

Docket No. 50-416

August 12, 1986

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Mr. Oliver D. Kingsley, Jr.
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Dear Mr. Kingsley:

SUBJECT: ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT - SPENT FUEL POOL EXPANSION

Re: Grand Gulf Nuclear Station, Unit 1

By letter dated May 6, 1985, you requested a license amendment in support of the proposed spent fuel pool expansion at Grand Gulf Unit 1. We have enclosed our Environmental Assessment related to this proposed action. Based on our assessment, we have concluded that there are no significant radiological or non-radiological impacts associated with the proposed spent fuel pool expansion and it will have no significant impact on the quality of the human environment.

We have also enclosed a Notice of Availability of Environmental Assessment and Finding of No Significant Impact. This notice is being forwarded to the Office of Federal Register for publication.

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

Enclosures:

1. Environmental Assessment
2. Notice

cc w/enclosures:
 See next page

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ENVIRONMENTAL ASSESSMENT
RELATED TO THE MODIFICATION OF THE
SPENT FUEL STORAGE RACKS AT
GRAND GULF NUCLEAR STATION, UNIT 1

FACILITY OPERATING LICENSE NPF-29

MISSISSIPPI POWER AND LIGHT COMPANY
MIDDLE SOUTH ENERGY, INC.
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

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1 INTRODUCTION

1.1 Description of Proposed Action

By letter dated May 6, 1985, as supplemented by letters dated September 12 and December 18, 1985, and March 14, June 5, and June 9, 1986, the Mississippi Power and Light Company, Middle South Energy, Inc., and South Mississippi Electric Power Association (the licensees) requested an amendment to Facility Operating License NPF-29 for Grand Gulf Nuclear Plant Unit 1 to expand the capacity of the spent fuel pool and the upper containment pool. Grand Gulf Unit 1 is a boiling water reactor with a Mark III containment. The spent fuel pool is located in the auxiliary building, similar to spent fuel pool arrangements for pressurized water reactors. Above the reactor, and within the containment, there is an upper containment pool with racks for holding new fuel to be placed in the reactor and spent fuel removed from the reactor during refueling; however, before reactor startup after refueling, all spent fuel is transferred to the spent fuel pool (SFP) for storage.

The licensee has, at its own risk, replaced the initially installed fuel racks with high density fuel racks during and subsequent to a planned outage in the fall of 1985. A license condition prohibits the use of the spent fuel pool for storing spent fuel until the standby service water system is modified, which is scheduled for the first refueling outage. The proposed license amendment would revise Section 5.6, "Fuel Storage," of the Technical Specifications to allow a larger number of spent fuel assemblies to be placed in the upper containment pool and a larger number of spent fuel assemblies to be stored in the spent fuel pool. The high-density fuel racks increase the upper containment pool capacity from 170 to 800 fuel assemblies to hold a complete core unloading, if necessary, and increase the SFP storage capacity from 1270 to 4348 fuel assemblies. Before the full capacity of the spent fuel pool can be used, the SFP cooling system must be modified. Therefore, the licensee has proposed a Technical Specification that would limit the number of fuel assemblies stored in the spent fuel pool to 2324. This environmental assessment, however, is based on the conservative assumption of full use of the new racks in the upper containment pool (800) and in the spent fuel pool (4348) for a total of 5148 spent fuel assemblies.

1.2 Need for Increased Storage Capacity

When the licensee submitted the application for an operating license for Grand Gulf Unit 1, the SFP design for each unit provided the capacity sufficient for one normal refueling and reserve capacity to receive one full core in accordance with the guidelines of Section 9.1.2 of the Standard Review Plan (SRP) (NUREG-0800). At that time it was assumed that the spent fuel would be removed from the site.

By retaining the capability for a full core offload, the initial capacity for one and one-third core would be exhausted before the second refueling, which is currently scheduled for the fall of 1988. Without retaining the full core capability the capacity would be exhausted before the fifth refueling, which is currently scheduled for 1990. Because these dates are earlier than the date when

a federal repository is expected to be available to receive spent fuel from the Grand Gulf Nuclear Station Unit 1, which is 1998 in accordance with Public Law 97-425, the Nuclear Waste Policy Act (NWPA) of 1982, Section 302(a)(5) (Ref. 2), the expansion of the spent fuel pool is needed for the continued operation of the unit. The expansion of the upper containment pool will improve safe handling of spent fuel because a full core offload, if needed, would not have to be transferred to the spent fuel pool in the auxiliary building.

The expansion of the spent fuel pool will provide adequate storage capacity, including the full core offload capability, until approximately the year 2004. This provides a margin in storage capability beyond the currently projected date for the availability of a permanent federal repository. Furthermore, the initially installed racks are relatively uncontaminated, having been used only to store startup sources removed from the reactor. The installation of spent fuel storage racks at a later time would have to be performed under water and in the presence of spent fuel.

1.3 Alternatives

Commercial reprocessing of spent fuel has not developed as had been originally anticipated. In 1975 the Commission directed the NRC staff to prepare a Generic Environmental Impact Statement (GEIS, the Statement) on spent fuel storage. The Commission directed the staff to analyze alternatives for the handling and storage of spent light water power reactor fuel with particular emphasis on developing long range policy. The Statement was to consider alternative methods of spent fuel storage as well as the possible restriction or termination of the generation of spent fuel through nuclear power plant shutdown.

A final "Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel" (NUREG-0575), was issued by NRC in August 1979. The findings of NUREG-0575 are that the environmental impact costs of interim storage are essentially negligible, regardless of where such spent fuel is stored. A comparison of the impact costs of various alternatives reflects the advantage of continued generation of nuclear power versus its replacement by coal-fired power generation. Continued nuclear generation of power versus its replacement by oil-fired power generation provides an even greater economic advantage. In the bounding case considered in NUREG-0575, that of shutting down the reactor when the existing spent fuel storage capacity is filled, the cost of replacing nuclear stations before the end of their normal lifetime make this alternative uneconomical. The storage of spent fuel as evaluated in NUREG-0575 is considered to be an interim action and not a final solution to permanent disposal.

One spent fuel storage alternative considered in detail in NUREG-0575 is the expansion of onsite fuel storage capacity by modifying the existing spent fuel pools. Applications for more than 100 spent fuel pool expansions have been received and have been approved or are being reviewed by NRC. The finding in each case has been that the environmental impact of such increased storage capacity is negligible. However, because there are variations in storage designs and limitations caused by the spent fuel already stored in some of the pools, NUREG-0575 recommends that licensing reviews be done on a case-by-case basis to resolve plant-specific concerns.

The staff has evaluated certain alternatives with respect to the need for the proposed action as discussed in Section 1.2 of this assessment. The following alternatives were considered:

- (1) shipment of spent fuel to a permanent fuel storage/disposal facility
- (2) shipment of fuel to a reprocessing facility
- (3) shipment of fuel to another utility for storage
- (4) reduction of spent fuel generation
- (5) construction of a new independent spent fuel storage installation (ISFSI)
- (6) no action taken

A discussion of each of these alternatives follows.

(1) Shipment of Spent Fuel to a Federal Fuel Storage/Disposal Facility

Shipment to a permanent federal fuel storage disposal facility is the preferred alternative to increasing the onsite spent fuel storage capacity. The U.S. Department of Energy (DOE) is developing a repository under the Nuclear Waste Policy Act (NWPA) of 1982. However, the facility is not likely to be ready to receive spent fuel until 1998 at the earliest. Therefore, this alternative does not meet the licensee's near-term storage needs for Grand Gulf Unit 1.

Under NWPA the federal government has the responsibility to provide not more than 1900 metric tons capacity for the interim storage of spent fuel. The impacts of storing fuel at a Federal Interim Storage (FIS) facility fall within those already assessed in NUREG-0575. In passing the NWPA, Congress found that the owners and operators of nuclear power stations have the primary responsibility for providing interim storage of spent nuclear fuel. In accordance with the NWPA and 10 CFR 53, shipping of spent fuel to an FIS facility is considered a last-resort alternative. Therefore, because the licensee has been pursuing diligently this application for the use of an expanded spent fuel pool, the alternative of shipping the spent fuel to an FIS is not considered reasonable.

(2) Shipment of Fuel to a Reprocessing Facility

Reprocessing of spent fuel from Grand Gulf Unit 1 is not viable because there is presently no operating commercial reprocessing facility in the United States, nor is there the prospect for one in the foreseeable future.

(3) Shipment of Fuel to Another Utility for Storage

The shipment of spent fuel from Grand Gulf Unit 1 to the storage facility of another utility company could provide short-term relief to the Grand Gulf Unit 1 storage capacity problem. However, the NWPA and 10 CFR 53 clearly place the responsibility for the interim storage of spent nuclear fuel with each owner or operator of a nuclear power plant. Moreover, transshipment of spent fuel to and its storage at another site would entail potential environmental impacts greater than those associated with the proposed increased storage at the Grand

Gulf site. Therefore, this is not considered a practical or reasonable alternative.

(4) Reduced Spent Fuel Generation

Improved use of fuel in the reactor of each unit and/or operation at a reduced power level would extend the life of the fuel in the reactors. In the case of extended burnup of fuel assemblies, the fuel cycle would be extended and fewer offloads would take place. However, the current storage capacity would still be exhausted before 1998 as discussed in Section 1.2. Operation at reduced power would not make effective use of available resources, thus causing economic penalties.

(5) Construction of a New Independent Spent Fuel Storage Installation

Additional storage capacity could be developed by building a new independent spent fuel storage installation (ISFSI) that is similar to the existing pool or a dry cask storage installation. The NRC staff has generically assessed the impacts of the pool alternative and has found, as reported in NUREG-0575, that "the storage of LWR spent fuels in water pools has an insignificant impact on the environment." A generic assessment for the dry cask alternative has not been made by the staff. However, an assessment by the staff of the proposed dry cask ISFSI for the Surry Power Station resulted in a Finding of No Significant Impact (letter dated April 12, 1985). Although these alternatives are environmentally acceptable, such new storage facility, either on the Grand Gulf site or at a location offsite, would require a new, site-specific design and construction, including equipment for the transfer of spent fuel. It also would require NRC review, evaluation, and licensing of such facility. It is not likely that this entire effort could be completed in time to meet the need for additional capacity as discussed in Section 1.2. Furthermore, such construction would not use the existing expansion capabilities of the existing pools and thus would be wasteful of resources.

(6) No Action Taken

If no action were taken, the storage capacity would become exhausted as discussed in Section 1.2 and Grand Gulf Unit 1 would have to be shut down. This stop in operations would result in no further generation of spent fuel thereby eliminating the need for increased spent fuel storage capacity. The impacts of terminating the generation of spent fuel by ceasing the operation of existing nuclear power plants (i.e., ceasing generation of electric power) when their spent fuel pools become filled was evaluated in NUREG-0575 and found to be undesirable. This alternative would be a waste of an available resource, such as the power generated by the Grand Gulf Nuclear Station Unit 1, and is not considered viable.

In summary, the only alternative that could provide an alternative solution to the licensee's spent fuel storage capacity problem is the construction of a new independent spent fuel storage installation at the Grand Gulf site or at a location away from the site. Construction of such an additional spent fuel storage facility could provide long-term increased storage capacity for the licensee. However, this alternative cannot be implemented in a timely manner to meet the need for additional capacity for Grand Gulf Unit 1.

1.4 Fuel Reprocessing History

Spent fuel is currently not being reprocessed on a commercial basis in the United States. The Nuclear Fuel Services (NFS) plant at West Valley, New York, was shut down in 1972 for alterations and expansion. In September 1976, NFS informed the Commission that it was withdrawing from the nuclear fuel reprocessing business. The proposed Allied General Nuclear Services (AGNS) plant in Barnwell, South Carolina, is not licensed to operate. The General Electric Company (GE) Morris Operation (formerly Midwest Recovery Plant) in Morris, Illinois, is in a decommissioned condition.

On April 17, 1977, President Carter issued a policy statement on commercial reprocessing of spent nuclear fuel that effectively eliminated reprocessing as part of the relatively near-term nuclear fuel cycle.

Although no plants are licensed for reprocessing fuel, the storage pools at Morris and at West Valley are licensed to store spent fuel. The storage pool at West Valley is not full, but the current licensee (New York Energy Research and Development Authority) is presently not accepting any additional spent fuel for storage, even from those power generating facilities that had contractual arrangements with West Valley. (In fact, spent fuel is being removed from NFS and returned to various utilities.) On May 4, 1982, the license held by GE for spent fuel storage activities at its Morris operation was renewed for another 20 years; however, GE is committed to accept only limited quantities of additional spent fuel for storage at this facility from Cooper Nuclear Station and San Onofre Unit 1.

2 RADIOACTIVE WASTES

The plant contains radioactive waste treatment systems designed to collect and process the gaseous, liquid, and solid waste that might contain radioactive material. The radioactive waste treatment systems are evaluated in the Grand Gulf Final Environmental Statement (FES) dated September 1981 (NUREG-0777). There will be no change in the waste treatment systems described in Section 4.2.5 of the FES as a result of the proposed spent fuel pool (SFP) rerack.

2.1 Radioactive Material Released to the Atmosphere

During the storage of the spent fuel under water, both volatile and nonvolatile radioactive nuclides may be released to the water from the surface of the assemblies, or through defects in the fuel cladding. Most of the material released from the surface of the assemblies will consist of activated corrosion products that are nonvolatile: such as cobalt (Co-58 and Co-60), iron (Fe-59), and magnesium (Mn-54). The radionuclides that might be released to the water through defects in the cladding are also predominantly nonvolatile. These include cesium (Cs-124 and Cs-137) and strontium (Sr-89 and Sr-90). The principal volatile fission product nuclides that might be released to the air through defects in the fuel cladding are the noble gases (xenon and krypton), tritium, and the iodine isotopes.

With respect to the release of gaseous radioactive materials to the atmosphere, the only significant radioactive gas remaining after several years of storage is krypton-85 (Kr-85) because the other noble gases would be depleted by radioactive decay. Even the Kr-85 remaining in the fuel is not considered significant because experience has demonstrated that after spent fuel has decayed for 4 to 6 months, there have been no significant releases of any fission products from fuel cladding defects. However, the staff has conservatively estimated for dose calculation purposes that an additional 100 curies (Ci) per year of Kr-85 may be released after the modified pool is completely filled.

The amount of tritium and iodine isotopes released from the spent fuel assemblies to the SFP water is not expected to be significantly increased over those values used in calculating population doses in the plant FES because (1) similar to the noble gases there should be no significant release of tritium or iodine from fuel cladding defects after 4 to 6 months of storage, and (2) short-lived isotopes such as iodine-131 will be depleted from the fuel by radioactive decay. Thus, the staff has assumed that for dose calculation purposes there is no significant increase in the amount of tritium or radioiodine released from fuel cladding defects resulting from the increased number of stored fuel assemblies in the SFP.

Evaporation is another potential source of airborne activity resulting from storing additional spent fuel assemblies in the SFP. However, this is not expected to be a significant source of radioactivity for the following reasons:

- (1) The storage of additional spent fuel assemblies in the SFP is not expected to increase the bulk water temperatures above those found during normal

refuelings as used in the design analysis. Therefore, the expected evaporation rate is about the same as before, and it is not expected that there will be any significant change in the annual release of tritium or iodine from the SFP.

- (2) On an annual basis, most airborne releases from the station result from leakage of reactor coolant that contains tritium and iodine in higher concentrations than the SFP. Therefore, even if there were a higher evaporation rate from the SFP, the potential increase in the release of tritium and iodine would be small compared with the amount normally released from the station and that amount previously evaluated in the FES.
- (3) The SFP area exhaust system must be operating and discharging through high-efficiency particulate air (HEPA) and charcoal filters whenever spent fuel is stored in the SFP or being moved, or when heavy loads are being carried over the SFP (Technical Specification Section 3.9.12).
- (4) Regardless of the sources, the station is limited to its total releases of gaseous activity by the radiological effluent Technical Specifications.

Accordingly, the staff has assumed for dose calculation purposes that there will be no significant increase in the release of tritium or radioiodine caused by evaporation from the SFP.

2.2 Solid Radioactive Wastes

The concentration of radionuclides in the pool water is controlled by the SFP cleanup system and by the decay of short-lived isotopes. The activity is highest during refueling operations, when reactor coolant water is introduced into the pool, and decreases as the pool water is processed through the SFP cleanup system. The increase of radioactivity, if any, resulting from the proposed modification should be minor because of the capability of the cleanup system to continuously remove radioactivity in the SFP water and thus lower it to acceptable levels.

The staff does not expect any significant increase in the amount of solid waste generated from the SFP cleanup systems as a result of the proposed modification. The expected increase in total waste volume shipped from the Grand Gulf Unit 1 should be less than 1% of what it would be without SFP expansion and would not have any significant additional environmental impact.

If the present spent fuel racks are contaminated because of the proposed modifications, they may be disposed of as low level solid waste. Averaged over the lifetime of the station, this would increase the total waste volume shipped from the station by less than 1%. This will not have any significant additional environmental impact.

2.3 Radioactive Material Released to Receiving Waters

There should not be a significant increase in the liquid release of radionuclides from the plant as a result of the proposed modifications. Because the SFP cooling and cleanup systems operate as a closed system, only water originating from cleanup of SFP floors and resin sluice water need be considered as potential sources of radioactivity.

It is not expected that either the flow rate or the radionuclide concentration in the floor cleanup water will change as a result of these modifications. This is because the SFP demineralizer resin will remove soluble radioactive materials from the SFP water. These resins are periodically sluiced with water to the spent resin storage tank. The amount of radioactivity on the SFP demineralizer resin may increase slightly as a result of the additional spent fuel in the pool, but the soluble radioactive material should be retained on the resins. Radioactive material that might be transferred from the spent resin to the sluice water will be removed effectively by the liquid radwaste system. After processing within the liquid radwaste system, the amount of radioactivity released to the environment as a result of the proposed modification should be negligible.

3 RADIOLOGICAL IMPACT ASSESSMENT

This section provides the staff's estimates of the impact on the public from the proposed spent fuel pool expansion. The staff considered major sources of radioactivity and principal environmental pathways and evaluated the estimates of the additional radiological impacts on the plant workers from the proposed operation of the expanded spent fuel pool.

3.1 Public Radiation Exposure

The principal source of radiation doses to individual members of the general public from releases from the SFP is exposure to krypton-85. The staff has estimated the doses to individual members of the public, as well as the population as a whole, in the area surrounding Grand Gulf Unit 1 by conservatively assuming a release of 100 Ci of Kr-85 resulting from the proposed increased storage of spent fuel assemblies and using the calculational methods presented in Regulatory Guide (RG) 1.109. The staff estimated the total body and organ doses for the direct radiation exposure pathway from the Kr-85 plume shine for individual members of the general public of all ages at the maximum site boundary location, 1700 meters west-southwest of the plant, resulting from the assumed additional release of airborne Kr-85. The individual member of the public was conservatively assumed to be at the site boundary continuously for a whole year. The atmospheric dispersion factor, X/Q, used in making the estimate is 1.45×10^{-5} (NUREG-0777). This value yields the maximum dose estimates at this location.

The additional total body dose that might be received by an individual from the assumed release of Kr-85 at the worst site boundary location and the estimated dose to the total body of the population within a 50-mile radius of the plant are less than 0.1 mrem/yr and 0.1 person-rem/yr, respectively. Furthermore, the population dose resulting from the SFP modification represents an estimated increase of less than 0.1% of the population dose evaluated in the FES for the release of noble gases from the normal operation of Grand Gulf Unit 1.

By comparison, the same population of about 340,000 persons will receive a cumulative total body dose every year of more than 34,000 person-rems from natural background radiation (about 0.1 rem per year per person, NCRP-45, 1975). Thus, the additional total body dose to the population from the SFP modification is estimated to be less than 1 millionth of the annual dose resulting from natural background radiations.

On this basis, the staff concludes that the doses to individuals in unrestricted areas, and to the population within 80 kilometers, resulting from the assumed additional airborne Kr-85 released annually from the SFP modification, will not be environmentally significant.

3.2 Occupational Exposure

The originally installed spent fuel racks were removed and the high density racks were installed before the racks were used to store spent fuel. The dose to workers due to the SFP modification was estimated to be less than one person-rem.

This exposure is a small fraction of the annual occupational radiation dose at the plant and is as low as is reasonably achievable (ALARA).

The increases in occupational exposures for the proposed operation of the modified SFP are estimated to add less than one percent to the total annual occupational radiation doses at the plant. The estimated small increase in occupational radiation doses should not affect the licensee's ability to maintain individual occupational doses within the limits of 10 CFR 20, and is as low as reasonably achievable. Normal radiation control procedures (NUREG-0800, and Regulatory Guide 8.8, 1978) should preclude any significant occupational radiation exposures. Thus, on the basis of present and projected operations in the spent fuel pool area, the staff estimates that the proposed operation of the modified SFP should add only a small fraction to the total annual occupational radiation dose at this facility.

3.3 Conclusions

On the basis of its review of the proposed expansion of the spent fuel pool at Grand Gulf Unit 1, the staff concludes that:

- (1) the estimated additional radiation doses to the general public should be
 - (a) much less than those incurred during normal operation of Grand Gulf Unit 1
 - (b) not significant in comparison to the doses that members of the public receive each year from exposure to natural background radiation
- (2) the licensee has taken appropriate steps to ensure that occupational doses will be maintained as low as reasonably achievable and within the limits of 10 CFR 20 (the staff estimates that the total annual occupational dose associated with the proposed operation of the expanded fuel pool adds less than one percent to the total annual occupational doses at the plant).

On the basis of the foregoing evaluation, the staff concludes that there should be no significant additional environmental radiological impact attributable to the proposed reracking and modification to increase the spent fuel storage capacity at Grand Gulf Unit 1.

4 NONRADIOLOGICAL IMPACT

The additional spent fuel pool capacity is achieved by removing the racks initially installed in the pool and installing new metal racks that can accommodate a greater number of fuel assemblies by reducing the distance between adjacent assemblies. The net result is that older spent fuel assemblies can be left in storage for a longer time period thus reducing the impacts associated with handling and transportation to other storage facilities.

Fuel has not been stored in the spent fuel pool. Thus, the expansion before a scheduled refueling minimizes considerations of occupational radiation exposure to workers constructing the new high-density storage racks and disposing of the old racks.

The new racks were fabricated off site. The racks removed from the pools will be disposed of through normal industrial channels. The proposed action is not expected to impact terrestrial resources not previously disturbed during original station construction.

The only nonradiological discharge altered by the spent fuel pool modification is the waste heat rejected to the Mississippi River. The contribution of 8-year-old and older spent fuel assemblies to the total station heat discharge will be unmeasurable and negligible. Fuel assemblies removed from the reactor immediately following shutdown comprise the major heat source in the spent fuel pool. With the expanded capacity, the normal maximum fuel pool heat load will increase from 12.2×10^6 Btu/hour to 14.7×10^6 Btu/hour (normal maximum conditions from the new design assumes 228 assemblies to be unloaded from core, requiring 57 hours to unload, and heat load to be highest 86 hours after initiating the unloading). Abnormal maximum conditions (i.e., a full core unload) will result in a fuel pool heat load of 36.8 million Btu/hour for the new design, compared to 34.3 million Btu/hour for the original design. Thus, fuel pool capacity expansion increases the heat discharge from the fuel pool by approximately 20% during normal conditions and 7% during abnormal conditions. The maximum normal heat load from the spent fuel will be about 0.2% of the rate of station heat rejection (8.6×10^9 Btu/hour) that occurs with the station generating at full power. Therefore, the total increase in station heat discharge resulting from fuel pool capacity expansion is less than three hundredths of one percent during normal spent fuel pool operation.

The increase in heated effluent from the increased fuel pool capacity will have a negligible effect on river water temperature at the discharge point. No impacts to aquatic biota or water quality are anticipated from the additional heat load. The licensee has not proposed any change in the use or discharge of chemicals in conjunction with the fuel pool modifications.

The staff concludes that the additional waste heat load from the additional and extended storage of spent fuel assemblies is insignificant. There are no other nonradiological discharges.

5 SUMMARY

The Final Generic Environmental Impact Statement (FGEIS) on handling and storage of spent light water power reactor fuel (NUREG-0575) concluded that the cost of the various alternatives reflects the advantage of continued generation of nuclear power with the accompanying spent fuel storage. Because of the differences in SFP designs, NUREG-0575 recommended environmental evaluation of SFP expansions on a case-by-case basis.

For Grand Gulf Unit 1, the expansion of the storage capacity of the SFP will not create any significant additional radiological effects or measurable nonradiological environmental impacts. The additional whole-body dose that might be received by an individual at the site boundary is less than 0.1 millirem per year; the estimated dose to the population within a 50-mile radius is estimated to be less than 0.1 person-rem per year. These doses are small compared with the fluctuations in the annual dose this population receives from exposure to background radiation. The occupational radiation dose for the proposed operation of the expanded spent fuel pool is estimated to be less than 1 person-rem per year. This is less than 1% of the average annual occupational dose. The small increase in radiation dose should not affect the licensee's ability to maintain the individual occupational dose within the limits of 10 CFR 20 and as low as reasonably achievable.

The only nonradiological effluent affected by the SFP expansion is the waste heat rejected to the Mississippi River. The increase in total plant waste heat is less than 0.03%. Thus, there is no significant environmental impact attributable to the waste heat from the plant as a result of the SFP expansion.

5.1 Alternative Use of Resources

This action does not involve the use of resources not previously considered in connection with NRC's Final Environmental Statement (NUREG-0777) related to the Grand Gulf Nuclear Station.

5.2 Agencies and Persons Consulted

The NRC staff reviewed the licensee's request. Other agencies or persons were not consulted.

6 BASIS AND CONCLUSIONS FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The staff has reviewed the proposed spent fuel pool modifications to Grand Gulf Unit 1 relative to the requirements set forth in 10 CFR 51. On the basis of the environmental assessment, the staff has concluded that there are no significant radiological or nonradiological impacts associated with the proposed action and that the proposed license amendments will not have a significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendments.

Dated: August 12, 1986

Principal Contributors:

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E. Pentecost	No longer employed by NRC; was in the Environmental and Hydrologic Engineering Branch in the previous NRR organization.

7 BIBLIOGRAPHY

Nuclear Waste Policy Act of 1982, Pub. L. 97-425, Section 302(a)(5).

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UNITED STATES NUCLEAR REGULATORY COMMISSIONMISSISSIPPI POWER & LIGHT COMPANYMIDDLE SOUTH ENERGY, INC.SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATIONDOCKET NO. 50-416NOTICE OF AVAILABILITY OF ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. NPF-29, issued to Mississippi Power & Light Company, Middle South Energy, Inc., and South Mississippi Power Association, (the licensees), for operation of the Grand Gulf Nuclear Station, Unit 1, located in Claiborne County, Mississippi.

Identification of Proposed Action: The amendment would consist of changes to the operating license and Technical Specifications (TSs) and would authorize an increase of the storage capacity of the spent fuel pool (SFP) from 1270 fuel assemblies to 2324 fuel assemblies and an increase of the storage capacity of the upper containment pool (UCP) from 170 to 800 fuel assemblies.

The amendment to the TSs is responsive to the licensee's submittal, dated May 6, 1985. The NRC staff has prepared an Environmental Assessment of the Proposed Action, "Environmental Assessment Related to the Modification of the Spent Fuel Storage Racks at Grand Gulf Nuclear Station, Unit 1, Facility Operating License No. NPF-29, Mississippi Power & Light Company, Middle South Energy, Inc., South Mississippi Electric Power Association," dated August 12, 1986.

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Summary of Environmental Assessment: The Final Generic Environmental Impact Statement (FGEIS) on Handling and Storage of Spent Light Water Power Reactor Fuel (NUREG-0575), Volumes 1-3, concluded that the environmental impact of interim storage of spent fuel was negligible and the dose of the various alternatives reflects the advantage of continued generation of nuclear power with the accompanying spent fuel storage. Because of the differences in SFP designs, the FGEIS recommended licensing SFP expansions on a case-by-case basis.

For Grand Gulf Nuclear Station, Unit 1, the expansion of the storage capacity of the spent fuel pool and the upper containment pool will not create any significant additional radiological effects or non-radiological environmental impacts.

The additional whole body dose that might be received by an individual at the site boundary is less than 0.1 millirem per year; the estimated dose to the population within a 50-mile radius is estimated to be less than 0.1 person-rem per year. These doses are small compared to the fluctuations in the annual dose this population receives from exposure to background radiation. The increases in occupational exposures for the proposed operation of the modified spent fuel pool are estimated to add less than one percent to the total annual occupational radiation doses at the plant. This small increase in occupational radiation doses should not affect the licensee's ability to maintain individual occupational doses within the limits of 10 CFR 20.

The only non-radiological discharge altered by the modifications to the SFP and UCP is the waste heat rejected to the Mississippi River. The total

load to the Mississippi River will be increased less than 0.03 percent. Thus, there is no significant environmental impact attributable to the discharge waste heat from the station due to this very small increase.

FINDING OF NO SIGNIFICANT IMPACT

The staff has reviewed the proposed modifications to the facilities relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and that the issuance of the proposed amendment to the license will have no significant impact on the quality of the human environment. Therefore, pursuant to 10 CFR 51.31, an environmental impact statement need not be prepared for this action.

For further details with respect to this action, see (1) the application for amendment to the Technical Specifications dated May 6, 1985 and supplemental letters dated July 29, August 15, August 30, September 11, September 12, November 1, and December 18, 1985, and March 14, March 15, June 5, June 9, and July 25, 1986, (2) the FGEIS on Handling and Storage of Spent Light Water Power Reactor Fuel (NUREG-0575), (3) the Final Environmental Statement for Grand Gulf Nuclear Station, Unit 1, issued September 1981, and (4) the Environmental Assessment dated August 12, 1986. These documents are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. 20555 and at the Hinds Junior College, McLendon Library, Raymond, Mississippi 39154.

Dated at Bethesda, Maryland, this 12th day of August 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script that reads "Walter R. Butler".

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