

December 3, 1986

Docket No.: 50-416

Mr. Oliver D. Kingsley, Jr.  
Vice President, Nuclear Operations  
Mississippi Power & Light Company  
Post Office Box 23054  
Jackson, Mississippi 39205

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Dear Mr. Kingsley:

SUBJECT: CHANGES TO TECHNICAL SPECIFICATIONS REGARDING CHLORINE DETECTORS

RE: GRAND GULF NUCLEAR STATION, UNIT 1

The Commission has issued the enclosed Amendment No. 25 to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated June 26, 1986.

This amendment deletes the Technical Specifications and associated Bases for control room chlorine detectors based on acceptably low chlorine concentrations from a potential onsite release of stored chlorine and acceptably low probability of an accidental release from a barge transporting chlorine on the Mississippi River.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

**Original signed by**

Lester L. Kintner, Project Manager  
BWR Project Directorate No. 4  
Division of BWR Licensing

Enclosures:

1. Amendment No. 25 to License No. NPF-29
2. Safety Evaluation

cc w/enclosures:  
See next page

MO'Brien  
11/20/86

LKintner:lb  
11/20/86

*w/ noted revision to SE  
check SECY + state  
def assurance.*

OGC Young 11/21/86  
PD#4/D WButler 12/3/86

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PDR ADDCK 05000416  
PDR



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

December 3, 1986

Docket No.: 50-416

Mr. Oliver D. Kingsley, Jr.  
Vice President, Nuclear Operations  
Mississippi Power & Light Company  
Post Office Box 23054  
Jackson, Mississippi 39205

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Sincerely,

A handwritten signature in cursive script that reads "Lester L. Kintner".

Lester L. Kintner, Project Manager  
BWR Project Directorate No. 4  
Division of BWR Licensing

Enclosures:

1. Amendment No. 25 to License No. NPF-29
2. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Oliver D. Kingsley, Jr.  
Mississippi Power & Light Company

Grand Gulf Nuclear Station

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MISSISSIPPI POWER & LIGHT COMPANY  
MIDDLE SOUTH ENERGY, INC.  
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION  
DOCKET NO. 50-416  
GRAND GULF NUCLEAR STATION, UNIT 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 25  
License No. NPF-29

1. The Nuclear Regulatory Commission (the Commission) has found that
  - A. The application for amendment by Mississippi Power & Light Company, Middle South Energy, Inc., and South Mississippi Electric Power Association, (the licensees) dated June 26, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-29 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 25, are hereby incorporated into this license. Mississippi Power & Light Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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P PDR

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

**Original signed by**

Walter R. Butler, Director  
BWR Project Directorate No. 4  
Division of BWR Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 3, 1986

*MB*  
PD#4/LA  
NO. Brien  
11/20/86

*ML*  
PD#4/PM  
LKintner:lb  
11/20/86

*m Young*  
OGC concurred by  
Phone 12.2.86  
PD#4/D  
WButler  
1/86 12/3/86  
*W*

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Walter R. Butler, Director  
BWR Project Directorate No. 4  
Division of BWR Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 3, 1986

ATTACHMENT TO LICENSE AMENDMENT NO. 25

FACILITY OPERATING LICENSE NO. NPF-29

DOCKET NO. 50-416

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Overleaf pages provided to maintain document completeness.\*

Remove

3/4 3-79  
3/4 3-80

3/4 7-5  
3/4 7-6

B 3/4 3-5  
B 3/4 3-6

Insert

3/4 3-79  
3/4 3-80\*

3/4 7-5\*  
3/4 7-6

B 3/4 3-5  
B 3/4 3-6\*

INSTRUMENTATION

CHLORINE DETECTION SYSTEM

LIMITING CONDITION FOR OPERATION

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3.3.7.8 DELETED

SURVEILLANCE REQUIREMENTS

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4.3.7.8 DELETED

## INSTRUMENTATION

### FIRE DETECTION INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

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3.3.7.9 As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.3.7.9-1 shall be OPERABLE.

**APPLICABILITY:** Whenever equipment protected by the fire detection instrument is required to be OPERABLE.

#### ACTION:

With the number of OPERABLE Function A or Function B fire detection instruments less than the Minimum Instruments OPERABLE requirement of Table 3.3.7.9-1:

- a. Within 1 hour, establish a fire watch patrol to inspect the zone(s) with the Function A or room(s) with Function B inoperable instrument(s) at least once per hour, unless the instrument(s) is located inside the containment, steam tunnel or drywell, then inspect the primary containment at least once per 8 hours or monitor the containment, steam tunnel and/or drywell air temperature at least once per hour at the locations listed in Specification 3.7.8, 4.6.1.8 and 4.6.2.6.
- b. Restore the minimum number of instruments to OPERABLE status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the instrument(s) to OPERABLE status.
- c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.3.7.9.1 Each of the above required fire detection instruments which are accessible during unit operation shall be demonstrated OPERABLE at least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST. Fire detectors which are not accessible during unit operation shall be demonstrated OPERABLE by the performance of a CHANNEL FUNCTIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 6 months.

4.3.7.9.2 The NFPA Standard 72D supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

## PLANT SYSTEMS

### 3/4.7.2 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

#### LIMITING CONDITION FOR OPERATION

3.7.2 Two independent control room emergency filtration system subsystems shall be OPERABLE.

APPLICABILITY: All OPERATIONAL CONDITIONS and \*.

#### ACTION:

- a. In OPERATIONAL CONDITION 1, 2 or 3 with one control room emergency filtration subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 4, 5 or \*:
  1. With one control room emergency filtration subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or initiate and maintain operation of the OPERABLE subsystem in the isolation mode of operation.
  2. With both control room emergency filtration subsystems inoperable, suspend CORE ALTERATIONS, handling of irradiated fuel in the primary or secondary containment and operations with a potential for draining the reactor vessel.
- c. The provisions of Specification 3.0.3 are not applicable in Operational Condition \*.

#### SURVEILLANCE REQUIREMENTS

4.7.2 Each control room emergency filtration subsystem shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates for at least 10 continuous hours with the heaters OPERABLE.
- b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the subsystem by:
  1. [DELETED]

\* When irradiated fuel is being handled in the primary or secondary containment.

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that the subsystem satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 4000 cfm  $\pm$  10%.
  3. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.
  4. Verifying a subsystem flow rate of 4000 cfm  $\pm$  10% during subsystem operation when tested in accordance with ANSI N510-1975.
- c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978.
- d. At least once per 18 months by:
1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 7.2 inches Water Gauge while operating the subsystem at a flow rate of 4000 cfm  $\pm$  10%.
  2. Verifying that the subsystem receives an appropriate isolation actuation signal by each of the following test conditions. For at least one of the test conditions, verify that the subsystem automatically switches to the isolation mode of operation and the isolation valves close within 4 seconds.
    - (a) High high radiation in the outside air intake duct,
    - (b) High drywell pressure,
    - (c) Low low reactor water level, and
    - (d) Manual initiation from the Control Room.
  3. Verifying that the heaters dissipate  $20.7 \pm 2.1$  kW when tested in accordance with ANSI N510-1975 (except for the phase balance criteria stated in Section 14.2.3).
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm  $\pm$  10%.
- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm  $\pm$  10%.

## INSTRUMENTATION

### BASES

#### 3/4.3.7.6 SOURCE RANGE MONITORS

The source range monitors provide the operator with information of the status of the neutron level in the core at very low power levels during startup and shutdown. At these power levels, reactivity additions should not be made without this flux level information available to the operator. When the intermediate range monitors are on scale adequate information is available without the SRMs and they can be retracted.

The SRMs are required OPERABLE in OPERATIONAL CONDITION 2 to provide for rod block capability, and are required OPERABLE in OPERATIONAL CONDITIONS 3 and 4 to provide monitoring capability which provides diversity of protection to the mode switch interlocks.

#### 3/4.3.7.7 TRAVERSING IN-CORE PROBE SYSTEM

The OPERABILITY of the traversing in-core probe system with the specified minimum complement of equipment ensures that the measurements obtained from use of this equipment accurately represent the spatial neutron flux distribution of the reactor core.

The TIP system OPERABILITY is demonstrated by normalizing all probes (i.e., detectors) prior to performing an LPRM calibration function. Monitoring core thermal limits may involve utilizing individual detectors to monitor selected areas of the reactor core, thus all detectors may not be required to be OPERABLE. The OPERABILITY of individual detectors to be used for monitoring is demonstrated by comparing the detector(s) output with data obtained during the previous LPRM calibrations.

#### 3/4.3.7.8 CHLORINE DETECTION SYSTEM

DELETED

#### 3/4.3.7.9 FIRE DETECTION INSTRUMENTATION

OPERABILITY of the detection instrumentation ensures that both adequate warning capability is available for the prompt detection of fires and that fire suppression systems, that are actuated by fire detectors, will discharge extinguishing agent in a timely manner. Prompt detection and suppression of fires will reduce the potential for damage to safety-related equipment and is an integral element in the overall facility fire protection program.

In the event that a portion of the fire detection instrumentation is inoperable, increasing the frequency of fire watch patrols in the affected area(s), or zone(s), is required to provide detection capability until the inoperable instrumentation is restored to OPERABILITY.

## INSTRUMENTATION

### BASES

#### 3/4.3.7.10 LOOSE-PART DETECTION SYSTEM

The OPERABILITY of the loose-part detection system ensures that sufficient capability is available to detect loose metallic parts in the primary system and avoid or mitigate damage to primary system components. The system consists of 16 sensors, of which only 8 are selected and need to be OPERABLE at a time, to provide the inputs to the 8 monitoring channels. The remaining 8 sensors may be used as replacement sensor inputs for failed sensors or to provide a change in location of the area being monitored. The allowable out-of-service times and surveillance requirements are consistent with the recommendations of Regulatory Guide 1.133, "Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors," May 1981.

#### 3/4.3.7.11 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

The radioactive liquid effluent monitoring instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

#### 3/4.3.7.12 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The radioactive gaseous effluent monitoring instrumentation is provided to monitor and control, as applicable, gaseous effluents during actual or potential releases. Those instruments that monitor the activity of gaseous effluents being released to the environment shall have their alarm/trip setpoints calculated in accordance with the methods in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. Other instruments that monitor offgas processing, (i.e., the Explosive Gas Monitor, Offgas Pre-Treatment Monitor, and Offgas Post-Treatment Monitor) are calibrated according to plant procedures. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

#### 3/4.3.8 PLANT SYSTEMS ACTUATION INSTRUMENTATION

The plant systems actuation instrumentation is provided to initiate action to mitigate the consequences of accidents that are beyond the ability of the operator to control. The LPCI mode of the RHR system is automatically initiated on a high drywell pressure signal and/or a low reactor water level, level 1, signal. The containment spray system will then actuate automatically following high drywell and high containment pressure signals. Negative barometric pressure fluctuations are accounted for in the trip setpoints and allowable values specified for drywell and containment pressure-high. A 10-minute minimum, 13-minute maximum time delay exists between initiation of LPCI and containment spray actuation. A high reactor water level, level 8, signal will actuate the feed-water system/main turbine trip system. The suppression pool makeup system is automatically initiated on a low low suppression pool water level signal with a concurrent LOCA signal or following a specified time delay after receipt of a LOCA signal. The low low suppression pool water level Trip Setpoint and Allowable Value are relative to the surface floor of the suppression pool (93'6" above mean sea level).

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 25 TO FACILITY OPERATING LICENSE NO. NPF-29

MISSISSIPPI POWER & LIGHT COMPANY

MIDDLE SOUTH ENERGY, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

By letter dated June 26, 1986, Mississippi Power & Light Company (the licensee) requested an amendment to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1. The proposed amendment would delete Technical Specification 3/4.3.7.8, "Chlorine Detection System" and associated Bases. These changes were requested to implement a design change which deletes the automatic closure of the outside air intake duct in the control room heating, ventilating and air conditioning (HVAC) system upon detection of excessive chlorine in the air intake duct. The requested changes were based upon the applicant's estimates of acceptably low chlorine concentration in the control room due to an accidental release of chlorine stored on site and of the acceptably low probability of an accidental release of chlorine from a barge transporting chlorine on the Mississippi River.

2.0 EVALUATION

The NRC staff has reviewed the licensee's proposed changes to the Technical Specifications and the bases for these changes.

Chlorine detectors to automatically close dampers in the outside air intake of the control room HVAC thus isolating the control room were installed because accidental release of chlorine was identified as being a potential hazard to the control room operators. The FSAR indicated that in 1974 about 36% of all the cargo shipped on the Mississippi River past the site (approximately 1.34 miles west at its closest point) was considered as hazardous material. In its June 26, 1986 submittal, the licensee provided an offsite chlorine accident probability study using: data from the Chlorine Institute, New York, New York; data from the U. S. Army Corps of Engineers, Vicksburg, Mississippi; and meteorological data which take into account the site terrain features. The data show that a total of 11 accidents occurred involving spills on the lower Mississippi River, between Baton Rouge, Louisiana, and Cairo, Illinois, within the nine year period from 1973 to 1982.

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Using the above data, the licensee has estimated the probability of occurrence of an offsite chlorine accident, from barge traffic on the Mississippi River to be approximately  $10^{-7}$  per year, which meets the acceptance criteria given in the Standard Review Plan (SRP) Section 2.2.3, "Evaluation of Potential Accidents." The SRP states that such offsite hazards do not need to be considered as design basis events if their expected rate of occurrence is less than  $10^{-6}$  per year. Therefore, the staff concludes that the hazard due to an offsite accidental release of chlorine is acceptably small without the use of chlorine detectors to automatically isolate the control room.

Approximately 1200 pounds of liquid chlorine is stored onsite in 150-pound cylinders at four different locations. Two cylinders are kept at each location. The location closest to the control room is approximately 225 meters from the control building. This complies with the guidance in Regulatory Guide 1.95, Regulatory Position 1, which suggests liquified chlorine in quantities greater than 20 pounds be stored at least 100 meters away from the control room. The control room HVAC is provided with the capability for manual isolation as stated in FSAR Section 7.3.1.1.10.1. This complies with the guidance in Regulatory Guide 1.95, Regulatory Position 2, which suggests the capability for manual isolation of the control room if a chlorine container having an inventory of 150-lbs or less is stored more than 100 meters from the control room. The licensee's analysis of an onsite chlorine accident was performed by postulating a failure of a single chlorine container. The postulated failure led to an initial puff release of about 25% of the chlorine. This was followed by the subsequent vaporization of the remaining chlorine which was spilled from the container. Using the methodology of NUREG-0570, "Toxic Vapor concentrations in The Control Room Following a Postulated Accident Release" and the diffusion calculations from Regulatory Guide 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," the licensee estimates that the chlorine concentration inside the control room is well below the toxicity guidelines of Regulatory Guide 1.78. Based on its review, the staff concludes that the licensee's analysis is acceptable.

On the basis of its evaluation, the staff concludes that (1) the onsite chlorine usage and storage meet the requirements of Regulatory Position 1 and 2 in Regulatory Guide 1.95, (2) an onsite accidental chlorine release without automatic isolation of the control room would result in chlorine concentrations inside the control room well below the toxicity limit suggested by Regulatory Guide 1.78, and (3) the probability of an offsite chlorine accident is within SRP Section 2.2.3 acceptance criteria. Therefore, the staff concludes that the proposed changes to the Technical Specifications which would delete the requirements for control room chlorine detectors and the automatic isolation of the control room upon detection of chlorine, are acceptable.

### 3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

### 4.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (51 FR 36096) on October 8, 1986, and consulted with the state of Mississippi. No public comments were received, and the state of Mississippi did not have any comments.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and the security nor to the health and safety of the public.

#### Principal Contributors:

A. Chu, Plant Systems Branch, DBL  
L. Kintner, Project Directorate No. 4, DBL

Dated: December 3, 1986