



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

Report Nos.: 50-269/78-27, 50-270/78-26 and 50-287/78-27

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

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

Licensee: Duke Power Company
Post Office Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Facility Name: Oconee Nuclear Station

Inspected at: Oconee Site, Seneca, South Carolina

Inspection conducted: October 30 - November 3, 1978

Inspectors: C. M. Hosey
D. M. Collins

Accompanying Personnel: A. F. Gibson

Reviewed by: A. F. Gibson
A. F. Gibson, Chief
Radiation Support Section
Fuel Facility and Materials Safety Branch

12/4/78
Date

Inspection Summary

Inspection on October 30 - November 3, 1978 (Report Nos. 50-269/78-27, 50-270/78-26 and 50-287/78-27)

Areas Inspected: Routine, unannounced inspection of radiation protection program, including qualification of personnel, licensee audits, health physics instruments and equipment, exposure records, posting, labeling and control of radiologically controlled areas, posting of notices, leak test of radioactive sources and notifications and reports; radioactive waste management program, including effluent control instrumentation, testing of containment air-cleaning systems and solid radioactive waste processing and disposal; review of IE circulars and bulletins and follow-up on previously identified items. The inspection involved 68 inspector-hours on-site by two NRC inspectors.

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Results: Of the thirteen areas inspected, no apparent items of noncompliance or deviations were found in eleven areas; one apparent item of noncompliance was found in each of two areas (infraction - failure to follow procedures for transferring evaporator concentrates and calibrating survey instruments (269/287/78-27-02; 270/78-26-02), paragraphs 6 and 12; infraction - failure to keep entrance to high radiation area locked (269/287/78-27-01; 270/78-26-01), paragraph 5).

DETAILS I

Prepared by: C. M. Hosey
C. M. Hosey, Radiation Specialist
Radiation Support Section
Fuel Facility and Materials
Safety Branch

11/30/78
Date

D. M. Collins
D. M. Collins, Radiation Specialist
Radiation Support Section
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12/4/78
Date

Dates of Inspection: October 30 - November 3, 1978

Reviewed by: A. F. Gibson
A. F. Gibson, Chief
Radiation Support Section
Fuel Facility and Materials
Safety Branch

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1. Individuals Contacted

- *J. E. Smith, Station Manager
- *R. M. Koehler, Superintendent of Technical Services
- *C. T. Yongue, Station Health Physicist
- *L. A. Blue, Health Physicist
- S. R. Newcomb, Junior Health Physicist
- J. Owens, Health Physics Supervisor
- G. F. Davis, Health Physics Supervisor
- R. Adams, I&C Engineer
- W. Morgan, Unit 1 Shift Supervisor
- *R. T. Bond, Technical Services Supervisor
- R. E. Foy, Chem-Nuclear Services Engineer
- R. Wieland, Utility Operator
- *N. Pope, Superintendent of Operations
- D. L. Davidson, Health Physics Supervisor
- R. L. Clemmer, Health Physics Supervisor
- G. Davenport, Performance Engineer
- R. Todd, Performance Engineer
- T. Barr, Performance Engineer

The inspectors also talked with and interviewed other licensee employees, including health physics technicians, shift supervisors and plant operators.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (73-12-01): Correlation of Radiation Monitor and Laboratory Results. An inspector selectively reviewed the correlation of radiation monitors RIA-43, 44, 45, 46, 47, 48, 49 and 53 and laboratory results completed during 1978 and had no further questions.

3. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance or deviations. One unresolved item was identified during this inspection.

269/287/78-27-03; 270/78-26-03 Calibration of Effluent Radiation Monitors

Records documenting the calibration of Radiation Monitor RIA-33 and 38 were not readily available for review. Failure to maintain records of radiation monitor calibrations would be in noncompliance with Technical Specification 6.5.2. This item is discussed further in paragraph 4.

4. Effluent Control Instrumentation

- a. On November 2, 1978 an inspector reviewed the setpoints established for radiation monitors RIA-38 and RIA-45 for a gaseous release (GWR No. 78-434) made that day. During a check of the monitors in the Unit 1 and 2 control room, the inspector noted that RIA-38 had been set to alarm at 1700 cpm. However, the multipoint recorder indicated the maximum count rate during the release was 10,000 cpm. The Unit 1 shift supervisor stated that no alarm had occurred. A review of the Unit 1 computer list out verified no alarm had occurred. A check of RIA-38 and the multipoint recorder revealed that a microswitch in the multipoint recorder stuck when the count rate on RIA-38 increased, causing the recorder to readout RIA-48 as RIA-38. The problem with the recorder was corrected on November 3, 1978. The inspector selectively reviewed the monitor setpoints and correlation of monitor readout and laboratory analysis for other gaseous waste releases and had no questions.
- b. The inspector reviewed plant procedures IP/O/A/0360/04A "LWD Radiation Monitor Calibration (RIA-33 and -34)," IP/O/A/0360/04D "RIA-38 Waste Gas Disposal Monitor," IP/O/A/0360/19 "Process Radiation Monitoring System RIA-33 and -34 Monthly Functional Check" and verified that the checks, test and calibrations required by Technical Specifications were included in the procedures. The

inspector ask to see the records of the two most recent monthly functional test performed for RIA-33 and -38, however at the time of the inspection the records were not readily available for review. A licensee representative stated that the I and E Shop records indicated the test had been performed, but copies of the completed procedures could not be located. The inspector stated that the item would be unresolved (269/287/78-27-03; 270/78-26-03) pending review of the functional test records.

5. Posting and Control

The inspector reviewed the licensee's posting, and control of radiation areas, high radiation areas, airborne radioactivity areas, contamination areas and radioactive material areas during tours of the auxiliary building. During a tour on November 2, 1978, the door at the south end of Room 121, decay heat cooler room was found open. The door was posted with a high radiation area sign. The highest radiation level in the room was 500 mr/hr. The door was not being used for access to the area. The inspector stated that failure to maintain the access to the high radiation area locked, except during periods when access to the area is required, is in noncompliance (269/287/78-27-01, 270/78-26-01) with 10 CFR 20.203(c).

6. Solidification of Radioactive Waste

Technical Specification 6.4.1 states, in part, that the station shall be operated and maintained in accordance with approved procedures. Step 3.1 to plant procedure OP/O/A/1104/33 "Transfer of Liquid Waste Concentrates to Mobile Unit" states "Complete Valve Checklist Enclosure 6.1." The inspector discussed the transfer of evaporator concentrates to the mobile solidification unit with a licensee representative. During this discussion the inspector asked to see a copy of the completed valve checklist for a transfer made on October 29, 1978. The licensee representative stated that the checklist was not completed when transfers were made; however the checklist was used when verifying valve positions prior to the transfer. A licensee representative acknowledged that records were not available for previous transfers made during the month of October. The inspector stated that failure to followed the procedure was in noncompliance (269/287/78-27-02); 270/78-26-02) with Technical Specification 6.4.1.

7. IE Circulars and Bulletins

- a. Circular 78-03, "Packaging Greater Than Type A Quantities of Low Specific Activity Radioactive Material for Transport." An inspector reviewed selected radioactive shipment records for 1978 and discussed the solid waste disposal program with a licensee

representative. The shipping records reviewed indicated that shipments had apparently been made in accordance with 10 CFR 71 and 49 CFR requirements. Since Chem-Nuclear Services takes possessions of evaporator concentrates on site and acts as the shipper, the inspector reviewed selected Chem-Nuclear shipping records for evaporator concentrates and had no questions.

The inspector toured the Chem-Nuclear solidification unit and discussed the operation of the unit with a Chem-Nuclear representative. The inspector discussed IE Circular 78-03 with a licensee representative. The inspector observed the shipout of high level waste on November 1, 1978. The shipment required the use of a NRC approved specification container. The licensee representative was questioned concerning compliance with the special requirements for the container listed in the certificate of compliance. The licensee representative stated that a copy of the certificate was not available at the plant, however a copy was on file at the corporate office. The specific requirements of the certificate were obtained from the corporate office by telephone. The inspector stated that copies of certificate of compliance for NRC approved containers should be available at the plant to ensure the special requirements of the certificates are complied with for each shipment of greater than type A quantities of radioactive material.

- b. Bulletin 78-07 "Protection Afforded by Air-line Respirator and Supplied-Air Hoods." The inspector discussed Duke Power Company's letter of July 11, 1978 in response to the subject bulletin. Supplied-air hoods, half-mask face pieces and full face pieces operated in the demand mode are not utilized by personnel at Oconee. The inspector had no further questions.
- c. Bulletin 78-08 "Radiation Levels from Element Transfer Tubes." The inspector discussed Duke Power Company's letter of August 11, 1978 in response to the subject bulletin and review the results of radiation surveys performed in the fuel transfer tube area during the recent refueling outage of Unit 1. The highest radiation levels were encountered at the 2 inch wide seismic gap between the transfer tube shield and the reactor building wall. A licensee representative stated that Units 2 and 3 are of similar design and the same condition would be expected to exist. The licensee representative stated that the areas that are greater than 100 mr/hr would be controlled as high radiation areas as required by 10 CFR 20.203(c). The inspector had no further questions.

8. In-Place Filter Testing

a. Prerequisite Tests (77-16/1)

This item was originally discussed in IE Report Nos. 50-269/77-16, 50-270/77-16 and 50-287/77-16 and concerns prerequisite tests of filter systems. The inspector toured the facility and observed the Units 1 and 2 Reactor Building Purge and Spent Fuel Pool ventilation systems, the Units 1 and 2 Penetration Room ventilation system, the Units 1 and 2 Penetration Room ventilation system, the Units 1 and 2 Control Room ventilation system, and the Hydrogen Purge system. The inspector discussed the prerequisite tests specified in ANSI-N510-1975 with licensee representatives. The inspector reviewed the record "Air Filter Test, Reactor Building Purge System" dated October 6, 1972. Licensee representatives and management stated that those prerequisite tests recommended by their ventilation system consultant would be performed even though tests specified in ANSI-N510-1975 were not required by Technical Specifications. (269/287/78-27-04; 270/78-26-04) The inspector had no further questions.

b. Annual Filter Tests

The inspector discussed the annual testing of filters with licensee representatives. The inspector examined the filter efficiency test results in the following procedures and reports:

"In-Place Testing of Reactor Building Purge Exhaust for Duke Power Company at Oconee Nuclear Station Unit No. 2" dated April 20, 1978.

"Reactor Building Purge Filter Test" dated June 27, 1978, for Unit 3.

"Reactor Building Hydrogen Purge Filter System Test" dated July 1, 1977.

"Penetration Room Ventilation System Filter Tests" dated June 28, 1978, for Unit 3.

"Control Room Filter System Test" dated June 28, 1978, for Unit 3.

"Penetration Room Filter Tests" dated June 24, 1977, for Unit 2.

"Reactor Building Purge Filter Test" dated January 6, 1978, for Unit 2.

"Control Room Filter System" dated June 28, 1978, for Unit 1.

"Penetration Room Ventilation System Filter Test" dated June 30, 1978, for Unit 1 (A Train)

"Penetration Room Ventilation System Filter Test" dated June 30 -July 1, 1978, for Unit 1 (B Train)

"Reactor Building Purge Filter Test" dated August 6, 1977, for Unit 1.

The licensee was required by Technical Specifications 4.5.3, 4.12, 4.14 and 4.4.3 to test filter systems. No items of noncompliance or deviations were observed by the inspector.

9. Personnel Qualifications

The inspector discussed the training and qualification program for health physics personnel with licensee representatives. The inspector discussed training received with two health physics technicians. The inspector reviewed selected sections of the documents "Nuclear Station Training Plan" and "Technical Training - Health Physics". The inspector examined the training and qualification records for selected, newly hired health physics technicians. The licensee was required by Technical Specification 6.1.1.4 to have personnel incorporated in the station staff meeting the training and experience requirements of ANSI N18.1-1971. No items of noncompliance or deviations were observed by the inspector.

10. Licensee Audits

The inspector discussed the audits of health physics operations with licensee representatives. The inspector examined results of the audits conducted from August 21 through September 15, 1978, and October 10 through 21, 1977. The inspector noted licensee identified items. The licensee was required by Technical Specification 6.1.3.4 to perform audits. The inspector had no further questions.

11. External Radiation Dose Control

a. Dosimetry Results

The inspector observed workers wearing TLD badges and pockets dosimeters. The inspector discussed the radiation dose monitoring program with workers and licensee representatives. The inspector examined, for selected employees, the computer printout of doses for the first and second quarters of 1978, the daily exposure control report for November 1, 1978, and for, selected individuals

whose dose was above that specified in 10 CFR 20.101(a) but below that in 20.101(b), the NRC Form 4's. The inspector examined printouts of dose by radiation work permit and by work group. The inspector discussed steps taken by the licensee to limit dose for selected work assignments. The licensee was required by 10 CFR 20.101, .102, .202 and .401 to monitor and limit radiation doses. No items of noncompliance or deviations were observed.

b. Investigations

The inspector reviewed the reports in the file "Report of Possible Overexposure Investigation" for the period July 2 through April 8, 1978. The licensee was required by 10 CFR 20.201(b) to perform surveys to assure compliance with 10 CFR 20. The inspector noted results of an investigation initiated because of whole body counts. The analysis of exposure done by the licensee was based on the concentrations in the area where the individuals were exposed and the estimated time in the area. The inspector discussed the evaluation with licensee representatives. The inspector stated that the analysis should also include an evaluation of MPC-hour exposure based on the body counts. The inspector had no further questions.

12. Instrument Calibration

a. The inspector toured work areas and observed the operation, alarm set-points, and calibration stickers for radiation survey instruments. The inspector checked the battery status and source check point for selected instruments in the health physics office. The inspector discussed the radiation survey instrument calibration program with the health physics technician and an electronics technician who performed the calibrations. The inspector observed the operation of the source well used for instrument calibration. The inspector requested and observed radiation level surveys made on the floor above the calibration well.

b. The inspector examined the following procedures:

"Calibration Procedure for Portable Neutron Survey Instruments" dated May 25, 1978

"Calibration Procedure for Portable Ionization Chamber Instruments" dated May 25, 1978.

"Calibration Procedure for Portable GM Survey Instruments" dated May 25, 1978

The inspector noted that the procedures did not specify a calibration frequency and that the procedures required that the instruments be calibrated according to the specific instrument technical manuals. The inspector reviewed the calibration sections of the instrument manuals listed below.

"Instruction Manual for Model 497 Portable Exposure Rate Survey Meter," undated

"Servicing Information for the Teletector Model 6112," undated

"Technical Manual for the Geiger Counter Model E-120/E-120G" dated June 23, 1975

"Portable Neutron Rem Counter Model PNR-4" dated March 30, 1976

The inspector examine calibration records for selected survey meters for the third and fourth quarters of 1977 and the third and fourth quarters of 1978, and for the fourth quarter for selected pocket chambers. The licensee was required by Technical Specification 6.4.1 to follow radiation protection procedures.

- c. The manual for the Model 497 required that the instrument be viewed at a distance during source exposure, that the person doing the calibration not stand in or place hands in the beam, and that the meter be exposed to an exposure rate between 100 R/hr and 1000 R/hr. Discussions with licensee representatives and review of records showed that for the highest exposure rate available, approximately 70 R/hr, the instrument was viewed at arms length, that the person doing the calibration placed his hands in the beam, and that no calibration was made in the 100 R/hr and 1000 R/hr range.
- d. The manual for the Teletector required that a dose rate of 750 R/hr be used in the setting of potentiometer. This dose rate was not available from the source well for calibration of the instrument.
- e. The manual for the PNR-4 required that the licensee determine the operating voltage using a gamma source or gamma and neutron sources. Licensee representatives stated that the operating voltage was not determined using sources each time the instrument was calibrated.
- f. Licensee representatives and management were informed that failure to follow calibration procedures would be considered an item of noncompliance (269/287/78-27-02; 270/78-26-02) with Technical Specification 6.4.1.

- g. The inspector discussed the source well and procedures used to calibrate the radiation detection instrument, noting that manufacturers' instrument manuals often are vague and offer several alternate methods for calibrating and instrument. The inspector noted that the instrument manual procedures do not discuss the specific equipment to be used and do not contain precautions necessary for use of sources. The inspector also noted that the calibration equipment and procedures in use required the person doing the calibrating to stand in a radiation field of 4 R/hr and to place his hands in an approximately 70 R/hr field when calibrating high ranges on the instruments. The inspector examined records of the radiation doses to the technician who calibrated the instruments and noted a whole body dose of 2125 mrem for the year and a dose of 1100 mrem to the extremities for the month of September. The inspector questioned whether the doses were being maintained as low as reasonably achievable. Licensee representatives stated that they had recognized the need for modification of the well or increased source size in order to reduce radiation doses. The inspector examined a letter dated October 16, 1978, from the plant to corporate headquarters requesting assistance in the design of a source well, type of source to be obtained, and in reducing dose to the technician. The inspector had no further questions.

13. Sealed Source Leak Tests

The inspector discussed the sealed source leak test procedures with a health physics technician. The inspector reviewed the procedure "Health Physics Source Handling Procedure." The inspector selected source numbers from sources in the source storage room and checked the file "1978 Source Leak Check" for these sources to assure that checks were done as required by Technical Specification 4.1.6. The inspector noted licensee identified items. The inspector had no questions.

14. Other Areas Inspected

The following additional items were reviewed by the inspectors with no deviations or noncompliance items identified:

- a. Posting of Notices required by 10 CFR 19.11
- b. Keowee Hydro Dam leakage flow rate test required by Technical Specification Table 4.1-3.

15. Exit Interview

At the conclusion of the inspection on November 3, 1978, the inspectors met with management representatives (denoted in Paragraph 1). The inspectors summarized the scope and findings of the inspections. Items discussed included two items of noncompliance and one unresolved item.