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U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

RO Inspection Report No. 050-237/72-07

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, Illinois 60690

Dresden Unit 2
Morris, Illinois

License No. DPR-19
Category: C

Type of Licensee: BWR, 809 Mwe

Type of Inspection: Special, Announced

Dates of Inspection: November 1 and 2, 1972

Dates of Previous Inspection: October 13 and October 26, 1972

Principal Inspector: *H. C. Dance*
H. C. Dance

12/5/72
(Date)

Accompanying Inspector: *C. C. Williams*
C. C. Williams (Sections 6-9)

Dec 5 1972
(Date)

Other Accompanying Personnel: None

Reviewed By: *G. Fiorelli*
G. Fiorelli, Chief
Reactor Operations Branch

12/5/72
(Date)

1086.1

SUMMARY OF FINDINGS

Enforcement Action

- A. Criterion V of Appendix B, 10 CFR 50, states that activities affecting quality shall be accomplished in accordance with documented instructions.

Contrary to the above, the following deficiencies were noted:

1. Radiographic reports indicated acceptance of radiographs which do not meet the requirements of the ASME B&PV Code, Section III, Appendix IX, paragraphs 3326 and 3331. Film density of accepted radiographs had not been determined and facilities were not available for measuring the density of radiographs; further, an observed filler to base metal notch approaching 3/16 inch at several locations on the weld coupled with available viewing facilities appeared to mask the area of interest on the film. (Paragraph 6.b.(6))
2. Weld rod was not controlled in accordance with the contractor's weld rod control procedure, paragraph 9.2.3, and Engineering Specification No. 22A2560, Revision C, paragraph 5.1.1(e) in that issued, but unused, 7018 rod was observed to be unprotected from the environs in the immediate vicinity of the flow restrictor work area. (Paragraph 6.c.(1))
3. The records available did not establish conformance to Repair Instruction Specification No. 22A2560AB, Revision B, paragraph 4.10.1.(a) requirement that weld preparation surfaces be inspected using a five power glass, after removal of installation fitup spacers. (Paragraph 6.b.(2))

- B. Criterion VII of Appendix B, 10 CFR 50, states that measures shall be established to assure that purchased material conforms to the procurement documents.

Contrary to the above, documents were unavailable for review to support the apparent intent of Repair Instruction Specification No. 22A2560AB, Revision B, paragraph 4.7.3, requiring the use of low chloride content water soluble purge dams and glues. (Paragraph 8)

Licensee Action on Previously Identified Enforcement Items

No previously identified enforcement items were involved.

Unusual Occurrences

No unusual occurrences were identified.

Other Significant Findings

A. Current Findings

Installation requirements designated in the engineering specifications which were not available for review during the inspection are shown below. These matters will be reviewed during a subsequent inspection.

1. Dimensional parameters for the fitup and alignment of the 18 high pressure sockets. (Paragraph 6.b(3))
2. Magnetic particle inspection records for the weldments of the four main steam flow restrictor spools. (Paragraph 6.b(7))
3. Permanent radiographic location and identification markings had not been attached to the pipe base metal. (Paragraph H of Management Interview)
4. Document approval of drawings marked as "preliminary." (Paragraph 7)

B. Status of Previously Reported Unresolved Items

No previously reported unresolved items were identified.

Management Interview

The inspectors met with Messrs. Worden, Morris, Diederich, Abrell, Turbak, Vertovec, Groth, Wadsworth, Butcher and Kelly at the close of the inspection and discussed the following:

- A. The inspector stated the flow element calibration test procedure should specify a hold point for evaluation of steam flow response in the power ascension program. The licensee plans this check at approximately 50 percent of power. (Paragraph 5)

B. Radiography - Main Steam Flow Restrictor Repair

The inspector stated that construction activities relative to radiography appear to be inconsistent with AEC regulations, governing codes, and the engineering specification. The licensee stated that this matter would be evaluated. (Paragraph 6.b(6))

C. Chemical Certification - Purge Dams

The inspector stated that, contrary to AEC regulations and engineering specifications, documents which would establish the

chemical certification of the soluble purge dams and associated glue were unavailable for review. The licensee stated that this matter would be reviewed. (Paragraph 8)

D. Weld Rod Control

The inspector stated that low hydrogen weld rod was not handled in accordance with the P-G weld rod control procedure. The licensee stated that the matter would be evaluated. (Paragraph 6.c(1))

E. Engineering Approval of Documents

The inspector said that the flow restrictor spool pieces had been completely installed utilizing fabrication drawings stamped "preliminary." "Final" drawings were unavailable at the site. The licensee said that the matter would be examined. (Paragraph 7)

F. Installation Records

The inspector stated that installation records to establish that the required inspection of the weld preparation surface, after grind out of installation spacers, were unavailable for review, and that records were not available to establish that socket weld fit-up requirements were met. The licensee stated that the clearances were established by scribing and that the final records would reflect this clearance. (Paragraphs 6.b(2) and 6.b(3))

G. Magnetic Particle Records

The inspector stated that magnetic particle examination records relative to the primary installation welds for the spool pieces were also unavailable for review. The licensee replied that, although these inspections had been completed, final reports had not been documented. (Paragraph 6.b(7))

H. Radiographic Film Location Markers

The inspector stated that permanent radiographic film location markers had not been placed on the four main steam lines as required. The licensee stated that the marking would be established.

REPORT DETAILS

1. Persons Contacted

Commonwealth Edison Company (CE)

W. Worden, Station Superintendent
F. Morris, Assistant Superintendent
J. Diederich, Supervisor - Technical Staff
G. Abrell, Operating Engineer
L. Burke, Construction Representative
R. Vertovec, Construction and Engineering Staff
M. Turbak, Engineer - Technical Staff
J. Groth, Quality Control Coordinator - Construction
N. Jackiw, Quality Control Coordinator - Operations

Phillips-Gettchow Company (P-G)

M. Kelly, Quality Assurance Manager

General Electric Company (GE)

D. Butcher, Quality Assurance Representative
W. Wadsworth, Field Engineer

2. Station Review Board

Plant approvals of the flow restrictor replacement were documented in the Station Review Board minutes.

a. Meeting No. 379, October 6, 1972

- (1) A representative of the Mechanical and Structural Department presented the repair specifications, safety analysis, Technical Specifications requirements, and installation procedures.
- (2) A package describing the work was forwarded to AEC RO:III and the state Boiler Inspector.
- (3) Documented approvals prior to start of work was identified as a requirement.

b. Meeting No. 381, October 14, 1972

- (1) Approved an operating order to control water level during the outage.
- (2) Specified weekly audits at key points of flow element installation.
- (3) Stated that Engineering and Station Construction Department personnel will keep the station QA personnel current on all procedures and certifications required.

3. Hydrostatic Test

- a. Proposed hydrostatic test pressure of 1120 psig based on reactor vessel material, SA-302, grade B is in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, 1971 Edition.
- b. A draft of the proposed hydrostatic test procedure following replacement of the main steam line flow restrictors was reviewed. The procedure appeared to be comprehensive. Discussions with the inspector led to the incorporation of a specific step for removal of the safety valve gags. This step is normally assumed to be accomplished.

4. Steam Line Inspections and Tests

- a. Phillips-Getschow letter at site, dated October 26, 1972, stated a visual inspection of 'B' main steam line revealed no damage. A scrape indication approximately three inches long and one inch wide without depth was noted at the bottom of the 90° elbow. A CE metallurgist was reported to have viewed the area with the aid of a boroscope.
- b. According to the GE engineer, each of the inboard main steam isolation valves was visually inspected prior to welding of the line.
- c. A leak test of the B line main steam isolation valves (MSIV) was performed on November 1, 1972. Test data of the 1B and 2B MSIV's indicated total leakage through both valves was 3.94 SCFH. Separate tests were not performed since the above total leakage is less than the 11.5 SCFH permissive limit for each valve in Technical Specification 4.7.A.2.f.

5. Flow Element Calibration Test

The main steam flow element calibration test procedure was transmitted from GE San Jose on November 1, 1972. Station Review Board was

scheduled to review the plan on November 2. Calibration data was specified at 25, 50, 70, 80, 90, and 100 percent of power.

Following discussion with the inspector, station personnel planned to include a hold point for an evaluation of the steam flow response to the expected performance at approximately 50 percent power.

6. Main Steam Piping (Flow Restrictor Spools)

Welding

Implementation of QA Program

A review of engineering specifications (GE Specifications No. 22A2560, Revision C, and 22A2560AB, Revision B) and the associated contractors QA manuals, disclosed that the licensee and his contractors have developed an adequate QA program. Specific aspects of the program, and certain deficiencies in program implementation are discussed below.

a. Review of QC System

A review of quality control procedures and engineering specification indicated that QC procedural and record keeping requirements have been established for qualification of weld procedures, welders, NDT personnel, and NDT techniques. The procedures and specifications also provided for identification of each of the following items: (1) visual inspection, (2) heat treatment, (3) nondestructive testing, (4) repair of defects, and (5) weld material control.

b. Follow-up Record Review

A review of the installation for the four main steam flow restrictors, Serial Nos. 1041 through 1044, disclosed the following:

- (1) Visual inspection of finished welds was not complete.
- (2) Contrary to 10 CFR Part 50, Appendix B, Section V, records were not available to establish conformance to a visual inspection using a five-power glass after grind out of installation spacers, as required by Specification No. 22A2560AB, Revision B, 4.10.1(a).

- (3) Documented evidence of conformance to root gap (fit-up) dimensions, as specified in Specification No. 22A2560, Revision C, paragraph 4.5.4(d) were unavailable for review.
- (4) Alignment records and root pass records for the spool pieces were comprehensively documented.
- (5) Heat treat records, relative to preheat and interpass temperature, were reviewed and found to be satisfactory.
- (6) Radiography and weld quality was contrary to the requirements of 10 CFR Part 50, Appendix B, Section V, in that radiographic reports indicated acceptance of radiographs which appear not to meet the requirements of Specification E 22A2560, Revision C, paragraph 4.5.3, and the ASME Boiler and Pressure Vessel Code, Section III, Appendix IX, paragraphs 3331 and 3326. That is, the density of the radiographs which were reviewed approached the upper limits of the requirements and devices were not available to determine the actual density of the film. Film density values were not reported.

Weld irregularities appeared to mask, and interfere with interpretation, of the area of interest. The weld to base metal interface is a right angle notch approaching 3/16" in elevation at several locations on all four main steam lines.

The density of the film, the noted notch condition, coupled with marginal viewing facilities (low intensity lighting) was such that one of sixteen films reviewed (e.g., film No. B-C for MS line 2-300 1A, weld No. 4-A, previously accepted by the licensee) could not be conclusively identified, nor interpreted, by the licensee in terms of what appeared to be a linear indication.

- (7) Records for magnetic particle inspection were incomplete and were not finalized during this inspection. However, records were identifiable to the subject welds.
- (8) Repair of defects has not been encountered. However, approved and comprehensive procedures are available.
- (9) Material control records for welding material control were complete and comprehensive. However, apparent violations were identified during the inspection.
(See Paragraph 6.c.(1))

c. Follow-up Observation of Work

All eight welds, 4(a) and 4(b), on each of 4 main steam lines were reviewed, including 18 socket welds, for conformance to engineering specifications, drawings, governing codes, QC requirements, and identification of welds, welders, and inspectors. Two violations were observed as follows:

- (1) Contrary to 10 CFR Part 50, Appendix B, Section V, weld rod was not controlled in accordance with the contractors weld rod control procedure, paragraph 9.2.3, and Specification No. 22A2560, Revision C, paragraph 5.1.1(e) in that issued, but unused, 7018 rod was observed to be unprotected from the environs in the immediate vicinity of the flow restrictor work area.
- (2) The plane of intersection between the weld and the base metal in several locations on each spool piece installation weld was observed to be a right angle notch with a maximum elevation of 3/16". (See Paragraph 6.b.(6)) Otherwise, the appearance of the weld was acceptable.

7. Document Approval

Final approval of the contractors QA manual and repair process procedures was not available at the site, prior to implementation of the work. Specification No. 22A2560, Revision C, paragraph 5.1.1 requires GE-APED approval prior to production use. However, GE arranged for the final approval documents to be "wired" to the site during the inspection. These approval documents were received at the site after completion of the spool installation work activities. Furthermore, final, approved drawings apparently were not available at the site during the course of the repair work. Instead, preliminary drawings appear to have been utilized and were included in the documentation package. Site personnel stated clarification of the approval for the installation drawings would be provided.

8. Purge Dams and Glue

Contrary to the requirements of 10 CFR Part 50, Appendix B, Section VII, and the apparent intent of an engineering specification (No. 22A2560, Revision B, paragraph 4.7.3), documents were unavailable at the site for review to establish that the chemistry of the water soluble purge dams and glue met the requirements for chloride content.

9. Piping (Main Steam)

a. Implementation of QA Program (Receiving, Material Requirements, and Handling)

A review of the engineering specification, the quality control procedures, as approved by the NSSS supplier, and the functional and organizational arrangements, indicated that the piping QA program was adequate.

b. Review of QC System

Review of the contractors QA manual, the site receipt inspection records, and the document package for four main steam replacement flow restrictors, including engineering specifications for storage, installation, test, and protection, disclosed no apparent deficiencies.

c. Follow-up Record Review

Review of mill certifications for chemistry, physical character, and NDT disclosed agreement with the requirements. Hold tags were reviewed for quarantine of the subject spools until the required documentation arrived at the site. All required considerations have been made and completed with the exception of hydrostatic testing.