



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

AUG 30 1985

Report No.: 50-416/85-24

Licensee: Mississippi Power and Light Company
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf

Inspection Conducted: July 8-12, 1985

Inspector: *D M Collins* 8/30/85
for W. T. Cooper Date Signed

Approved by: *D M Collins* 8/30/85
for C. M. Hosey, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This special, unannounced inspection involved 44 inspector-hours onsite in the areas of review of radiological controls during work on the Unit 1 traversing incore probe (TIP) drive mechanism and a review of the qualifications of the Chemistry/Radiation Control Superintendent.

Results: One violation was identified: failure to adhere to NRC requirements.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. E. Cross, General Manager
- *J. A. Bailey, Compliance Coordinator
- *C. Daughtery, Compliance Superintendent
- *M. Wright, Manager, Plant Operations
- *T. Hildebrandt, Radiation Control Supervisor
- *J. Parrish, Chemistry/Radiation Control Superintendent
- *J. Vencelli, Radiation Control Supervisor
- J. Hurst, Radiation Control Shift Supervisor

Other licensee employees contacted included three technicians, and two office personnel.

NRC Resident Inspector

- *J. Caldwell

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 12, 1985, with those persons indicated in paragraph 1 above. The apparent violations for failure to evaluate airborne radioactivity level in a work area (paragraph 4), failure to document a survey (paragraph 4), and four examples of failure to follow health physics procedures (paragraph 4) were discussed in detail. The apparent failure of the individual filling the position of Chemistry/Radiation Control Superintendent to meet the requirements of the Technical Specifications for that position was discussed and left as an unresolved item* pending further review of the individual's qualifications (paragraph 3).

In a telephone conversation between D. M. Collins of the Region II office and J. E. Cross, General Manager, the qualifications of the Chemistry/Radiation Control Superintendent were discussed and licensee management stated that a detailed resume for the individual would be sent to the Regional office by July 15, 1985. The additional information was provided on July 15, 1985.

*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.

On July 30, 1985, Roger D. Walker, and J. Philip Stohr of the Region II office discussed the qualifications of the Chemistry/Radiation Control Superintendent with utility management in a meeting at your facility. The Superintendent's qualifications were also a subject of an August 5, 1985, telephone conversation between V. Panciera of the Region II office and O. Kingsley of your staff.

Inspection findings were the topic of a telephone conversation between V. Panciera of the Region II office and J. E. Cross of your staff on August 9, 1985.

3. Training and Qualification (83723)

Technical Specification 6.3.1 requires that each member of the facility staff meet or exceed the minimum qualifications of ANSI N18.1-1971 for comparable positions, except for the Chemistry/Radiation Control Superintendent (Radiation Protection Manager) who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975.

Regulatory Guide 1.8, September 1975, requires the Radiation Protection Manager to have a bachelor's degree or the equivalent in a science or engineering subject, including some formal training in radiation protection and at least five years of professional experience in applied radiation protection. At least three years of the professional experience should be in applied radiation protection work in a nuclear facility dealing with radiological problems similar to those encountered in nuclear power plants.

The inspector reviewed the qualifications of the newly appointed Chemistry/Radiation Control Superintendent and discussed the qualifications with licensee management and the individual. Topics discussed included his radiation protection experience while in the Navy during the period 1974-1979 and 1983-1985. The inspector also discussed the individual's radiation protection experience while serving as an Evaluation Officer at the Naval Reactors Facility in Idaho.

Through review of records and discussions with the individual, the inspector concluded that the individual had the equivalent of 2.3 years applied health physics experience. The licensee maintained that the individual met the necessary experience requirements. This item was designated an unresolved item at the exit interview pending review of the individual's qualifications by regional management. (416/85-24-01)

4. Review of Radiological Controls Associated With Incore Probe Maintenance (92700)

Through a review of licensee records and discussions with licensee representatives, the inspector determined the following:

On June 21, 1985, before 0200 hours, the Health Physics Shift Supervisor (HPSS) received a Radiation Work Permit (RWP) request to inspect the TIP mechanism, and if necessary, hand crank the TIP into the core. This RWP

request was originated in an attempt to prevent the facility from entering a Limiting Condition for Operation (LCO) as required by Technical Specifications (TS). RWP number 85-6-20 was issued June 21, 1985, at 0200 hours to inspect incore drive mechanism "E" and to possibly hand crank the TIP into the core. Protective clothing and personal dosimetry requirements were specified on the radiation work permit. Respiratory protection was not required as contamination levels encountered during previous TIP drive work had been on the order of 50,000 disintegrations per minute per one hundred square centimeters (dpm/100cm²). The HPSS assigned a Health Physics Technician (HPT) to provide job coverage. The HPSS instructed the HPT to allow work to begin while smears and air samples were being analyzed in the health physics (HP) counting laboratory.

The HPT assigned to provide job coverage entered the TIP drive area and performed the initial survey at 0305 hours and passed the samples to another HPT for transport to the health physics counting laboratory for analysis. Four smears were taken on the inside of the TIP drive box, box cover and on the drive cable. These samples were later found to indicate smearable contamination levels from 10,000 dpm/100cm² to 1.6×10^6 dpm/100cm². The general area dose rates were found to be less than 2 millirem/hour. After the HPT finished taking the samples, he allowed work to begin on the TIP drive mechanism. It was noted by the HPSS on the RWP that this area was a transient very high radiation area due to operation of the TIP drive and that there was a potential airborne problem in the TIP drive boxes. The special instructions on the RWP required that an air sample be taken upon initial opening of the TIP boxes and to evacuate the area immediately if any unusual increase in radiation levels were detected. Plant procedure 08-S-02-50, Radiological Surveys and Surveillance, required that radiological surveys be performed to assess radiological conditions in specific cases such as RWP issuance. Upon opening the TIP drive housing, it was found that the TIP coaxial cable was not on the drive spool and that the cable was broken. To make the necessary repairs required that the cable be handled. The necessity of handling the TIP cable changed the scope of the work in that this action was not identified or authorized under the RWP in effect at that time.

Upon exiting containment, the HPT assigned to carry the samples from the jobsite to the health physics counting laboratory performed a field check of the samples and noted abnormally high radiation levels. The HPT did not return to containment to stop the work, but continued on to the health physics counting laboratory to analyze the samples. When he reached the decontamination area near the health physics office, the walk-through portal monitors alarmed as he tried to pass through. The HPSS responded to the alarm and questioned the HPT. The HPSS immediately sent another HPT into containment to stop the work on the TIP drive and to take another air sample in the area. Attempts were made to reach the personnel in the containment using the page system, but these attempts failed because the workers could not hear the page. The HPT entered the work area without respiratory protection and had the personnel exit the area.

The inability of the workers to hear the page while working in the containment was identified as an inspector followup item (IFI). (416/85-24-02)

The licensee performed contamination surveys on the personnel as they exited the containment. Two personnel were found to be contaminated to approximately 2000 counts per minute in the facial area. Both individuals were successfully decontaminated and whole body counts were performed. Maximum permissible concentration-hour (MPC-hour) calculations performed by the licensee and verified by the inspector assigned one individual 12 MPC-hours exposure and the other 3 MPC-hours exposure. None of the other individuals assigned to the TIP drive work had any positive indication of internal contamination.

Subsequent analysis of the air samples collected at the "E" TIP drive at 0313 hours on June 21, 1985, utilizing a beta/gamma scaler indicated air activity of 3.0×10^{-8} microcuries per cubic centimeter ($\mu\text{Ci/cc}$). An isotopic analysis of the sample was performed at 0645 hours when an ANSI qualified chemistry technician came on shift.

The inspector interviewed the HPSS and two health physics technicians who participated in the work on the TIP drive on June 21, 1985. The HPSS stated that his main concern during the work was that the TIP would become exposed and create an extremely high radiation field. He also stated that he had provided job coverage on this type of work in the past and did not expect the contamination levels to be a limiting factor for the work to be performed. The HPT assigned to the job coverage stated that this was the first time he had provided job coverage for this type of work. The inspector questioned the HPT as to the type of pre-job briefing his supervisor provided for him. He stated that the briefing was general and dealt mostly with the potential for extremely high dose rates in the area should the TIP become exposed. The HPT assigned to carry the samples from the containment to the HP counting lab stated that he made an error in judgement after noting the abnormally high radiation levels on the samples he carried. He stated that he should have returned to the containment to stop the work, but at the time, he was concerned with obtaining a sample analysis.

The inspector reviewed the licensee's written evaluation of this incident; whole body counts and evaluations for the uptake by two licensee personnel; Radiation Work Permit 85-6-20, the RWP access log, dosimetry issue log and the RWP authorized personnel lists; health physics survey records and applicable plant administrative and health physics procedures, and discussed these items with licensee personnel.

10 CFR 20.401(b) required that each licensee maintain records showing the results of surveys required by 20.201(b). 10 CFR 20.201(b)(2) required the licensee to make or cause to be made such surveys as may be necessary for the licensee to comply with the regulations in this part and are reasonable under the circumstances to evaluate the extent of radiation hazards that may

be present. At 3:05 a.m. on June 21, 1985, the licensee performed a beta radiation survey in the "E" TIP drive box, however, the licensee failed to document beta radiation levels. The survey results obtained on a beta radiation survey which was performed at approximately 0900 hours when work was allowed to continue were 25 millirads per hour general area and 67 millirads per hour on contact. The failure to document the beta radiation surveys performed at 0305 hours was identified as an apparent violation of 10 CFR 20.401(b). (416/85-24-03)

10 CFR 20.103(a)(3) required the licensee to use suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas. On June 21, 1985, air samples collected to support work on RWP 85-6-20 were not analyzed prior to the start of work on the "E" TIP drive. Later analysis indicated airborne concentrations of 3×10^{-8} uCi/cc (gross beta/gamma), which was 40 times the licensee administrative control limit for radioactive material in air based on a gross beta/gamma count. Smear samples which would have indicated contamination levels of 1.6×10^6 dpm/100cm² were also not analyzed prior to the issuance of the original RWP. Personnel protective requirements were not adequately addressed as survey results were not available which indicated the need for the use of respiratory protection equipment. The failure to evaluate the extent of radioactive hazards that were present in the area of TIP drive work by not analyzing the airborne radioactivity samples collected at the beginning of the work was identified as an apparent violation of 10 CFR 20.201(b). (416/85-24-03)

Technical Specification (TS) 6.11 required that procedures for personnel radiation protection shall be approved, maintained and adhered to for all operations involving personnel radiation exposure. Plant procedure 08-S-01-24, Radiation Work Permits, required that surveys be performed prior to the issuance of the original work permit. This procedure also required that protective requirements will be based on surveys.

Plant procedure 08-S-01-25, Contamination Control, required that requirements concerning the use of protective clothing and equipment within contamination areas are posted at the area entrances, specified on an RWP, or as directed by HP. Any deviations from the requirements stated on the RWP must be granted in an exemption statement on the RWP. Health Physics personnel are required by plant procedure 08-S-01-24 to comply with the RWP requirements unless they are granted this exemption on the RWP. The RWP required the personnel to wear a single set of protective clothing, a surgeons cap and cloth hood, cotton glove liners and two pair of rubber gloves. The HPT providing job coverage entered the RWP area wearing a lab coat, plastic booties and gloves. The failure of the HPT to comply with the dress requirements as stated on the RWP was identified as an additional example of an apparent violation of TS 6.11. (416/84-24-03)

Plant procedure 08-S-01-20, Designation of and Access to Radiologically Controlled Areas, required that high contamination areas be established when loose surface contamination levels exceed 10,000 dpm/100cm² (beta/gamma). A review of records and discussions with licensee personnel indicated that

loose surface contamination levels in the TIP drive area exceeded 10,000 dpm/100 cm² (beta/gamma). A high contamination area was not established. The failure of plant personnel to establish a high contamination area when loose beta/gamma surface contamination exceeded 10,000 dpm/100cm² was identified as an additional example of an apparent violation of TS 6.11. (416/85-24-03)

Plant procedure 01-S-08-3, Personnel Monitoring, required that electronic alarming dosimeters will be issued as required by Health Physics personnel on an applicable RWP. The inspector reviewed the access log for RWP number 85-6-20 and compared this to the dosimetry issue log for this job. The inspector found that only four of twelve personnel signed in on the access log had been issued alarming dosimetry as required by the RWP and procedure. Failure to issue the required dosimetry to all personnel entering the TIP drive area was identified as an additional example of an apparent violation of TS 6.11. (416/85-24-03).