

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/86004(DRSS)

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: January 27-31, 1986

*W.B. Grant*  
Inspector: W. B. Grant

*2/18/86*  
Date

*L.R. Greger*  
Approved By: L. R. Greger, Chief  
Facilities Radiation Protection  
Section

*2-18-86*  
Date

Inspection Summary

Inspection on January 27-31, 1986 (Report No. 50-331/86004(DRSS))

Areas Inspected: Routine unannounced inspection of the radiation protection program including: organization and management controls; training and qualifications; external occupational exposure control and personal dosimetry; internal exposure control and assessment; control of radioactive materials and contamination, surveys and monitoring; facilities and equipment; maintaining exposures ALARA; IE Information Notices 85-06 and 85-81; status of decontamination program and decontamination techniques; and status of certain NUREG 0737 items. The inspection involved 36 inspector-hours onsite by one NRC inspector.

Results: No violations or deviations were identified.

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## DETAILS

### 1. Persons Contacted

- \*C. Armstrong, ALARA Coordinator
- W. Doolittle, Assistant Radwaste Coordinator
- H. Giorgio, Radiation Protection Supervisor
- L. Haven, Exposure Records Coordinator
- \*L. Henderson, Decon Coordinator
- \*R. Hennen, Assistant Plant Superintendent, Operations
- \*L. Jenkins, Quality Assurance Engineer
- K. Konzen, Health Physics Foreman
- P. Louis, Health Physics Foreman
- \*D. Mineck, Plant Superintendent, Nuclear
- E. Parsons, Radiation Protection Engineer
- \*S. Reith, Licensing
- P. Schmelzer, Assistant to Chemistry Coordinator
- \*P. Schmidt, Dosimetry Coordinator
- \*P. Serra, Health Physics Supervisor
- \*J. Smith, Technical Support Supervisor
- \*P. Swafford, Acting Assistant Health Physics Supervisor
- \*K. Young, Assistant Plant Superintendent, Radiation Protection and Security
  
- \*N. Valliere, Resident Inspector, NRC
- \*J. Wiebe, Senior Resident Inspector, NRC

The inspector also contacted other licensee and contractor employees.

\*Denotes those present at the exit meeting.

### 2. General

This inspection, which began at 12:30 p.m. on January 27, 1986, was conducted to examine the routine aspects of the radiation protection program during normal operations. The inspection included tours of the reactor building, turbine building, and the new low level radwaste processing and storage facility which is under construction; discussions with licensee and contractor personnel; review of licensee records and reports, and independent radiation measurements by the inspector. Housekeeping was very good.

### 3. Organization and Management Controls

The inspector reviewed the licensee's organization and management controls for radiation protection program including changes in the organizational structure and staffing, effectiveness of procedures and other management techniques used to implement these programs, experience concerning self-identification and correction of program implementation weaknesses, and effectiveness of audits of these programs.

Since previously reported in Inspection Report No. 50-331/85020, several organization changes have been made, including:

- A former Radiation Protection Engineer was promoted to ALARA Coordinator.
- An individual with a recent masters degree in Environmental Science was hired as Decon Coordinator.
- An individual with a recent bachelors degree in Health Physics was hired as a Radiation Protection Engineer.
- The former Assistant Radwaste Coordinator transferred to the Shift Technical Advisor (STA) program.
- A former Radiation Protection Engineer was promoted to Assistant Radwaste Coordinator.

Representatives from health physics, dosimetry, decon, radwaste, ALARA, and chemistry sections have recently started meeting on a daily basis to discuss problem areas, activities in progress and activities scheduled. According to licensee representatives, the meetings have helped communications and increased interface between sections.

The inspector attended a weekly plant planning meeting, during which representatives from all plant areas discuss work scheduled for the next week, when it is scheduled to be done, how long it is scheduled to take, and what support will be required from other plant groups. According to licensee representatives, this meeting has helped the licensee coordinate work groups and more effectively allocate resources.

The inspector reviewed the radiation protection program audit conducted by INPO in September 1985. Two findings resulted. The licensee appears to be adequately addressing audit concerns and preventing recurrences. In addition the licensee has a commitment with INPO to have the Health Physics Technician step training program accredited by September 1986.

No violations or deviations were identified.

#### 4. Training and Qualifications

The inspector reviewed the training and qualifications aspects of the licensee's radiation protection, radwaste, and transportation programs, including: changes in responsibilities, policies, goals, programs, and methods; qualifications of newly hired or promoted radiation protection personnel; and provisions for appropriate radiation protection, radwaste, and transportation training for station personnel. Also reviewed were management techniques used to implement these programs and experience concerning self-identification and correction of program implementation weaknesses.

The inspector selectively reviewed portions of the recently revised Health Physics Technician step training program. Currently 16 of the 25 licensee Health Physics Technicians are involved in this program. It appears that the progress of the technicians through the training program, which is described in Inspection Report No. 50-331/85020, is falling behind schedule. Some licensee estimates indicate the schedule has slipped as much as one full step. Reasons for the schedule slipping include: the recent outage; training program revisions; and lack of available time for both trainees and trainers due to Health Physics coverage priorities. This training program represents the licensee's plan for staffing for current and future needs. As such it is desirable to minimize further slippage in completion of this training program. This matter was discussed at the exit meeting and will be reviewed during a future inspection. (50-331/86004-01)

One open item was identified.

5. External Exposure Control and Personal Dosimetry

The inspector reviewed the licensee's external exposure control and personal dosimetry programs, including: changes in facilities, equipment, personnel, and procedures; adequacy of the dosimetry program to meet routine and emergency needs; planning and preparation for maintenance and refueling tasks including ALARA considerations; required records, reports, and notifications; effectiveness of management techniques used to implement these programs; and experience concerning self-identification and correction of program implementation weaknesses.

The inspector verified that there were no changes in the licensee methods of exposure evaluation, badge spiking program, QA/QC program, or extremity neutron monitoring program. No problems were noted.

The CY 1985 accumulated dose was about 1500 person-rem; with about 1400 person-rem of that dose attributed to the recent outage. This outage included IHSI/ISI drywell activities, ISI torus work, and recirculation piping weld overlay work not normally performed during routine outages. The ISI/IHSI drywell, torus and weld overlay doses were about 450, 160 and 132 person-rem respectively. The inspector reviewed the licensees' vendor supplied exposure reports through December 1985; no exposures greater than 10 CFR 20.101 limits were noted. Form NRC-4s were selectively reviewed for persons permitted to receive greater than 1250 mrem per calendar quarter; no problems were noted. Requests for increased exposure were reviewed for approval status and content; no problems were noted.

The licensee is installing a computerized system for personnel dosimetry records and RWP preparation. The system "PRISM" which is expected to greatly enhance record keeping, RWP preparation, and report writing is expected to be operational by December 1986. The operation of the system will be reviewed during future inspections.

No violations or deviations were identified.

6. Internal Exposure Control and Assessment

The inspector reviewed the licensee's internal exposure control and assessment programs, including: changes in facilities, equipment, personnel, respiratory protection training, and procedures affecting internal exposure control and personal assessment; determination whether engineering controls, respiratory equipment, and assessment of individual intakes meet regulatory requirements; planning and preparation for maintenance and refueling tasks including ALARA considerations; required records, reports, and notifications; effectiveness of management techniques used to implement these programs; and experience concerning self-identification and correction of program implementation weaknesses.

The licensee has recently installed a new Canberra chair type whole body counter (WBC). Early hardware malfunctions have apparently been corrected and the unit appears to be operating properly. The inspector selectively reviewed whole body counts conducted during 1985; no problems were noted.

The licensee's program for controlling internal exposure includes use of engineering controls, surface and airborne survey data, respiratory protection equipment, and direct surveillance of selected work activities. A selective review of records of respirator users showed that all had been trained, fit tested, and medically evaluated on a timely basis.

Recently issued guidance on respirator issue outlines additional methods for improving control of respirator maintenance, inspection, and issue. The guide assigns responsibilities for issuance, decontamination, cleaning, disinfection, contamination survey, inspection, inventory, and storage of all respiratory equipment. Use of this guide should improve the licensee's respiratory protection program.

No violations or deviations were identified.

7. Control of Radioactive Materials, Contamination, Surveys, and Monitoring

The inspector reviewed the licensee's program for control of radioactive materials and contamination, including: changes in instrumentation, equipment, and procedures; effectiveness of survey methods, practices, equipment, and procedures; adequacy of review and dissemination of survey data; effectiveness of methods of control of radioactive and contaminated materials; and management techniques used to implement the program and experience concerning self-identification and correction of program implementation weaknesses.

The inspector reviewed Radiation Protection Incident Reports (RPIP) and personnel contamination records (HP-27) for 1985, since August. Personnel contamination incidents (except for minor skin contamination) are included in RPIPs. There were 87 RPIPs written during 1985. Corrective action has not yet been completed for all of them; disciplinary action was taken in three instances to date.

Records of routine and job specific surface contamination surveys conducted since May 1985 were reviewed. Routine surveys appear to be conducted at frequencies specified. Job specific surveys appear adequate to assess the need for issuance of RWPs and to specify protective requirements when RWPs are issued. No problems were noted.

The inspector selectively reviewed instrument calibration records. Instruments appeared to be calibrated in accordance with procedures. Calibration ranges reflected applicable ranges encountered in the field. Responses were within tolerance levels. Beta correction factors are calculated for ionization survey instruments and recorded on calibration tags attached to the instruments. A computer tracking system is used to identify upcoming calibration dates. No problems were noted.

The licensee has purchased a freon tool cleaner unit for decontamination of tools, small parts, hoses, and small welding modules. Initial reports indicate this decontamination effort is very successful.

Considerable effort is still being placed into reducing the number of contaminated areas in the plant. Areas that have recently been or are being decontaminated include North East Corner Room (100%); South West Corner Room (40%); South East Corner Room (90%); Fuel Pool Heat Exchanger (50%); Jungle Room (50%); Refuel Floor (40%); HPCI; and RCIC (80%). The licensee maintains a work force of about 25 labors, working under the direction of Health Physics, doing decontamination and painting.

No violations or deviations were identified.

8. Radiation Protection Procedures and Instructions

The inspector reviewed the following new or recently revised procedures and instructions for compliance with regulatory requirements and good health physics practice. No significant problems were identified.

HPP 3102.1, Revision 5, The DAEC ALARA Program

HPI 3102.1.3, Revision 0, ALARA Improvement Recommendation

HPP 3105.5, Revision 1, Instrument Calibration Standards

HPP 3105.6, Revision 1, Instrument Inventory and Calibration Records

HPI 3105.6.2, Revision 1, Health Physics Instruments Standardized  
Calibration Intervals and Computer Run

HPP 3106.1, Revision 4, Area Classification and Control

HPI 3106.1.1, Revision 2, Area Posting

HPI 3106.3.1, Revision 6, Radiation Work Permit Preparation and Use

HPI 3106.4.1, Revision 1, Decontamination of Equipment and Facilities

HPI 3106.4.5, Revision 0, Decontamination of Protective Clothing Using  
Superma Model 1020 Drycleaning System

HPI 3106.4.6, Revision 0, Freon Tool Cleaner Operating Instructions

9. Maintaining Occupational Exposures ALARA

The inspector reviewed the licensee's program for maintaining occupational exposures ALARA, including: changes in ALARA policy and procedures; worker awareness and involvement in the ALARA program; and establishment of goals and objectives, and effectiveness in meeting them. Also reviewed were management techniques used to implement the program and experience concerning self-identification and correction of program implementation weaknesses.

On October 1, 1985, the licensee implemented an Exposure Goals Program as part of a continuing effort to reduce radiation exposure to the lowest achievable level. The program is intended to provide a method to measure cost-effective results in exposure reduction and maintain supervisory awareness of personnel exposure. Licensee and contractor workers who receive exposure in a similar manner were placed in groups and a specific individual was assigned as the responsible individual for that group. The Exposure Goals program sets an annual exposure goal limit per group which is established by the review of the prior year's total exposure. Each groups' exposure is evaluated on a quarterly basis and each responsible individual is notified of his groups' total exposure in relation to his annual goal. Major projects or outage related activities are not included in the total group exposures since these activities require different exposure reduction techniques and are evaluated separately using normal RWP ALARA reviews. The licensee intends to use the last quarter of the year as an evaluation period to make adjustments in each groups' exposure goal and possibly the program itself. In the short time the program has been in existence; no problems were noted.

The licensee has recently purchased 20 ALNOR alarming dosimeters for use in special high dose situations. High exposure maintenance jobs are videotaped and critiqued with workers to identify poor radiological and inefficient practices and to reinforce good practices. No problems were noted.

No violations or deviations were identified.

10. Facilities and Equipment

The inspector toured the Low Level Radwaste Processing and Storage Facility which is under construction. The new facility will contain storage space for about 2.5 years worth of solid radwaste, new or additional radwaste processing equipment, and health physics and radwaste office space. Completion is scheduled for mid-1986. No problems were noted.

No violations or deviations were identified.

11. IE Information Notices

Information Notice 85-06: Contamination of Breathing Air Systems. DAEC has a dedicated breathing air system. Service air is used for breathing only if the breathing air system is not operable and then only using a MSA DelMonic filter system. Service air is tested for radioactive contaminants monthly and for Grade D breathing air quality semi-annually. DAEC procedures require two in series back flow prevention valves to be installed between any contaminated tools or equipment and the service air system.

Information Notice 85-81: Problems resulting in Erroneously High Reading With Panasonic 800 Series Thermoluminescent Dosimeters (TLD). The licensee has not used the Panasonic TLDs. The information notice has been received and the license is reviewing the information for applicability to DAEC.

12. Status of Certain NUREG-0737 Items

As noted in Inspection Reports No. 331/83010 and No. 331/85005, Kaman monitoring/sampling systems are installed on the off-gas stack, the turbine building vent, and the reactor building vent to meet NUREG-0737 Item II F.1.1, Noble Gas Effluent Monitoring and Item II F.1.2, Sampling and Analysis of Plant Effluents (iodine and particles). Three reactor building vent backup samplers are installed to verify that no significant activity is being released during isolation of the vents; however, these backup samplers are not required by NUREG 0737 since the reactor building vents automatically isolate during accident conditions. All the Kaman systems are supplied by the primary electrical bus. If primary power is lost, a battery supplies 10-12 volts to the microprocessors so that memory and calibration data are not lost while the primary power is off. Surveillance procedure STP 415 C001 outlines monthly source checks, quarterly functional tests, and 18-month calibrations for the Kaman systems.

13. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on January 31, 1986. The inspector summarized the scope and findings of the inspection. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary. The licensee acknowledged the inspector's comments concerning the schedule slippage of the health physics technician step training program. (Section 4)