



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

MAR 06 1992

Report Nos.: 50-269/92-06, 50-270/92-06, and 50-287/92-06

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: January 27-31, 1992

Inspectors:	<u>R. B. Shortridge</u>	<u>2/27/92</u>
	R. B. Shortridge	Date Signed
	<u>E. D. Testa</u>	<u>2/27/92</u>
	E. D. Testa	Date Signed

Accompanying Personnel: B. A. Parker
 Dr. B. S. Mallett

Approved by:	<u>J. P. Potter</u>	<u>3/2/92</u>
	J. P. Potter, Chief	Date Signed
	Facilities Radiation Protection Section	
	Radiological Protection and Emergency Preparedness Branch	
	Division of Radiation Safety and Safeguards	

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of occupational exposures during extended outages. Dr. B. S. Mallett made a one day tour of the facility as part of a management review.

Results:

Based on observation of outage activities, interviews with licensee management, supervision, and plant personnel; and a review of radiological records, the inspectors found the radiation protection program to be functioning satisfactorily to protect the health and safety of plant personnel and the public. The licensee's program to minimize personnel exposure continues to perform well. One non-cited violation (NCV) was noted when inspectors found several contaminated items in the clean area of the plant that were not labeled properly. The licensee took immediate corrective actions upon being notified (Paragraph 2e).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *H. Barron, Station Manager
- *T. Carroll, Radiation Protection Supervisor
- *J. Davis, Safety Assurance Manager
- *M. Patrick, Regulatory Compliance Manager
- *S. Perry, Regulatory Compliance
- *G. Rothenberger, Work Control Superintendent
- *C. Yongue, Radiation Protection Manager

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, and administrative personnel.

Nuclear Regulatory Commission

- *P. Harmon, Senior Resident Inspector
- *W. Poertner, Resident Inspector
- *B. Desai, Resident Inspector
- *B. Mallett, Deputy Director, Division of Radiation Safety and Safeguards

*Attended January 31, 1992 Exit Meeting

2. Occupational Exposure (83750)

a. Organization and Management Controls

The licensee is required by Technical Specification (TS) 6.1.1.3 to implement the minimum operating shift requirements specified in Table 6.1-1. The inspector reviewed the staffing levels and lines of authority as they relate to the radiation protection (RP) program and verified that the licensee had not made organizational changes that would adversely affect their ability to implement critical elements of the RP program.

TS 6.1.3.1 states that the Nuclear Safety Review Board (NSRB) shall function to provide independent review and audit of designated activities in the area of radiological safety.

The inspector reviewed QA audit NP-91-03(ON) performed by the Audit Division, Corporate Quality Assurance Department dated February 25, 1991. The audit addressed Radiation Protection and Chemistry

activities and was performed during the period January 7-17, 1991. The radiation protection audit activities included the following areas:

- Respiratory Protection
- Dosimetry
- Surveillance and Control
- Housekeeping and Cleanliness
- Body Burden Analysis
- Source Control and Leak Testing
- Measuring and Test Equipment
- High Radiation Area Access
- Qualifications and Training
- Liquid and Gaseous Waste Releases
- Procedures and Instructions
- Technical Specifications
- Count Room Activities
- Record Management
- Environmental Monitoring
- Corrective Action
- Radwaste Shipments
- Independent Spent Fuel Storage Installation
- ALARA

The one finding involved the lack of implementation of a calibration program for rotameters. Tours of the auxiliary building verified that the item had been closed out. Selective observations revealed that rotameters were in current calibration.

The inspector reviewed the qualifications of the audit team by reviewing their previous related work experience, current position and responsibility and education. The team was found well qualified to perform the radiation protection portion of the audit. Identified audit items were entered on a tracking system and had been assigned and/or closed out in a timely manner.

In addition to audits, the licensee utilizes Problem Identification Report (PIRs), and Radiological Work Practice Deficiency Reports (RWPDRs) to identify radiological deficiencies.

Prior to the inspection, the resident inspector requested the Region-based inspectors to review elements of the RP program to determine if radioactive spills and/or noble gas problems were leading to overall performance problems in the RP program. From a review of documentation in the PIR or RWPDR files, the inspector found documentation of one spill. However, in 1991, only 17 RWPDRs and four PIRs were written. Two of the PIRs were repeats of two of the 17 RWPDRs. While the PIRs and RWPDRs findings were substantive, they did not provide the information the inspectors were looking for and did not indicate any adverse trends in the RP program because there were so few reports written that trending was not possible.

A detailed review of the RWPDRs revealed that significant problems existed with the process of correcting problems with RWPDRs. Four of the 17 RWPDRs had no root cause listed nor corrective action, and no response by department level management. Three of the events occurred in September 1991 and one in December 1991. A second notice had been sent to department managers for two of the events and a third notice for response had been sent for the two remaining RWPDRs. In several of the RWPDRs, the root cause analyses performed for the events did not appear to address the true issues. For example, an operator had drained radioactive water directly onto the floor after having been instructed not to by HP. The root cause was listed as unnecessary pressure on the worker and bad drain design. The inspector determined that missing from the root cause was careless disregard for radiological requirements.

In discussions with the inspector, licensee management stated that identified deficiencies were frequently corrected outside of the documentation system and that reporting systems other than radiological may capture the documentation for some spills and system (radioactive gas) leaks.

A review of Section 8.1 of the Radiation Protection Manual, Review and Audit, dated April 8, 1991, the procedure that outlines the RWPDR system, revealed several inadequacies that may contribute to the problems identified. The inspector found that the program for identifying radiological deficiencies via RWPDRs was basically reserved for the RP department's HP technicians. Step 3.2.1.2 provided a wide range of radiological deficiencies to be covered by the RWPDR system. Step 3.2.1 stated that all deficiencies not acceptedly resolved within a reasonable time may be referred to the station manager. The inspector determined that unlike the self-identification of quality deficiencies the RWPDR system was open only to HP personnel. The procedure did not specify a time period for timely resolution of deficiencies, and there was no requirement for escalation to higher management for a deficiency that was not resolved in a timely manner.

Based on the review of the RWPDR portion of the licensee's program for self-identification of radiological deficiencies, the inspectors informed licensee management that plant management did not appear aggressive in following up identified deficiencies or utilization of the RWPDR system.

b. Training and Qualifications

The training and qualifications of station RP technicians were reviewed during the inspection. Various station technicians were interviewed and/or observed in the performance of their outage duties. All of those contacted/observed appeared to be adequately trained and qualified to complete their assigned duties.

The training and qualifications of RP vendor personnel were also reviewed during the inspection. Very brief training is required in this area since the licensee continues to have a high percentage of "return" vendors during outages who do not require retraining. For the two planned outages in 1991, the licensee had 84 percent and 99 percent returnees, respectively.

New incoming vendor technicians are required to take an entrance examination which tests their knowledge of radiation protection practices. Passing grade for a Senior Tech is 70 percent and a Junior Tech is required to make 50 percent.

Four new technicians were examined prior to their work in the latest outage and their test scores were reviewed by the inspector. Three of the four passed with 85 percent or better, but a Junior Tech made 50 percent. Although the individual passed the test, the inspector questioned the adequacy of the individuals knowledge and noted that 50 percent is a fairly low standard. The inspector also noted that retraining of vendors is limited. Site specific training is required if it has not been received within the last 12 to 15 months. If technicians have worked an outage at Oconee within the last 15 months, only training on changes and revisions is given. Reexamination with the entrance examination is not required. Once a technician has taken and successfully completed the exam at one of the three nuclear plants within Duke Power Company, the tech is considered trained within the system.

The inspector questioned the licensee about the low testing standard and the policy on retraining vendor personnel. The licensee agreed to evaluate their training program in order to assess the need for adjustments.

During processing in the station, site specific training was required for one of the inspectors. The licensee was unable to provide an instructor for approximately two hours. To complete training and processing an additional two and one half hours was required. Four video tapes with 10-15 minutes of verbal instruction in between tapes were required to cover radiation protection, security, etc., with badging, dosimetry, and whole body counting taking the remainder of time.

Training personnel were unavailable for most of the inspection so the lead inspector discussed the inordinate amount of time (4 1/2 hours) for gaining access to the station for inspection purposes with licensee management. The inspector informed licensee management that the majority of training material presented was generic and had been previously given to NRC inspectors during initial site access training. The inspector requested the licensee to review the content of site specific training for NRC and to consider revising training to include only pertinent, site specific information.

c. External Exposure Control

10 CFR 20.202 requires the licensee to supply appropriate monitoring equipment to specific individuals and requires the use of such equipment.

During tours of the Unit 2 containment and auxiliary building, the inspector observed that workers were wearing self-reading pocket dosimeters and that digital alarming dosimeters (DADs) were randomly used. The inspector learned that the licensee was utilizing approximately 60 DADs and had approximately 1,500 on hand that were to be issued after software is developed to support an automated access system.

The inspector performed radiation surveys inside the RCA and did not note any readings that were different from licensee postings. The inspector did not note any postings that were discrepant.

The inspector selectively reviewed the licensee's personnel dose record system and thermoluminescent dosimeter results (TLD) termination letters. It was noted by the inspector that the licensee did not include a telephone contact number on termination letters. At the inspector's request, the licensee agreed to evaluate the inclusion of a central telephone number so that any question concerning termination record doses can be expeditiously resolved. The inspector noted that TLD glow curve information was not currently stored nor available for retrieval. The licensee stated that the TLD processing system was undergoing change and upgrading, whereupon TLD glow curve records will be stored and available for retrieval. The change over to the new TLD system is scheduled for operation in 1993.

Review of plant computer dose records and termination letter records (Corporate) revealed some minor inconsistencies in data field display. The licensee planned to evaluate the feasibility of correcting the data field display inconsistencies during the next annual computer program revision.

d. Internal Exposure Control (83750)

10 CFR 20.103(a) states that no licensee shall possess, use or transfer licensed material in such a manner as to permit any individual in a restricted area to inhale a quantity of radioactive materials in any period of one calendar quarter greater than the quantity which would result from inhalation for 40 hours per week for 13 weeks at uniform concentrations of radioactive materials in air specified in 10 CFR Part 20, Appendix B, Table 1, Column 1.

10 CFR 20.103(a)(3) requires for purposes of determining compliance with the requirements of this section, the licensee to use suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas and in the body, measurements of radioactivity excreted from the body, or any combination of such measurements as may be necessary for the timely detection and assessment of individual intakes of radioactivity by exposed individuals.

The licensee's System Health Physics Manual requires that internal body-burden analyses (BBAs) be performed by RP on a routine basis, for all nuclear power station personnel who are assigned a personnel monitoring badge, or on a special basis for those persons who were or may have been exposed to radioactive materials in excess of applicable limits. BBAs are required to be performed upon employment initiation and termination, as well as, at least annually during employment.

A special BBA or Respiratory Evaluation (RE) is required to be performed if one of the aforementioned BBAs indicates any potential uptake or if warranted by certain other circumstances as indicated below.

These circumstances include:

- Random sampling
- Increased potential of uptake
- Area MPC > Equipment protection factor(s)
- Exceeding 35 MPC-hours in a 7-day period
- Iodine atmosphere > 100 MPC
- Facial contamination > 300 ccpm
- Skin contamination exceeds Station Action Level for particular nuclide(s)
- Other circumstances as deemed necessary by Radiation Protection

In the area of BBAs, a typical quarter for the licensee was the third quarter of 1991 in which a total of 1,530 BBAs were performed. Of the 1,530 BBAs, 463 were routine, 511 were initial and 479 were termination. In addition, 77 REs were performed. In all cases, including the 77 REs, no Station action levels were exceeded.

Further, as of November 30, 1991, the licensee had investigated a total of 203 positive BBAs in 1991. The positive BBAs typically involved minor uptakes of iodine-131, cesium-137, cobalt-60 and a dose of 8.8 millirem to the critical organ (thyroid) was calculated.

Based on a review of records and discussions with licensee representatives, it appears that the licensee maintains an adequate program for monitoring and controlling internal exposure.

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

TS 6.4.1 states that the station should be operated and maintained in accordance with approved procedures.

Oconee Radiation Protection Manual Procedure, Section 5.1, Movement of Radioactive Materials Within the Owner Controlled Area, dated August 15, 1989, Step 3.1.2.1, requires in part, that all radioactive materials removed from the radiological controlled zone shall be labeled.

The inspector performed radiological surveys both outside and inside the radiologically controlled area (RCA) of the station. All surveys were performed with a portable frisker with a pancake probe. The inspector did not locate any radioactive material outside the RCA. However, when surveying the primary chemistry laboratory, the inspector located two items of radioactive material. A lead brick used as a door stop, had levels of fixed contamination up to 50,000 dpm per probe area and a pair of needle nose pliers with up to 12,000 dpm per probe area. While both items were located inside the RCA, neither were labeled as required by RP procedure Section 5.1. HP technicians were informed of the finding and took immediate corrective actions to contain and label the items. Further surveys revealed that the floor area under the brick was contaminated.

The inspectors discussed the findings with Region II management regarding the scope of the surveys, findings, and corrective action taken when notified. The findings were considered to have minor safety significance and quick corrective action was taken. The licensee had responded to correcting a similar contamination control problem identified by the Resident Inspector. Therefore, this violation will not be cited because the licensee's efforts in correcting the violation meet the criteria specified Section V.A of the enforcement policy. (NCV 50-269/92-06-01).

The inspector reviewed the licensee's program to control contamination at its source. The licensee maintains six percent of the 107,750 square feet (ft²) RCA as contaminated. Personnel contamination events (PCEs) increased to 294 in 1991 from 141 in 1990. Licensee representatives stated that the installation of 23 sensitive (state of the art) personnel contamination monitors and a dual outage year were contributors to the increase in PCEs.

f. Program for Maintaining Exposure As Low As Reasonably Achievable (ALARA)

10 CFR 20.1(c) states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposure ALARA.

The licensee's program to reduce out-of-core source term and minimize collective dose continues to perform well. The licensee's three year per unit average of 183 person-rem is based on per unit averages of 228, 134, and 187 person-rem for the years 1989, 1990, and 1991 respectively. The licensee's collective dose goal for 1991 was 504 person-rem but this was exceeded by 56 person-rem as a result of three unscheduled outages.

During tours of the Unit 2 containment the inspector noted significant reductions in the ambient dose rates in the loop and basement area. Removal of the uncoated, 20 year old, hot leg shield blocks resulted in a decrease in general area dose rates from 150 mrem/hour to 45 mrem/hour. Some shield blocks had contact readings of up to 8,000 mrem/hour. The licensee estimated that replacement of the shield blocks in A and B cavity would result in a saving of 2.2 person-rem per outage. A significant reduction in dose rates in the basement of Unit 2 was realized by replacing the 4" diameter component Drain Header and the steam generator "J" leg drains. Dose rates in general areas have been reduced from several hundred mrem/hour to 30 to 60 mrem/hour in most areas. Dose rates were also reduced in Room 70A of the Auxiliary Building with the flushing and removal of highly radioactive resin drainlines. The licensee's program continues to be aggressive in implementing methods to reduce source term and collective dose. A rapidly changing Top Ten ALARA Action Item List is managed by the Station ALARA Committee and actively presents substantive dose reduction items for management's review and approval.

Currently the licensee uses only 50-60 digital alarming dosimeters, does not utilize closed circuit television cameras to facilitate remote monitoring of areas during normal operations, or a video disc type system to facilitate personnel pre-job briefings. All three methods are being developed by the licensee to improve their ALARA program. Since Unit 3 has the highest source term/radiation levels, the inspector discussed the particular importance of implementing the 1,500 digital alarming dosimeters, (already on site), for the upcoming Unit 3 refueling/maintenance outage.

The licensee's efforts to reduce source term and dose at Oconee through fuel reliability were reviewed during the inspection. According to the licensee, high priority was not given to fuel reliability prior to 1985. When the plant began to fall under the

industry average for Fuel Reliability Indicators, the licensee developed and implemented a program to improve fuel performance. The program included working with the fuel vendor to improve fuel design and enhancement of the fuel inspection process. In addition, methods for mitigating and preventing fuel failures were focused upon. In 1991, the licensee reached the goal of "zero leakers." According to the licensee, all fuel is fully inspected for defects and no known leakers are placed back into the reactor during refueling. As a result, at startup, no additional source term is added to the RCS due to leaking fuel. However, the licensee pointed out that leakers are only prohibited at startup and that, in all likelihood, a reactor would not be shutdown during power operation solely for the purpose of replacing suspected leaking fuel but, instead, would replace it during the next unit outage.

3. Exit Meeting

The inspectors met with licensee representatives denoted in Paragraph 1 on January 31, 1992. The inspector discussed the inordinate amount of time required for site access training and requested the licensee to reevaluate site access training for NRC inspectors. The inspectors summarized the scope of the inspection and discussed in detail the findings. The inspectors did not receive any proprietary information or dissenting comments from the licensee.

<u>Item Number</u>	<u>Description and References</u>
50-269/92-06-01	NCV - Failure to label radioactively contaminated material in the RCA (Paragraph 2e)