



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

JUN 05 1985

Report Nos.: 50-369/85-15 and 50-370/85-16

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

Docket Nos.: 50-369 and 50-370

License Nos.: NPF-9 and NPF-17

Facility Name: McGuire

Inspection Conducted: May 6 - 9, 1985

Inspector: *CM H*  
T. R. Collins

5-31-85  
Date Signed

Accompanying Personnel: B. K. Revsin

Approved by: *CM H*  
C. M. Hosey, Section Chief  
Division of Radiation Safety and Safeguards

5-31-85  
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 33 inspector-hours on site during regular hours inspecting: radiation protection program including instruments and equipment used for radiation protection of personnel; posting, labeling, and control of radiological control areas; radiation work permit controls; shipment of radioactive materials; internal and external exposure controls; training and qualifications of personnel; as low as reasonably achievable (ALARA) program; previously identified inspector followup items, and IE Information Notices.

Results: No violations or deviations were identified.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*T. L. McConnell, McGuire Station Manager
- \*D. Mendezoff, Engineering Specialist, Compliance
- \*B. Hamilton, Superintendent, Technical Services
- \*G. Terrell, Coordinator, Health Physics
- J. W. Foster, Station Health Physicist
- \*C. H. Bailey, Supervisor, Dosimetry Records
- D. F. Adams, Supervisor, Health Physics
- J. S. Mooneyhan, Supervisor, Health Physics
- D. C. Britton, Supervisor, Health Physics
- L. E. Haynes, Health Physics Staff
- L. J. McKenzie, ETQS
- D. Franks, Supervisor, QA Surveillance

Other licensee employees contacted included three construction craftsmen, six technicians, one operator, two mechanics, three security force members, and three office personnel.

#### Other Organizations

NUMANCO, Inc.

#### NRC Resident Inspectors

- \*W. Orders, Senior Resident Inspector
- \*R. Pierson, Resident Inspector

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on May 9, 1985, with those persons indicated in paragraph 1 above. The inspector discussed with licensee representatives the worker respirator usage qualifications through test and evaluation after training. The licensee acknowledged the inspector's comments.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

### 3. Licensee Action on Previous Enforcement Matters

(Closed) Violation 50-269/84-07-01, 02, and 03; 50/270/84-07-01, 02, and 03: failure to comply with 10 CFR 20.201, violation of Technical Specifications 6.11 for inadequate dosimetry procedure, and violation of Technical Specifications 6.12.2 for failure to post steam generator manway with flashing lights. The inspector reviewed and verified the corrective actions as stated in Duke Power Company's letter of August 2, 1984.

### 4. Training and Qualifications (83723)

#### a. Basic Radiation Protection Training

The licensee was required by 10 CFR 19.12 to provide basic radiation protection training to workers. Regulatory Guides 8.27, 8.29, and 8.13 outline topics that should be included in such training. Chapters 12 and 13 of the FSAR contain further commitments regarding training. The inspector discussed the initial and refresher general employee radiation protection training (GET) with the Training Supervisor and reviewed lesson plans to determine what changes had been made in GET training and the scope of these changes. During tours of the plant, the inspector discussed topics from the GET training with an auxiliary operator and a maintenance mechanic to determine the effectiveness of the training. The inspector reviewed the GET training records for selected individuals to determine if records reflected adequate completion of GET initial and refresher training.

#### b. Radiation Protection and Chemistry Technician Qualification

The licensee was required by Technical Specification 6.3 to qualify radiation protection and chemistry technicians in accordance with ANSI 18.1. The inspector discussed with selected technicians controls established for certain radiation work permits (RWP). The inspector discussed with the technicians their training and qualification program. The inspector discussed the qualification program with one recently qualified radiation protection technician. The inspector reviewed the training records for these technicians to assure all topics were completed. The inspector discussed, with one radiation protection technician-in-training, the qualification program and assignments to assure that they had not been assigned to work independently and had been qualified for assigned tasks.

The inspector reviewed the program for qualification of contract radiation protection technicians and contract chemistry technicians. The inspector discussed separately with two contract technicians their previous experience and training to determine if it was comprehensive or if it had been limited to selected tasks. The inspector also discussed the training and qualification program the licensee had

provided, what limits had been placed on their activities, and controls that should be established for one task they were qualified to perform. The inspector reviewed the resumes, training records, and tests for these technicians.

c. Radiation Protection and Chemistry Foreman Qualifications

Technical Specification 6.3 required that radiation protection and chemistry supervisory staff have four years experience in their specialty. The inspector discussed, with one recently appointed foreman from the radiation protection department, training and experience and selected duties and responsibilities of the respective position. The inspector reviewed the records of this individuals' experience.

d. Radiation Protection Manager Qualifications

Technical Specification 6.3 required that the individual filling the position of Station Health Physicist meet the qualifications for a Radiation Protection Manager specified in Regulatory Guide 1.8. The inspector discussed with the recently appointed Radiation Protection Supervisor his training and experience and reviewed the records of his qualifications.

e. Respiratory Protection Training

The licensee was required by 10 CFR 20.103 to establish a qualification program for workers who wear respiratory protection equipment. Elements of the qualification program outlined in 10 CFR 20.103 are delineated in NUREG-0041. The inspector discussed the respiratory protection program with the cognizant Radiation Protection Supervisor and the Station Health Physicist. The inspector was informed by licensee representatives that upon completion of the respiratory protection training, no testing or evaluation of the training was performed. The inspector stated that adequate evaluation should be conducted to assure that personnel completing the training are qualified to wear respiratory protection equipment. The licensee committed to a review of this issue with the view of incorporating respiratory protection training testing for all workers who use respiratory devices, both for health physics purposes as well as industrial hygiene purposes. The inspector informed licensee representatives that this area would be reviewed in subsequent inspections (Inspector Followup Item 50-369/85-15-01, 50-370/85-16-01).

No violations or deviations were identified.

## 5. Organization and Management Controls (83722)

### a. Organization

The licensee was required by Technical Specification 6.2 to implement the plant organization specified in Figure 6.2-1. The responsibilities, authorities, and other management controls were further outlined in Chapters 12 and 13 of the FSAR. Technical Specification 6.5.2 specified the members of the Nuclear Safety Review Board (NSRB) and outlined its functions and authorities. Regulatory Guide 8.8 specified certain functions and responsibilities to be assigned to the Radiation Protection Manager and radiation protection responsibilities to be assigned to line management.

The inspector reviewed recent changes to the plant organization, to determine their effect on plant radiological controls, by examining the resulting changes to administrative procedures and position descriptions and discussing the changes with the Radiation Protection Manager.

The inspector discussed with a radiation protection foreman, and shift foremen, the type, methods of, and degree of interaction between plant groups. The inspector discussed with the Radiation Protection Manager and selected Radiation Protection Supervisors and Foremen, how frequently they toured the plant and radiation control areas.

### b. Staffing

Technical Specification 6.2.2 specified minimum plant staffing. FSAR Chapters 12 and 13 also outlined further details on staffing. The inspector discussed authorized staffing levels vs. actual on-board staffing separately with the Radiation Protection Supervisor. The inspector examined shift staffing for the midnight shift on May 8, 1985, to determine if it met minimum criteria for radiation protection.

No violations or deviations were identified.

## 6. Control of Radioactive Materials and Contamination, Surveys, and Monitoring (83726)

The licensee was required by 10 CFR 20.201(b), 20.403, and 20.401 to perform surveys to show compliance with regulatory limits and to maintain records of such surveys. Chapter 12 of the FSAR further outlines survey methods and instrumentation. Technical Specification 6.11 required the licensee to adhere to written procedures in radiation protection. Radiological control procedures further outlined survey methods and frequencies.

### a. Surveys

During plant tours the inspector observed surveys being performed by the radiation protection staff. The inspector reviewed selected Radiation Work Permits (RWP) and the control specified thereon. The



RWP system and controls were discussed with the Station Health Physicist. Several workers in Unit #1 containment were questioned as to the RWP they were working on and the requirements specified by the RWP. In all cases, workers were knowledgeable of their RWP and its requirements. The inspector performed independent radiation level surveys.

During plant tours, the inspector observed radiation level and contamination survey results outside selected cubicles. The inspector performed independent radiation level surveys of selected areas and compared them to licensee survey results. The inspector noted that all locked high radiation areas observed in the auxiliary building were locked as required by Technical Specification 6.12. The licensee was exercising the option specified in Technical Specification 6.12.2 whereby in lieu of stay time specification on the RWP, direct or remote continuous surveillance for individuals accessing a high radiation area greater than 1Rem/hr may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities within the area.

b. Frisking

During tours of the plant, the inspector observed the exit of workers from the Reactor Building and from the Auxiliary Building to clean areas to determine if proper frisking was performed by workers. In general, personnel frisking appeared adequate to detect station action levels should contamination be present. Discussions with licensee representatives showed that incidents of skin contamination had been promptly removed from the workers using routine washing techniques. Subsequent whole body counts showed less than detectable internal deposition of radioactive material.

c. Instrumentation

During plant tours, the inspector observed the use of survey instruments by plant staff and compared plant survey meter results with results of surveys made by the inspector using NRC equipment. The inspector examined calibration stickers on radiation protection instruments in use by licensee staff and at frisker stations located throughout the plant. The inspector discussed with radiation protection technicians the methods for performing instrument source checks prior to each issuance from the health physics instrument issuance room.

No violations or deviations were identified.

7. Facilities and Equipment (83727)

FSAR Chapters 1 and 12 specified plant layout and radiation protection facilities and equipment. During plant tours, the inspector observed the operation of the contaminated clothing laundry, the flow of traffic through change rooms, the use of temporary shielding and the use of glove bags, and ventilated containment enclosures.

No violations or deviations were identified.

8. Audits

The licensee was required by Technical Specification 6.5.2.9 to perform audits of radiological controls and chemistry operations. The inspector reviewed audits of the radiation protection operations during 1984 and 1985. The inspector discussed the results of these audits with the Supervisor, Quality Assurance (QA) Surveillance. These discussions revealed that the audits were conducted by plant staff lacking technical backgrounds in the area of radiation protection and controls. The QA Surveillance Supervisor indicated that a 46 week training program had been initiated in January 1985, and that two members of the QA Surveillance staff were in attendance. It was further stated that the remainder of the staff would be rotated through the training program on a staggered basis.

No violations or deviations were identified.

9. Transportation (86721)

The licensee was required by 10 CFR 71.5 to prepare shipments of radioactive material in accordance with Department of Transportation regulations. The inspector observed the preparation of a shipment of Reactor Coolant System filters and discussed the shipment with the shipping supervisor and radiation protection technicians. The inspector reviewed the procedure under which the shipment was made and the resulting documentation. The inspector made confirmatory radiation level measurements of the shipment. The inspector reviewed recent changes to shipping procedures and records of shipments of radwaste for the month of January to April 1985. The inspector verified that the licensee was registered with the NRC for packages used. Also the inspector reviewed with the licensee the total cubic feet of radwaste shipped for the calendar year 1984, which was 14,304 ft<sup>3</sup> with a total activity of 1.89 x 10<sup>6</sup> mCi. The inspector determined that the volume shipped for burial for the year of 1984 was comparable with other facilities of the same size.

No violations or deviations were identified.

10. External Occupational Dose Control and Personal Dosimetry (83724)

During plant tours, the inspector checked the security of the locks at selected locked high radiation areas and observed posting of survey results and the use of controls specified on three radiation work permits (RWPs).

a. Use of Dosimeters and Controls

The licensee was required by 10 CFR 20.202, 20.201(b), 20.101, 20.102, 20.104, 20.402, 20.403, 20.405, 19.13, 20.407, and 20.408 to maintain worker's doses below specified levels and keep records of and make reports of doses. The licensee was required by 10 CFR 20.203 and Technical Specification 6.12 to post and control access to plant areas. FSAR Chapter 12 also contained commitments regarding dosimetry and dose controls. During observation of work in the plant, the inspector observed the wearing of TLDs and pocket dosimeters by workers. The inspector discussed the assignment and use of dosimeters with the Dosimetry and Records Supervisor and two dosimetry clerks and the pocket dosimeter vs thermoluminescent dosimeter (TLD) correlation program and how such discrepancies were resolved. Evaluations of dose assignments for lost or damaged TLDs or off scale pocket dosimeters was also discussed with the licensee. During plant tours, the inspector observed the posting of areas and made independent measurements of dose to assure proper posting. The inspector reviewed recent changes to plant procedures regarding the use of TLDs and dosimeters.

b. Dosimetry Results

The inspector examined the files of 35 contract workers presently on site to ensure that NRC Form 4s had been completed. The inspector examined records of two cases of damaged dosimeters to evaluate the methods and conclusions regarding the assignment of dose. The inspector examined three cases where doses were adjusted for other reasons.

c. Management Review of Dosimetry Results

The inspector discussed the method used for dissemination of dose data to the worker and their supervisors with the Dosimetry and Records Supervisor. No cases were reported whereby workers exceeded administrative limits without appropriate dose extensions. When dose had to be assigned a worker due to problems with the PD/TLD correlation, the assignment was made each month by the Station Health Physicist after review of available data.

No violations or deviations were identified.

11. Internal Exposure Control and Assessment (83725)

The licensee was required by 10 CFR 20.103, 20.201(b), 20.401, 20.403, and 20.405 to control uptakes of radioactive material, assess such uptakes, and keep records of and make reports of such uptakes. FSAR Chapter 12 also includes commitments regarding internal exposure control and assessment.



a. Control Measures

During plant tours, the inspector observed the use of temporary ventilation systems, containment enclosures, and respirators. The inspector discussed the use of this equipment with workers and radiation protection technicians. The inspector reviewed recent changes to respiratory protection procedures.

b. Respiratory Maintenance and Issue

The inspector observed the cleaning and maintenance of respirators with two staff members assigned the task. The inspector observed the issuance of respirators and reviewed records for selected workers who were issued respirators to determine if they were qualified for the respirators issued. The inspector reviewed recent changes to respirator maintenance and issue procedures.

c. Uptake Assessment

The inspector observed operation of whole body counter and discussed its operation and results with the counter operator. The inspector discussed the assessments and corrective actions with a radiation protection supervisor. For 1984, there were no positive counts exit or routine (not including initial) counts.

No violations or deviations were identified.

12. Maintaining Occupational Doses ALARA (83728)

10 CFR 20.1(c) specifies that licensees should implement programs to keep workers' doses ALARA. FSAR Chapter 12 also contains licensee commitments regarding worker ALARA actions.

a. Worker and Supervisor Actions

The inspector discussed with a Station Health Physicist licensee actions to reduce individual and collective doses, concentrating particularly on staff members with highest doses. The inspector also discussed these actions to set dose goals for tasks, methods used to reduce doses, and techniques used to monitor performance against goals.

b. ALARA Procedure Changes

The inspector reviewed the system-wide ALARA manual which contained the administrative procedures that delineated management commitment to ALARA principles and which implemented the elements of ALARA. Station specific procedures were reviewed as was a draft ALARA procedure which would effectively lower the collective person-rem requirement for initiating certain ALARA actions.

c. ALARA Reports

The inspector reviewed the ALARA data for 1984 and for the recently completed Unit 2 outage. The dose projection for 1984 was 577 man-rem while the actual dose received by workers was 505 man-rem as measured by thermoluminescent dosimeters (TLD). During this timeframe, a refueling outage and a four week maintenance outage occurred.

For the recently completed Unit #2 outage of approximately 14 weeks duration, the projected man-rem total was 270.8, while the actual exposure received was 330 man-rem. This outage encompassed both refueling and maintenance activities.

For the Unit #1 outage which had just begun an expenditure of 258 man-rem was estimated. For the entire station (Units #1 and #2), the collective dose projected for 1985 was 720.9 man-rem. The inspector noted that for outages alone 588 man-rem would be utilized, leaving only 132 man-rem for the remainder of the year for routine operation. The licensee acknowledge the comment and indicated that major maintenance during the outages had been more extensive than originally planned, and as a consequence, thought that the original goal for 1985 might be exceeded.

No violations or deviations were identified.

13. Problem Reports and Radiological Deficiency Reports

The inspector examined the Problem Reports and Radiological Deficiency Reports and resulting corrective actions for the period January through June 1984 and discussed selected reports with involved workers. The inspector reviewed maintenance work requests and plant modification requests to determine if deficiencies contributing to the reports had been corrected.

No violations or deviations were identified.

14. Preparation for March 1985 Outage

The inspector discussed with the Radiation Protection Supervisor the plans for supplemental staffing, including decon, shielding, and laundry staff, during the outage and subsequent startup. The inspector discussed methods to be used to select and qualify the staff with contractor support, proposed methods of supervision and limitations on task assignments.

No violations or deviations were identified.

15. IE Information Notices (92717)

The following IE Information Notices were reviewed to ensure their receipt and review by appropriate licensee management:

IN-84-24, Physical Requalification of Individuals to Use Respiratory Protective Devices

IN-84-34, Respiratory User Warning: Defective Self-Contained Breathing Apparatus Air Cylinder

IN-84-40, Emergency Worker Doses

IN-84-59, Deliberate Circumventing of Station Health Physics Procedures

IN-84-60, Failure of Air-Purifying Respiratory Filters to Meet Efficiency Requirements

IN-84-61, Overexposure of Diver in Pressurized Water Reactor (PWR) Refueling Cavity

No violations or deviations were identified.