



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

JUL 14 1989

Report Nos.: 50-269/89-19, 50-270/89-19, and 50-287/89-19

Licensee: Duke Power Company
 422 South Church Street
 Charlotte, NC 28242

Docket Nos.: 50-269, 50-270,
 and 50-287

License Nos.: DPR-38, DPR-47, and
 DPR-55

Facility Name: Oconee 1, 2, and 3

Inspection Conducted: June 12-16, 1989

Inspectors: *John P. Potter* 7/12/89
 for R. B. Shortridge Date Signed

John P. Potter 7/12/89
 for T. R. Collins Date Signed

Approved by: *John P. Potter* 7/12/89
 Date Signed
 John P. Potter, Chief
 Facilities Radiation Protection Section
 Emergency Preparedness and Radiological
 Protection Branch
 Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection of the radiation protection program included a review of occupational exposure, shipping and transportation, and licensee action on previous inspection findings.

Results:

The licensee's radiation protection program during extended outages appears to be effective in protecting the health and safety of the occupational radiation worker. The inspectors identified that exposure controls for very high radiation areas could be improved by uniquely identifying areas with very high radiation levels.

No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *S. Coy, Health Physics Supervising Scientist
- *T. Curtis, Compliance Engineer
- *J. Davis, Operations Superintendent
- *W. Foster, Maintenance Superintendent
- *E. LeGette, Compliance Engineer
- *S. Spear, Health Physics General Supervisor
- *M. Thorne, Health Physics General Supervisor
- *M. Tuckman, Station Manager
- *C. Yongue, Station Health Physicist

Other licensee employees contacted during this inspection included engineers, operators, mechanics, technicians, and office personnel.

Nuclear Regulatory Commission

- *P. Skinner, Senior Resident Inspector

*Attended exit interview

2. Occupational Exposure (83750)

- a. The licensee shut down Unit 2 reactor on May 20, 1989, for a 43 day routine refueling outage. Significant work planned for the end of cycle 10 included Eddy Current testing of both A and B once through steam generators, tube plugging and tube end repair, replacement of a letdown cooler and replacement of 23 valves in the reactor building (containment).
- b. The inspectors reviewed the organization, staffing level, and lines of authority as they related to the refueling outage radiation protection program. The inspectors verified that the licensee had not made organizational changes which would adversely affect the ability to control occupational radiation exposures. The inspectors determined that the licensee had adequate resources to provide radiological job coverage for outage work. To supplement 66 licensee health physics (HP) technicians, 88 contract HP technicians were utilized to provide support for the outage. Two additional contract HP technicians were assigned to maintenance as coordinators for outage related work.

c. External Exposure Control

During tours of Unit 2 containment, the inspectors evaluated licensee progress on a previously identified inspector followup item (IFI) related to external exposure control. The IFI identified that workers were wearing personal dosimetry under protective clothing and that this practice increased the risk of contamination when a person monitors their self reading pocket dosimeter (SRPD). The inspectors noted that approximately 20 to 30 percent of the workers still placed SRPDs inside protective clothing and that all workers in paper suits had personal dosimetry inside. As a followup to monitor the licensee progress on corrective action to a previous IFI, the inspectors noted that some workers, approximately 10 to 15 percent still were not knowledgeable of dose rates in their work areas. Also, during tours of Unit 2 containment, workers were not observed to read their SRPDs when in high radiation areas. Licensee representatives provided data to support a station wide training effort to improve worker awareness of radiological conditions in their work area and added requirements in general employee training for training workers in dose rate awareness. The inspectors noted that while the majority of workers were knowledgeable of radiological conditions in their work area, however, some were not. Licensee representatives stated that HP technicians had been tasked to provide closer coverage of jobs and that the technicians would read a person's SRPD, in cases where the worker may be approaching an exposure limit, or the worker is in a highly contaminated area, or a high radiation area. Licensee representatives further stated that they would reinvestigate the requirement for a worker to frequently monitor their SRPD when working in a high radiation area, but the licensee believed that this practice would reduce production and increase personnel contamination and exposure.

During the tours of Unit 2 containment, the inspectors noted that the licensee does not provide the type of positive control over very high radiation areas (radiation levels greater than 1,000 mrem/hr at 18 inches) that are specified in standard technical specifications, but rather provides controls specified in 10 CFR 20. The licensee did not apply to the Commission for alternative methods of controlling high radiation areas as allowed in 10 CFR 20.203(c)(5). Therefore, the entrance to Unit 2 containment is maintained locked except during periods when access to the area is required, with positive control over each individual entry. The containments are posted at the entry as a high radiation area with many high radiation and very high radiation areas within. Positive control for entry to the high radiation area is provided by a HP control point at the entrance to containment. For some jobs the licensee provides continuous job coverage by a HP technician and provides some workers with digital alarming dosimeters. Standard technical specification controls require that when persons enter a high radiation area (greater than 100 mrem/hr but less than 1,000 mrem/hr), they must have one or more of the following: (1) a radiation monitoring device that

continuously indicates that radiation dose rate in the area; (2) a radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms at a present dose, and/or (3) an individual qualified in radiation protection procedures, with a dose rate monitoring device, who is responsible for providing positive control over activities within the area and who shall perform positive surveillance at a specified frequency. Areas with radiation levels greater than 1,000 mrem/hr at 18 inches (very high radiation areas) are provided with locked doors to prevent unauthorized entry and the keys are maintained under the administrative control of the shift foremen on duty and/or HP supervision. Licensee commitment included closer job coverage, and SRPD readings by HP technicians in high radiation areas as discussed above.

During a previous inspection, the inspectors described in Inspection Report Nos. 50-269, 270, 287/89-02 a potential exposure control problem in Unit 1 containment, in that; (1) workers generally were not knowledgeable of dose rates in their work area; (2) workers were not monitoring their SRPD when in high radiation areas; (3) SRPDs were frequently worn under protective clothing making monitoring impractical; and (4) hot spots remained on piping after shielding and were not posted to adequately inform the worker of the radiation hazards present. During this inspection, the inspectors observed a pipe in the overhead (approximately 20 feet from the floor) in the basement level of Unit 2 containment posted as 100,000 mrem/hr on contact. The area was posted as a high radiation area with a notation on the sign, "100 R/hr contact" in the overhead. The inspectors toured the area with licensee management and pointed out problems that are occurring in the industry associated with very high radiation areas and the potential for an unplanned exposure due to the licensee's current method of positive control over very high radiation areas. Licensee management inquired if this area (100,000 mrem/hr) would be barricaded and locked at other Region II facilities. The inspectors stated that normally areas greater than 1,000 mrem/hr would be locked, or a flashing light would be installed to warn personnel of the very high radiation levels that were present, and that Oconee should consider these techniques to minimize the risk of a significant overexposure.

The inspectors informed the licensee that, although significant progress had been made in training and improving worker awareness and knowledge of their radiological job conditions and area dose rates, improvements are still needed in the exposure control program, as discussed below. During the inspection, the inspectors, while accompanied by HP supervision and licensee management, identified the recurrence of problems identified in Inspection Report Nos. 50-269, 270, 287/89-02. Two weeks prior to the inspection, the resident inspectors notified the licensee that workers continued to place SRPDs under their protective clothing. Specific exposure controls needing improvement were identified to the licensee by the

inspectors. These controls included improvement in positive control over very high radiation areas and placement and monitoring of SRPDs. Also, the requirements established to correct these problems should be formalized in approved procedures. The inspectors informed the licensee that these recurring problems would be reviewed during subsequent inspections and would be tracked by the NRC as IFI 50-269, 270, 287/89-19-01.

d. Control of Radioactive Material and Contamination, Surveys and Monitoring

(1) Surveys

During tours of Unit 2 containment and the Auxiliary Building, the inspectors performed radiation and contamination surveys. No discrepancies were noted between the surveys performed by the inspectors and licensee posted surveys.

(2) Area and Personnel Contaminations

The licensee continues to maintain 107,750 square feet (ft²) of controllable area in the radiation controlled area (RCA) of the plant. As of this inspection, 9 percent or 9,660 ft² of the RCA was contaminated. Contaminated areas have increased two percent since 1988.

The licensee had 159 personnel contaminations through June 4, 1989, with a goal of less than 200 for the year. Licensee representatives stated that a task team of five HP personnel would be reviewing trends from a new computerized trending program, and recommending corrective actions to reduce personnel contamination events. Previously used personnel contamination investigation forms were modified to include broader cause categories and provide detailed root causes of the events.

e. Transportation of Radioactive Materials

10 CFR 71.5 requires that licensees who transport licensed material outside the confines of its plant or other place of use, or who deliver licensed material to a carrier for transport, shall comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation in 49 CFR Parts 170 through 189.

10 CFR 71.91 specifies records that the licensee is required to maintain for each non-exempt shipment of radioactive material. The inspectors reviewed selected records of radioactive waste shipments made during the period of January to June 1989, and verified that the licensee had maintained the records required by 10 CFR 71.91.

The inspectors observed the performance of radiological surveys and the loading of a waste shipment, consisting of dry active waste (DAW) on June 14, 1989. The inspectors performed independent radiation surveys and verified that the radiation levels were within the limits specified in 49 CFR. The inspectors also reviewed the appropriate records for the shipment and discussed the shipment with licensee representatives.

The inspector reviewed the following plant procedures:

- ° HPP/O/B/1006/01, Procedure for Packaging and Shipment of Radioactive Materials
- ° HP/O/B/1006/01/A, Procedure for Packaging and Shipment of Radioactive Wastes
- ° HP/O/B/1006/02, Procedure for Receiving and Opening Packages Containing Radioactive Material
- ° HP/O/B/1006/10, Periodic Sampling of Radioactive Waste for 10 CFR 61 Scaling Factor Evaluation

The inspectors determined by review that the procedures were adequate and verified that the procedures were consistent with regulations.

No violations or deviations were identified.

3. Action on Previous Inspection Findings (92701)

- a. (Open) IFI 50-269/87-42-04. This originally was a four-part IFI regarding identified problems with the plant's breathing air systems. All parts have been closed except the updating of the location of breathing air manifolds on drawings to the as-built condition in the plant.

The licensee stated that current plans for a major modification of the breathing air system targeted the updating of drawings for September 1989. This item will remain open.

- b. (Closed) IFI 50-269/89-02-01. SRPDs worn inside protective clothing. Resident inspectors identified to the licensee that this practice was still a problem prior to this inspection. The inspectors verified that plant personnel (approximately 20-30 percent) wear personal monitoring devices (SRPDs) under protective clothing which, if read, increases the potential for personnel contamination.

The inspectors informed the licensee that this item will be closed and made a part of an exposure control problem as discussed in Paragraph 2.c.

- c. (Closed) IFI 50-269/87-02-02. Establish trending and analysis of personnel contamination events. Licensee representatives provided the inspector with data that verified the licensee has developed a program for reducing personnel contamination through trending and analysis of contamination events that is designed to result in corrective actions to reduce personnel contamination. This item is closed.
- d. (Closed) Violation 50-269, 270, 287/89-02-03. Failure to relabel hot spots on piping after shielding had been installed. The licensee's corrective action for the violation was to delete the procedure requirement for posting hot spots on piping after shielding was installed. The licensee stated that information for hot spots on piping would be displayed on rope barriers upon entry to the radiation/high radiation areas.

The inspectors verified that this action was taken as stated in the licensee's response to the violation. However, during the inspection, the inspectors noted that hot spot information on signs was limited due to the number of hot spots and relative small size of the radiation warning sign. Most radiation warning signs stated the general area radiation level and that a hot spot reading a certain mrem/hr was in the area or that there were unidentified hot spots in the area. The inspectors determined that the fundamental problem of not adequately informing the worker of radiation hazards present in the work area had not improved. Licensee representatives stated that HP technicians were required to point out hot spots for personnel in these areas and were held responsible.

4. Exit Interview

The inspection scope and findings were summarized on June 16, 1989, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below. Weaknesses were still observed in the external exposure control program. The inspectors requested the licensee to implement a requirement that a SRPD be worn on the outside of protective clothing to enable dosimetry monitoring. Licensee management committed to evaluate methods/requirements for implementation of monitoring SRPDs and for more positive exposure control in very high radiation areas. The licensee did not identify any of the materials provided to or reviewed by the inspectors during the inspection as proprietary. The licensee was informed the status of items discussed in Paragraph 3.

Item Number

Description and Reference

50-269, 270, 287/89-19-01

IFI - Improve procedure requirements for positive exposure controls in very high radiation areas and placement and monitoring of SRPDs.