UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

SEP 27 1984

Report Nos.: 50-269/84-20, 50-270/84-19, and 50-287/84-21

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: August 20-24, 1984

Inspector: Roy C. Weddington 9/7/84
R. E. Weddington Date Signed

Accompanying Personnel: J. D. Buchanan

Approved by: L. R. Jenkins 9/7/84
G. R. Jenkins, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection entailed 40 inspector-hours on site in the areas of health physics and chemistry organization and management controls, training and qualifications, external exposure, internal exposure, control of radioactive material and transportation.

Results: Two violations were identified - failure to ensure that a radioactive material shipment complied with DOT shipping requirements, and two examples of failure to properly label containers of radioactive material.

REPORT DETAILS

1. Licensee Employees Contacted

   M. S. Tuckman, Station Manager
   C. T. Yongue, Station Health Physicist
   T. C. Matthews, Compliance Technical Specialist
   J. J. McCool, Quality Assurance Surveillance Supervisor
   R. T. Bond, Compliance Engineer
   T. S. Barr, Superintendent of Technical Services
   D. J. Berkshire, Health Physics Staff
   J. J. Sevic, Station Chemist
   C. C. Jennings, Compliance Staff
   R. P. Rogers, General Office, On-site Safety Review Group Chairman

   Other licensee employees contacted included engineers, technicians, and office personnel.

   NRC Resident Inspectors

   J. C. Bryant, Senior Resident Inspector
   L. P. King, Resident Inspector
   M. K. Sasser, Resident Inspector

2. Exit Interview

   The inspection scope and findings were summarized on August 24, 1984, with those persons indicated in paragraph 1 above. The following issues were discussed in detail: an apparent violation for failure to properly label two containers of radioactive material (paragraph 7.a); an apparent violation for failure to post a radiation area in two instances (paragraph 7.b); and an Unresolved Item* regarding the proper classification of a radioactive material shipment (paragraph 10).

   The licensee acknowledged the inspection findings and stated that they believed the two apparent violations were not appropriate on the grounds that sufficient information was provided to workers and that it was not practical to implement corrective actions to preclude recurrence.

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*An Unresolved Item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

In a August 28, 1984, telephone discussion, the inspector informed the station manager that, based on a Region II review of the circumstances concerning the radioactive material shipment, the unresolved item was converted to a violation. The licensee reiterated their position in regard to the two other apparent violations.

In a August 29, 1984, telephone discussion, the inspector informed the station health physicist that the method of posting a radiation area was not considered a violation based upon Region II review of the circumstances.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation 269/270/287/84-07-01 - Failure to perform adequate evaluation of dosimetry data. The inspector reviewed and verified the corrective actions as stated in Duke Power Company's letter of June 8, 1984.

(Closed) Violation 269/84-12-01, 270/84-12-01, and 287/84-14-01 - Failure to verify that a fuel shipment cask moderator was present and in proper condition prior to shipment. The inspector reviewed and verified the corrective actions as stated in Duke Power Company's letter of July 20, 1984.

(Closed) Violation 269/84-12-02, 270/84-12-02 and 287/84-14-02 - Failure in two instances to perform neutron radiation surveys. The inspector reviewed and verified the corrective actions as stated in Duke Power Company's letter of July 20, 1984.

4. Unresolved Items

(Closed) UNR 269/270/287/84-07-01 - Reporting of extremity radiation dose to terminated workers. Region II evaluation of the reporting procedure indicated that regulatory requirements were satisfied.

5. Organization and Management Controls (83722)

Technical Specification 6.1 describes the licensee's organization.

The inspector reviewed the licensee's organization, staffing level and lines of authority as they related to radiation protection, radioactive material control and plant chemistry, and verified that the licensee had not made organizational changes which would adversely affect the ability to control radiation exposures, radioactive material or plant chemistry.

No violations or deviations were identified.

6. Training and Qualification (83723)

a. Technical Specification 6.1.1.4 requires that each member of the facility staff meet the minimum qualifications of ANSI ANS-3.1-1978 for comparable positions.

Paragraph 4.5.2 of ANSI ANS-3.1-1978 states that technicians shall have a minimum of three years of working experience in their specialty. The inspector reviewed the experience and training records for selected health physics and chemistry technicians currently working at the station. The inspector discussed radiological controls for specific jobs with health physics technicians.

b. 10 CFR 19.12 requires the licensee to instruct all individuals working in or frequenting any portion of the restricted area in the health protection problems associated with exposure to radioactive material or radiation, in precautions or procedures to minimize exposures, and in the purpose and functions of protective devices employed, applicable provisions of Commission regulations, individual responsibilities and the availability of radiation exposure data.

The inspector discussed the radiation aspects of the general employee training program with licensee representatives and reviewed the lesson plans for the radiation protection training.

c. Technical Specification 6.1.1.5 states that a retraining and replacement training program for the facility staff shall be in accordance with ANSI ANS-3.1-1978. Paragraph 5.5 of ANSI ANS-3.1-1978 states that a training program shall be established which maintains the proficiency of the operating organization through periodic training exercises, instruction periods, and reviews.

The inspector reviewed the initial training program for new chemistry and health physics technicians. The licensee had also implemented a continuing qualification program consisting of training and evaluation on specific tasks related to their specialty. The inspector reviewed the training manual which described the specific tasks, discussed evaluations with chemistry and health physics personnel, and reviewed qualification records for selected tasks.

No violations or deviations were identified.

7. External Exposure Control (83724)

a. 10 CFR 20.203(f) specifies the labeling requirements for containers of licensed material.

During tours of the plant, the inspector performed independent radiation surveys and reviewed the labeling of containers of licensed material. In the Unit 3 auxiliary building, level 3, the inspector observed two large wooden boxes stacked inside of a rope barrier posted as a radiation area. The inspector observed that the bottom box was labeled as having radiation levels up to 600 millirem/hour at contact and that the top box was unlabeled. A licensee representative stated that both boxes contained radioactive control rod drive (CRD) mechanisms. The licensee then provided a label for the top box. Subsequent review of licensee survey records indicated that the boxes

had been in the area for approximately ten days and that two days prior to moving the boxes to the area that tags had been affixed.

The inspector also observed on the opposite side of the room a large metal box stenciled "production tools". A radioactive material tag on the top of the box indicated that the contact radiation levels were less than two millirem/hour at contact. The inspector surveyed the box using NRC Xetec 305B, portable beta-gamma survey meter, serial number 383, calibration due December 12, 1984. The inspector noted that the highest contact reading on the side of the box was 17 millirem/hour and 48 millirem/hour on the bottom. Licensee health physics personnel verified the radiation levels with their own survey instruments. The item in the box causing the elevated radiation levels was subsequently identified by the licensee as a pipe reducer that was reading in excess of 70 millirem/hour. The pipe reducer was in an open, untagged poly bag and had apparently been removed from a controlled area and transported to the tool box without health physics awareness.

The inspector informed the licensee that failure to properly label the one control rod drive mechanism box and the tool box were two examples of an apparent violation of 10 CFR 20.203(f) (VIO 269/84-20-02, 270/84-19-02, and 287/84-21-02).

The licensee stated that they believed that this was not a violation on the grounds that their periodic surveillances would have eventually discovered the items and that it was not reasonable to expect them to constantly maintain every item of radioactive material inside their controlled area tagged with current information. In a telephone conversation with licensee representatives on August 28, 1984, the licensee was informed that there had been no change in the Region II position.

b. 10 CFR 202.3(b) requires that each radiation area be conspicuously posted.

The inspector noted while performing radiation surveys of the control rod drive mechanism boxes that the radiation levels at the radiation area boundary posted around the boxes ranged to 20 millirem/hour. Radiation levels up to 5 millirem per hour were observed up to 12 feet from the posted boundary and included a portion of the main passageway. The inspector observed that the radiation levels in the vicinity of the box outside the posted barrier were significantly higher than in the remainder of the area. The inspector also observed that the doors to the auxiliary building, level 3 passageway were posted as a radiation area.

On a subsequent tour of the plant restricted area with licensee health physics representatives, the inspector noted on the auxiliary building, level 2, main passageway that general area radiation levels up to ten millirem/hour were present in the vicinity of the door to room 207, a

posted high radiation area used to store drums of high level waste. The general area dose rates in the remainder of the Unit 1 to Unit 3, level 2, main passageway were less than two millirem per hour. The survey was performed using a licensee Eberline RO-2A portable beta-gamma survey instrument, serial number 1428, calibration due September 11, 1984. The inspector observed that the doors to the auxiliary building, level 2, main passageway were posted as a radiation area and that additional information was annotated on the signs to indicate that the general area radiation levels ranged from two to 20 millirem/hour.

The inspector informed the licensee that failure to properly post the radiation areas in the vicinity of the control rod drive mechanism boxes and in the vicinity of Room 207, was an apparent violation of 10 CFR 20.203(b). The licensee took exception on the grounds that the entire auxiliary building was posted as a radiation area and that it was impractical to post all areas greater than 5 millirem/hour in the auxiliary building due to changing plant conditions and the resulting increased manpower required to perform sufficient radiation surveys to be constantly aware of all such areas.

On August 29, 1984, the inspector informed the station health physicist by telephone that this was not a violation since the doors to the auxiliary building passageways were posted with radiation area signs and because it appeared that, for those areas in question, practical efforts had been made to delineate the areas. The station health physicist stated that he would evaluate supplementing the existing postings with "hot spot" signs or similar postings to provide additional information to workers.

c. 10 CFR 20.202 requires that each individual who enters a restricted area and is likely to receive a dose in any calendar quarter in excess of 25 percent of the applicable radiation dose limit specified in 20.101, be supplied with appropriate personnel monitoring equipment.

The inspector reviewed selected records of personnel exposure, records of job radiation levels, and interviewed selected health physics technicians who had provided coverage for high exposure work to determine that appropriate dosimetry had been specified.

8. Internal Exposure Control (83725)

a. 10 CFR 20.103(a) establishes the limits for exposure of individuals to concentrations of radioactive materials in air in restricted areas. This section also requires that suitable measurements of concentrations of radioactive materials in air be performed to detect and evaluate the airborne radioactivity in restricted areas and that appropriate bioassays be performed to detect and assess individual intakes of radioactivity.

The inspector reviewed selected results of general in-plant air samples taken during August, 1984 and the results of air samples taken to support work authorized by specific radiation work permits.

The inspector reviewed selected results of bioassays (whole body counts) and the licensee's assessment of individual intakes of radioactive material performed during the period April to August, 1984.

b. 10 CFR 20.103(b) requires the licensee to use process or other engineering controls, to the extent practicable, to limit concentrations of radioactive material in air to levels below that specified in Part 20, Appendix B, Table I, Column 1, or limit concentrations when averaged over the number of hours in any week during which individuals are in the area, to less than 25 percent of the specified concentrations.

The use of process and engineering controls was discussed with the licensee, particularly in regard to radioactive iodine levels present in the reactor building during power operation personnel entries.

No violations or deviations were identified.

9. Surveys, Monitoring, and Control of Radioactive Material (83726)

a. 10 CFR 20.201(b) requires each licensee to make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations, and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

The inspector reviewed selected records of radiation and contamination surveys performed during the period May to August, 1984 and discussed the survey results with licensee representatives.

The inspector performed independent radiation surveys in the auxiliary building and in the restricted area outside the auxiliary building.

The inspector discussed with licensee representatives the method used to release material from the restricted area and from the plant site. The inspector performed independent radiation surveys of warehouses on the licensee's property outside the station fence. While surveying Warehouse 7, the inspector discovered a pallet of bags containing sandblasting sand that read 0.2 millirem/hour or 800 counts per minute on a RM-14 portable frisker. The sand was analyzed by the licensee and found to contain naturally occurring thorium. The licensee stated that this type of sandblasting sand had been used in the past in the turbine building.

The inspector toured the turbine building roof. In the vicinity of the auxiliary boiler, the inspector obtained several smears and a sample of encrusted tar-like debris in the vicinity of the boiler stack. The auxiliary boiler is used to incinerate radioactive contaminated waste

oil. The licensee evaluated the samples and determined the activity on the smears ranged from 66 to 117 disintegrations per minute and the debris sample was determined to contain Cs^{134}, Cs^{137}, and Co^{60}. Although the licensee did not have an established counting geometry for that type of sample, they estimated the specific activity as being approximately 550 picocuries per gram.

The inspector determined that this activity buildup had not been previously identified. The licensee stated that they would consider adding roof surveys to their on-site environmental surveillance program.

b. The inspector reviewed the following licensee calibration procedures:

HP/O/B/1004/32, Calibration Procedure: Eberline Model PNR-4 Portable Neutron Rem Counter

HP/O/B/1004/45, Calibration Procedure: Eberline Model PIC-6A Portable Ion Chamber

HP/O/B/1004/51, Calibration Procedure: Eberline Model RO-2A Ion Chamber

HP/O/B/1003/12, Calibration Procedure for the ND 6600 System Body Burden Analyzer With Multiple NaI Detectors

The inspector observed a licensee health physics technician perform a calibration of an Eberline RO-2A using the Sheppard radiac calibrator.

No violations or deviations were identified.

10. Transportation of Radioactive Material (86721)

10 CFR 71.5 requires that licensees who transport licensed material outside the confines of its plant or other place of use, or who delivers 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.

The inspector reviewed the shipping papers for a shipment of two boxes containing control rod drive mechanisms to Babcock and Wilcox refurbishment shop in Leechburg, Pennsylvania on August 23, 1984, under control number ONS-84-120.

The inspector noted that the manifest stated that the constituent nuclides in the radioactive material were Mn^{54}, Co^{58}, Co^{60}, Cs^{134}, and Cs^{137}. The inspector inquired how this had been determined. The licensee stated that the nuclides listed were the predominant isotopes found on routine smears taken over a period of time throughout the plant and that no specific isotopic data had been obtained from the mechanisms.

The inspector then reviewed a licensee survey data sheet dated August 11, 1984, which documented the contamination levels on the mechanisms after decontamination as being a maximum of 12,000 counts per minute. The inspector also observed that the data sheet indicated that the smears had not been evaluated for alpha contamination. The data sheet indicated that the surveys had been performed to support Special Radiation Work Permit (SRWP)-17. The inspector reviewed SWRP-17 and noted that the document was a blanket document for all radioactive material shipments. The SWRP indicated that alpha contamination evaluation was required and contained the special instruction to "evaluate all radiological conditions with respect to the source(s) of radiation and tasks being performed."

The licensee informed the inspector that the mechanisms had been removed from Unit 3 during the recent refueling outage. The inspector inquired as to the possibility of alpha contamination being present. The licensee stated that there had been a small percentage of failed fuel during the last Unit 3 fuel cycle and that a reactor coolant system sample had been obtained approximately ten days prior to the Unit 3 shutdown. The sample had been analyzed by an outside laboratory and had been found to contain a gross alpha activity of 5.8E-8 microcuries/milliliter.

The inspector noted that the survey data sheet dated August 12, 1984, also taken to support SWRP-17, indicated that the maximum radiation level on a mechanism was 800 millirem/hour which could not be attributed entirely to the relatively low contamination levels noted previously. The inspector stated that it was likely that a significant portion of the activity was due to neutron activation of the mechanisms.

The inspector observed that the shipment had been classified as low specific activity (LSA). The total activity of the shipment was 554.69 millicuries and the gross weight was 3400 pounds. The specific activity of the shipment was therefore 4E-4 millicuries/gram. 49 CFR 173.403(n)(4) gives the definition of LSA as radioactive material whose specific activity is less than or equal to 1E-4 millicuries/gram if the A2 value of the material is less than or ecual to 5E-2 curies.

49 CFR 173.433(b)(6) states that when the identity of the radionuclides in the radioactive material is not known, an A2 value of 2E-3 curies will be used unless alpha emitters are known to be absent, in which case an A2 value of 4E-1 curies will be used.

The inspector stated that this matter would be designated as an Unresolved Item pending Region II review of the shipping papers and supporting documents. In a telephone conversation with the licensee on August 28, 1984, the inspector informed the station manager that they had not made an adequate evaluation of the shipment classification prior to shipping the material. The constituent nuclides and absence of alpha emitters in the radioactive material had not been determined. The licensee, therefore, failed to verify that their shipment met LSA criteria since the definition

of LSA and A2 value that was appropriate for this shipment indicated that the specific activity of the material was four times the LSA limit. The Unresolved Item as therefore converted to a violation of 10 CFR 71.5 (VIO 269/84-20-01, 270/84-19-01, and 287/84-21-01).