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UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

TELEPHONE
(312) 858-2660

April 12, 1972

Iowa Electric Light and Power Company
ATTN: Mr. Charles W. Sanford
Vice President, Engineering
Security Building
P. O. Box 351
Cedar Rapids, Iowa 52405

Docket No. 50-331

Gentlemen:

This refers to the inspection conducted by Messrs. Hayes, Sutton, and Rohrbacher of this office on March 15 - 17, 1972, of construction activities at the Duane Arnold site authorized by AEC Construction Permit No. CPPR-70 and to the discussion of our findings at the conclusion of the inspection with Messrs. Root, Ward, Cook, and others of your staff.

Areas examined during the inspection included storage and installation of reactor coolant recirculation piping, additional quality records associated with calibration of temperature monitoring equipment used during hydrostatic testing of the reactor pressure vessel, placement of concrete, fabrication and installation of the diesel generator fuel oil tank, closure speed control of the main steam isolation valves, measures to assure that Class I cast valve wall thicknesses meet design requirements, weld rod traceability, modification of pressure vessel feedwater nozzle safe ends, installation of electrical components and cables, and installation of the main steam piping. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with plant personnel, and observations by the inspectors.

During this inspection, it was found that one of your activities appears to be in noncompliance with 10 CFR Part 50, Appendix B, and in nonconformance with installation instruction specification No. 22A-2281. The item and reference to the pertinent requirements are listed in the enclosure to this letter. Please provide us within 30 days, in writing, with your comments concerning this item, any steps which have been or will be taken to correct it, any step that has been or will be taken to prevent recurrence, and the date all

corrective action or preventive measures were or will be completed. Your reply should emphasize, in particular, any appropriate changes that have been or will be made to improve the effectiveness of your quality assurance program to prevent recurrence.

With regard to questions raised during this inspection, we understand that all Class I cast valves shipped to the site to date have quality documentation to establish that wall thicknesses have been measured and found to meet design requirements and that you have taken steps to assure that additional valves in this category, yet to be received, will have like quality documentation. Our inspectors will review this matter further during subsequent inspections.

Should you have questions concerning this inspection, we will be glad to discuss them with you.

Sincerely yours,

Boyce H. Grier
Regional Director

Enclosure:
Description of item of
Noncompliance and
Nonconformance

cc: L. D. Root, Assistant
Project Manager
J. N. Ward, Nuclear
Group Leader
G. A. Cook, Quality
Assurance Manager

bcc: J. B. Henderson, CO
L. Kornblith, CO
R. H. Engelken, CO
P. A. Morris, DRL
CO Files
DR Central Files
PDR
Local PDR
NSIC
R. L. Shannon, DTIE

ENCLOSURE

Docket No. 50-331

One of your activities appears to be in noncompliance with 10 CFR Part 50, Appendix B, and in nonconformance with installation instruction specification No. 22A-2281 as indicated below:

Part 50, Appendix B, Criterion XIII, states, in part, that: "Measures shall be established to control the handling, storage, shipping, cleaning, and preparation of material and equipment in accordance with work instructions to prevent damage or deterioration." Installation instruction specification No. 22A-2281, Section 3.1, states, in part, that: "Good housekeeping is essential and should be maintained in all storage, fabrication, and erection areas to prevent accumulation of dirt and debris. Piping, valves, etc., awaiting erection should be carefully stored at the installation location in a manner that will not be a hazard to personnel and will not subject the equipment to damage."

Contrary to the above, several of the reactor coolant recirculation system stainless steel piping spools, stored in place in the reactor drywell, were found to be inadequately protected by plastic covers or other means to assure continued cleanliness and protection from surface damage. Moreover, other work in progress in close proximity to the recirculation piping, i.e., main steam piping fitup and concrete placement activities, was being conducted in a manner such that the recirculation piping welds in progress were subject to contamination as a result of falling dirt and debris.

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(312) 858-2660

April 10, 1972

J. B. Henderson, Chief, Reactor Construction Branch
Division of Compliance, Headquarters

IOWA ELECTRIC LIGHT AND POWER COMPANY (DUANE ARNOLD)
DOCKET NO. 050-331

The attached report of a routine inspection at the subject facility on March 15-17, 1972, is transmitted for information. No immediate safety problems were encountered during the inspection but one item of apparent noncompliance and nonconformance, was discussed at the conclusion of the inspection and will be called to the attention of corporate management by enclosure to the letter summarizing the results of the inspection.

W. E. Vetter
Senior Reactor Inspector

Attachment:
CO Rpt No. 050-331/72-02 by
D. W. Hayes, J. W. Sutton, and
R. A. Rohrbacher

cc: E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DRL (2)
D. J. Skovholt, DRL (3)
H. R. Denton, DRL (2)
L. Kornblith, CO
R. H. Engelken, CO
CO Files
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U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

REGION III

CO Inpsection Report No. 050-331/72-02

Subject: Iowa Electric Light and Power Company
(Duane Arnold)
Cedar Rapids, Iowa

License No. CPPR-70
Priority: N/A
Category: A

Type of Licensee: BWR (GE) 550 Mwe

Type of Inspection: Routine, Unannounced

Dates of Inspection: March 15 - 17, 1972

Dates of Previous Inspection: December 7 - 9, 1971
January 15, 1972 (Special - RPV Hydro)

Principal Inspector: D. W. Hayes W.E. Vetter/FOR 4-10-72 (Date)

Accompanying Inspectors: J. W. Sutton W.E. Vetter/FOR 4-10-72 (Date)

R. A. Rohrbacher W.E. Vetter/FOR 4-10-72 (Date)

Other Accompanying Personnel: None

Reviewed By: W. E. Vetter, Senior Reactor Inspector W.E. Vetter 4-10-72 (Date)

Proprietary Information: None

SECTION I

Enforcement Action

A. Noncompliance

Activities were inconsistent with 10 CFR 50, Appendix B Criterion XIII as well as with applicable procedures and specifications in respect to the control of handling, storage, and preservation of the reactor coolant recirculation piping. (Paragraph 7)

B. Nonconformance: None

C. Safety Items: None

Licensee Action on Previously Identified Enforcement Matters: None

Unresolved Items: None

Status of Previously Reported Unresolved Items

A. Inadequate Temperature Instrument Calibration Records (CO Report No. 050-331/72-01)

Additional calibration records and procedures associated with the use of thermocouples to monitor the reactor pressure vessel metal temperature during hydrostatic testing, were made available for review by the inspector. The records were considered to be sufficient to establish the identity of the test equipment and that a potentiometer in question met the accuracy requirements. This item is considered to be resolved.

B. Concrete Placement Time Limits (CO Report No. 050-331/71-07)

Bechtel now monitors the time between mixing and placement of concrete by reviewing the transit tickets at the placement site, and controls mixing requirements by radio communication from the placement site. Presently used procedures to monitor and control placement time limits now appear to be adequate, and this item is now considered resolved.

C. Incomplete Documentary Evidence of Quality for the Diesel Fuel Oil Storage Tank (CO Report Nos. 050-331/71-04 and 71-07)

Additional quality documentation relative to the fuel oil tank was received on site from the Bechtel San Francisco office. The documents were reviewed and found to establish the identity and approval of the welding and NDT procedures as well as the qualification of the NDT technicians.

Evidence that the seismic calculations had been performed for the tank was not available. The licensee stated that seismic calculations were not required of the tank fabricator but that Bechtel will perform this work and that the results would be available, for review at the site, prior to use of the equipment. This remains an outstanding matter to be reviewed during subsequent inspections.

D. Main Steam Isolation Valve Speed Control (Vendor Report No. RW-71-01, dated August 3, 1971, and CO Report No. 050-331/71-04)

Revised Deviation Disposition Requests (DDR's) in regard to the reduced requirements for closing speed adjustment control on the main steam isolation valves were reviewed. The approved DDR's now contain an explanation of the change in the specification requirements. This item is closed.

E. Valve Casting Wall Thickness (CO Report No. 050-331/71-04)

General Electric and Bechtel shop inspector reports were reviewed and found to establish that wall thickness measurements for pressure boundary valves, shipped to date for the Duane Arnold facility, have been made and documented. The measurements are made after machining but before assembly.

The licensee stated that purchase orders for any additional cast pressure boundary valves for the Duane Arnold facility would contain requirements for wall thickness measurements to assure conformance to design requirements. This matter is now considered to have been resolved.

F. Weld Rod Traceability (CO Report No. 050-331/71-04)

Receiving documentation for six recent purchases of over 30,000 pounds of welding rod were reviewed. The records now contain both the weld rod heat numbers and lot numbers. Full traceability between paper and weld rod container and between weld rod container and paper is now possible. This matter is no longer an issue.

Design Changes

A. The intertie breakers between 4160 volt buses 1A and 1C (now labeled 1A1 and 1A3) and between 1B and 1D (now labeled 1A2 and 1A4), shown on Figure 8.3-1 of the Duane Arnold PSAR, have been eliminated. Buses 1A3 and 1A4 will now be fed during normal plant operation from the startup transformer or the standby transformer. The change was included in the FSAR recently submitted to DRL.

B. The four reactor pressure vessel (RPV) feedwater nozzle safe ends are being modified to meet code and GE specification requirements.[1/] Also, a double thermal sleeve is being installed in the CRD return line, and it may become necessary to relocate the area of RCIC injection into the vessel pending completion of an engineering review and analysis concerned with expected operating conditions related to nozzle temperatures. A meeting between IEL&P, GE, CB&I, DRL, DRS, and CO, to discuss this design change, was held by DRL on March 28, 1972, at Bethesda, Maryland.

Unusual Occurrences: None

Persons Contacted

The following people were contacted during the inspection:

Iowa Electric Light and Power Company (IEL&P)

L. D. Root, Assistant Project Manager
H. A. Herold, Project Engineer
G. A. Cook, QA Manager
W. J. Kacer, QA Engineer
R. D. Essig, QA Engineer
D. E. Gembler, QA Engineer
K. V. Harrington, Site Manager - Construction
J. N. Ward, Nuclear Group Leader
Z. (NMI) Zuhn, Electrical Group Leader
R. Nossardi, Mechanical Group Leader
G. Chuo, Instrument and Control Engineer
H. Shearer, Instrument and Control Engineer
J. Cimburek, Electrical Engineer

1/ CO Inquiry Report No. 050-331/72-01.

Bechtel Corporation (Bechtel)

J. S. Fiedler, Project QA Engineer
J. R. Behres, QC Engineer
D. W. Hutton, QA Engineer
R. S. Love, QC Engineer
D. F. Wendele, QA Supervisor (SFHO)
F. G. Will, Lead Electrical Engineer
B. Collin, Electrical Engineer
C. W. Jordan, Electrical Engineer (SFHO)
W. Warren, Lead Welding Engineer

General Electric Company (GE)

J. H. M. Miller, Site Manager
T. M. LaVasseur, QA Representative

Management Interview

Personnel in Attendance

Iowa Electric Light and Power Company (IEL&P)

L. D. Root, Assistant Project Manager
G. A. Cook, QA Manager
J. N. Ward, Nuclear Group Leader
W. J. Kacer, QA Engineer
R. D. Essig, QA Engineer
H. A. Herold, Project Engineer
K. V. Harrington, Site Manager - Construction

Bechtel Corporation (Bechtel)

J. S. Fiedler, Project QA Engineer
J. R. Behres, QC Engineer

Items Discussed

The inspector described working conditions observed in the drywell and stated that protection of the reactor coolant recirculation piping appeared to be inadequate and in noncompliance with the requirements of 10 CFR 50, Appendix B, Criterion XIII, as well as the GE installation specification No. 22A-2281. The licensee stated that they would review the matter and take appropriate corrective action. The inspector added that this matter would be discussed in the enclosure to our letter to the licensee summarizing the results of the inspection. (Paragraph 7)

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies or Unresolved Items Were Found

1. General

   a. Construction Status

      As of March 1, 1972:

      Engineering ----------(overall) ---82%

      Construction (Overall Project)----------49%

   b. Personnel Additions

      IEL&P has added Mr. D. E. Gembler, as a Quality Assurance Engineer, and Mr. J. N. Ward as the Nuclear Group Leader. IEL&P now has a total of four QA personnel assigned to the site. Mr. Ward, formerly with the Navy Nuclear Program, replaces Mr. Cotton, who resigned a few months ago.

2. Electrical

   Record Review

   a. Installation Inspection.

      (1) 4160 Volt Switchgear bus 1A3.

   b. Material Certification.

      (1) 4160 Volt Switchgear (buses 1A1, 1A2, 1A3, & 1A4).

      (2) 4160 Volt Breakers (44).

      (3) Station Batteries 1D1, 1D2, and 1D4.

      (4) NIS Batteries 1D5 and 1D6.

      (5) RHR Pump Motors (4).

c. Nonconformance Reports.

Observation of Work

a. Installation Techniques

(1) 4160V Switchgear buses 1A1, 1A2, 1A3, and 1A4.

(2) 480V Switchgear 1B3 and 1B4.

(3) 4160V/480V transformers 1X31 and 1X41.

(4) Station Batteries 1D1, 1D2, and 1D4.

(5) NIS Batteries 1D5 and 1D6.

(6) RHR Pump Motors (4).

(7) Startup Transformer (Installation not complete).

3. Cables and Terminations

QC System

a. Cable tray loading (physical and thermal).

b. Site NDT on cables.

Record Review

a. Vendor NDT Records.

b. Cable Nonconformance Reports - Note - all reports closed.

No nonconformance cable on site at time of inspection.

c. Installation Records (cables only).

Observation of Work

a. Use of Specified Materials.

b. Installation.

(1) Trays and conduit.

(2) Cables and termination.

c. QC Inspections (trays and cables).

4. Primary Piping - Reactor Coolant Recirculation

a. Welding - Record Review

(1) QC Inspector Records.

(Visual inspections, correlation record to weld, radiograph quality, evaluation weld quality, and welding material receipt verification, pre-issue storage conditions, issue control, post-issue environmental control and disposition of unused materials).

(2) Repair Records.

(3) Material Control.

b. Welding - Observation of Work

(1) Use of Welding Procedure.

(2) Joint Preparation and Alignment.

(3) Identification of Weld, Welder, and Inspector.

(4) Appearance of Welds.

(5) Control of Weld Material.

Note: Only two welds of 28 completed at time of inspection.

c. Piping - Record Review

(1) Material Certification.

(2) Receipt Inspection.

(3) Installation.

d. Piping - Observation of Work

(1) Installation Techniques.

(2) QC Inspection of Piping Installation.

5. Primary Piping - Main Steam

a. Piping - Record Review

(1) Material Certification.

(2) Receipt Inspection.

(3) Nonconformance Report.

6. Other Class I Components - Emergency Generator Diesel Fuel Oil Storage Tank

a. Welding - Record Review

(1) Welder Qualification Records.

(2) Listing of Currently Qualified Welders.

b. Welding - Observation of Work

(1) Use of Welding Procedures.

c. Structure - Record Review

(1) Installation Records (NDT Testing and Inspection).

Details of Subjects Discussed in Section I

7. Protection Reactor Coolant Recirculation Piping

During inspection of storage and installation of reactor coolant recirculation piping, Mr. Essig was questioned with respect to the cleanliness and proper storage of the reactor coolant piping which was stored in upper and lower areas of the containment drywell.

The stainless steel recirculation piping, in most instances, has been temporarily positioned in preparation for welding, i.e., secured by pipe hangers and braces, and fitted with protective covers. In one instance, however, SS piping stored on the grating was found to be only partially protected. A flange on one spool was found to be without protective covering and had

received significant surface damage (gouged). Dirt was noted in the gasket area. Another spool was being used as a table for storing welding masks and goggles. In areas where piping extended through grating, the piping was being used to climb and descend from level-to-level. It was also noted that, during the critical welding operations, protective measure had not been taken to protect the welding area from dirt and debris filtering through overhead gratings. Other work, e.g., fit-up of the main steam piping and pouring of the biological shield of the reactor, was noted to be in progress during the inspection.

In addition to the above, upon completion of the welding operation, a spool piece was not protected to prevent damage. In one instance, a carbon steel sling was lying across an unprotected spool piece for which the welding operations had been completed.