

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-331/94004(DRSS)

Docket No. 50-331

License No. DPR-49

Licensee: IES Utilities, Incorporated
IE Towers
P. O. Box 351
Cedar Rapids, IA 52406

Facility Name: Duane Arnold Energy Center

Inspection At: Duane Arnold Site, Palo, Iowa

Inspection Conducted: February 7 through 11, 1994

Inspector: *Cynthia D. Pedersen*
C. R. Cox
Radiation Specialist

3/4/94
Date

Approved By: *Cynthia D. Pedersen*
William G. Snell, Chief
Radiological Programs Section 2

3/4/94
Date

Inspection Summary:

Inspection on February 7 through 11, 1994 (Report No. 50-331/94004(DRSS))

Areas Inspected: Routine announced inspection of the licensee's radiation protection program including: self assessment; control of radioactive material and contamination; solid radioactive waste; transportation; and maintaining occupational exposure as-low-as-reasonably achievable (ALARA) (Inspection Procedures (IP) 83750, 84750, and 86750).

Results: The licensee's radiation protection program appears to be effective in controlling radiological work and in protecting the public health and safety. Radiological performance during 1993 was very good and dose expended continued a downward trend. Emergent work in January 1994 resulted in the person-rem for January (14 person-rem (.14 person-sievert)) to significantly impact the 1994 goal of 100 person-rem (1 person-sievert). Rather than adjusting the 1994 goal to reflect the emergent work, the licensee planned to more aggressively control the dose for the remainder of the year in order to not exceed the 1994 goal. No problems were noted in the implementation of the new 10 Code of Federal Regulations Part 20. Self-assessment within the Radiation Protection Department improved since the last inspection with good tracking of personnel contamination events (PCEs) and radiation deficiency/incident reports noted for December 1993 and January 1994. A problem was noted in packing leakage with several flow control valves in the control rod drive system. Caution tags were hung on the leaking valves and catch buckets were hung below the valves to catch the potentially contaminated water and

direct the flow to the radwaste drains. One inspection follow-up item (IFI) was identified regarding a freezing problem in the offgas stack flow monitoring system.

DETAILS

1. Persons Contacted

Licensee Staff

- * P. Bessette, Regulatory Compliance Supervisor
- * D. Boone, Decontamination Supervisor
- * R. Hite, ALARA Supervisor
- * W. Holden, Training Supervisor - Radiation Protection
- * L. Kriege, Chemistry Supervisor
- * R. Perry, Acting Health Physics Supervisor
- * K. Peveler, Manager, Corporate Quality Assurance
- * D. Robinson, Regulatory Communications
- * L. Root, President, IES Utilities
- * D. Schebler, Radioactive Waste Supervisor
- * G. Taylor, Environmental Supervisor
- * G. Van Middlesworth, Assistant Plant Superintendent - Operations and Maintenance
- * E. Wienola, QA Specialist
- * T. Wilkerson, Manager, Radiation Protection
- * D. Wilson, Plant Superintendent - Nuclear
- * K. Young, Manager, Nuclear Licensing

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- C. Miller, Resident Inspector
- * J. Hopkins, Senior Resident Inspector

The inspector also interviewed other licensee personnel in various departments during the course of the inspection.

* Denotes those present at the exit meeting on February 11, 1994.

2. General

This inspection was conducted to review aspects of the licensee's radiation protection program. The inspection included tours of the reactor building, the turbine building and radwaste facilities, observations of licensee activities, a review of representative records and discussions with licensee personnel.

3. Training and Qualifications of Personnel (IP 83750)

The inspector reviewed the implementation of the Personnel Radiological Exposure Management System (PREMS). The PREMS tracked doses for entry into the Radiological Controlled Area (RCA) by having the radiation worker log-in on the computer under the appropriate radiation work permit (RWP). A dose margin would be assigned by the computer and the self-reading dosimeter (SRD) initial reading would be entered by the worker. An exit SRD reading would be entered upon leaving the RCA and

the difference in the SRD readings would be the dose assigned to the worker. PREMS was implemented on January 1, 1994. Training on the new system was accomplished by training twelve radiation protection technicians who would then assist workers in logging in on the PREMS until the workers were comfortable with logging themselves in. General Employee Training (GET) would be updated to reflect the PREMS. Training on the new 10 Code of Federal Regulations Part 20 (10 CFR 20) was reviewed during the previous inspection and no problems in the implementation were noted.

No violations or deviations were identified.

4. Control of Radioactive Materials and Contamination, Surveys and Monitoring (IP 83750)

The inspector reviewed the licensee's program for control of radioactive materials and contamination, including: maintenance and calibration of contamination survey and monitoring equipment; adequacy of review and dissemination of survey data; and effectiveness of radioactive and contaminated material controls.

The inspector reviewed the calibrations of several survey instruments in use and found all to be current. The inspector toured various radiologically controlled areas of the plant and found that surveys were available, adequate and current for those areas toured. The inspector noted that housekeeping in contaminated areas continued to improve with the northwest corner room in the reactor building being decontaminated and freshly painted. Problems in housekeeping in the turbine building were noted and pointed out to the licensee.

A potential problem in contamination control was also noted due to packing leakage from three flow control valves in the control rod drive system. The three valves (V 17-24, 17-28, and 17-29), located on the southeast side of the first floor in the reactor building, were caution tagged and had catch buckets directing the leakage to the radwaste drains. One valve's leakage was causing a spray to be emitted from around its packing and any increase could cause it to miss the catch bucket causing the spread of potentially contaminated water. The licensee acknowledged the problem and indicated that it would be tracked.

Personnel contamination events (PCEs) for 1994 were well tracked leading the radiation protection group to determine that several PCEs in the Chemistry Department were due to a contaminated conductivity bridge. The discovery of the contaminated conductivity bridge demonstrated the value of recording and trending even minor PCEs. There were a total of 9 PCEs in 1994 through January 20, 1994.

No violations or deviations were identified.

5. Self Assessment (IP 83750)

An improvement was noted by the inspector in radiation protection self assessment. Six Radiological Deficiency/Incident Reports (RDIRs) had been written so far in 1994 compared to a total of 19 RDIRs recorded for 1993. Also better trending of personnel contamination events (PCEs) was noted in Section 4. Review of the 1994 RDIRs indicated that the increased trend in RDIRs was due to a lowering of the threshold for writing the RDIRs and not necessarily due to a negative performance trend. A lower threshold for writing RDIRs and the better trending of PCEs is recognized as an effective means of identifying negative trends before the trends manifest themselves as major events. Radiation protection management recognized the value of the improvement in self assessment and indicated that the efforts to improve would continue.

A recently conducted ALARA Quality Assurance (QA) surveillance was reviewed by the inspector. The scope of the surveillance was adequate and observations appropriate. To ensure that a broad look at the ALARA program was accomplished, two industry peers were utilized for the ALARA surveillance. Radiation protection management was in the process of evaluating comments and recommendations from the two industry peers and indicated that the use of the two peers added value to the surveillance.

No violations or deviations were identified.

6. Solid Radioactive Waste (IP 86750)

The inspector observed a spent resin transfer and dewatering.

No violations or deviations were identified.

7. Maintaining Occupational Exposures ALARA (IP 83750)

The inspector reviewed the licensee's program for maintaining occupational exposures ALARA, including: the source term reduction program; ALARA group staffing and qualification; changes in ALARA policy and procedures, and their implementation; ALARA considerations for planned maintenance and refueling outages; and worker awareness and involvement in the ALARA program.

The total exposure for 1993 was maintained below the ALARA goal of 470 person-rem (4.70 person-sievert). Thermoluminescent dosimetry (TLD) readings indicated a total of 407 person-rem (4.07 person-sievert) total for 1993. The total exposure meeting the ALARA goal is especially noteworthy because the goal of 470 person-rem (4.70 person-sievert) did not consider the dose resulting from the fuel pool clean-up project after the 1993 refueling outage. ALARA goals continued to be aggressively set for 1994. A goal was established for 100 person-rem (1 person-sievert) for the year. However, emergent work in January 1994 cause the January total exposure (14 person-rem (.14 person-sievert)) to exceed the January goal. Rather than adjust the annual goal to reflect the emergent work dose, the licensee planned to more aggressively control the dose for the remainder of the year.

No violations or deviations were identified.

8. Effluents (IP 84750)

The inspector reviewed several reports indicating problems with the offgas stack system. The first report involved the Offgas Treatment System vent pipe becoming blocked due to sub-zero weather freezing the condensation in the pipe. System pressure was relieved through a drain trap until the blockage could be melted. Review of the event indicated that there was no unmonitored release. The second report involved an offgas stack fan replacement which resulted in a backflow damper leaking 200 to 300 cubic feet per minute to the basement of the offgas stack building for approximately 21 hours. Chemistry department personnel investigated the event and determined there was no unmonitored release due to building ventilation flow test data, work area real time air sample data, and normal meteorological conditions. The inspector concurred with the report's conclusion. Another problem with cold weather protection for the offgas stack was noted due to caution tags hung in the Control Room. The sensing line for the flow meter in the offgas stack was experiencing freezing problems in sub-zero weather, rendering the meter inoperable. During these periods, the Chemistry department would have to estimate the flow through the stack by the flow inputs to the stack. Therefore, caution tags would be hung on controls in the Control Room for systems inputting into the offgas stack. The tags would require Chemistry to be notified if the system lineups were changed causing a change in the stack flow. Engineering solutions were being pursued to solve the stack flow freezing problem. The freezing problem in the stack flow sensing line will be tracked at an inspection followup item until an engineering solution is determined and completed. (Inspection Followup Item (IFI) 331/94004-01)

No violations or deviations were identified.

9. Transportation (IP 86750)

The inspector reviewed the documentation of two shipments in January 1994 of radioactive material. The first was a shipment of a Highway Route Controlled Quantity (HRCQ) of stellite bearings on January 17, 1994, and the second was a shipment of radwaste on January 18, 1994. Documentation for both shipments were in order.

No violations or deviations were identified.

10. Exit Meeting

The inspector conducted an exit meeting with licensee representatives (denoted in Section 1) on February 11, 1994, to discuss the scope and findings of the inspection.

During this meeting, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. Licensee representatives did not identify any such documents or processes as proprietary. The inspector specifically discussed the following items:

- * The improved self assessment and the need to continue the downward trend in dose expended.
- * The inspection followup item regarding the flow line in the offgas stack.