

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/86014(DRSS)

Docket No. 50-331

License No. DPR-49

Licensee: Iowa Electric Light and Power
Company
IE Towers, Post Office Box 351
Cedar Rapids, IA 52406

Facility Name: Duane Arnold Energy Center

Inspection At: Duane Arnold Site, Palo IA

Inspection Conducted: August 18-21, 1986

Inspector: *A. B. Januska for*
L. J. Hueter

9/4/86
Date

Approved By: *A. B. Januska for*
M. C. Schumacher, Chief
Radiological Effluents and
Chemistry Section

9/4/86
Date

Inspection Summary

Inspection on August 18-21, 1986 (Report No. 50-331/86014(DRSS))

Areas Inspected: Routine, unannounced inspection of gaseous and liquid radioactive programs including: effluent releases; records and reports of effluents; effluent control instrumentation; procedures for controlling releases; reactor coolant chemistry and activity; gaseous effluent filtration; and followup on status of a previous violation and open items.

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

W. Doolittle, Assistance Radwaste Supervisor
*H. Giorgio, Radiation Protection Supervisor
*R. Lewis, Chemistry Foreman
*W. Miller, Technical Services Department
*D. Mineck, Plant Superintendent
*W. Reid, Licensing
*P. Schmelzer, Health Physicist
*P. Serra, Health Physics Supervisor
*K. Young, Assistant Plant Superintendent, Radiation
Protection and Security

*J. Weibe, NRC Senior Resident Inspector

*Denotes those attending exit meeting on August 21, 1986.

2. Licensee Action on Previous Inspection Findings

(Closed) Violation (331/85022-01): Failure to follow liquid radwaste release procedures. As noted in the licensee's response dated October 10, 1985, the planned release to the river of slightly contaminated water without completion of required authorization and record forms resulted from the licensee's misinterpretation of Paragraph 5 of the note to 10 CFR 20 Appendix B and the use of this interpretation to establish a de minimus level. Corrective actions taken included retrieval of data and completion, to the extent feasible, of the required record and authorization forms. Appropriate personnel in the Radiation Protection Group were made aware of the correct interpretation of the note, and appropriate procedures were revised to prohibit considering water "clean" if any radionuclides are identified.

(Closed) Open Item (331/85022-02): Licensee to review/evaluate the use of a nonconservative MPC valve in procedure for alarm setpoint determination for normal range gaseous effluent monitors. As noted in Inspection Report No. 331/85022, another factor in the setpoint calculation provided conservatism which appeared to adequately compensate for this identified nonconservative factor. Plant Chemistry Procedure PCP 10.14, which governs alarm setpoint determinations for normal range Kaman effluent monitors, was totally revised upon implementation of the RETS technical specifications and Offsite Dose Assessment Manual (ODAM), effective January 1, 1986. In the revised procedure, the alarm setpoints for these monitors (and all effluent monitors) are now based on dose using equations and dose conversion factors contained in the ODM for radionuclides identified in samples from each respective effluent release path. With this revised procedure, the nonconservative MPC values are no longer used in the alarm setpoint determinations.

(Open) Open Item (331/83010-02): Inadequate ventilation in laboratory and sample hoods - a third finding in a licensee internal audit (I-82-28). A Design Change Package to modify the existing ventilation system had been placed on a low priority since it was discovered that to modify the system, workers would have to cut through asbestos material. In an internal memo dated February 7, 1986, it was stated that Iowa Electric was pursuing the removal of the asbestos and hoped to have the asbestos problem resolved in June or July of 1986. As the change to the laboratory and sample hoods ventilation was expected to require about three months work after asbestos removal, it was anticipated that this modification could be completed by end of October 1986. The current status involves a delay in removal of the asbestos due to difficulty in contracting this job. The purchase order has now been issued and the licensee believes asbestos removal work will begin very soon. If the asbestos removal begins very soon, the modification to the laboratory and hood ventilation system can probably be completed by end of December 1986.

3. Gaseous Radioactive Waste

The inspector reviewed the licensee's gaseous radwaste management program. The effluent records and semiannual effluent reports were selectively reviewed for the last half of 1985 and the first half of 1986.

As noted in Section 2, the RETS Technical Specifications and ODAM (which include dose based release and setpoint criteria) were implemented as required on January 1, 1986. Procedures were modified to accommodate the changes.

Gaseous effluent release paths and release quantification methodologies are basically unchanged from the brief description provided in Inspection Report No. 331/85022 with the exception that effluent release quantifications and dose determinations are now calculated using the Midas computer software program. The Midas program determines an hourly average concentration of gaseous activity based on instrument response and the efficiency from the latest calibration using plant generated gases from the off gas system. It also measures hourly average flow rate of the release path and from the product of these two values, determines the total release from the pathway. The program also apportions this total activity on a weighted basis among the nuclides identified on the basis of the monthly analysis of gas samples.

Since the last refueling/maintenance outage end July 20, 1985, the reactor has been operating except for two intentional outages, a 19 day outage beginning March 17, 1986 for annual STP surveillances and a 13 day outage beginning June 8, 1986 to install a new transformer.

The licensee continues to have good fuel cladding integrity contributing to low noble gas release rates and low dose equivalent I-131 concentrations in reactor coolant. Noble gas releases have remained very low, quantified at about 416 Ci in 1984, 251 Ci in 1985 and about 134 Ci for the first six months of 1986.

No violations or deviations were identified.

4. Liquids and Liquid Radioactive Wastes

The inspector reviewed the licensee's liquid radwaste management program. The program including the semiannual effluent reports was reviewed for the last half of 1985 and the first half of 1986. During this period, the licensee had no liquid releases, a goal which has been achieved with few exception since about 1979. The licensee is pursuing some modifications to the liquid processing system with a goal of reducing the volume of solid wastes in the form of spent resins generated and shipped to radwaste burial grounds.

No violations or deviations were identified.

5. Calibrations and Surveillances of Gaseous and Liquid Process and Effluent Monitors

The inspector reviewed selected records for two liquid monitors (liquid effluent monitor and RHR service water monitor) and five gaseous effluent monitors (reactor building monitors A, B, and C, off gas stack monitor and turbine building monitors). The latest 18 month calibrations, the quarterly functional tests performed in 1986 and the daily source and channel checks performed in July 1986 were reviewed for all seven monitors. Calibrations and surveillances appeared to be appropriate and timely in accordance with Technical Specification Tables 4.14-1 and 4.15.1 for liquid and gaseous effluent monitoring respectively. An apparent typographical error referencing a previous step in procedure STP 414A001 was identified and is described in Section 6.

The setpoints of gaseous and liquid effluent monitors were also reviewed. For gaseous monitors, the alert alarm is established at 10 percent of the corresponding dose limit and the high alarm is established at 60 percent of the dose limit. The RHR service water monitor is currently located in the HPCI room which has a relatively high and variable background. To avoid occasional spurious alarms, this monitor is set at 100 percent of the dose limit. The licensee recognizes the advantages of relocating this monitor to a low background area to permit establishment of a setpoint below 100 percent of the limit. This matter was discussed at the exit and will be reviewed during a future inspection. (Open Item 331/86014-01)

No violations or deviations were identified.

6. Procedures for Controlling Releases

The inspector selectively reviewed the following procedures involving liquid and gaseous radwaste monitors.

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|------------------------|--|
| PCP 10.6B, Revision 12 | Normal Range Particulate, Iodine and Gas Radiation Monitor Calibration Procedure |
| PCP 10.14, Revision 7 | Alarm Setpoint and Background Determination for the Normal Range Kaman Effluent Monitors |
| PCP 10.15, Revision 1 | Liquid Radiation Monitors Alarm Setpoint Determination |

STP 414A001 Revision 23 Radwaste Effluent Radiation Monitor Functional Test and Calibration

STP 414C001 Revision 20 Reactor Building Stack "A" Radiation Monitoring System Functional Test/Calibration

During the review of STP 414A001, it was noted that Step 4.5.b references a previous step (Step 4.4.b) that does not exist in the procedure. It appears that this is a typographical error and should reference Step 4.3.b. No other problems were identified in the review of procedures. The reference error in STP 414A001 was discussed at the exit meeting and corrections will be reviewed during a future inspection. (Open Item 331/86014-02)

No violations or deviations were identified.

7. Reactor Coolant Chemistry

Good fuel cladding integrity and the absence of condenser tube leaks the past two years have contributed to the licensee's good record of remaining within the technical specifications for coolant chemistry parameters during this review period (since mid-August 1985).

The dose equivalent I-131 concentration has ranged from 0.5E-04 to 1.0E-04 $\mu\text{Ci/gm}$, well below the 1.2 $\mu\text{Ci/gm}$ criteria specified in Technical Specifications 3.6.B.1.

During the past year, daily analysis of reactor coolant for chloride ion has never been above the detection limit of the ion electrode (0.01 ppm) in use until July 1986, nor above the detection limit of the more sensitive ion chromatograph (0.005 ppm) in use since July 1986. These levels are well below the reactor mode of operation dependent limits of 0.1 ppm and 0.5 ppm specified in Technical Specification 3.6.B.2. a and b.

For conductivity and pH, Technical Specification 3.6.B.2 specifies that every effort will be made to keep conductivity below 1 micro mho/cm at all times but permits higher limits of 5 and 10 micro mho/cm (depending on reactor mode of operation) for limited periods of time. During the past year, the reactor coolant conductivity exceeded 1 micro mho/cm on only four occasions, all lasting for only a few hours duration with the maximum being 1.2 micro mho/cm. The pH has ranged between 5.9 and 7.2, well within the criteria specified.

The licensee has committed to follow the BWR Owners Group Guidelines for the coolant parameters silica, conductivity and chlorides as contained in the current revision (Revision 0) of the Electrical Power Research Institute (EPRI) document.

No violations or deviations were identified.

8. HEPA Filter and Charcoal Adsorber Systems

Two ventilation systems have HEPA filters and charcoal adsorbers subject to Technical Specifications requirements. These systems are the two trains of the control room emergency filtration system and the two trains of the SGTS system. Inplace testing of HEPA filters and charcoal adsorbers have been performed on a timely basis for both systems. In preparation for testing train B of the control room emergency filtration system in the spring of 1986, it was noted that some seepage had occurred from the spray nozzle of the deluge system for use in case of a fire in the charcoal adsorbers. Therefore, on the basis that the filters and adsorbers might be damaged, all the filters and adsorbers were replaced with new filters and adsorbers before testing was performed, also, before testing, to preclude a recurrence, a modification was made to both trains A and B to add a drain line (with water trap) in the deluge line between the activation valve and the nozzle. A similar modification had been made to the SGTS system in 1983 following a similar occurrence in that system.

Records of HEPA filter and charcoal adsorber inplace tests show the efficiency to be greater than the 99.0 percent test criterion for the latest tests of the control room system and the 99.9 percent criterion for the SGTS system. In addition, records of a laboratory analysis of a representative carbon sample from each train for methyl iodide removal showed the removal efficiency to be greater than the 90 percent criterion for the control room charcoal adsorber and greater than the 99 criterion for the SGTS charcoal adsorber.

No violations or deviations were identified.

9. Audits

The inspector reviewed QA audit I-86-06 conducted April 21-25, 1986 of surveillance activities. One audit finding was identified associated with the liquid and gaseous effluent program. An incorrect value had been recorded by a contractor in a surveillance procedure involving inplace filter testing of the standby gas treatment system. However, the correct value had been used to make efficiency calculations. Licensee followup, including discussions and written statement from the person involved and procedure modifications appeared to be adequate.

No violations or deviations were identified.

10. Training and Qualification Effectiveness

Staffing for the liquid and gaseous radwaste program appears adequate in number and fairly stable with no changes in supervisory personnel since the last inspection. The staff also appears adequately trained and supervised. Personnel interviewed were knowledgeable of their procedures and assigned responsibilities. Certain technicians have more advanced training provided by the vendors of specialized instruments.

In addition to the regular training program, weekly meetings are held with the technicians to keep them current on plant happenings, to provide training on new or revised procedures or policies and to cover safety subjects. Efforts are being made for INPO accreditation of the technician program with a goal of receiving accreditation by the end of 1986.

No violations or deviations were identified.

11. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Sections 5 and 6.

12. Exit Meeting

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on August 21, 1986. The inspector 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 such documents/processes as proprietary. The inspector summarized the scope and findings of the inspection. In response to certain items discussed by the inspector, the licensee:

- a. Acknowledged the advantage of relocating the RHR service water monitor from the HPCI room to an area with lower background radiation levels. The licensee stated that efforts would be made to relocate the monitor to a low background area during the next refueling outage now scheduled for the Spring of 1987. (Section 5)
- b. Acknowledged the apparent typographical error referencing a previous step in procedure STP 414A001 and stated the error would be corrected. (Section 6)