



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

TELEPHONE
(312) 858-2660

A. RO Inspection Report No. 050-331/73-09

Transmittal Date : September 5, 1973

Distribution:

RO Chief, FS&EB

RO:HQ (5)

DR Central Files

Regulatory Standards (3)

Licensing (13)

RO Files

Distribution:

RO Chief, FS&EB

RO:HQ (4)

L:D/D for Fuel & Materials

DR Central Files

RO Files

B. RO Inquiry Report No. _____

Transmittal Date : _____

Distribution:

RO Chief, FS&EB

RO:HQ (5)

DR Central Files

Regulatory Standards (3)

Licensing (13)

RO Files

Distribution:

RO Chief, FS&EB

RO:HQ

DR Central Files

RO Files

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

Transmittal Date : _____

Distribution:

RO Chief, FS&EB

RO:HQ (4)

Licensing (4)

DR Central Files

RO Files

Distribution:

RO chief, FS&EB

RO:HQ (4)

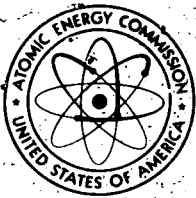
L:D/D for Fuel & Materials

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RO Files

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A.R. C. 10/14/73



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

TELEPHONE
(312) 858-2660

SEP 5 1973

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. Sutton of this office on July 25-27, 1973, 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, Harrington, and Essig of your staff.

Areas examined during the inspection are identified in the attached inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspector.

During this inspection, it was determined that certain of your activities appear to be in violation of AEC regulations. The activities and reference to the applicable requirements are listed in the enclosure to this letter.

This letter is a notice of violation 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 (30) days of the date of this letter, 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.

With respect to the preceding paragraph, a written statement of explanation is not required for violation number 2, in view of the fact that adequate, corrective action was accomplished prior to the completion of the inspection and verified by the inspector.

SEP 5 1973

A copy of our report of this inspection is enclosed and, 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 letter and the enclosed inspection report will be placed in the AEC's Public Document Room. If this enclosed inspection report contains information which you or your contractors believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. If such an application is submitted, it must identify the basis for which information is claimed to be proprietary and should be prepared so that proprietary information identified is contained in a separate part of the document, since the application, excluding this separate part, will also be placed in the Public Document Room. If we do not receive an application to withhold information, or are not otherwise contacted within the specified time period, the enclosed report will be placed in the Public Document Room with a copy of this letter.

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

Sincerely yours,

James G. Keppler
Regional Director

Enclosures:

1. Description of Violations
2. RO Inspection Rpt No. 050-331/73-09

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

ENCLOSURE

Iowa Electric Light and Power Company
Docket No. 50-331

Certain activities under your license appear to be in violation of AEC requirements.

These apparent violations are considered to be of Category II severity.

1. 10 CFR Part 50, Appendix B, Criterion V, states, in part, that: "Activities affecting quality shall be prescribed by documented instructions . . . and shall be accomplished in accordance with these instructions . . .".

Contrary to the above, documentation was not available at the site to verify that the Bechtel Corporation procedure for large pipe hanger installation and inspection had been implemented.

2. 10 CFR Part 50, Appendix B, Criterion XIII, states, in part, that: "Measures shall be established to control handling, storage, shipping, cleaning and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration."

Contrary to the above, documented work instructions or procedures had not been issued, prior to the current inspection, to protect the reactor vessel and vessel internals, during fabrication of the concrete shield plugs for the reactor fuel pool.

However, prior to the completion of the inspection, work instructions to control the possibility of contamination of the reactor vessel and its components, during construction activity on the 855' level of the reactor building, were issued, signed, and distributed to all superintendents and lead engineers for immediate implementation. The inspector reviewed the work instructions (procedures) and observed that the instructions, were being implemented.

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Inspection Report No. 050-331/73-09

Licensee: Iowa Electric Light and Power Company
Security Building
P. O. 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: July 25-27, 1973

Dates of Previous Inspection: May 16-18, 1973 (Construction)

Principal Inspector: *J. W. Sutton*
J. W. Sutton

9-4-73
(Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: D. W. Hayes *D. W. Hayes*
Senior Reactor Inspector (Acting)

9/4/73
(Date)

SUMMARY OF FINDINGS

Enforcement Action

A. Violations

1. Contrary to 10 CFR, Part 50, Appendix B, Criterion V, documentation was not available at the site during the inspection to verify that the Bechtel Corporation (Bechtel) procedure for large pipe hanger installation and inspection had been implemented. (Paragraph 2)
2. Contrary to 10 CFR, Part 50, Appendix B, Criterion XIII, documented work instructions had not been issued to protect the reactor vessel and vessel internals during fabrication of concrete shield plugs for the reactor pool. (Paragraph 1)

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.

Other Significant Findings

A. Current Findings

1. Status of Construction

a. <u>Piping (Greater Than 2½")</u>	<u>Percent Complete (July 20, 1973)</u>
Main Steam	100%
Feedwater	100%
Recirculation	100%
CRD	100%
Total (Process Piping)	96%

b. <u>Electrical</u>	<u>Percent Complete (July 17, 1973)</u>
Trays	99%
Conduit	98%
Cable Pulled	92%
c. <u>Instrumentation</u>	<u>Percent Complete (July 26, 1973)</u>
Installation	89%
Initial Calibration	61%
d. <u>Overall Construction</u>	93%

2. Fuel Loading - October 30, 1973

B. Unresolved Matters

Reactor Building Overhead Crane

During a review of the receiving and testing documentation for the reactor building overhead crane, it was observed that a Bechtel nonconformance report had been prepared relative to damaged teeth on the drum and pinion gears. The damage to the gears apparently occurred because of misalignment during assembly at the factory. (Paragraph 3)

C. Status of Previously Reported Unresolved Matters

1. Reactor Pressure Vessel Lower Head Repair (RO Inspection Report No. 050-331/73-04 and No. 050-331/73-05)

The reactor vessel lower head was accidentally damaged by a hand grinder. Approved repairs were completed except for an amended stress analysis report.

During the current inspection the inspector reviewed documentation prepared by General Electric Company (GE) dated June 27, 1973, indicating that the reactor pressure vessel stress report, prepared by Chicago Bridge and Iron Company (CB&I) dated May 28, 1973, had been reviewed by GE APED and was stamped as a certified addendum for the pressure vessel documentation. The stress report complies with the necessary requirements of the ASME Boiler and Pressure Vessel Code, Section III, Paragraphs N454 and N462.4(d), Summer 1969 Addenda.

This matter is considered closed.

2. Defective AC Reversing Starters, Sizes 1 and 2 (RO Inspection Report No. 050-331/73-04 and No. 050-331/73-05)

The inspector reviewed final documentation, prepared by Bechtel and signed on July 12, 1973, indicating that the program for replacement of defective Allis-Chalmers 480-volt mechanical interlocks, sizes 1 and 2, has been completed. The replacement interlock installations were inspected by Bechtel QA personnel. This matter is considered closed.

3. Corporate QA Audits (RO Inspection Report No. 050-331/73-04 and No. 050-331/73-05)

The inspector reviewed a Iowa Electric Light and Power Company (IEL&P) draft procedure, titled "Program for Iowa Electric Management Review of Quality Assurance Activities," No. 1101.4, Revision 0, dated July 24, 1973.

The proposed procedure presently is being reviewed, for approval, by the president of IEL&P. Implementation of the procedure will be examined during the next scheduled inspection. This matter remains open.

4. Lack of Certification Documentation for Transducers Used During Valve Measurement Program (RO Inspection Report No. 050-331/73-02 and No. 050-331/73-05)

The inspector reviewed documentation attesting that the transducers used during the valve measurement program complied with the manufacturer's specification. This matter is considered to have been resolved.

5. Evaluation of the Ferrite Content of Stainless Steel Welds (RO Inspection Report No. 050-331/73-02 and No. 050-331/73-05)

This matter remains open pending review of documentation that the method used for the ferrite measurements of stainless steel welds was consistent with the methods described in Bechtel's Specification No. 7884-M-113. A followup is planned for the next scheduled inspection.

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
K. V. Harrington, Site Construction Manager
R. D. Essig, Quality Assurance Engineer
D. E. Gembler, Quality Assurance Engineer

Bechtel Corporation (Bechtel)

M. J. Jacobson, Project Quality Assurance Engineer
J. R. Behres, Lead Quality Control Engineer
G. L. Fouts, Project Field Engineer

General Electric Company (GE)

J. M. H. Miller, Resident Site Manager
J. L. Nickle, Operations Superintendent

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

1. The inspector stated that the conditions observed during his inspection of the reactor building at the 855-foot level indicated that precautions to prevent contamination (by dirt, dust, and debris) had not been taken to protect the reactor vessel and its internals and that this appeared to be a violation of 10 CFR Part 50, Appendix B, requirements. The inspector added that this apparent violation would be brought to the attention of corporate management by attachment to the letter summarizing the results of the inspection. The inspector also stated it appeared that no reply, in regard to this violation, would be required, as adequate corrective action had been accomplished prior to the completion of the inspection and verified by the inspector. (Paragraph 1)

The licensee stated that implementation of the work instruction would be followed up by IEL&P QA engineers.

2. The inspector stated, that during review of the large pipe hanger inspection program, it appeared that the Bechtel procedure for verification of hanger status was not being implemented and that this failure to follow procedures appeared to be a violation of 10 CFR Part 50, Appendix B, requirements and would be included in an attachment to the letter summarizing the results of the inspection.

The licensee stated that this matter would be reviewed with Bechtel Personnel. (Paragraph 2)

3. The inspector stated that documentation was unavailable at the site that established the safe operation conditions for the reactor building overhead crane, pending repair of the misaligned gears. (Paragraph 3)

The licensee stated that this information would be made available to the inspector as soon as it was received from Bechtel and the crane manufacture.

4. The inspector stated that he had reviewed the revised Bechtel procedure in regard to safeguard cable separation and that he would review the inspection results, following final QA sign-off. (Paragraph 4)

The licensee stated that IEL&P QA was following the cable separation program and would document the results.

5. The inspector stated that he had reviewed the status of unresolved items and the disposition of deviation and non-conformance reports required to be resolved prior to fuel loading and that it appeared proper QA/QC surveillance was being maintained in this area. (Paragraph 5)

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)

C. W. Sandford, Vice President - Engineering
H. W. Rehrauer, Group Leader - Startup Engineer
J. N. Ward, Nuclear Group Leader

Bechtel Corporation (Bechtel)

R. G. Maes, Mechanical Engineer
W. Pons, Mechanical Engineer
F. Wills, Lead Field Engineer - Electrical
R. Booth, Mechanical Field Engineer
T. M. Gwin, Jr., Field Superintendent

General Electric Company (GE)

W. A. Kruse, Senior Mechanical Engineer
R. J. Kasko, Mechanical Engineer
T. M. Le Vasseur, Quality Control Engineer

Results of Inspection

1. Reactor Building Cleanliness, 855-Foot Level

During inspection of the reactor building, conditions were observed, at the 855-foot level, that were producing dust, dirt, and loose debris that, if left uncontrolled, could adversely effect the reactor vessel and internals. The work in progress consisted of fabrication of forms and shield plugs (concrete) for the reactor pool. Welding and metal cutting was in progress and concrete was being poured. These basic construction activities were being carried on without instructions or procedures being issued relative to protection and cleanliness of Class I equipment in this area. The reactor vessel head had been removed, and the reactor vessel was fitted with a protective covering. However, no written instructions had been issued to thoroughly clean and vacuum the protective cover, prior to removing it for access.

The reactor vessel head and the upper and lower vessel internals were found to be inadequately protected to prevent contamination from dirt and dust. During discussions with IEL&P, Bechtel, and GE personnel, in regard to this matter, it was brought to the inspector's attention that, for BWR's, these shield plugs must be fabricated in this area, as the size of the plugs prevents their movement through normal access openings in the reactor building. Prior to the conclusion of the inspection, Bechtel issued instructions, to all superintendents and lead engineers that would control activities at the 855-foot level of the reactor building. The instructions included provisions:

- a. To erect a protective fence around the reactor pressure head, clean the head, and cover to prevent exposure of the exterior and interior of the head to foreign matter.
- b. To cover and wrap the separator and steam dryer using Visqueen and tape.
- c. To cover the separator pool area to prevent entry of debris and trash.
- d. For crane operators and craftsmen to be instructed not to lift or pass loads over the separator pool-basin cavity, RPV head or other areas that could be detrimental to reactor internals.
- e. For craftsmen to be assigned to the 855-foot level to maintain cleanliness during the construction activities.
- f. For all work to be stopped when the reactor protective cover is removed.

Implementation of the above instructions was observed by the inspector.

2. Large Pipe Hanger Inspection

The inspector reviewed a procedure, dated May 10, 1973, for large pipe hanger installation and inspection. Section 2.2 (Variable Supports) and Section 10.0 (Tagging) of the procedure require that after the pins and bolts have been removed this information will be recorded on the appropriate inspection form and the hanger yellow tagged.

Full compliance to the procedure requirements was apparently lacking, in that records, to establish that the hangers had been inspected and tagged, could not be made available. Moreover, a visual inspection of the containment vessel hangers indicated that, in nine instances, hangers were not tagged as required.

Bechtel QA/QC personnel indicated that a new program for inspection and review of hangers had been prepared. The inspector was shown a draft copy of the new procedure and informed that a complete review and inspection of all hangers would be made, using these procedures. Implementation of these new procedures will be examined during the next scheduled inspection.

3. Reactor Building Overhead Crane

During the review of documentation for the overhead crane, manufactured by the Harneschfeger Corporation (Harneschfeger) it was observed that Bechtel had issued a Nonconformance Report (NCR) No. 1027, dated April 13, 1973. The NCR indicated that the drum and pinion gear had damaged teeth and were misaligned. The Harneschfeger Corporation was contacted by Bechtel, regarding this matter, and was informed that a replacement pinion gear would be shipped to the site and that during installation the gears would be realigned. The repairs have not been completed to date. Maintenance inspections are being conducted and recorded. Special emphasis on gear tooth wear was noted on the maintenance reports, however, no indication of restricted use of the crane was contained in the reports. The inspector inquired if the manufacturer had prepared a written engineering evaluation of this matter and if particular attention was given to the area of undue stresses that could possibly occur if the gears were misaligned. The Bechtel personnel indicated that no report was available, but one would be requested. Subsequent to the inspection, the inspector received a copy of a telex from Harneschfeger, dated July 27, 1973, that indicated that the replacement pinion gear, shipped on May 29, 1973, should be installed as soon as possible to prevent premature wear to the drum gear and that intermittent use of the hoist at up to 60 percent loads could be made safely, as long as three-fourths of the pinion tooth was in contact with the drum gear. The inspector was informed by phone on August 15, 1973, that realignment of the gears had been completed on August 5, 1973. A follow-up inspection of this matter is planned for the next regular inspection.

4. Safeguard Cable Separation

The inspector examined a Bechtel field engineering instruction (E-6) dated April 4, 1973, that clarified the inspection procedure to be used to record and document field engineering changes for safeguard cable separation. Surveillance of cable installation will continue under this instruction until construction is completed then a final release inspection is scheduled by the electrical field engineer. At this time, any violation of the criteria in the Bechtel

specification, No. E-512, would be documented on a nonconformance report. Final QA/QC inspection will be performed after all construction is completed. The inspector indicated that he would review the QC inspection results after final signoff. This item will be followed up during the next scheduled inspection.

5. Nonconformance Notices

The inspector reviewed a Bechtel QC memorandum, dated July 25, 1973, that listed all NCR's that are still outstanding. The list contains approximately 100 open items. The closing out of these NCR's is receiving special attention by Bechtel QC. Followup of the implementation of this memo is planned for the next scheduled inspection.

6. Hydrostatic Test Records (RO Inspection Report No. 050-331/73-05)

The inspector reviewed the final reactor vessel and associated piping hydrostatic test documentation package prepared as required by Section 10.0 of the Bechtel Field Hydrostatic Test Procedure, Revision 2, dated May 10, 1973. The records reviewed contained all the documents as required by this procedure. This matter is considered to be resolved.

7. Main Condensate Pumps (RO Inspection Report No. 050-331/73-04 and No. 050-331/73-05)

One condensate pump has been repaired, returned to the site and reinstalled. The second pump is presently under test at the manufacturer's plant. This matter will be reviewed during the next scheduled inspection.

8. Control Rod Blades (RO Inspection Report No. 050-331/73-04)

The licensee conducted an audit on March 14, 1973, at the GE Wilmington plant to review the circumstances surrounding the failure to chamfer weld the control blade between the velocity limiter casting and blade sheath. The inspector reviewed the March 14, 1973, report and a second report of a follow-up audit conducted on April 12, 1973. The reports indicated that the rework documentation package for the control rod blades had been reviewed by IEL&P QA personnel and that the work performed on the control rods was found to be acceptable. This matter is considered as closed.

9. Control Rod Blades (Absorber Tubes)

The inspector was informed of the steps that IEL&P plans to take to implement the requirements of the RO:III letter of July 26, 1973, regarding the absorber tube problem. The licensee stated that the DA control blades would be x-rayed onsite and is presently planned for August 4 and 5, 1973.

Subsequent to the inspection, RO:III received a phone call from Mr. Cook, QA Manager, that complied with the July 26, 1973, telephone reporting requirement. The results of the inspection are listed below:

- a. A total of 89 CRD control blades were inspected.
- b. Initial survey, using stud finder:
 - (1) 27 of the 89 - Results questionable; blades rejected.
 - (2) 62 of the 89 - Appeared acceptable.
- c. The 62 blades not rejected during the initial survey were x-rayed. The x-ray results were as follows:
 - (1) 44 were found to be acceptable.
 - (2) 12 were rejected.
 - (3) 6 were inconclusive, but rejected.
- d. GE supplied 40 new blades that were received onsite with full documentation. Twenty extra blades are to be sent to the site within the next week. All rejected blades will be returned to GE.

IEL&P indicated that a written report will be submitted to RO:III as required by the RO:III letter of July 26, 1973.

10. High Energy Pipe Modification

The inspector was informed that IEL&P intends to submit an amendment to the FSAR covering high energy pipe modifications. An impingement problem has been identified in the basement of the turbine building. Further review of this matter is planned for the next scheduled inspection.

11. Oil Storage Tank (RO Inspection Report No. 050-331/73-04)

The seismic report for the diesel oil storage tank was reviewed by the inspector. The report indicated that a seismic study had been conducted by Bechtel engineering. The report was signed off by Bechtel engineering on November 17, 1972. This matter is considered to be resolved.

12. Quality Assurance Audits

The inspector reviewed Bechtel's QA site audits and daily logbook. The audits listed the open and closed items and followup required to close the items out.

The audits reviewed were found to be well documented and were performed using check sheets. A continuing review of audits will be conducted by the inspector during subsequent inspections.

13. Main Steam Line Isolation Valve Seal System

The inspector inquired as to the status of the main steam line isolation valve leakage problem. The inspector was informed that a drain-off system would be installed during the first refueling. Stub tubes are to be installed and capped off. This matter will be reviewed during the next scheduled inspection.

14. Defective DC Reversing Starters (50.55(e) Report)

The inspector reviewed the final corrective action taken to resolve this problem. The defective starters were repaired by the manufacturer then returned to the site for installation. The installation report, dated July 26, 1973, was reviewed and found to be in order. This matter is considered to be resolved.

15. Limitorque Switches

The program for replacement of limitorque switches has been completed. Installation documentation and QC signoff records, dated July 26, 1973, were reviewed and found to be in order. This matter is considered resolved.