

UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

TELEPHONE
(312) 858-2660

A. RO Inspection Report No. 050-331/74-01

Transmittal Date : February 20, 1974

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DR Central Files
Regulatory Standards (3)
Licensing (13)
RO Files

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B. RO Inquiry Report No. _____

Transmittal Date : _____

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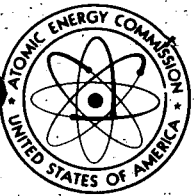
C. Incident Notification From: _____
(Licensee & Docket No. (or License No.))

Transmittal Date : _____

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(312) 858-2660

FEB 20 1974

Iowa Electric Light and Power Company
ATTN: Mr. Charles W. Sandford
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 Mr. J. W. Sutton of this office on January 24-25, 1974, of activities at the Duane Arnold site authorized by AEC Construction Permit No. CPPR-70 and to the discussion of our findings with Messrs. Root, Cook, and others of your staff at the conclusion of the inspection.

A copy of our report of this inspection is enclosed and identifies the areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, interviews with plant personnel, and observations by the inspector.

During this inspection, it was found that certain of your activities appear to be in violation of AEC requirements. The item and reference to the pertinent requirements are listed under Enforcement Action in the Summary of Findings Section of the enclosed inspection report.

This notice is sent to you pursuant to the provisions of Section 2.201 of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office within thirty days of your receipt of this notice, a written statement or explanation in reply, including: (1) corrective steps which have been taken by you, and the results achieved; (2) corrective steps which will be taken to avoid further violations; and (3) the date when full compliance will be achieved.

In accordance with Section 2.790 of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this notice, the enclosed inspection report, and your response to this notice will be placed in the AEC's Public Document Room. If this report contains any information that you or your contractors believe to be proprietary, it is necessary that you make a written application to this office, within twenty days of your receipt of this notice, to withhold such information from public disclosure. Any such application must include a full statement of the reasons for which it is claimed that the information is proprietary, and should be prepared so

Iowa Electric Light and
Power Company

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FEB 20 1974

the proprietary information identified in the application is contained in a separate part of the document. Unless we receive an application to withhold information or are otherwise contacted within the specified time period, the written material identified in this paragraph will be placed in the Public Document Room.

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

Sincerely yours,

James G. Keppler
Regional Director

Enclosure:

RO Inspection Rpt No. 050-331/74-01

bcc: RO Chief, FS&EB
RO:HQ (4)
Licensing (4)
DR Central Files
RO Files
PDR
Local PDR
NSIC
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OGC, Beth, P-506A

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Inspection Report No. 050-331/74-01

Licensee: Iowa Electric Light and Power Company
Security Building
Post Office Box 351
Cedar Rapids, Iowa 52405

Duane Arnold Energy Center
Palo, Iowa

License No. CPPR-70
Category: B

Type of Licensee: BWR (GE) - 538 Mwe

Type of Inspection: Routine, Announced

Dates of Inspection: January 24 and 25, 1974

Dates of Previous Inspection: December 26-27, 1973 and
January 7, 1974 (Test and Startup)

Principal Inspector: J. W. Sutton

RC Knapp for

2-19-74
(Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: D. W. Hayes, Senior Reactor Inspector
Reactor Construction Branch

RC Knapp for

2-19-74
(Date)

SUMMARY OF FINDINGS

A. Enforcement Action

One of the activities at the Duane Arnold site appears to be in violation of AEC regulations and in nonconformance with the Iowa Electric Light and Power Company quality assurance program, as identified below, and is considered to be of Category II severity.

10 CFR Part 50, Appendix B, Criterion V, states, in part, that: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings and shall be accomplished in accordance with these instructions".

The Iowa Electric Light and Power Company's Quality Control Procedure No. RE-5, titled "Control Procedure for 855' Refueling Level," in Section 6.3, states, in part, that a cleanliness inspection of the 855' level would be performed and recorded on a weekly schedule.

Contrary to the above, inspections were not performed during the period December 13, 1973, to January 2, 1974. This apparent violation was observed and documented during an Iowa Electric Light and Power Company QA audit of DAEC Operations Department records. (Paragraph 1, Report Details)

B. Safety Matters

No safety matters were identified.

Licensee Action on Previously Identified Enforcement Matters

No previously identified enforcement matters were involved.

Design Changes

No new design changes were identified during the inspection.

Unusual Occurrences

No unusual occurrences were identified.

A. Current Findings

1. Status of Construction

		Percent Complete <u>January 15, 1974</u>
a.	<u>Piping (Greater Than 2 1/2")</u>	
	Main Steam	100%
	Feedwater	100%
	Recirculation	100%
	CRD	100%
	Total (Process Piping)	99.9%
b.	<u>Electrical</u>	Percent Complete
	Trays	100%
	Conduit	99.9%
	Cable Pulled	99.5%
c.	<u>Instrumentation</u>	Percent Complete
	Installation	99%
	Initial Calibration	96%
d.	<u>Overall Construction</u>	98%
2.	<u>Fuel Loading (Utility Estimate)</u>	February 15, 1974
3.	<u>Construction Inspection Status</u>	

Construction inspection items remaining to be completed prior to fuel loading include the following:

- a. Forty-five nonconformance reports remain to be resolved, reviewed, and approved.
- b. Eight Field Deviation Instructions (FDI's) of Field Deviation Deficiency Reports (FDDR's) remain to be resolved, reviewed, and approved.
- c. Pipe hanger installation and inspection remains to be completed for two selected systems.
- d. Electrical cable installation for three selected circuits remains to be reviewed for proper routing, separation, identification, and termination.

B. Unresolved Matters

No new unresolved matters were identified.

C. Status of Previously Reported Unresolved Matters

Corporate QA Audits (RO Inspection Reports No. 050-331/73-04,
No. 050-331/73-09, No. 050-331/73-14, and No. 050-331/73-05)

The inspector reviewed a draft copy of a corporate Internal Practices Audit Committee (IPAC) audit report, titled "IPAC Audit Report No. 2." This matter is now considered closed. (Paragraph 2, Report Details)

Management Interview

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

Iowa Electric Light and Power Company (IEL&P)

L. D. Root, Assistant Project Manager
G. A. Cook, Manager - Quality Assurance
R. D. Essig, Quality Assurance Engineer
D. E. Gemblor, Quality Assurance Engineer
D. L. Hammond, Quality Assurance Engineer
R. R. Rinderman, Quality Supervisor - Operation
E. L. Hammond, Assistant Chief Engineer

Bechtel Corporation (Bechtel)

L. E. Rosetta, Project Superintendent
M. J. Jacobson, project Quality Assurance Engineer
J. R. Behres, Project Field Quality Control Engineer

General Electric Company (GE)

H. M. Miller, Resident Site Manager

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

1. The inspector stated that, during a review of the cleanliness inspection reports, it appeared that the IEL&P procedure for cleanliness inspections of the 855' refueling level of the reactor building had not been implemented. The inspector

added that this was an apparent violation of 10 CFR Part 50, Appendix B, Criterion V, as well as an IEL&P plant operation procedure. (Paragraph 1, Report Details)

2. The inspector stated that housekeeping efforts within the reactor building appeared to need more attention relative to removal of flammable materials that were observed during a plant inspection. The licensee stated that an intensive program to remove all flammable debris is presently underway.
3. In regard to inspection of the fuel channels, the inspector stated that he observed a light coating of dust on the channels. The licensee stated that this matter would be resolved by cleaning prior to fuel loading. (Paragraph 1, Report Details)
4. The inspector acknowledged that he was informed, by IEL&P personnel, that, during a routine design review of the reactor building by Bechtel, it appeared that the floor in the fuel loading area may not support the full load of the 100-ton spent fuel cast and railroad car. The inspector inquired if IEL&P intended to report this matter pursuant to the requirement of 10 CFR Part 50, Paragraph 50.55(e). The licensee stated that this matter was presently under review. Subsequent to the inspection, RO:III was notified that this matter would be reported pursuant to the requirements of 50.55(e). (Paragraph 3, Report Details)

REPORT DETAILS

Persons Contacted

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

Iowa Electric Light and Power Company (IEL&P)

H. Rehrauer, Mechanical Engineer

Bechtel Corporation (Bechtel)

C. R. Edwards, Quality Control Engineer

D. Young, Welding Field Engineer

M. Macondrary, Mechanical Engineer

G. Stam, Lead Welding Engineer

1. Reactor Building Cleanliness, 855-Foot Level (RO Inspection Report No. 050-331/73-15)

During the inspector's review of records pertaining to the cleanliness of the 855-foot level of the reactor building, it was noted that weekly inspections, as required by paragraph 6.3 of the IEL&P procedure, titled "Control Procedure for 855-Foot Refueling Level," had not been made for the period December 13, 1973, to January 2, 1974. This condition was also noted and documented during a quality assurance audit conducted on January 2, 1974, by the DAEC quality supervisor. The licensee's representative was informed that failure to follow procedures appeared to be in violation of the requirements of 10 CFR Part 50, Appendix B, as well as in non-conformance with DAEC QA procedures.

The 855-foot level was inspected to determine the cleanliness conditions. Cleaning was still in progress. The vessel's temporary cover had been removed and work was being performed in the vessel. (Necessary cleaning had been performed prior to removal of the temporary cover.) Weekly inspections had been reinitiated following the January 2, 1974, DAEC QA audit. The inspector checked the stored fuel channels for dust contamination and a light coating of dust was present. The licensee stated that the fuel would be hand cleaned prior to loading. Followup is planned during the next inspection.

2. Corporate QA Audits (RO Inspection Reports No. 050-331/73-04, No. 050-331/73-05, No. 050-331/73-09, No. 050-331/73-14, and No. 050-331/73-15)

The inspector reviewed a draft report of a second IEL&P audit conducted on the DAEC quality assurance program. The audit was performed on January 14, 1974. The QA program areas examined were as follows:

- a. QA audit activities for major vendors, Bechtel construction, and IEL&P engineering.
- b. Management report requirements for the companies listed in item a., above.
- c. AEC reporting requirements for the audits listed in items a. and b., above.

The audit was thoroughly documented, and copies had been properly transmitted to project personnel for review and action. The report included references to discrepancies found during the audit, as well as evidence that follow-up action would be required. This matter is considered to be resolved.

3. Spent Fuel Cask Loading Area

During the current inspection, the inspector was notified by IEL&P personnel that a design problem may exist in the spent fuel cask loading area. The licensee stated that they were informed by Bechtel that, during a routine design review of the reactor building, it appeared that the floor in the fuel cask loading area may not have been designed to support the combined weight of a 100-ton spent fuel cask and railroad car. (Table 12.3-1, titled "Live Loads on Structures of the DAEC, FSAR, Paragraph 3, Reactor Building," indicates that the fuel cask loading dock and wash-down area is to be designed to accommodate a cask load of 100 tons). Subsequent to the inspection, on February 1, 1974, the licensee reviewed the available data and notified RO:III that preliminary analysis indicates that the floor support beams may be under designed. The matter is still being reviewed, however, and is to be reported pursuant to the requirements of 10 CFR Part 50, paragraph 50.55(e). Followup is planned during the next inspection.

4. Large Pipe Hanger Inspection (RO Inspection Reports No. 050-331/73-09, No. 050-331/73-14, and No. 050-331/73-15)

The pipe hanger verification program is progressing satisfactorily. Piping systems required for startup are being inspected and results documented by the Bechtel QC hanger inspection group. As of the current inspection, 20 systems have been completed and released to the Startup Department. Followup review is planned for the next inspection.

5. GE Fuel Fabricating Plant Audit (RO Inspection Report No. 050-331/73-15)

This item remains open pending receipt of a clarifying answer to the licensee's letter to GE and will be reviewed during the next inspection.

6. High Energy Pipe Modification (RO Inspection Reports No. 050-331/73-09, No. 050-331/73-14, and No. 050-331/73-15)

The structural steel required by the engineering specification has been installed in the area of the feedwater line elbows located on the ground floor at the north end of the turbine building. This completes the modification work of high energy lines, as identified in Amendment No. 12 dated February 1973 to the DAEC FSAR and, subsequently revised by Change Notice dated September 1973. This matter is considered as closed.

7. Nonconformance Reports (NCR's) Field Deviation Instructions (FDI's) and Field Deviation Disposition Requests (FDDR's)

The inspector reviewed a list of open NCR's that had been prepared by the Bechtel QC group. The list was dated January 24, 1974. The number of open NCR's has been reduced since the previous inspection. A GE list of FDI's and FDDR's, required to be resolved prior to fuel loading, was also reviewed. This list was dated January 14, 1974, and contained seven open items. A continuing review of the NCRs, FDI's and FDRs is planned to ensure proper resolution, review and approval.

8. Pins/Bolts Found in Three Spring Type Hangers in the 22" Recirculation System Lines Following Completion of the Primary System Hydrostatic Test (RO Inspection Report No. 050-331/73-15)

RO:III received a satisfactory interim report dated January 16, 1974, from IEL&P that indicated the circumstances surrounding this matter. The report was prepared pursuant to the requirements of 10 CFR Part

50, paragraph 50.55(e). A final engineering analysis on the effect of the pins/bolts on the primary piping system during the hydrostatic test is being made by the nuclear steam supply system supplier. This item remains open pending receipt and review of the engineering analysis report.

9. Fuel Bundle Lower Tie Plate Orifice, Type I and Type II
(RO Inspection Report No. 050-331/73-15)

RO:III received a satisfactory interim report dated December 26, 1973, from IEL&P pursuant to the requirements of 10 CFR Part 50, paragraph 50.55(e) relative to the discovery of interchanged orifices involving one Type I and one Type II fuel assembly. The fuel fabricator is preparing a report on the possible consequences of operating with the orifices interchanged. This matter remains open pending receipt and review of this report.

10. Non-Code Piping Installed in Discharge Line From the Residual Heat Removal System Safety Relief Valves (RO Inspection Report No. 050-331/73-15)

The inspector reviewed completed records and documentation pertaining to the removal and rewelding of 20 shop welds in the referenced piping system. The records examined consisted of the following:

- a. Bechtel ISO Drawing 7884-FSK-HBE-29-1, Revision 3F3.
- b. Bechtel Field Welding Checklists.
- c. NDE Records, PT and RT.
- d. Welding Procedure Pl-AT-LH, Revision 8.
- e. RT Procedure XG-2, Revision 6.
- f. Weld Rod Control Records.
- g. Code and welder signoff.
- h. RT film for the following welds: 13, 2, 1, 26, and 6. The film reviewed was found acceptable and conformed to code requirements.

All records reviewed indicated that the piping was properly prepared and rewelded using controlled preheat, interpass temperature and visual examination. The operations were witnessed by the authorized

code inspector, and the necessary code forms were found to have been completed. The piping now conforms to all requirements of nuclear Class I piping as stated in the DAEC FSAR. This matter is closed.

11. Valve Casting Wall Thickness Measurement Program (RO Inspection Reports No. 050-331/72-09, No. 050-331/72-11, and No. 050-331/73-15)

The inspector reviewed the final IEL&P documentation attesting to the fact that the valve wall thickness measurement program for the DAEC complied with the RO:III letter of June 29, 1972, regarding the verification of valve wall thickness measurements. A total of 82 valves were identified by IEL&P as requiring measurements to verify wall thickness requirements had been met. All but eight of the valves were measured in the vendor's shop prior to being shipped to the site. A review of the vendor's documentation for valve wall measurement was made by the inspector and found to be acceptable.

The remaining eight valves (main steam isolation) were measured in the field using ultrasonic techniques. The identification, applicable code, and minimum wall thickness requirements were found to be properly documented. The X-Ray Engineering Company was contracted to perform these valve wall measurements. Measurement results were evaluated by GE for conformance to their minimum wall thickness requirements, as indicated in GE Specification No. 213A5399. An indication of wall thickness less than specified, covering approximately 13 square inches, was found on one valve (Serial No. 143). The wall thickness was determined to be 1.425" or 0.043" below the specified design thickness. This slight deficiency (3%) was evaluated by GE and reported in a letter, dated February 2, 1973, as acceptable without repair. This conclusion was based on the fact that the strength of the valve material was above the required value by 5% and that the area of reduced thickness was located in a small diameter section of the valve. Wall thickness measurements for all other valves were found acceptable.

The measurement procedures for the valves were established by the X-Ray Engineering Company and approved by Bechtel. Detailed drawings for each valve were prepared, and the grid inspection criteria was established. The entire valve was UT scanned, and the readings were documented on the valve drawing. Testing personnel and equipment were approved and certified prior to measurements being taken on the valves. Below is a tabulation of those valves measured during the program.

<u>Use</u>	<u>Quantity</u>	<u>Purchased By</u>	<u>Measured</u>
General Nuclear Valves	43	Bechtel	Shop
Small Nuclear Valves	17	Bechtel	Shop
Recirculation System	6	GE	Shop
Main Steam Isolation	8	GE	Field
Safety and Relief	8	GE	Shop
Total	82		

The completed measurement and supplementary documentation for all valves was examined and found to be in order. The licensee's valve wall thickness verification program is considered to have been successfully completed.

12. Piping Insulation

Release forms for piping shown on drawings MS-2-2, MS-3-3, MS-4-2, and M-117 were examined to determine if the piping being insulated had been properly inspected for defects, weld splatter, and arc strikes prior to being released for insulation. The records indicated that the referenced piping had been properly inspected and the results documented prior to the insulation being installed.

13. Safeguard Cable Separation (RO Inspection Report No. 050-331/73-15)

A review of records relative to cable separation, installation, and termination was made by the inspector. Four cables, 1B3445D, 1B3445E, 2B4439D, and 2B4439E, were physically traced from termination to control panel. The cables were located in startup system No. 53 (standby liquid control). Records examined included cable tab sheets and cable pull and routing cards. The Bechtel QA/QC release package for this system was also examined. The finished construction and documentation deficiencies and construction turnover package check sheets were found to have been properly executed and signed. Further review of electric cable for proper installation, termination, separation and identification is scheduled for the next inspection.

14. Quality Assurance Audits - Site

Continuing QA audits are being performed by IEL&P and Bechtel. Audit reports reviewed during this inspection covered the following items:

- a. December 17 and 18, 1973 - Final Electrical area inspection prior to turnover.

- b. December 20 and 27, 1973 - Bechtel startup, DAEC preoperational testing activities, intergrated leak rate test, and instrumentation.
- c. January 10 and 11, 1974 - Separation of safeguard cable.
- d. January 18 and 21, 1974 - Electrical cable documentation.

Deficiencies found during these audits were properly documented, and corrective action was identified. A continuing review of IEL&P and Bechtel QA audits is planned during subsequent inspections.