

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

REGION III

Report No. 50-331/78-26

Docket No. 50-331

License No. DPR-49

Licensee: Iowa Electric Light and Power Company  
IE Towers  
P. O. Box 357  
Cedar Rapids, Iowa 52406

Facility Name: Duane Arnold Energy Center

Inspection At: Duane Arnold Site, Palos, Iowa

Inspection Conducted: October 4-6, and 18-20, 1978

Inspectors: W. D. Shafer

*RC Knop for*

11/6/78

*A. N. Jackiw*  
A. N. Jackiw

11/6/78

D. E. Miller

Approved By: R. C. Knop, Chief  
Reactor Projects Section 1

*RC Knop*

11/6/78

Inspection Summary

Inspection on October 4-6, and 18-20, 1978 (Report No. 50-331/78-26)

Areas Inspected: Routine, unannounced inspection of previous non-compliance and outstanding inspection items, review of decontamination methods, review of IE bulletins, review of maintenance, review of IE circulars, and a special review of the health physics program during the current outage. The inspection involved 55 inspector-hours onsite by three NRC inspectors.

Results: Of the six areas inspected, no items of noncompliance or deviations were identified.

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## DETAILS

### Section I

Prepared by W. D. Shafer  
Reviewed by R. C. Knop, Chief  
Reactor Projects Section 1

#### 1. Persons Contacted

- \*E. Hammond, Chief Engineer
- \*R. Rinderman, Quality Supervisor
- \*R. Essig, QA Engineer
- \*K. Young, Rad Protection Engineer
- \*J. VanSickel, Engineering Assistant

\*denotes those attending the exit interview.

The inspector also talked with and interviewed several other licensee employees.

#### 2. Followup on Previous Noncompliance and Outstanding Inspection Items

(Open) Unresolved item (331/78-09); the licensee reported in licensee event report No. 77-28, the failure of thirteen water level control switches on the CRD hydraulic control system. Following this event the licensee received an analysis from their contractor identifying the possible causes for failure. However, during the last refueling outage (April, 1978), the failure of two additional switches was identified by the licensee during their normal surveillance program. As a result of this second failure, the licensee is now in the process of obtaining a re-analysis of the cause of failure. The inspector reviewed a letter dated October 5, 1978, recommending the contractor to perform this re-analysis. The contract has not been let to date. This item will remain an open item pending determination of the cause of failure.

(Closed) Unresolved item (331/78-25); in the identified inspection the inspector noted that eight design change packages could not be located at the time the inspection was in progress. As a result of this problem the licensee requested and received additional time to locate these missing packages. During this inspection the inspector reviewed the eight missing packages and considers this unresolved item closed.

(Open) Noncompliance (331/78-12); failure to properly store safety related items and to determine the need for preservation and in-storage maintenance. The inspector noted that the licensee stated that the program would be in compliance by December 31, 1978. During the review of this area the inspector noted that it does not appear the licensee will be in compliance by December 31, 1978 and cautioned the licensee that a request for additional time will be required to be in writing. This remains an open item.

3. Review of Inspection and Enforcement Circulars

(Closed) IEC 77-15, regarding the degradation of fuel oil flow to the emergency diesel generator. The licensee has completed their engineering review and considered their program adequate.

4. Review of Maintenance

The inspector conducted a review of the licensee's maintenance program for the period of January 1, 1978 through October 1, 1978. The inspection included a review of safety-related maintenance action requests Nos. 22322, 22405, 23865, 23884, 23937, 23938, 24160, 24161, 24267, and 24989, to verify that in each case the limiting conditions for operation was met while the components or systems was removed from service for maintenance, required administrative approvals were obtained prior to initiating the work, the maintenance activity was accomplished using approved procedures, the maintenance activities included functional testing and calibrations when required and where applicable, the maintenance activities were reported as reportable occurrences as defined by the Technical Specifications when appropriate.

A review of several non-safety related maintenance activities revealed no inconsistencies in the classification in the administrative control of safety related and non-safety related maintenance activities.

No items of noncompliance or deviations were identified.

5. Review of Licensee's Methods for Decontamination of the Reactor Coolant Pressure Boundary

A special review was conducted of the licensee's methods for decontaminating components within the reactor coolant pressure boundary. In this general area, the inspector determined the following:

- a. For general cleanup purposes the licensee relies primarily on demineralized water.
- b. For those safety-related items in need of decontamination, the material used for decontamination is limited to acetone and alcohol. The licensee's maintenance procedure, cleanliness control (CCP 1), restricts cleaning materials to acetone, alcohol, or toluol for decontamination purposes.
- c. In discussions with licensee representatives the inspector determined that some decontamination of small items is accomplished through the use of electro-polishing, as identified in the following publication:

Electro-polishing as a large-scale decontamination technique, authored by, R. P. Allen, H. W. Arrosmith and W. C. Budke.

This paper is based on work performed under ERDA contract E (45-1)-1830. The electrolyte used for licensee's decon is phosphoric acid. The inspector could not determine whether a review for acceptability for this electrolyte was ever made.

No items of noncompliance or deviations were identified.

6. Review of IE Bulletins

- a. (Closed), IEB-78-01, regarding the use of flammable contact-arm retainers in GE CR 120A relays. The inspector determined by review of design change package No. 722 that the licensee has replaced all safety-related contact-arm retainers. The licensee is continuing to work on those relays identified in the balance of plant equipment. For record purposes, the licensee has completed the requirements identified in this bulletin.
- b. (Closed), IEB 78-04, regarding the environmental qualifications of certain stem-mounted limit switches inside the reactor containment. The licensee's review has determined that none of the switches of concern as identified in the above described bulletin exists in the reactor facility. However, while making this review, the licensee determined that some NAMCO model switches are utilized on certain safety-related valves inside the primary containment, including the main steam isolation valves. The licensee concluded their review by determining that these switches are utilized for position information and are not required during and/or after a LOCA event. No concerns were identified.

- c. (Closed), IEB-78-09, regarding BWR Drywell leakage paths associated with inadequate drywell closure. Through a review of the licensee's procedures, (RP 59 and 45), the inspector determined that the licensee's response to this bulletin appears adequate.
- d. (Closed), IEB-78-11, regarding examination of Mark-1 containment torus welds. This bulletin was sent to the licensee for information purposes only. An engineering review of the bulletin content is in progress.

7. Review of Inspection and Enforcement Circulars

The following IE circulars were reviewed onsite to verify the circulars were received by licensee management, a review for applicability was performed, and for those circulars applicable to the facility, appropriate action was taken or planned.

- a. IEC 78-02, Proper Lubricating Oil for Terry Turbines, (Closed).
- b. IEC 78-03, Packaging Greater than Type A Quantities of Low Specific Activity Radioactive Material, (Closed).
- c. IEC 78-04, Installation Errors that could Prevent Closing of Fire Doors (Closed).
- d. IEC 78-06, Potential Common Mode Flooding of ECCS Equipment Rooms at BWR Facilities, (Review in progress).
- e. IEC 78-07, Damaged Components on a Bergen-Patterson Series 25000 Hydraulic Test Stand, (Closed).
- f. IEC 78-08, Environmental Qualification of Safety-Related Equipment at Nuclear Power Plants, (Review in progress).
- g. IEC 78-09, Arcing of GE Size 2 Contactors, (Review in progress).
- h. IEC 78-11, Recirculation M-G Set Overspeed Stops (Review in progress).
- i. IEC 78-12, HPCI Turbine Control Valve Lift Rod Bending, (Review in progress).
- j. IEC 78-13, Inoperability of Service Water Pumps, (Review in progress).

- k. IEC 78-15, Tilting Disk Check Valves Failed to Close with Gravity in Vertical Position, (Review in progress).
- l. IEC 78-16, Limit Torque Valve Actuators, (Review in progress).

The inspectors review indicated no concerns.

Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspections on October 5 and 6, 1978. The inspector summarized the scope and findings of the inspection. The licensee had no comments following the remarks made at this exit interview.

## DETAILS

### Section II

Prepared by D. E. Miller

Reviewed by W. L. Fisher, Chief for  
Fuel Facility Projects and  
Radiation Support Section

*D. E. Miller*

11/6/78

*W. L. Fisher*

11/6/78

#### 1. Persons Contacted

K. Young, Radiation Protection Engineer  
G. Kuehn, Assistant Radiation Protection Engineer  
R. Decker, Health Physicist (Allied Nuclear)  
E. Parsons, Health Physicist (Allied Nuclear)  
M. Williford, Health Physicist (Allied Nuclear)

#### 2. Health Physics Program During Outage

The inspector reviewed the following aspects of the health physics program during this inspection:

##### a. Airborne Contamination Controls

The licensee has constructed tents enclosing each coolant pipe replacement site. These tents have absolute filtered exhaust ventilation. Respiratory protection devices are worn within these tents whenever work is being performed. In addition, plastic bag secondary containments are used when grinding is done, with the air from the air-driven grinders keeping the bags inflated for viewing and providing the force to move the enclosed air thorough an absolute filter.

##### b. Whole Body Counting

During the period June 1 through August 31, 1978, 391 whole body counts were performed on 369 persons. The inspector noted that the highest indicated uptake was about four percent of MPBB and about forty persons had indicated uptakes of one to three percent of MPBB for Co-60.

Considering the high potential for significant uptakes during reactor coolant pipe cutting, grinding, fitting, weld preparation, and welding, the licensee's control measures and use of respiratory protection equipment appears to have been effective to date.

c. External Exposure

The inspector reviewed TLD results for the period July 1 through September 29, 1978. The highest individual whole body dose noted for this period was 2100 millirems.

The licensee has recently computerized the previously hand tallied daily dose update. This update lists the remaining amount of allowable exposure for the quarter for each person badged. This remainder is based on the exposure received and the internally set administrative limits, which are more restrictive than 10 CFR 20 limits.

No problems were noted.