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

OCT 22 1985

Report Nos.: 50-369/85-34 and 50-370/85-35

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 1 and 2

Inspection Conducted: September 30 - October 4, 1985

Inspector: B. K. Revsin 10/17/85
B. K. Revsin Date Signed

Approved by: C M Hosey 10/17/85
C. M. Hosey, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection involved 38 inspector-hours onsite during regular hours inspecting: radiation protection program including external exposure control and dosimetry; internal exposure control; transportation of radioactive materials; radioactive waste classification and characterization; and control of radioactive materials, posting and labeling.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *T. L. McConnell, Station Manager
   *D. Mendezoff, Engineering Specialist
   *B. H. Hamilton, Superintendent of Technical Services
   *K. R. Frye, Contract Services
   *W. F. Bryrum, Coordinator, Health Physics
   *D. M. Franks, Quality Assurance
   D. C. Britton, Health Physics Supervisor
   J. W. Foster, Station Health Physicist
   G. F. Terrell, Health Physics Coordinator
   C. H. Bailey, Administrative Supervisor, Health Physics

   Other licensee employees contacted included 6 technicians, 2 security force members, and 3 office personnel.

   NRC Resident Inspectors

   *W. T. Orders, Senior Resident Inspector
   *R. C. Pierson, Resident Inspector

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on October 4, 1985, with those persons indicated in paragraph 1 above. 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 (92702)

   a. (Closed) Violation 50-369/85-22-01 Single exposure to skin of 10.6 rems with 11.18 rems total for the quarter. The inspector verified that the licensee's corrective action as specified in their response dated August 30, 1985, had been implemented.

   b. (Closed) Violation 50-369/85-22-02 Failure to post a radiation area. The inspector verified that the licensee's corrective action as specified in their response dated August 30, 1984, had been implemented.

4. Audits (83724, 83725, 83726, 84722, 86721)

The licensee was required by Technical Specification (TS) 6.5.2 to perform audits of radiological safety. The inspector reviewed audits of the radiation protection operations for the years 1984 and 1985, the responses to these audits and the status of selective corrective actions resulting from these audits. Corrective action had been initiated for all items.

The inspector noted that the subjects of dosimetry issuance and control and the efficacy of the dose card system used by the licensee to monitor the radiation worker's daily exposure had not been addressed in an audit report to management since 1983. In discussions with a licensee representative, the inspector was informed that this area had been audited in 1984, but due to an oversight, had not been included in the corresponding audit report, and that there had been no findings in this area. The representative further stated that this area was due for audit in November 1985, and that the resulting audit report prepared for management review would include this topic.

No violations or deviations were identified.

5. Transportation (86721)

10 CFR 20.205(b)(2) required that when removable contamination in excess of 0.01 microcuries (22,000 disintegrations per minute) per 100 square centimeters of package surface is found on the external surfaces of the package, the licensee shall immediately notify the final delivering carrier and the appropriate NRC Regional Office.

On August 13, 1985, the licensee received an empty fuel cask from Nuclear Assurance Corporation (NAC) onsite which had two areas on the cask surface with removable contamination in excess of 22,000 disintegrations (dpm)/100 cm^2. The inspector reviewed the licensee's investigation of the event and verified that two smear surveys had removable contamination in excess of the limits (24,632 and 34,610 dpm/100 cm^2). Surveys were performed over 100 cm^2 assuming a 10% removal efficiency for all smears. The licensee decontaminated the cask promptly to below all applicable limits and notified the carrier, NAC and the NRC, Regior II, of the reportable contamination levels.

The licensee was required by 10 CFR 71.5 to prepare shipments of radioactive material in accordance with Department of Transportation regulations.

The inspector reviewed the Radwaste Shipment Accountability Log from January 29, 1985, to September 30, 1985, and verified that all shipments had been acknowledged by the receiver as required by 10 CFR 20.311. The inspector reviewed the records of radioactive waste shipment numbers 85-51, 85-54, 85-74 and 85-56 for adherence with the requirements of 49 CFR Parts 170 through 189 and verified that the licensee was registered with the NRC for packages used in September 1985.

Staffing for the waste shipping section consisted of six licensee personnel and four vendor supplied technicians. The six licensee personnel had attended a 32-hour radioactive materials shipping course given in August 1985 though none of the vendor personnel had attended. A licensee representative stated that all four vendor technicians were ANSI qualified and were supervised closely and that training for these individuals was unnecessary. The inspector reviewed the course outline for the radioactive waste shipping course.

No violations or deviations were identified.

6. Solid Waste (84722)

10 CFR 61.56 specified the waste characteristic and stability requirements for low-level radioactive waste. Through discussions with licensee representatives and review of selected records, the inspector determined that waste stability, when required, was achieved by use of approved containers or by solidification which was performed by a vendor.

10 CFR 20.311 required a licensee who transfers radioactive waste to a land disposal facility to prepare all wastes so that waste is classified according to 10 CFR 61.55.

10 CFR 61.55(a)(8) provided that the concentration of a radionuclide may be determined by indirect methods such as use of scaling factors which relate the inferred concentrations of one radionuclide to another that is measured if there is reasonable assurance that the indirect method can be correlated with actual measurements.

The licensee had had samples of their various radioactive waste streams analyzed by an offsite contractor laboratory and from these analyses, had developed six sets of scaling factors for various waste streams at the facility. The inspector reviewed the documentation which served as the bases for the scaling factor development which was entitled, 10 CFR 61 Waste Classification and Waste Form Implementation Program. Actual waste classification was accomplished by use of computer program "Wastetrak" which was provided by an offsite vendor. Classification could also be performed manually and the work sheets used for this process were reviewed by the inspector. Waste shipment Nos. 85-51, 85-54, 85-74 and 85-56 were examined for correct classification and to determine shipment manifest compliance with the requirements of 10 CFR 20.311.

No violations or deviations were identified.

7. Internal Exposure Control and Assessment (83725)

10 CFR 20.103(a) established the limits for exposure of individuals to concentrations of radioactive materials in air in restricted areas. This section also required 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 uptakes of radioactivity.

10 CFR 20.103(b)(2) required that whenever the intake of radioactive material by an individual exceeds 40 MPC-Hours in a seven consecutive day period, the licensee shall make such evaluations and take such actions as may be necessary to assure against recurrence. The licensee shall maintain records of such occurrences, evaluations and actions taken in a clear and readily identifiable form suitable for summary review and evaluation.

The inspector reviewed selected results of bioassays (whole body counts) performed by the licensee from January 1 to October 3, 1985. The inspector also examined the daily Radiation Exposure Control (REC) computer printout for October 2, 1985, and verified that for 1985, all plant workers were well below the 40 hour maximum permissible concentrating per seven consecutive day control measure specified by 10 CFR 20.103(b)(2).

The inspector observed the operation of the whole body counter and discussed its operation and results with the counter operator and with the Health Physics Administrative Supervisor.

No violations or deviations were identified.

8. External Exposure Control and Dosimetry (83724)

10 CFR 20.101 specified the applicable radiation dose standards. The inspector reviewed the REC and verified that the radiation doses recorded for the period January 1 to October 2, 1985, were well within the limits specified by 10 CFR 20.101.

During tours of the plant the inspector observed the wearing of thermo-luminescent dosimeters (TLDs) and pocket dosimeters (PDs) by workers. The inspector also discussed with licensee representatives the assignment and use of dosimeters as well as TLD/PD discrepancy investigations.

10 CFR 20.104 prohibited the possession, use or transfer of licensed material in such a manner as to cause any individual within a restricted area who is under 18 years of age to receive in any one calendar quarter a dose in excess of 125 mrem.

On September 11, 1985, the licensee had reported the overexposure of a minor to the NRC, Region II. The inspector discussed the occurrence with licensee representatives and found that the minor had worked for an offsite contractor and when reporting to the facility, he stated that his age was 18 years and the forms accompanying his in-processing all bore a birthdate corresponding to 18 years of age. During the month of June 1985, this individual received 580 mrem of exposure.

In September 1985, this individual reported for work at Oconee Nuclear Station where Oconee personnel noted that he stated his age as 19, since a birthday had intervened between employment at McGuire and Oconee Stations,

but this age did not correspond to the birthdate he had put on his forms for in-processing. Further investigation of the situation established his true age to be 18 years of age and while at McGuire Nuclear Station, he had been 17. Therefore, an overexposure had occurred.

10 CFR 2, Appendix C, Section V.A states that licensees are not ordinarily cited for violations resulting from matters not within their control. Since the licensee had no reason to believe that the information provided by the worker was not factual, a Notice of Violation will not be issued.

The inspector was informed by licensee representatives that to preclude any recurrence of such events, all individuals under 20 years of age would be required to present some form of verification of their bithdate, such as a birth certificate or a picture driver's license. The licensee was in the process of proceduralizing this requirement. In response to this incident, this individual has been restricted from access at all Duke Power facilities.

The inspector observed the diving operations that were underway to rerack the spent fuel in Unit 1 spent fuel pool. The inspector discussed with licensee representatives the multibadging of the divers and the methodology used to ensure that all dose data were captured in the computer system. One dosimetry clerk had been utilized exclusively for attaching the dosimetry to the divers in the appropriate location on the body and filling out the accompanying forms. Each multibadge packet consisted of high range PD, a low range PD and a TLD. The PDs were read immediately upon termination of the dive and if any were offscale, the TLD was sent for immediate processing. If the PD readings were in an acceptable dose range, TLDs were not sent for processing until the day's diving activities were complete. In all cases reviewed, the dose data for the previous day had been entered into the data bank prior to permitting diving to be resumed.

10 CFR 20.101(b)(3) required the licensee to determine an individual's accumulated occupational dose to the whole body on a Form NRC-4 or equivalent record prior to permitting the individual to exceed the limits of 10 CFR 20.101(a). The inspector verified by examination of selected records that exposure histories were being completed and maintained as required.

No violations or deviations were identified.

9. 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 and to maintain records of such surveys necessary to show compliance with regulatory limits. Survey methods and instrumentation were outlined in the FSAR, Chapter 12 while TS 6.11 provided the requirement for adherence to written procedures. Radiological control procedures further delineated survey methods and frequencies.

a. Surveys

The inspector observed, during plant tours, results of surveys performed by the HP staff. The inspector reviewed the Radiation Work Permits for the fuel rerack to determine if adequate controls were specified. During plant tours the inspector examined 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 examined were maintained as required by TS 6.12.

b. Frisking

During tours of the plant, the inspector observed the exit of workers from contamination control to clean areas to determine if proper frisking was performed. The inspector reviewed selected records of skin contamination occurrences for the months of June, July and August, 1985 and resulting evaluations and corrective actions. Skin doses were assigned individuals where contamination exposure exceeded 10 mrem. The highest dose assigned from a skin contamination event (other than the overexposure documented in Inspection Report Nos. 50-369/85-22 and 50-370/85-23) was 65 mrem.

c. Instrumentation

During plant tours, the inspector observed the use of survey instruments by plant staff and compared plant survey instrument readings with readings made by the inspector using NRC equipment. The inspector examined calibration stickers on HP instruments in use by the licensee staff and friskers throughout the facility. The inspector observed the checkout process for portable HP instruments and verified that response checks were performed as required. Daily response checks for frisker stations were verified at selected frisker locations.

d. Control of Radioactive Materials and Contamination

During tours of the auxiliary and spent fuel buildings, the inspector observed the posting of containers and performed independent surveys to determine if containers of radioactive material were properly labeled. During these tours the inspector observed that numerous receptacles for contaminated protective clothing (PCs) were positioned on the clean side of the Radiation Control Zone (RCZ), that often these receptacles were full to overflowing, and that in many instances discarded PCs lay scattered about the RCZ rather than being placed in the appropriate container. A licensee representative stated that no problems had been encountered as evidenced by the on-going program of performing contamination surveys of step-off-pads (SOPs) on a routine schedule. The inspector stated that nonetheless, these activities did not constitute good health physics or housekeeping practices. The licensee acknowledged the inspector's comments.

No violations or deviations were identified.

10. ALARA (83728)

10 CFR 20.1C stated that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposures as low as reasonably achievable (ALARA).

The inspector discussed the ALARA goals and objectives for 1985 with licensee representatives and reviewed the man-rem estimates and results. As of August 31, 1985, the actual collective exposure for the station was 675 man-rem as measured by TLD. The goal for 1985 was 721 man-rem. With no more outages planned for 1985, the licensee was optimistic that the goal would not be exceeded.

11. Information Notices (92717)

The inspector reviewed the following Information Notices to ensure receipt and review by the licensee.

84-75, Calibration Problems - Calibration Problems-Eberline Instrument Model 6112B Analog Teletectors

85-46, Clarification of Several Aspects of Removable Radioactive Surface Contamination Limits for Transport Packages

85-42, Loose Phosphor in Panasonic 800 Series Badge Thermoluminescent Dosimeter (TLD) Elements

85-57, Lost Iridium-192 Source Resulting in the Death of Eight Persons in Marocco

85-07, Contaminated Radiography Source Shipments

85-06, Contamination of Breathing Air Systems

85-48, Respirator Users Notices: Defective Self-Contained Breathing Apparatus Air Cylinders

85-60, Defective Negative-Pressure, Air-Purifying, Full Facepiece Respirators

85-43, Radiography Events at Power Reactors