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. 050-331/73-05

Transmittal Date : June 13, 1973

Distribution:
RO Chief, FS&EB
RO:HQ (5)
DR Central Files
Regulatory Standards (3)
Licensing (13)

Distribution:
RO Chief, FS&EB
RO:HQ (4)
L:D/D for Fuel & Materials
DR Central Files

B. RO Inquiry Report No. _____

Transmittal Date : _____

Distribution:
RO Chief, FS&EB
RO:HQ (5)
DR Central Files
Regulatory Standards (3)
Licensing (13)

Distribution:
RO Chief, FS&EB
RO:HQ
DR Central 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

Distribution:
RO Chief, FS&EB
RO:HQ (4)
L:D/D for Fuel & Materials
DR Central Files

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

TELEPHONE
(312) 858-2660

June 13, 1973

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 Mr. Sutton of this office on May 16-18, 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. Cook, Kacer, and Essig of your staff.

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

No violations of AEC requirements were identified within the areas examined during this inspection.

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 the 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.

Unless you wish to make application to withhold information, no reply to this letter is necessary; however, should you have questions concerning this inspection, we will be glad to discuss them with you.

Sincerely yours,

Boyce H. Grier
Regional Director

Enclosure:
RO Inspection Rpt No. 050-331/73-05

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

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Inspection Report No. 050-331/73-05

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: Special Announced

Dates of Inspection: May 16-18, 1973

Dates of Previous Inspection: April 4-6, 1973

Principal Inspector: J. W. Sutton — 6-12-73 (Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: D. W. Hayes, Senior Project Inspector (Acting) — W. E. Vetter/FOR — 6-14-73 (Date)
Reactor Construction Branch

SUMMARY OF FINDINGS

Enforcement Action

A. Violations

No violations of AEC requirements were identified.

B. Safety Matters

No safety matters were identified.

Licensee Action on Previously Identified Enforcement Matters

Unapproved Ferrite Inspection Procedure (RO Inspection Report No. 050-331/73-02)

The corrective action outlined in the licensee's letter of May 7, 1973, in response to the RO:III letter of April 6, 1973, was found to have been satisfactorily accomplished. This matter is considered to be closed.

Design Changes

No new designed changes were identified.

Unusual Occurrences

No unusual occurrences were identified.

Other Significant Findings

A. Current Findings

1. Status of Construction (May 18, 1973)

a. Piping (Greater Than 2½")

	Percent Complete
Main Steam	100%
Feedwater	100%
Recirculation	100%
CRD	100%
Total (Process Piping)	92% (5/4/73)

b. Electrical

	Percent Complete
Trays	99%
Conduit	91% (5/4/73)
Cable Pulled	86.5 (5/7/73)

c. Instrumentation

	Percent Complete
Installation	62%
Initial Calibration	47%

d. Overall Construction — 89% (5/4/73)

e. Fuel Delivery — June 15, 1973

2. The Hydrostatic test of the Reactor Pressure Vessel and attached piping was successfully completed on May 18, 1973.

B. Unresolved Matters

No unresolved matters were found during the inspection.

C. Status of Previously Unresolved Matters

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

The inspector reviewed documentation indicating that repairs had been completed, in the lower RPV head, to satisfactorily repair the gouge that had been accidently caused by a hand grinder. The records indicated that the gouge was repaired by a blending process. Bechtel Procedure, 1.0 Revision 1 was used to effect the repair. The repair steps of the procedure, as accomplished, were signed by witnessing personnel. An amended vessel stress report is being prepared by Chicago Bridge and Iron (CBI). The inspector was informed by personnel of the Iowa Electric Light and Power Company (IEL&P), that the stress report would be available for his review as soon as received. This matter remains open. (Paragraph 7)

2. Defective Reversing Starters (RO Inspection Report No. 050-331/73-04)

The inspector reviewed documentation dated May 2, 1973, verifying that the defective Allis Chalmers 480V MCC's PO 7884-E-9 sliding plate actuating mechanism, had not been found at the DAEC. This matter is closed. The program for replacing defective size 1 and 2 mechanical interlocks however is still in progress. This matter remains open.

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

The inspector was informed that IEL&P Company management personnel were in the process of determining the method to be employed to conduct an internal corporate level audit of IEL&P QA activities. This matter remains open.

4. Relocation of Chilled Water Piping (RO Inspection Report No. 050-331/73-04)

The chilled water piping located in the main control room has been relocated to prevent an accidental leak or break of piping, to affect the control room area. This matter is considered as closed.

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

This matter is still under review by the licensee and remains open.

6. Evaluation of the Ferrite Content of Stainless Steel Welds (RO Inspection Report No. 050-331/73-02 - 73-04)

The inspector was informed by IEL&P that documentation to establish that the method used for the ferrite measurements of stainless steel welds was consistent with the methods described in Bechtel Specification No. 7884-M-113 was not available. This matter remains open pending review and evaluation of the ferrite measurements.

Management Interview

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

Iowa Electric Light and Power Company (IEL&P)

G. A. Cook, Quality Assurance Manager
R. D. Essig, Quality Assurance Engineer
W. J. Kacer, Quality Assurance Engineer

Bechtel Corporation (Bechtel)

M. J. Jacobson, Project Quality Assurance Engineer
J. R. Behres, Lead Quality Control Engineer

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

The inspector stated that the hydrostatic test was conducted in compliance with the approved procedures. It was also evident from the inspectors observation of the hydrostatic test that the system was tight (except for minor valve and pump packing leaks). The inspector stated that he would review the final hydrostatic test documentation during the next inspection.

IEL&P personnel indicated that a complete package would be available for his review.

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

K. V. Harrington, Site Construction Manager

Bechtel Corporation (Bechtel)

R. J. Smith, Field Engineer - Test Director

Kemper Insurance Company

B. McCall, Code Inspector

ResuIts of Inspection

1. General

On May 18, 1973, a hydrostatic test of the Reactor Pressure Vessel and attached piping for the Duane Arnold Energy Center Unit 1 was conducted to verify the mechanical integrity of the systems within the defined code boundaries. The test included the Recirculation System, the main steam piping up to the turbine stop valves (including the by-pass valves) and associated systems up to the first isolation valve outside of containment, as designated on the Hydro drawings. The systems were filled, and heated to above the nil ductivity temperature limit. (165°F minimum and 200°F maximum skin temperature on the reactor vessel) The systems were pressurized to 125% of the vessel design pressure. A hydrostatic test over pressure of 1563 psig was reached and maintained for twenty minutes. The code inspector verified the hydrostatic over pressure and conducted his inspection at this pressure. All designated piping was also inspected by the piping contractor (Bechtel) but at the designed operating pressure of 1285 psig.

The inspection criteria complied to the requirements of the Nuclear Power Piping Code ANSI B 31.7-1968, ASME Boiler and Pressure Vessel Code - Section III, Article 7 - Summer Addenda 1972 Appendix G. Addenda 8-9 and 11 Winter 1970 ANSI B.16.11 and 1966 Forged Steel Socket Weld and Threaded Fittings.

The hydrostatic test pressure was observed by the inspector. Completed and signed test procedures, including addenda's, test records, and measuring device calibration results, were reviewed prior to and after completion of the test.

2. Procedures and Test Records Examined

The following documents were reviewed.

a. Bechtel Corporation Field Hydrostatic Test Procedure, Revision 2, dated May 10, 1973.

b. Addenda and modification to the Procedures, Addenda 1 thru 6.

c. Bechtel drawings FSK-1055 Revision 4 - 1056, Revision 4, 1057, Revision 4 and M-115-P, Revision 0, indicating systems Hydro test boundaries.

d. Instrument calibration records.

e. Water chemistry analysis reports.

f. ASME code forms to be used.

g. Relief valve setting certification.

h. Vessel metal temperature recorder charts.

i. Log of temperature readings.

j. System pressure logs.

k. Piping isometric drawings.

All records and documents reviewed were found to have been properly signed by authorized personnel of IEL&P. GE, Bechtel and Lumberman Insurance Company.

3. Pressure Gage Calibration

An examination of records established that recording and indicating gages and equipment had been calibrated and documented as required by ASME Code, Section III, and ANSI B31.7 power piping codes.

4. Water Quality

An examination of records established that the quality of water used for the test met the requirements of the test procedure.

5. Nuclear Systems Test Temperatures and Pressures

The temperature and pressure for the reactor vessel and the NSS system was recorded by use of recording charts and pressure gages being monitored by Bechtel personnel. The temperatures and pressures conformed to the test limits as indicated in the hydrostatic test procedure.

6. Deviation Notices (NCR) (RO Inspection Report No. 73-04)

The inspector reviewed a completed list of deviation and nonconforming notices that had been prepared by Bechtel prior to the hydrostatic test. The items listed were required to be completed prior to the test. The following NCR-DDR's were reviewed.

DDR No. 39 - 12-7-72
SDR No. 39 - QA Report
MCAR No. 40 - QA Report
NCR Nos. 658, 671, 725, 747, 935, 949, 966, 1025 and 1064

Completion documentation for the above was reviewed and indicated that the deficiencies as reported had been corrected and signed by authorized personnel.

7. Reactor Pressure Vessel Lower Head Repair

The groove located in the lower RPV head was repaired using a blending process. The licensee reported this incident under AEC requirements Part 50.55(e). The 50.55(e) report dated May 11, 1973, was reviewed and the repair resolution documentation was examined. The documents reviewed included:

a. Bechtel NCR 814 and 814A. The repair was completed on May 5, 1973. The gouge was repaired by blending (grinding). A impression of the repaired area was made and transmitted to CBI for stress analysis and calculations.

b. Repair Procedure 1.0 Revision 1 dated April 4, 1973, approved by IEL&P, GE, CBI and Bechtel.

c. Non-destructive test reports. UT and PT examinations by X-Ray Engineering Company.

d. Photographs of the gouge area before and after repairs.

e. Casting mold of the area before and after repairs.

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

The inspector was informed that the remaining condensate pump (B) has been returned to the manufacturer for rebuilding - both "A" and "B" pumps are to be modified and rebuilt. It is expected that the pumps will be returned to the site during the month of June.