD24-19

Spool No. 1-MS-01BD24-20

Weld Data Sheet

No. A-6259 - High Pressure Core Spray FW 51

No. 4803 - Reactor Water Cleanup FW 19

No. 10350 - RHR FW 147

No. 2271 - MS Relief FW-181

No. A-6403 - Main Steam FW 55

No. A-6024 - LPCS - FW 23

No. 2357 - HPCS - FW 36

No. A-7935 - Fuel Pool Cooling FW 127

No. A-13069 - Fuel Pool Cooling FW 139

M. W. Kellogg, mill test reports 74-1-E 14" pipe heat No. N93498.

M. W. Kellogg, mill test report 8342-16-115 22" pipe heat No. A85716.

M. W. Kellogg, mill test report 74-10-A fitting heat No. N90081.

M. W. Kellogg, mill test reports 8342-16-115 22" pipe heat No. A85716.

M. W. Kellogg, mill test reports 8416-192-905 8" Tee heat No. P-3926.

M. W. Kellogg, mill test report, 8530-63-384 6" s/s pipe heat No. 78323.

M. W. Kellogg, mill test report K-262 24" 90° elbow. Heat No. 801N10210.

M. W. Kellogg, mill test report No. 6-99 33" C/S pipe heat No. 99025.

M. W. Kellogg, mill test report No. 13C-458B 4.5" pipe heat No. 99025.

M. W. Kellogg, mill test report No. 13C-458B 4.5" pipe heat No. 2P6429.

8. KEI Procedures

The following Kaiser procedures were reviewed, and the inspector determined that they met the applicable code requirements.

SPPM 4.0 General NDE procedure
SPPM 4.1 Revision 1, (RT) procedure
SPPM 4.2 Revision 1, (PT) procedure
SPPM 4.4 Revision 1, (MT) procedure
SPPM 4.5 Revision 1, (NDE) Personnel Qualifications
SPPM 4.6 Revision 1, Visual Requirements
SPPM 5.1 Revision 1, FW post weld heat treatment
SPPM 5.2 Revision 1, FW post weld heat treatment
SPPM 5.5 Stress relief carbon and low alloy steel

9. CBI Records and Reports

- a. The inspector reviewed spent fuel liner records of the following weld joints. No discrepancies were noted.
- (1) Joints No. 10 VN and No. 8 HN recorded on dwg. R27-Revision 1, "Spent Fuel Liner."
 - (2) Joints No. 513-A-3 and No. 513-A-6 recorded on dwg. R-18, Revision 1, "Gate Supports on Dryer Separator Storage Pool West Wall."
 - (3) Joints No. 2 VS, No. 5HW and No. 6HS recorded on dwg. R-47, Revision 1, "Shipping Cask Wall Liner South and West."
- b. The following NDE and welding procedures were reviewed by the inspector, and determined to meet the requirements of ASME code.
- (1) Welding Procedure

GMA - WPS-IIIIB - 8147 - Revision 1.
SMA - WPS-IIIIB - 8146 - Revision 1.
 - (2) NDE procedures

PTP (74-2172) - 10B - Revision 2
RTP (74-2172) - 15L - Revision 3.

- c. The following nonconformance reports and the corrective actions taken were reviewed and determined to be acceptable. NCR No.'s 2, 5, 9, 11, 14, 16, 19, and 24.
- d. Audit report No. 1976-1 performed April 1, 1976, and report No. 1976-2 performed May 7, 1976, were reviewed and determined to meet NRC requirements.