



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

CENTRAL FILES

Docket No. 50-331/77-21

JUN 8 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. D. E. Miller and J. W. Hiatt of this office on November 14-18, 1977, of activities at Duane Arnold Energy Center 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.

The inspectors also examined actions you have taken with respect to the matters identified in your letter dated June 28, 1977. We have no further questions regarding these matters.

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 non-compliance: (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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DEC 8 1977

Based on discussions with your representatives at the site, we understand that: (1) methods will be developed to better document portable survey instrument functional status, and (2) you will resolve with NRR differences in interpretation of persons "qualified to implement radiation protection procedures."

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,

W. L. Fisher, Acting Chief
Fuel Facility and Materials
Safety Branch

Enclosures:

1. Appendix A, Notice of Violation
2. IE Inspection Report No. 50-331/77-21

cc w/encls:

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

OFFICE	RIII <i>WJ</i>	RIII <i>WJ</i>	RIII <i>WJ</i>	RIII <i>CK</i>	RIII	
SURNAME	Miller/jb	Hiatt	Fisher	Kister		
DATE	12/6/77					

Appendix A

NOTICE OF VIOLATION

Iowa Electric Light and Power Company

Docket No. 50-331

Based on the inspection conducted on November 14-18, 1977, it appears that certain of your activities were in noncompliance with NRC requirements. The item listed below is an infraction.

Contrary to Technical Specification 6.8.1.2, refueling procedure No. 16, and Plant Radiation Protection Manual, Section 6.9, certain licensee employees failed to comply with radiation work permit requirements.

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

REGION III

Report No. 50-331/77-21

Docket No. 50-331

License No. DPR-49

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

Facility name: Duane Arnold Energy Center

Inspection at: Duane Arnold Site, Palo, IA

Inspection conducted: November 14-18, 1977

Inspectors: *for W. L. Fisher*
D. E. Miller

12/7/77

for W. L. Fisher
J. W. Hiatt

12/7/77

Approved by: *W. L. Fisher*
W. L. Fisher, Chief
Fuel Facility Projects
and Radiation Support Section

12/7/77

Inspection Summary

Inspection on November 14-18, 1977 (Report No. 50-331/77-21)

Areas Inspected: Routine, unannounced inspection of radiation protection program, including: qualifications; audits; training; radiation protection procedures; instruments and equipment; exposure control; posting, labeling, and control; surveys; notifications and reports; previous items of noncompliance; unresolved items; commitments; and licensee event reports. The inspection involved 72 inspector-hours onsite by two NRC inspectors.

Results: Of the thirteen areas inspected, no items of noncompliance or deviations were identified in 12 areas. One item of noncompliance was found in one area (Infraction - failure to follow radiation work permit requirements during refueling - Paragraph 4).

DETAILS

1. Persons Contacted

- *E. Hammond, Chief Engineer
- *D. Mineck, Assistant Chief Engineer
- *K. Young, Radiation Protection Engineer
- *G. Kuehn, Assistant Radiation Protection Engineer
- *R. York, Operations Supervisor
- Y. Vinquist, Electrical Maintenance Supervisor
- *E. Lange, Health Physics/Radwaste Supervisor

The inspectors also contacted several Health Physics and Instrument Technicians during the course of the inspection.

*Denotes those present at the exit interview.

2. General

This inspection, which began with a facility tour and visual observation of facilities and equipment, postings, labeling, and access controls at 12:30 p.m. on November 14, 1977, was conducted to examine the radiation protection aspects of routine plant operations, previous items of noncompliance, unresolved items, and commitments made by the licensee. Additional visits were made to selected areas of the plant during the balance of the inspection.

3. Licensee Action on Previous Inspection Findings

(Closed) Infraction (50-331/77-10): Quarterly testing of off-gas stack and reactor building vent stack gaseous monitors not adequate to check calibration. The inspector reviewed the licensee's response dated June 28, 1977. The corrective actions appear to be adequate.

(Closed) Infraction (50-331/77-10): Required surveillance on the standby gas treatment system not adequately performed. The inspector reviewed the licensee's response dated June 28, 1977. The corrective actions appear to be adequate.

(Closed) Unresolved Item (50-331/77-10): Concerning reactor coolant sampling requirements when reactor is not operating. This matter was resolved by NRR in a letter dated September 19, 1977. Sampling had been adequately done by the licensee.

(Open) Unresolved Item (50-331/77-10): Concerning sample frequency requirements for certain particulate and charcoal filters. This matter was discussed by NRR in a letter dated September 19, 1977, addressed to the licensee. The licensee has requested further clarification of information presented in the letter. This matter will be reviewed during a subsequent inspection.

(Open) Commitment (50-331/77-01): Intensify investigation of area radiation monitor operability problems. (Paragraph 8)

(Closed) Commitment (50-331/77-01): Alter employee orientation training to include certain subjects. (Paragraph 6)

4. Current Findings

- a. As a followup of personal contamination incidents during the 1977 refueling outage, the inspectors reviewed radiation protection logs maintained on the refueling floor during that period and radiation work permits associated with work performed. As a result of this review and discussions with various station employees, the inspectors became aware that during parts of the period April 4-7, 1977, violations of radiation work permit procedures had occurred.

On April 4, 1977, operations supervisors decided that they would not follow the clothing requirements designated on the radiation work permit. Work continued in this fashion despite the objection of the Radiation Protection Engineer. Several persons received significant amounts of skin contamination during this time. On April 7, 1977, operations personnel were scheduled to start work on LPRMs. Radiation protection representatives instructed the operations personnel to obtain a radiation work permit specific for the job. The operations personnel started the job without a specific radiation work permit for LPRM work and were subsequently found to have portions of their skin highly contaminated. These persons expended a significant effort to effect decontamination, and were whole body counted several times over about a one week period to determine if internal contamination had also occurred. Analysis of the counting results indicated no significant internal contamination. This matter constitutes an item of noncompliance with Technical Specification 6.8.1.2, refueling procedure No. 16, and Plant Radiation Protection Manual, Section 6.9., because radiation work permit requirements were not adhered to.

The inspectors noted that no similar event has occurred subsequent to those described above.

- b. Licensee Technical Specification 6.2.2.2.e. requires that; "At least one member of each operating shift crew shall be qualified to implement radiation protection procedures." In a letter dated February 18, 1977, from NRR to the licensee, the NRR staff position regarding the necessary activities "individuals qualified in radiation protection procedures" should be able to perform was presented and the criteria listed. In discussions with licensee plant management, the inspectors learned that the licensee would not certify that at least one member of each operating shift crew is qualified to implement radiation protection procedures as described in the list of criteria presented in the above letter. The licensee stated that certain persons on all shifts are qualified to perform the duties required of them, and that additional persons are called in as needed. The inspectors did not independently review qualifications during this inspection.

Because of the differences in interpretation of "individuals qualified to implement radiation protection procedures," this item remains unresolved.

The licensee stated that plans are in progress to upgrade the qualifications of certain persons on each operating shift crew. As indicated in Paragraph 5, training has been conducted for some of the individuals who operate the radwaste system on all shifts. Because of limited manpower, it is difficult for the licensee to relieve these individuals of their work function to provide adequate training.

5. Organization - Qualifications

Since the previous radiation protection inspection, Mr. E. Lange was hired to fill a newly created radwaste and health physics supervisory position. The remainder of the health physics organization is unchanged.

There are currently three chemistry, two health physics, six radwaste, and one environmental technician. The licensee uses contract health physics technicians for job coverage during outages. In addition, the licensee currently maintains two contract technicians full time.

During August 1977, two supervisors and four technicians attended a four-week advanced health physics technician training course conducted onsite by a contractor.

During October 1977, onsite radiation protection supervisors conducted a forty-hour course on radiation protection practices attended by eight technicians.

During December 1977, the assistant radiation protection engineer and the chemist are scheduled to attend a two-week course on radiation protection at a university.

The licensee stated that additional advanced technician training is planned.

6. Orientation Training

Radiation protection orientation training is provided by either a videotape and lecture presentation for large groups or by requiring persons in small groups to study the "General Employee Training Program" manual. This manual, previously a section of the RPPM, has been revised and is now a separate training manual. All individuals are required to pass a written examination. The inspector reviewed the videotape presentation; no problems were found. Records of initial training of selected personnel were reviewed; no problems were found.

During a previous radiation protection inspection (50-331/77-01) the inspector noted that orientation given to administrative visitors required upgrading. The inspectors noted that upgrading had been completed.

No problems were identified.

7. Radiation Protection Procedures

The Plant Radiation Protection Manual (PRPM) and the Radiation Protection Procedures Manual (RPPM) contain the licensee's radiation protection procedures. Since the preceding radiation protection inspection there have been four revisions to the RPPM and one to the PRPM. The major change was the removal of the training section from the RPPM. The inspectors reviewed the revisions for administrative and technical content. The revisions did not appear to diminish the effectiveness of the radiation protection program.

No noncompliance items were identified in this area.

8. Instruments and Equipment

The inspectors reviewed calibration records of portable survey instruments, fixed radiation monitors, air samplers, and fixed

air monitors (CIM-CAMs) for calendar year 1977 to date. Instruments are calibrated either quarterly or semiannually. It was noted that the licensee is performing a two-point-per-scale calibration on Pic-6A's and that procedures were written requiring a two-point-per-scale calibration for other survey instruments^{1/}. The inspectors noted that the licensee has no method of recording whether an instrument is inoperable, misplaced, or out of service.

The inspector reviewed area radiation monitor calibration and operability records. Calibration is performed quarterly using a vendor supplied calibrator. As previously reported (50-331/77-01), the licensee is experiencing difficulty in keeping some of these monitors operable. The licensee is currently replacing certain components in some monitors. Also, control charts are being maintained to log the type and frequency of instrument failure in an attempt to identify generic problems.

No items of noncompliance were identified.

9. Personal Dosimetry

Self-reading dosimeters and TLD badges are used to measure personal radiation exposures. The TLD badges are processed by an outside contractor. The licensee provides a second badge for local processing during periods of expected elevated exposures.

The inspector reviewed the licensee's personal dosimetry records for January through September 1977. No quarterly whole body or skin exposures in excess of two rems were noted. Forms NRC-4 were selectively reviewed. Two to four TLD badges are spiked monthly by the licensee and submitted to the contractor as a quality assurance check. No abnormalities were identified.

10. Whole Body Counting

The licensee is using an onsite "Do-it-yourself Whole Body Counter," which is tied to a contractor's computer by phone lines. All persons who wear respiratory protective equipment are routinely counted, as are permanent employees who frequently work in the controlled area and contractors who have the potential for uptake of radioactive materials. Contractor persons who could have had previous uptakes are counted when they arrive at the plant.

The inspector reviewed the results of whole body counts conducted between March 24, and September 13, 1977. During this period, 539 counts were conducted on 457 persons. It was noted

^{1/} IE Inspection Report No. 050-331/77-01.

that several counts conducted during March and April showed elevated results. The persons showing elevated activity were recounted several times and evaluations were made by the licensee. In each case, the licensee concluded that the detected activity was external contamination. The inspectors reviewed these evaluations, which appear to be adequate. The inspectors reviewed records of work in progress where these persons became contaminated. (Paragraph 4.a)

11. Posting, Labeling, and Control

During the initial plant tour and other visits to areas of the plant, the inspectors noted that controlled area postings and control of high radiation areas complied with regulatory requirements. The inspectors also reviewed the licensee's compliance with posting requirements specified in 10 CFR 19.11. No problems were identified.

The licensee requires issuance of a radiation work permit (RWP) for controlled area entry. The inspectors randomly reviewed RWP's written during calendar year 1977 to date. Both extended and special RWP's are utilized. It was noted that the licensee maintains close surveillance of ongoing work in controlled areas. At the time of this inspection 1,417 RWP's had been issued in 1977. Except for the items noted in Paragraph 4, no problems were found in this area.

12. Surveys

Records of direct radiation, surface contamination, and air sampling surveys were reviewed for calendar year 1977 to date. Area beta-gamma surveys are performed weekly and neutron surveys are performed quarterly. Continuous air monitors (CAMs) are located in the reactor, turbine, off-gas, and radwaste buildings to provide warnings of elevated airborne activity. Grab samples at specific job locations are collected as a prerequisite to issuance of most RWP's. The inspectors noted that the licensee maintains an active air sampling program.

The inspectors also reviewed licensee survey records regarding receipt of radioactive material. Surveys of incoming fuel, laundered protective clothing, and calibration sources were reviewed.

Licensee records of source leak testing during 1977 indicated that testing was done in accordance with Technical Specification 7.9.2 and that materials possessed were allowed by the license.

No items of noncompliance were identified in the above areas.

13. ALARA

The inspectors asked the licensee what actions are taken to ensure that personal internal and external doses are as low as reasonably achievable. The licensee stated that there is no formal station policy or program, but related the following examples of station attention to the matter:

- a. Extensive use of radiation work permits, which are reviewed by radiation protection supervision to determine if exposures can be reduced.
- b. Discussion of ALARA principles during training and retraining.
- c. Initiation of an ALARA suggestion program whereby station persons can submit a suggestion for plant management consideration.
- d. Use of a report, submitted by the contract health physics services organization, containing summaries of doses received on each job during each outage, to indicate changes in plant conditions which require dose control evaluation.
- e. Use of temporary shielding to reduce dose rates at certain job sites.
- f. Radiation protection personnel participation in outage planning.

14. Review of Nonroutine Environmental Events Reported by the Licensee

The inspectors reviewed the licensee's corrective actions concerning the following licensee event reports. These actions appear to be adequate.

Off-gas stack flow recorder found indicating downscale (77-3).

Off-gas stack monitor sampling pump inoperable (77-4).

Off-gas stack monitor flow recorder giving an unreliable indication (77-5).

15. Reports

The inspector reviewed the following matters and found no items which required corrective actions:

- a. Reports required by 10 CFR 20.407 and 20.408.
- b. Report required by Technical Specification 6.11.1(3) concerning personal exposure by type of worker and work performed.

16. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 18 and further discussed the inspection findings with Mr. Hammond by telephone on November 25, 1977. The following matters were discussed:

- a. The scope of the inspection.
- b. The item of noncompliance. The inspectors expressed concern about the apparent weaknesses in management controls which existed at that time. Licensee management stated that meetings were held to discuss the apparent weaknesses and that management support of the radiation protection program was reinforced. (Paragraph 4)
- b. Records of portable survey instrument calibration. The licensee stated that methods would be developed to better document instrument functional status. (Paragraph 8)
- e. Previous inspection findings. (Paragraph 3)
- f. The unresolved item concerning the technical specification requirement: "At least one member of each operating shift crew shall be qualified to implement radiation protection procedures." Licensee management stated that they would resolve with NRR differences in interpretation. (Paragraph 4.b)