



ENTERGY

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April 18, 1996

U.S. Nuclear Regulatory Commission
Mail Station P1-37
Washington, D.C. 20555

C. R. Hutchinson
Vice President
Operations
Grand Gulf Nuclear Station

ATTENTION: Document Control Desk

SUBJECT: Grand Gulf Nuclear Station and River Bend Station
Docket No. 50-416 and 50-458
License No. NPF-29 and NPF-47
Fuel Loading With Control Rods Withdrawn or Removed From Defueled
Core Cells
Proposed Amendment to the Operating License

GNRO-96/00041
RBG-42766

Gentlemen:

Entergy Operations, Inc. is submitting by this letter a proposed amendment to the Grand Gulf Nuclear Station (GGNS) Operating License and a proposed amendment to the River Bend Station (RBS) Operating License. The proposed change adds an additional acceptable method of fuel movement when control rods are removed or withdrawn from defueled core cells. Currently Technical Specifications LCC 3.10.6 only allows fuel loading (and therefore fuel shuffle) as part of an approved spiral reloading sequence to prevent fuel loading into core cells in which the control rod is removed or withdrawn. The proposed change would allow fuel loading if a positive means of assuring fuel assemblies cannot be loaded into a core cell with a withdrawn or removed control rod is in effect. The positive means entails a physical barrier such that even if refueling procedures were violated and an attempt was made to load a fuel assembly into a core cell with a withdrawn or removed control rod the action would be prevented. The proposed change provides the same level of safety as the current requirements. We request NRC Staff complete its review and approval by October 1, 1996 to support GGNS's October 1996 refueling outage.

This proposed amendment has been submitted as part of the cost beneficial licensing action (CBLA) program established within NRR where increased priority is granted to licensee requests for changes requiring NRC Staff review that involve high cost without a commensurate safety benefit. This change is estimated to save an average of \$500,000 to \$2,500,000 every other refueling outage in reduced critical path time resulting in a savings of \$4.5M to \$22.5M for the remaining life of the plant for GGNS and \$5M to \$25M for RBS for a total savings of \$9.5M to \$47.5M.

Attachment 2 provides a detailed description of the proposed changes, justification, and the No Significant Hazards Considerations. Attachment 3 is a copy of the marked-up TS pages for GGNS and Attachment 4 is a copy of the marked-up TS pages for RBS.

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Based on the guidelines in 10 CFR 50.92, Entergy Operations has concluded that this proposed amendment involves no significant hazards considerations. Attachment 2 details the basis for this determination.

In accordance with the provisions of 10 CFR 50.4, the signed original of the requested amendment is enclosed.

Yours truly,



CRH/BSF

attachments:

1. Affirmation per 10 CFR 50.30 (2 pages)
2. Discussion and Justification (8 pages)
3. Mark-up of Affected Technical Specifications and Bases for GGNS (9 pages)
4. Mark-up of Affected Technical Specifications and Bases for RBS (9 pages)

cc:

Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
Mr. J. Tedrow (w/a)
Mr. H. L. Thomas (w/o)
Mr. J. W. Yelverton (w/a)

Mr. L. J. Callan (w/a)
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ATTN: Administrator

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cc: (continued)

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State Health Officer
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Mr. David L. Wigginton (w/2)
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
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Rockville, MD 20853

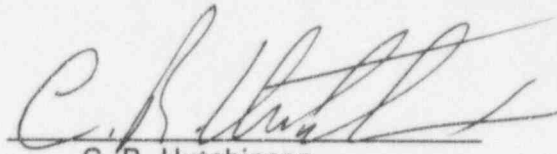
BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-29
DOCKET NO. 50-416

IN THE MATTER OF
MISSISSIPPI POWER & LIGHT COMPANY
and
SYSTEM ENERGY RESOURCES, INC.
and
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION
and
ENTERGY OPERATIONS, INC.

AFFIRMATION

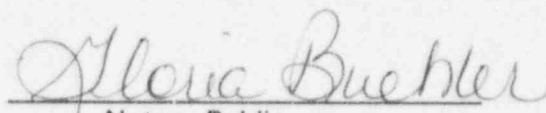
I, C. R. Hutchinson, being duly sworn, state that I am Vice President, Operations Grand Gulf Nuclear Station, of Entergy Operations, Inc.; that on behalf of Entergy Operations, Inc., System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission, this application; that I signed this application as the Vice President, Operations Grand Gulf Nuclear Station, of Entergy Operations, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.


C. R. Hutchinson

STATE OF MISSISSIPPI ^{of}
COUNTY OF ~~CLAIBORNE~~ Warren

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 18th day of April, 1996.

(SEAL)


Notary Public

My commission expires:
MISSISSIPPI STATEWIDE NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 16, 1997
BONDED THRU STEGALL NOTARY SERVICE

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

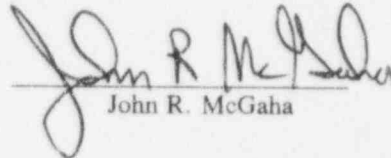
LICENSE NO. NPF-47

DOCKET NO. 50-458

IN THE MATTER OF
GULF STATES UTILITIES COMPANY
CAJUN ELECTRIC POWER COOPERATIVE AND
ENERGY OPERATIONS, INC.

AFFIRMATION

I, John R. McGaha, state that I am Vice President-Operations of Entergy Operations, Inc., at River Bend Station; that on behalf of Entergy Operations, Inc., I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission, this License Amendment Request, that I signed this request as Vice President-Operations at River Bend Station of Entergy Operations, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information, and belief.




John R. McGaha

STATE OF LOUISIANA
WEST FELICIANA PARISH

SUBSCRIBED AND SWORN TO before me, Notary Public, in and for the Parish and State above named, this
11th day of April, 1996.

(SEAL)



Claudia F. Hurst
Notary Public

My Commission expires with life.

**GRAND GULF NUCLEAR STATION
AND
RIVER BEND STATION**

**FUEL LOADING WITH CONTROL RODS WITHDRAWN
OR REMOVED FROM DEFUELED CORE CELLS**

DISCUSSION AND JUSTIFICATION

A. AFFECTED TECHNICAL SPECIFICATIONS

The following Technical Specification is affected by the proposed change.

Limiting Condition for Operation (LCO)

3.10.6 Multiple Control Rod Withdrawal - Refueling

The proposed Technical Specifications and the associated Technical Specification Bases changes to be implemented following NRC approval of the proposed Technical Specification changes are detailed in Attachment 3 for Grand Gulf Nuclear Station (GGNS) and Attachment 4 for River Bend Station (RBS).

B. BACKGROUND

The main refueling operations associated with fuel and control rod movement are the following:

1. normal control rod movement,
2. fuel movement,
3. removing the control rod drive (CRD) from a control rod associated with a fueled cell, and
4. multiple control rod removal or withdrawal from defueled cells.

Normal control rod movement and fuel movement are controlled by the requirements contained in Technical Specification Chapter 3.9, "Refueling Operations," and are unaffected by this change.

Two other activities associated with fuel and control rod movement are CRD removal from a control rod associated with a fueled cell and multiple control rod removal or withdrawal from defueled cells. These activities are performed in accordance with the requirements contained in Technical Specification Chapter 3.10, "Special Operations." Specifically single control rod withdrawal from a fueled cell is controlled by LCO 3.10.5, "Single Control Rod Drive (CRD) Removal - Refueling," and LCO 3.10.6, "Multiple Control Rod Withdrawal - Refueling." Like the requirements of Technical Specification Chapter 3.9 the requirements of LCO 3.10.5 are unaffected by this change.

The requirements of LCO 3.10.6 are modified by this change. The purpose of this MODE 5 Special Operations LCO is to permit multiple control rod withdrawal during refueling by imposing certain administrative controls.

LCO 3.10.6 allows the bypassing of the control rod position refueling interlocks so that the multiple control rods can be withdrawn. The purpose of the refueling interlocks is to restrict the movement of control rods and the operation of the refueling equipment and thereby reinforce operational procedures that prevent the reactor from becoming critical during refueling operations. During refueling operations, no more than one control rod is permitted to be withdrawn from a core cell containing one or more fuel assemblies by the requirements of Technical Specification Chapter 3.9. The refueling interlocks use the "full in" position indicators to determine the position of all control rods. If the "full in" position signal is not present for every control rod, then the all rods in permissive for the refueling equipment interlocks is not present and fuel loading is prevented. Also, the refuel position one-rod-out interlock will not allow the withdrawal of a second control rod.

To allow more than one control rod to be withdrawn during refueling, these interlocks must be defeated. LCO 3.10.6 provides the allowance that when all four fuel assemblies are removed from a cell, the control rod may be withdrawn. Any number of control rods may be withdrawn and removed from the reactor vessel in accordance with LCO 3.10.6 if their cells contain no fuel. LCO 3.10.6 establishes the necessary administrative controls to allow bypass of the "full in" position indicators.

Safety analyses in the GGNS Updated Final Safety Analyses Report (UFSAR) and RBS Updated Safety Analyses Report (USAR) demonstrate that the functioning of the refueling interlocks and adequate shutdown margin (SDM) will prevent unacceptable reactivity excursions during refueling. To allow multiple control rod withdrawals, control rod removals, associated control rod drive (CRD) removal, or any combination of these, the "full in" position indication is allowed to be bypassed for each withdrawn control rod if all fuel has been removed from the cell. With no fuel assemblies in the core cell, the associated control rod has no reactivity control function and is not required to remain inserted. Prior to reloading fuel into the cell, however, the associated control rod must be inserted to ensure that an inadvertent criticality does not occur, as evaluated in the analysis.

C. CURRENT TECHNICAL SPECIFICATION REQUIREMENTS

As described in LCO 3.0.7, compliance with LCO 3.10.6 is optional. Operation in MODE 5 with LCO 3.9.3, "Control Rod Position," LCO 3.9.4, "Control Rod Position Indication," or LCO 3.9.5, "Control Rod OPERABILITY - Refueling," not met, can be performed in accordance with the Required Actions of these LCOs without meeting LCO 3.10.6 or its ACTIONS. If multiple control rod withdrawal or removal, or CRD removal is desired, all four fuel assemblies are required to be removed from the associated cells. Prior to entering LCO 3.10.6, any fuel remaining in a cell whose CRD was previously removed under the provisions of another LCO must be removed.

When loading fuel in the core with multiple control rods withdrawn, LCO 3.10.6 requires special spiral reload sequences be used to ensure that reactivity additions are minimized. Spiral reloading encompasses reloading a cell (four fuel locations immediately adjacent to a control rod) on the edge of a continuous fueled region (the cell can be loaded in any sequence). Otherwise, all control rods must be fully inserted before loading fuel.

D. PROPOSED TECHNICAL SPECIFICATION CHANGE

The proposed change adds an additional acceptable method of fuel movement when control rods are removed or withdrawn from defueled core cells in accordance with LCO 3.10.6. The proposed change would allow fuel loading if a positive means of assuring fuel assemblies cannot be loaded into a core cell with a withdrawn or removed control rod is in effect. The positive means entails a physical barrier such that even if refueling procedures were violated and an attempt was made to load a fuel assembly into a core cell with a withdrawn or removed control rod the action would be prevented.

E. JUSTIFICATION

The Technical Specification requirements prohibiting fuel loading was placed in the Technical Specifications for GGNS and RBS as part of the originally enforced Technical Specification requirements to resolve NRC concerns identified in IE Information Notice No. 83-35, "Fuel Movement with Control Rods Withdrawn at BWRs" (IEN 83-35). IEN 83-35 details instances where fuel assemblies were loaded into core cells while the control rod was withdrawn and discusses that the General Electric Company (GE) had issued Service Information Letter (SIL) No. 372.

SIL No. 372 discusses a potential event where 8 fuel assemblies are loaded into 2 adjacent core cells where the control rods are withdrawn and no action is taken to recover from the errors. In this SIL GE identified that the probability of such an event occurring was extremely low but potentially slightly higher than 10^{-6} per reactor year. To lower the probability of the event even further to where it need not be considered credible (i.e., below 10^{-6} per reactor year), GE recommended that the additional administrative control of prohibiting loading fuel with withdrawn rods be enforced.

The proposed change will only provide an additional way to meet the intent of the original GE recommendation. The proposed change will provide the additional allowance to perform fuel loading only if an additional positive means of assuring fuel assemblies cannot be loaded into a core cell with a withdrawn or removed control rod is in effect. The positive means will entail a physical barrier such that, even if refueling procedures were violated and an attempt was made to load a fuel assembly into a core cell with a withdrawn or removed control rod, the action would be prevented. This requirement provides sufficient additional restrictions to meet

the intent of the GE recommendation to add additional administrative controls to prevent the postulated event from occurring.

With respect to a single error (either equipment failure or personnel error) this requirement provides sufficient restrictions. With no fuel assemblies in the core cell, the associated control rod has no reactivity control function. Any fuel loading error, not including loading the fuel assembly into a core cell with a withdrawn or removed control rod, is bounded by the analyzed fuel assembly mispositioning events.

Therefore, this change does not reduce the level of safety imposed by the current Technical Specification requirements.

F. SAVINGS ASSOCIATED WITH THE REQUESTED CHANGE

The proposed requirement will reduce critical path time caused by the currently required suspension of refueling activities during the time that Control Rod Drive (CRD) work is being performed. Both GGNS and RBS are relatively young plants and, as a result, past refueling outages have not usually included significant CRD work. In the future the required CRD work will increase. For example GGNS is expected to rebuild 20 to 30 CRDs every other refueling outage in the future. Consequently, the next outage has scheduled 120 hours of refueling floor critical path time with no fuel movement occurring to allow for the CRD work. During the upcoming outage, other work is scheduled to occur during most of this time, minimizing the impact of suspending fuel movement for the CRD work.

Future outages may contain work which would minimize the impact of the current requirements. Therefore, the estimated saving will average between 1 day and 5 days of critical path time per unit every other outage.

As a result, the proposed change provides a potential savings of \$500,000 to \$2,500,000 every other refueling outage in reduced critical path time resulting in a savings of \$4.5M to \$22.5M for the remaining life of the plant for GGNS and \$5M to \$25M for RBS for a total savings of \$9.5M to \$47.5M.

G. NO SIGNIFICANT HAZARDS CONSIDERATION

Entergy Operations, Inc. proposes to change the current Grand Gulf Nuclear Station (GGNS) and River Bend Station (RBS) Technical Specifications. The specific proposed change is to add an additional method of performing fuel loading into LCO 3.10.6, "Multiple Control Rod Withdrawal - Refueling". The proposed change would allow fuel loading if a positive means of assuring fuel assemblies cannot be loaded into a core cell with a withdrawn or removed control rod is in effect.

The Commission has provided standards for determining whether a no significant hazards consideration exists as stated in 10 CFR 50.92(c). A proposed amendment

to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

Entergy Operations, Inc. has evaluated the no significant hazards consideration in its request for this license amendment and determined that no significant hazards consideration results from this change. In accordance with 10 CFR 50.91(a), Entergy Operations, Inc. is providing the analysis of the proposed amendment against the three standards in 10 CFR 50.92(c). A description of the no significant hazards consideration determination follows:

I. The proposed change does not significantly increase the probability or consequences of an accident previously evaluated.

The refueling interlocks (i.e., the refueling equipment and one-rod-out interlocks) allowed to be bypassed by Technical Specification LCO 3.10.6 are explicitly assumed in the analysis of the control rod removal error or fuel loading error during refueling. This analysis evaluates the consequences of control rod withdrawal during refueling. Criticality and, therefore, subsequent prompt reactivity excursions are prevented during the insertion of fuel, provided all control rods are fully inserted during the fuel insertion. The refueling interlocks accomplish this by preventing loading fuel into the core with any control rod withdrawn, or by preventing withdrawal of a rod from the core during fuel loading.

LCO 3.10.6 allows multiple control rod withdrawals, control rod removals, associated control rod drive (CRD) removal, or any combination of these, and the "full in" position indication input to the refueling interlocks is allowed to be bypassed for each withdrawn control rod if all fuel has been removed from the cell. This supports the GGNS Updated Final Safety Analyses Report (UFSAR) and RBS Updated Safety Analyses Report (USAR) analyses since with no fuel assemblies in the core cell, the associated control rod has no reactivity control function and does not need to remain inserted. Prior to reloading fuel into the cell, however, the associated control rod must be inserted to ensure that an inadvertent criticality does not occur, as evaluated in the analysis.

The Technical Specification requirements prohibiting fuel loading was placed in the Technical Specifications for GGNS and RBS as part of the originally enforced Technical Specification requirements to resolve NRC concerns identified in IE Information Notice No. 83-35, "Fuel Movement with Control Rods Withdrawn at BWRs" (IEN 83-35). IEN 83-35 details instances where

fuel assemblies were loaded into core cells while the control rod was withdrawn and discusses that the General Electric Company (GE) had issued Service Information Letter (SIL) No. 372.

SIL No. 372 discusses a potential event where 8 fuel assemblies are loaded into 2 adjacent core cells where the control rods are withdrawn and no action is taken to recover from the errors. In this SIL GE identified that the probability of such an event occurring was extremely low but potentially slightly higher than 10^{-6} per reactor year. To lower the probability of the event even further to where it need not be considered credible (i.e., below 10^{-6} per reactor year), GE recommended that the additional administrative control of prohibiting loading fuel with withdrawn rods be enforced.

The proposed change will only provide an additional way to meet the intent of the original GE recommendation. The proposed change will provide the additional allowance to perform fuel loading only if an additional positive means of assuring fuel assemblies cannot be loaded into a core cell with a withdrawn or removed control rod is in effect. The positive means will entail a physical barrier such that, even if refueling procedures were violated and an attempt was made to load a fuel assembly into a core cell with a withdrawn or removed control rod, the action would be prevented. This requirement provides sufficient additional restrictions to meet the intent of the GE recommendation to add additional administrative controls to prevent the postulated event from occurring.

The probability of an inadvertent criticality occurring will continue to be precluded by the same number of layers of administrative controls; therefore, the proposed change does not significantly increase the probability or consequences of an accident previously evaluated.

- II. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The administrative changes in the Technical Specification requirements do not involve a change in the design of the plant. The proposed requirements will continue to ensure that fuel is not loaded into a core cell that is associated with a removed or withdrawn control rod.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

- III. The proposed change does not involve a significant reduction in a margin of safety.**

The margin of safety associated with criticality events during fuel handling is provided by the event being a non credible event. The proposed change will only provide an additional means to meet the same intent of ensuring that the event is of such low probability as to be considered non credible. The proposed change will provide the additional allowance to perform fuel loading only if an additional positive means of assuring fuel assemblies cannot be loaded into a core cell with a withdrawn or removed control rod is in effect. The positive means will entail a physical barrier such that even if refueling procedures were violated and an attempt was made to load a fuel assembly into a core cell with a withdrawn or removed control rod the action would be prevented. This requirement provides sufficient additional restrictions to ensure that the event is of such low probability as to be considered non credible.

The probability of an inadvertent criticality occurring will continue to be precluded by the same number of layers of administrative controls; therefore, this change does not reduce the level of safety imposed by the current Technical Specification requirements.

Therefore, the proposed changes do not cause a significant reduction in the margin of safety.

**Mark-up of Affected
Technical Specifications
and Bases**

Grand Gulf Nuclear Station