



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

Docket No. 50-331

JUN 24 1977

Iowa Electric Light and Power
Company
ATTN: Mr. Duane Arnold
President
IE Towers
P. O. Box 351
Cedar Rapids, IA 52406

Gentlemen:

This refers to the inspection conducted by Messrs. F. A. Maura and C. H. Brown of this office on June 2 and 3, 1977, of activities at Duane Arnold Nuclear Power Station authorized by NRC Operating License No. DPR-49 and to the discussion of our findings with Mr. Hammond and others of your staff at the conclusion of the inspection.

The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

During this inspection, certain of your activities appeared to be in noncompliance with NRC requirements, as described in the enclosed Appendix A.

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

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Iowa Electric Light and
Power Company

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JUN 24 1977

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter, the enclosures, and your response to this letter will be placed in the NRC's Public Document Room, except as follows. If the enclosures contain information that you or your contractors believe to be proprietary, you must apply in writing to this office, within twenty days of your receipt of this letter, to withhold such information from public disclosure. The application must include a full statement of the reasons for which the information is considered proprietary, and should be prepared so that proprietary information identified in the application is contained in an enclosure to the application.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Gaston Fiorelli, Chief
Reactor Operations and
Nuclear Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. IE Inspection Report No. 50-331/77-14

cc w/encls:

E. L. Hammond, Chief
Engineer
Central Files
Reproduction Unit NRC 20b
PDR
Local PDR
NSIC
TIC

OFFICE	RIII	RIII	RIII	RIII	RIII	
SURNAME	Maura	Brown	Little	Fiorelli	Fiorelli	
DATE	6/24/77					

Appendix A

NOTICE OF VIOLATION

Iowa Electric Light and Power Company

Docket No. 50-331

Based on the inspection conducted on June 2 and 3, 1977, it appears that certain of your activities were in noncompliance with NRC requirements, as noted below. Items 1 and 2 are infractions, and item 3 is a deficiency.

1. Contrary to Technical Specification 3.7.D.1 and ACP 1401.4, at least five of the eight MSIV's were not verified to close within the required time after maintenance had been performed on the valves.
2. Contrary to 10 CFR 50, Appendix B, Criterion V and ACP 1401.4 procedural control was not maintained within the MAR system.
3. Contrary to Technical Specification 6.11.2.a.(4) the licensee failed to report two possible periods shorter than five seconds experienced on May 22 and 27, 1977, within the required time period.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-331/77-14.

Docket No. 50-331 License No. DPR-49

Licensee: Iowa Electric Light and Power
Company
IE Towers
P. O. Box 351
Cedar Rapids, IA 52406

Facility Name: Duane Arnold Energy Center

Inspection at: Duane Arnold Site, Palo, IA

Inspection conducted: June 2 and 3, 1977

Inspectors: F. A. Maura

C. H. Brown

Approved by: W. S. Little, Chief
Nuclear Support Section

6/24/77
date signed

6/24/77
date signed

6/24/77
date signed

Inspection Summary

Inspection on June 2 and 3, 1977 (Report No. 50-331/77-14)

Areas Inspected: Routine, unannounced inspection of startup testing; refueling maintenance; and plant operations following refueling. The inspection involved 30 inspector-hours onsite by two NRC inspectors.

Results: Of the three areas inspected no items of noncompliance or deviations were found in one area; two apparent items of noncompliance were found in one area (two infractions - failure to perform post maintenance surveillance test and failure to maintain procedural control - Paragraph 4); one apparent item of noncompliance was found in one area (deficiency - failure to report an event within the required time period - Paragraph 3).

DETAILS

1. Persons Contacted

- *E. Hammond, Chief Engineer
- *D. Mineck, Assistant Chief Engineer
- *R. York, Operations Supervisor
- *R. Hannen, Reactor and Plant Performance Engineer
- *R. Rinderman, Quality Supervisor
- J. Gebert, Maintenance Superintendent

The inspectors also talked with and interviewed several other licensee employees, including members of the engineering staff, shift supervisors and mechanical and electrical maintenance personnel.

*Denotes those present at the exit interview.

2. Startup Testing

Startup tests performed after the refueling outage were reviewed and found to have been conducted in accordance with approved procedures and satisfactory results obtained unless otherwise noted.

- a. Reactor Engineering Procedure No. 15, Revision 2, covering CRD friction testing, insert/withdraw timing, and coupling integrity.
- b. STP 43A001, Revision 1, Shutdown Margin Test. The test consisted of the General Electric suggested "insequence critical shutdown margin check" used also after the first refueling outage. The measured SDM was greater than the minimum required SDM of .38% delta k/k with control rod 18-23 fully out. The advantages and disadvantages of the different methods being used to demonstrate SDM were discussed during the inspection and at the exit interview, including the fact that the "insequence critical shutdown margin check" may not be an accurate demonstration of the true SDM. The inspector stated he plans to refer this problem to IE:HQ for guidance.
- c. STP 43B001, Revision 3, Nuclear Response to Control Rod Motion and Control Rod Coupling Integrity.
- d. STP 43B002, Revision 0, CRD Housing Support Inspection.

- e. STP 43B003, RSCS and RWM Checks.
- f. STP 43C001, CRD Scram Time. This test was first performed during May 13 and 14, 1977, using the computer to measure the scram times. On May 15, 1977, the reactor was taken over 40% power, the power level which shall not be exceeded unless the scram time test is satisfactorily completed. On May 16, 1977, the Operations Supervisor reviewed and approved the test results. During the review of the test results by the Reactor and Plant Performance group it was noted that the scram times to position 46 read either 0.28 seconds or 0.78 seconds only, the latter being greater than the Technical Specification limit of 0.37 seconds. Fifty-five CRDs had recorded 0.78 seconds. To position 36 seven CRDs had exceeded the limit of 1.10 seconds. All times to positions 26 and 06 were within Technical Specification limits. The licensee's investigation determined the computer was in error. The tests were performed again on May 22 and 23, 1977, using a Brush recorder and this time the times were within Technical Specification limits. During the time between the discovery of the problem and May 22, 1977, the reactor remained in operation. The licensee justified continued operation on the basis that:

- (1) Due to the computer problem the times measured would be conservative.
- (2) Although conservative none of the times to position 26 or 06 exceeded the Technical Specification limits.
- (3) An analysis of the accelerations experienced during the 1976 scram time when applied to the scram time from full out to position 06 measured in 1977 gave acceptable results for the times to position 46, 36, and 26.

The licensee reported this personnel failure to identify unsatisfactory test results in a timely manner to NRC in a letter dated June 10, 1977.

This item of noncompliance was identified and corrected by the licensee.

- g. STP 43D001, Reactivity Anomaly Test.
- h. STP 42A001, Covering MCPR, MAPLHGR, peaking factor, etc.

- i. STP 42F007, APRM gain adjustments.
- j. The LPRM Calibration was being completed on June 3, 1977. Preliminary review of the data showed all but one to have been properly calibrated. This licensee was going to readjust the gain on the one which was improperly calibrated.

The licensee plans to perform a core asymmetry test once operation on the A sequence is established.

No items of noncompliance or deviations were identified.

3. IRM Scrams

On May 22 and 27, 1977, the licensee experienced two reactor scrams due to high IRM level. At the time of the scrams the unit had been taken off the line due to turbine problems and the reactor was being maintained in hot standby. The scrams were the result of a reactivity addition caused by an increase in feedwater flow (cold water) due to problems in controlling water level when in hot standby. A review of the IRM recorder charts showed the power level increased by a factor of approximately four but the time scale could not be determined (chart speed being 1-inch/hr). This item was discussed with the licensee in view of the reportability requirements if a reactor period of less than five seconds was experienced. The licensee would perform the necessary calculations to determine if the reactor period was shorter than five seconds. The inspector stated that this would remain an unresolved item until the calculations were performed and if the period was shorter than five seconds then it would be an item of noncompliance for failure to report in accordance with Technical Specification 6.11.2.a.(4).

4. Maintenance

During the review of the MAR (Maintenance Authorization-Request) system the inspector noted that a number of the MARs that had not been completed appeared to be ones that should have been cleared before startup. The licensee stated other methods had been used to verify that the MAR was completed and that the system was ready for testing and that the MARs may be held up in review or they may have been inadvertently destroyed. One MAR was located in the active file for an inboard MSIV and one for an outboard MISV, to perform packing tightening. The section of the MAR for retest was filled

in to test valves on startup. Also it was known that the four outboard valves were worked on, but only the one MAR was located. A weakness was also noted in the filling out and use of MAR's during questioning of licensee personnel. The problems and weaknesses within the system appear to have contributed to the missed tests on at least 5 of the 8 MSIV's that were worked on during the recent reactor outage.

The licensee was informed that the non-performance of the post maintenance surveillance was considered to be an item of noncompliance with Technical Specifications, Section 3.7.D.1 and facility procedures. The licensee stated that the test would be performed that evening to verify MSIV operability.

The licensee was also informed that the apparent loss of procedure control within the MAR system was considered to be in noncompliance with 10 CFR Part 50, Appendix B, Criteria V and facility procedure ACP 1401.4.

5. Restart and Surveillance

The initial review of the licensee's program to verify system and equipment operability following maintenance during the refueling outage appeared to be satisfactory. The licensee stated that all systems were to be checked and verified operable with the associated system procedures and/or surveillance tests as necessary. The inspector's review of the prestartup checklist indicated that all systems had been checked. The prestartup checklist had been initiated by the operator that had performed the check and by the reviewing Shift Engineer. The lineup sheets and system checklists were not reviewed as these sheets were not located until after the inspection had been completed. The check-off lists were completed indicating that all required systems for reactor startup were checked and found to be satisfactory with the exception of the post maintenance surveillance timing of the closure of the MSIVs.

This item was discussed in Section 4.

The control rod withdrawal sequence and rod withdrawal authorization was available for startup. The estimated critical position had been calculated and actual critical had been entered for comparison.

The surveillance test records were reviewed to verify that the frequency of the testing was maintained during the refueling period. No discrepancies were noted. Tests that could not be performed were so noted and reasons indicated.

6. Exit Interview

The inspectors met with licensee representative (denoted in Paragraph 1) at the conclusion of the inspection on June 3, 1977. The scope and findings of the inspection was summarized. The licensee acknowledged the statements by the inspectors with respect to the items of noncompliance (Paragraph 4) and possible item of noncompliance (Paragraph 3).

The licensee stated the CRD scram time problem should appear as an item identified by the licensee. The inspector noted that the degree of credit given to the licensee for finding the item would depend on what their report to NRC stated.

After the inspection and exit interview, on June 15, 1977, the licensee telephoned the inspector and stated that the occurrence described in Paragraph 5 (IRM scram) would be reported as possibly having experienced a reactor period shorter than five seconds.