MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

June 29, 1981

NUCLEAR PRODUCTION DEPARTMENT

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
File: 0260/5863/6510/L-334.0/
M-137.0
Radwaste Laundry Facility
NRC Question 320.21
AECM-81/223

Mississippi Power & Light Company is providing the attached response for your review pertaining to NRC question 320.21. This question pertains to the handling of radwaste laundry at Grand Gulf Nuclear Station.

The above information will be incorporated into FSAR Amendment 50. If you have any questions or require further information, please contact this office.

Yours truly,

L F Dale

L. F. Dale
Manager of Nuclear Services

JTB/JGC/JDR:lm
Attachments

cc: Mr. N. L. Stampley
Mr. G. B. Taylor
Mr. R. B. McGehee
Mr. T. N. Conner

Mr. Victor Stello, Jr., Director
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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S1/1

320.21 Your response to Item 320.16 is not acceptable. You should provide the following:

(a) An estimate of the number of days per year that the emergency laundry will be in use;

(b) Your provisions to assure that radioactivity from this will not contaminate the domestic water system;

(c) Comparison of the system input flow to the system capacity;

(d) More detail with regard to how the system design of the emergency laundry system meets the provisions of Regulatory Guide 1.143; and

(e) Sampling of the laundry waste monitoring tank is not adequate. You should provide a monitor, with an alarm, on the discharge from the system.

Response

Contaminated laundry services will not be provided onsite, and therefore, all contaminated laundry will be contracted to a commercial laundry licensed to handle contaminated material from nuclear facilities.

The above disposition of contaminated material will assure that no cross-connections exist between the domestic water system and any potentially radioactive system.

Subsections 9.2.4.2 and 11.2.1.1 have been revised to reflect the above design intent.

Currently, a design for onsite contaminated laundry facilities is being considered by MP&L's Nuclear Plant Engineering Group. This design will assure that all liquid waste is directed to the liquid radwaste system for processing. The design will not cross-connect with the domestic water system.

In the event that MP&L decides to provide an onsite radwaste laundry facility, the intended design details regarding the proposal will be furnished.

11.2 LIQUID RADWASTE SYSTEM

11.2.1 Design Objectives

The design objective of the liquid radwaste system is to provide for maximum recycle of waste water to the condensate storage tank. Sufficient treatment will be available to clean up any waste water to condensate quality. Discharge of liquid waste will be necessary only when both units have complete water inventories and no satisfactory capacity is available in the radwaste system. At this time, discharge to the environs shall be via the discharge basin. Maximum recycle of liquid waste will result in a radwaste material release which conforms with 10 CFR 50, which requires such releases to be "as low as reasonably achievable."

11.2.1.1 Power Generation Design Bases

The power generation design objective of the liquid radwaste system, common to both units, is to collect, process, recycle to the maximum extent possible, or dispose of potentially radioactive wastes produced during the operation of the plant. Therefore, waste concentrations which result from effluent releases during normal plant operation will be below the regulatory limits of 10 CFR 20 and will result in doses below the "as low as reasonably achievable" guidelines set forth in 10 CFR 50, Appendix I. These wastes are grouped as floor drains, equipment drains, and chemical waste.

Liquid waste collected in the equipment drain processing system is normally transferred to the Unit 1 or Unit 2 condensate storage tanks after processing. Chemical wastes are treated and either sent to the equipment drain collector tank for further processing or returned to the condensate storage tank. Liquid waste collected in the floor drain processing system is normally recycled to the condensate storage tank. If both units have complete condensate water inventories and no satisfactory capacity is available in the radwaste system, any of these treated wastes may be discharged to the environment, providing proper dilution with cooling tower blowdown effluent at the discharge basin is maintained; however, normally only processed waste from the floor drain subsystem will be discharged to the environment.

~~Laundry is normally done off the plant site at a commercial laundry licensed to handle clothing from nuclear facilities. Nevertheless, emergency laundry facilities have been provided in the control building. Drains from these facilities are collected in a separate tank. The emergency laundry wastes are monitored and sampled in accordance with Regulatory Guide 1.21 (see Appendix 3A of this FSAR), and then released to the environment through the sanitary waste treatment system.~~ The discharge basin ~~and control building sanitary waste treatment system discharge are~~ the only area~~s~~ designed for release of liquid radwaste to the environment.

320.21

The liquid effluents from the liquid radwaste system are continuously monitored, and the discharges are terminated if the effluents exceed preset radioactivity levels. These levels are specified in the Environmental Technical Specifications in the Final Environmental Report.

Figures 11.2-6 through 11.2-10 show the liquid radwaste system components and their design parameters (e.g., flow, temperature, and pressure). Materials of construction for major components are listed in Table 11.2-14.

The liquid radwaste system is designed so that failure or maintenance of any frequently used component will not impair system or plant operation. Redundancy of frequently used components is provided to achieve this design basis. Equipment which is not redundant is cross-tied, where feasible, with similar components for backup service. The location of backup and redundant equipment allows access to nonfunctioning components for maintenance and repair. Areas of the radwaste building for which access is required under all operating conditions are shielded from radioactive and potentially radioactive components. Condensate flushing connections are provided on all process pump suction lines for decontamination of system lines and components.

11.2.1.2 Codes and Standards

Codes and standards applicable to the liquid waste management system are listed in Table 3.2-1. The liquid waste management system and the Radwaste Building are designed and constructed in accordance with quality group D and the additional requirements of Branch Technical Position ETSB 11-1 (Revision 1, 4/75), "Design Guidance for Radioactive Waste Management Systems Installed In Light-Water-Cooled Nuclear Power Reactor Plants."

11.2.2 System Description

The liquid radwaste system is composed of a group of subsystems designed to collect and treat different types of liquid waste. These subsystems are designated as the equipment drain processing subsystem (clean radwaste), floor drain processing subsystem (dirty radwaste), chemical waste subsystem, and miscellaneous supporting subsystems. The piping and instrumentation diagrams of these subsystems are shown in Figures 11.2-1 through 11.2-5. The system flow diagrams are shown in Figures 11.2-6 through 11.2-10. Activity concentrations for selected points on the system flow diagram also are indicated.

Design isotopic concentration or inventories for major components are given in Tables 11.2-1 through 11.2-3. Expected concentration or inventories are given in Tables 11.2-4 though 11.2-6. These are based on parameters given in Table 11.2-7.

Isotopic decontamination factors for each piece of equipment in each subsystem are given in Tables 11.2-7 and 11.2-8.

and integrity of the system. A sample station is provided for routine chemical analysis. On-line instrumentation is provided to monitor regeneration and normal operation.

9.2.3.5 Instrument Application

The quality of the demineralized water is continuously monitored by conductivity measuring devices that indicate and alarm on the local and control room panels. There are two conductivity devices for each demineralizer train. One device measures the conductivity in the anion exchanger bed to anticipate the exhaustion of the bed. The other device measures the overall performance of the demineralizer train. When one of the demineralized trains reaches end-of-run or high conductivity, the effluent valves close automatically.

Pressure indicators on the inlet and outlet of each filter and ion exchanger provide the capability to determine the pressure drop across each vessel. The flow through each carbon filter and train of ion exchangers is recorded and totalized.

The pH of the regeneration waste neutralizing tank is monitored prior to discharge to the environment, and an alarm is actuated if the pH exceeds predetermined setpoints.

9.2.4 Domestic Water System and Sanitary Waste Water System

9.2.4.1 Power Generation Design Bases

a. The domestic water system and sanitary waste water system are designed to provide domestic water supplies and sewage treatment necessary for normal plant operation and shutdown periods.

b. The domestic water system, in conjunction with the makeup water treatment system, is designed to produce and maintain the quality of water required by the authorities having jurisdiction.

c. The sanitary waste water system is designed to produce an effluent quality required by local and state regulations.

9.2.4.2 System Description

Pretreated water from activated carbon filters of the makeup water treatment system is supplied to the domestic water storage tank. The domestic water distribution system consists of pumps, hot water heaters, and interconnecting piping and valves as shown in Figures 9.2-13 and 9.2-14. Sodium hypochlorite solution is added prior to distribution via the hypochlorinator.

The sanitary water system consists of a prefabricated, aerobic, digestion-type sewage treatment plant, capable of treating approximately 15,000 gpd of domestic sewage. The plant includes a comminutor and clarifier in addition to the aeration chamber. The equipment arrangement is shown in Figure 9.2-15. The quality of effluent meets, as a minimum, the standards established by the authorities having jurisdiction. System component performance data is given in Table 9.2-9.

There are no cross-connections between the domestic water system and any potentially radioactive system. ~~There is one input to the sanitary waste water system that will be monitored for radioactivity. The effluent from the emergency laundry facility will be pumped to a holding tank and monitored for radioactivity via a grab sample. This effluent will not be discharged to the sanitary waste water system until the radioactivity has decayed to within 10 CFR 20 limits. The emergency laundry facility will be used only in the event that the normal commercial laundering services are unavailable.~~ 32021

9.2.4.3 Safety Evaluation

The domestic water and sanitary waste water systems have no safety-related functions. Failure of the system will not compromise any safety-related equipment or component and will not prevent safe shutdown of the plant.

However, the systems incorporate some features that will assure reliable operation over the full range of normal plant operation. These features consist primarily of instrumentation that will monitor and/or control its respective process.

9.2.4.4 Inspection and Testing

The domestic and sanitary water systems are proven operable by their use during normal plant operation.

9.2.4.5 Instrumentation Application

The domestic water and sanitary waste water systems are furnished with instrumentation that will permit local and/or remote monitoring and/or control of each respective process. This instrumentation includes all meters, switches, indicators, pressure gages, transmitters, controllers, and valves required for service operation and for the protection of plant personnel and equipment.