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February 8, 1996
ST-HL-AE-5233
File No.: G20.01, G21.01
10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Proposed License Amendment Concerning an
Increase in Spent Fuel Pool Heat Loads - Revised

Reference: Letter from J. F. Groth to the Nuclear Regulatory Commission Document Control Desk dated May 30, 1995 (ST-HL-AE-5015)

Pursuant to 10CFR50.90, the South Texas Project proposes to amend its Operating Licenses NPF-76 and NPF-80 by incorporating the attached changes to the Updated Final Safety Analysis Report for the South Texas Project Units 1 and 2. The purpose of this license change is to revise the Spent Fuel Pool heat load licensing basis to provide greater flexibility for normal refueling practices. The proposed changes in this submittal include revised calculated temperatures developed using improved and more realistic assumptions, as well as responses to questions from Nuclear Regulatory Commission reviewers. The changes in the text of the summary and description of the proposed changes that affect the proposed amendment have been underlined. A new revision of Updated Final Safety Analysis Report Table 9.1-1 has also been included.

Current South Texas Project licensing basis calculations for heat load to the Spent Fuel Pool are based on the assumption that the entire core is discharged to the Spent Fuel Pool during refueling, and typically all but 65 assemblies are returned to the reactor. This is based on a twelve-month refueling cycle. Under the present 18-month refueling cycle, typically 88 fuel assemblies are left in the Spent Fuel Pool. Since fuel offload to the Spent Fuel Pool has not been permitted until the decay heat is less than that assumed in the licensing basis, the South Texas Project has remained within its licensing basis.

The licensing basis calculations have been reperformed using the methodology given in Section 9.1.3 of the Standard Review Plan, assuming more fuel assemblies are offloaded as a basis for the heat load. In this case, the calculated maximum temperatures may exceed the limits identified in the Safety Evaluation Report.

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The South Texas Project has reviewed the concerns identified in Information Notice 95-54, "Decay Heat Management Practices During Refueling Outages," and found no impact pertinent to this proposed license amendment.

The calculated increase in the Spent Fuel Pool temperature decreases the margin of safety and therefore requires review as an unreviewed safety question by the Nuclear Regulatory Commission pursuant to 10CFR50.59. However, the attached safety evaluation shows that the increase does not constitute a significant hazard.

The South Texas Project has reviewed the attached proposed amendment pursuant to 10CFR50.92 and determined that it does not involve a significant hazards consideration. In addition, the South Texas Project has determined that the proposed amendment satisfies the criteria of 10CFR51.22(c)(9) for categorical exclusion from the requirement for an environmental assessment.

The South Texas Project Nuclear Safety Review Board and the Plant Operations Review Committee previously reviewed and approved the proposed amendment. The changes in this revision do not change the intent of the proposed amendment.

The South Texas Project requests that the effective date of this amendment be 30 days after the date of Nuclear Regulatory Commission approval. Although this request is neither exigent nor an emergency, issuance of this amendment by the Nuclear Regulatory Commission by December 31, 1996, is requested.

In accordance with 10CFR50.91(b), the South Texas Project is providing the State of Texas with a copy of this proposed amendment.

If you should have any questions concerning this matter, please contact Mr. A. W. Harrison at (512) 972-7298 or me at (512) 972-8787.

T. H. Cloninger
Vice President,
Nuclear Engineering

PLW/lf

Attachments:
1) Summary and Description of the Proposed Changes - Revised
2) No Significant Hazards Consideration Determination - Revised
3) Marked-Up Updated Final Safety Analysis Report Pages - Revised

c:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Houston Lighting & Power	)	Docket Nos. 50-498
Company, et al.,	)	50-499
	)	
South Texas Project	)	
Units 1 and 2	)	

AFFIDAVIT

T. H. Cloninger, being duly sworn, hereby deposes and says that he is Vice President, Nuclear Engineering of Houston Lighting & Power Company; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached revision to the proposed amendment to the South Texas Project Units 1 and 2 concerning an increase in spent fuel pool heat loads; is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge and belief.

T. H. Cloninger
Vice President,
Nuclear Engineering

STATE OF TEXAS)
)
COUNTY OF MATAGORDA)

Subscribed and sworn to before me, a Notary Public in and for The State of Texas this 8th day of February, 1996.

LINDA RITTENBERRY
Notary Public, State of Texas
My Commission Expires 10/9/97

Linda Rittenberry
Notary Public in and for
The State of Texas

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ATTACHMENT 1

SUMMARY AND DESCRIPTION OF THE PROPOSED CHANGES

REVISED

1.0 SUMMARY

Currently, the South Texas Project spent fuel pool heatup calculations assume the entire core is discharged to the Spent Fuel Pool, and all but typically one-third of the core (65 assemblies) is reinserted in the reactor during each refueling outage. However, this is based on use of a twelve-month refueling cycle. The South Texas Project has performed an analysis based on an eighteen-month refueling cycle under which typically 88 assemblies are left in the Spent Fuel Pool during each refueling outage. Increasing the assumed number of fuel assemblies being discharged results in an increased heat load to the Spent Fuel Pool. The South Texas Project proposes to revise the Updated Final Safety Analysis Report Section 9.1 and Tables 9.1-1 and 9.1-5 to reflect the recalculated Spent Fuel Pool heatup temperatures.

Using methods more severe than prescribed in Section 9.1.3 of the Standard Review Plan, the South Texas Project has determined that the calculated maximum bulk water temperature in the Spent Fuel Pool, with the 18-month cycle Vantage 5H fuel, may exceed the limits specified in the Safety Evaluation Report for the South Texas Project. Pursuant to 10CFR50.59, this increase in temperature is a decrease in the margin of safety, and therefore requires review as an unreviewed safety question. However, the following safety evaluation shows that the increase does not constitute a significant hazard.

2.0 BACKGROUND

The current refueling practice at the South Texas Project is as follows:

1. Remove the entire core (193 fuel assemblies) and place it in the Spent Fuel Pool. This is a full-core offload and is defined as the Abnormal Maximum condition in Section 9.1.3 of the Standard Review Plan.

2. Transfer a fraction of the 193 fuel assemblies from the Spent Fuel Pool back to the reactor for use in the next cycle. The fuel assemblies not transferred remain in the Spent Fuel Pool. This is the Normal Maximum condition as defined in Section 9.1.3 of the Standard Review Plan.

Currently, the South Texas Project licensing basis assumes one-third of the core (65 assemblies) is discharged into the Spent Fuel Pool for each normal refueling. This assumption was based on 12-month refueling cycles. In April 1991 and December 1991, respectively, South Texas Project Units 1 and 2 began the first 18-month fuel cycles. For an 18-month fuel cycle, typically 88 fuel assemblies can be discharged to the Spent Fuel Pool for a given fuel cycle. To ensure the South Texas Project remains within the licensing basis for heat load to the Spent Fuel Pool, fuel offload to the Spent Fuel Pool is not permitted until the decay heat is less than that assumed in the licensing basis.

The South Texas Project has revised the Spent Fuel Pool heatup analysis to incorporate the routine refueling practice of full-core offload and 18-month cycles. In the revised Spent Fuel Pool heatup analysis, the South Texas Project has also conservatively accounted for the higher peaking factor and enthalpy rise factor due to the Vantage 5H Fuel Upgrade program. The revision changes the licensing basis of the plant.

3.0 PROPOSED CHANGES

The South Texas Project proposes to modify the Updated Final Safety Analysis Report Chapters 3 and 9. The proposed change would revise the Spent Fuel Pool heatup temperatures in the Updated Final Safety Analysis Report Table 9.1-1. Particularly, the peak Spent Fuel Pool bulk water temperatures for the following cases would exceed the licensing limits given in Safety Evaluation Report, Supplement 6, Appendix BB:

- **Normal Maximum Case:**

Current	145.7°F	(65 assemblies discharged 140 hours after shutdown, one Spent Fuel Pool cooling train in operation)
Proposed	155.0°F	(88 assemblies discharged 150 hours after shutdown, one Spent Fuel Pool cooling train in operation)

- **[Deleted]**

- **Peak Spent Fuel Pool Bulk Water Temperature:**

Rapid Refueling Case:

Current	150.7°F	(65 assemblies discharged 80 hours after shutdown, one Spent Fuel Pool cooling train in operation)
Proposed	154.0°F	(193 assemblies discharged 100 hours after shutdown, two Spent Fuel Pool cooling trains in operation)
	200.0°F	(193 assemblies discharged 100 hours after shutdown, one Spent Fuel Pool cooling train in operation)

Abnormal Maximum Case:

Current	155.4°F	(193 assemblies discharged 120 hours after shutdown, 65 assemblies discharged 36 days after shutdown, two Spent Fuel Pool cooling trains in operation)
Proposed	153.0°F*	(193 assemblies discharged 150 hours after shutdown, 88 assemblies discharged 36 days after shutdown, with two component cooling water trains supplying cooling water to two Spent Fuel Pool heat exchangers)
	200.0°F	(193 assemblies discharged 150 hours after shutdown, 88 assemblies discharged 36 days after shutdown, with two component cooling water trains supplying cooling water to one Spent Fuel Pool heat exchanger)

*This scenario is within the current licensing basis. It is included here for completeness.

The following Updated Final Safety Analysis Report changes clarify the refueling practices and design of the Spent Fuel Pool and are included in this submittal for completeness:

(a) Updated Final Safety Analysis Report Section 9.1.2.3, Safety Evaluation for Spent Fuel Storage, will be revised to reflect that a complete loss of Spent Fuel Pool water inventory is not a credible event.

(b) Updated Final Safety Analysis Report Sections 9.1.3.1.2 and 9.1.3.3.2, describing dewatering protection for the Spent Fuel Pool Cooling and Cleanup System, will be revised to describe that draindown is not possible for credible design basis pipe breaks.

(c) Updated Final Safety Analysis Report Section 9.1.3.2.1 for the Spent Fuel Pool heat exchangers will be revised to confirm the heat exchanger capability to handle heat loads under the Abnormal Maximum Case.

(d) A new Updated Final Safety Analysis Report Section 9.1.3.2.2, "Spent Fuel Pool Cooling During Refueling Operation," will be added to describe the current Spent Fuel Pool cooling method during refueling operation.

(e) Updated Final Safety Analysis Report Section 9.1.3.3.1, describing availability and reliability of the Spent Fuel Pool Cooling and Cleanup System, will be revised to discuss 18-month refueling cycles.

(f) Updated Final Safety Analysis Report Section 9.1.3.3.2, "Spent Fuel Storage Area Dewatering," will be revised to identify the assumptions used in the heatup analysis.

(g) Updated Final Safety Analysis Report Table 9.1-1, "Spent Fuel Pool Cooling and Cleanup System Design Parameters," will be replaced to provide the revised Spent Fuel Pool bulk water temperatures and heat loads for various scenarios and the 18-month fuel cycles. The title of the table will also be changed to read "Spent Fuel Pool Heatup Analysis Results for 18-Month Reload Cycles."

(h) Updated Final Safety Analysis Report Table 9.1-5, "Spent Fuel Pool Cooling and Clean-up System Failure Modes and Effects Analysis," will be revised to include effects of failure that may result in a complete loss of Spent Fuel Pool cooling.

(i) Editorial changes and clarifications are included in various other sections.

Updated Final Safety Analysis Report markups of the proposed changes are provided as Attachment 3.

4.0 SAFETY EVALUATION

This safety evaluation addresses the following topics:

1. Spent Fuel Pool time to boil
2. Spent Fuel Pool boil-off rate
3. Normal Maximum case temperature
4. Rapid Refueling case temperature
5. Abnormal Maximum case temperature
6. Peak clad temperature
7. Peak Boraflex (poison) temperature
8. Stainless steel fuel box temperature
9. Spent Fuel Pool liner temperature
10. Spent Fuel Pool concrete temperature
11. Boiling dose consequences
12. Spent Fuel Pool calculated heatup rate comparison with plant data

The safety evaluation includes the effects of the following:

(a) Full-core offload for routine refueling operation,
(b) Fuel reload cycles of 18 months,
(c) Higher peaking factor (Fq) to incorporate the Vantage 5H fuel upgrade effects,
(d) Higher enthalpy rise factor ($F\Delta h$) to incorporate the Vantage 5H fuel upgrade effects.

4.1 SPENT FUEL POOL TIME TO BOIL

The impact of the proposed changes on the Spent Fuel Pool boiling conditions have been evaluated. In the event of a postulated complete loss of Spent Fuel Pool cooling capability, the shortest time-to-boil is calculated to be 2.9 hours, compared to the 2.86 hours under the current licensing basis. The analysis conservatively assumes that both cooling trains simultaneously fail just when the Spent Fuel Pool reaches its maximum bulk water temperature. The South Texas Project Operating Procedures conservatively require restoration of cooling to the Spent Fuel Pool within 2.5 hours following a loss of cooling incident.

4.2 SPENT FUEL POOL BOIL-OFF RATE

The South Texas Project has determined that the maximum revised Spent Fuel Pool boil-off rate would be 128 gpm for the Abnormal Maximum case, while the current boil-off rate given in the Safety Evaluation Report is 135 gpm. Therefore, there is no adverse impact on the Spent Fuel Pool boil-off rate as a result of the proposed changes. The revised boil-off rate is lower because calculations take into account the time it takes for the pool temperature to increase to the boiling point. This additional time allows additional decay time, with resulting lower heat load to the Spent Fuel Pool. The current means of makeup, described in Updated Final Safety Analysis Report Section 9.1.3.3.2, would not be affected.

4.3 NORMAL MAXIMUM CASE TEMPERATURE

The South Texas Project has evaluated the effects of the proposed changes on the Spent Fuel Pool bulk water temperature for the Normal Maximum Case. The peak bulk water temperature for this case (150 hours after shutdown and one cooling train in operation) would be 155°F. In the current safety analysis, the maximum pool temperature is 145.7°F, and is given in Supplement 6 to the Safety Evaluation Report, Appendix BB, Section 5.1. In the current safety analysis, the Spent Fuel Pool bulk water temperature remains above the Standard Review Plan limit of 140°F for 11.5 days. For the proposed changes, the maximum bulk water temperature would be greater than the 140°F Standard Review Plan criterion for approximately 31 days.

The 31-day period in which the Spent Fuel Pool bulk water temperature would remain above 140°F would not have an adverse effect on the structural integrity of the Spent Fuel Pool (see Sections 4.8, 4.9, and 4.10.) The proposed Spent Fuel Pool bulk water temperatures presented in the revised Updated Final Safety Analysis Report Table 9.1-1 do not exceed the design temperatures of Spent Fuel Pool components (e.g., demineralizers, heat exchangers, etc.). The peak bulk water temperature calculated for the Normal Maximum Case is below the 225°F used in the high density spent fuel rack analysis.

4.4 RAPID REFUELING CASE TEMPERATURE

The South Texas Project has evaluated the effects of the proposed changes on the Spent Fuel Pool bulk water temperature for the Rapid Refueling Case (full-core offload 100 hours after shutdown). The peak bulk water temperature for this case, with two Spent Fuel Pool cooling trains in operation, would be 154°F. The current safety analysis assumes one-third of the core is offloaded to the Spent Fuel Pool 80 hours after shutdown, resulting in a maximum pool temperature of 129.2°F, for two cooling trains, and 150.7°F for one spent fuel pool cooling train.

Since a full-core offload is the normal refueling practice at the South Texas Project, an analysis has also been performed for this case considering a single active failure (e.g., loss of one Spent Fuel Pool cooling train). The peak bulk water temperature for a full core off-loaded 100 hours after shutdown was calculated to be 154°F for two spent fuel pool cooling trains and 200°F for one spent fuel pool cooling train. This case assumes the final full-core discharge consists of 88 assemblies of freshly burned fuel (16 months of burnup) and 105 fuel assemblies burned for 40,000 effective full power hours. All previous discharges are assumed to have 40,000 effective full power hours of burnup. The calculated bulk water temperature is lower than the "no boiling" criterion for the full-core offload case specified in Standard Review Plan 9.1.3. This case was not previously considered in the Safety Analysis Report but is included here for completeness.

4.5 ABNORMAL MAXIMUM CASE TEMPERATURE

For the Abnormal Maximum Case with full-core offload, Standard Review Plan Section 9.1.3 requires that the temperature of the pool remain below the boiling point. Also, a single active failure (e.g. loss of one Spent Fuel Pool cooling train) need not be considered for the Abnormal Maximum case. In the current safety analysis, the maximum Spent Fuel Pool temperature for this case is 155.4°F. The peak Spent Fuel Pool bulk water temperature for the proposed change would be 153°F with two Spent Fuel Pool cooling trains. This is much lower than the "no boiling" criterion specified for this case in Standard Review Plan 9.1.3. Revised values for calculated heat loads and bulk water temperatures reflect use of a smaller pool volume and a smaller incremental time step as the heat loads and temperatures vary with time, which provide more precise calculated results. Therefore, the revised Spent Fuel Pool bulk water temperatures would be acceptable, given the conservative assumptions and calculational models used to determine the heat loads and temperatures.

Since a full-core offload is the normal refueling practice at the South Texas Project, an analysis has also been performed for this case considering a single failure involving loss of one of the two Spent Fuel Pool cooling trains. The peak bulk water temperature was calculated to be 200°F. This temperature is also lower than the "no boiling" criterion specified in Standard Review Plan 9.1.3. This case was not previously considered in the Safety Analysis Report but is included at the end of this subsection for completeness.

This case considers the final full-core discharge consists of 88 assemblies of freshly burned fuel (36 days of burnup) and the remaining 105 fuel assemblies with 40,000 effective full power hours of burnup. All previous discharges are considered to have 40,000 effective full power hours of burnup.

The 200°F maximum bulk water temperature is based on the above burnup and the following two cases:

Case #1: full-core discharge 150 hours after shutdown with two component cooling water trains supplying cooling water to one spent fuel pool heat exchanger.

Case #2: full-core discharge 175 hours after shutdown with one component cooling water train supplying cooling water to one spent fuel pool heat exchanger.

Typically, cycle specific calculations are performed to ensure that these Spent Fuel Pool temperature limits are not exceeded.

In the event of a postulated complete loss of Spent Fuel Pool cooling capability, the time-to-boil was calculated to be 2.9 hours. The time-to-boil analysis has been performed for the Abnormal Maximum case with complete loss of cooling. The analysis conservatively assumes that both cooling trains fail just when the Spent Fuel Pool reaches its maximum temperature. The South Texas Project design basis time-to-boil, given in Supplement 6 to the Safety Evaluation Report, Appendix BB, is 2.86 hours.

4.6 PEAK CLAD TEMPERATURE

The South Texas Project's analysis shows that the maximum fuel cladding temperature would be 224°F for the South Texas Project Rapid Refueling case (full core offload, 100 hours decay), which is higher than the current value of 202°F. To conservatively account for the Vantage 5H Fuel effects, the calculation for the peak clad temperature assumes the decay heat at the peak location in the fuel rod is 2.7 times higher than the batch average to conservatively account for a peaking factor (Fq) of 2.7. At the top of the fuel racks (about 23 ft below the Technical Specification minimum spent fuel pool water level), the saturation temperature is approximately 238°F. This gives sufficient subcooling margin. Therefore, no boiling would occur at the location of the peak clad temperature and the fuel cladding integrity would be maintained.

4.7 PEAK BORAFLEX (POISON) TEMPERATURE

The previously calculated maximum temperature of the Boraflex poison was seen to be less than the boiling temperature of the coolant. The South Texas Project's analysis using improved and more realistic assumptions shows that the maximum Boraflex poison temperature due to gamma heating is calculated to be 200°F. Since this peak Boraflex temperature is expected to be of short duration, the integrity of the Boraflex absorbers will not be substantially impacted. This conclusion is supported by Northeast Technologies and industry consultants familiar with the phenomenon of Boraflex degradation. Therefore, the change does not have an adverse effect on the integrity of the Boraflex.

4.8 STAINLESS STEEL FUEL BOX TEMPERATURE

The thermal hydraulic analysis concludes that the temperature gradient across the rack structure, due to differential heating between a full and an empty cell, is negligible, as is the temperature gradient through the thickness of the cell walls (less than 2°F). Therefore, the stainless steel structural integrity will be maintained.

4.9 SPENT FUEL POOL LINER TEMPERATURE

The Spent Fuel Pool liner plate and gates are designed to be exposed to water containing boric acid solution at a pool temperature of 212°F. The liner is not considered a structural member. Its function is to provide a leak-tight boundary only. The liner and liner anchorages are considered ductile enough to safely self-relieve the temperature stresses and redistribute tension and axial stresses. The calculated Spent Fuel Pool bulk water temperatures are less than 212°F; therefore, the design conditions have been met.

4.10 SPENT FUEL POOL CONCRETE TEMPERATURE

A maximum pool water temperature of 200°F has been calculated for the Abnormal Maximum case of full-core offload. The concrete stresses are evaluated for a pool temperature of 212°F. Therefore, the existing concrete design conditions have been met.

4.11 BOILING DOSE CONSEQUENCES

The Spent Fuel Pool boiling dose consequences following a complete loss of Spent Fuel Pool cooling for the full-core offload are described in the Updated Final Safety Analysis Report Section 9.1.3.3.4. The analysis described in the Updated Final Safety Analysis Report bounds the potential consequences associated with 18-month reload cycles. The results of the evaluation show that the dose consequences of iodine release due to Spent Fuel Pool boiling are significantly below the allowable dose requirements of 10 CFR 100. Therefore, there will be no significant increase in hazards to the health and safety of the public.

4.12 SPENT FUEL POOL CALCULATED HEATUP RATE COMPARISON WITH PLANT DATA

Spent Fuel Pool heatup rate data was obtained during a planned loss of Spent Fuel Pool cooling while motor-operated valves were being tested. The measured heatup rate was 0.3°F/hr. Based on the same Spent Fuel Pool conditions, the calculated heatup rate was determined using the Standard Review Plan Branch Technical Position ASB 9-2 assumptions and decay heat formulations. Using assumptions given in Standard Review Plan Section 9.1.3, the heatup rate was calculated to be 0.7°F/hr. Since the calculated heatup rate over-estimates the measured heatup rate, the results presented in Updated Final Safety Analysis Report Table 9.1-1 are conservative.

5.0 CONCLUSIONS

The safety evaluation includes the effects of full-core offload, 18-month reload cycles, higher peaking factors (Fq), and higher enthalpy rise factors (FΔh) which incorporate the effects of Vantage V5H fuel upgrade. The evaluation shows that the small reduction in margin of safety does not significantly increase the hazards and is not a safety concern because the following conditions are acceptable:

1. The time-to-boil due to loss of all Spent Fuel Pool cooling is 2.9 hours, which is higher than the 2.5 hours used in the South Texas Project's Operating Procedures.

2. In the event of Spent Fuel Pool boiling, the reactor makeup water pump can provide sufficient makeup water to meet the boil-off rate of 128 gpm. The assured pool makeup source is the Seismic Category I Low Head Safety Injection system. Low Head Safety Injection has been evaluated to provide at least 200 gpm. The Low Head Safety Injection system mode of recovery is addressed in Supplement 6 to the Safety Evaluation Report, Appendix BB.

3. During a full-core offload refueling operation, various means of cooling, described in the Updated Final Safety Analysis Report Section 9.1.3.2.2, are available which ensure that the safety analysis described in Updated Final Safety Analysis Report Section 9.1.3 will remain valid.

4. The fuel clad integrity is not compromised.

5. The integrity of the Spent Fuel Pool Boraflex is not adversely impacted.

6. Thermal stresses in the Spent Fuel Pool stainless steel rack walls are negligible and the stainless steel structural integrity is maintained.

7. The Spent Fuel Pool liner plate and gates are designed to be exposed to water containing boric acid solution at a pool temperature of 212°F. The calculated Spent Fuel Pool bulk water temperatures are less than 212°F; therefore, the design conditions have been met.

8. The Spent Fuel Pool concrete structure is designed to be exposed to water at a pool temperature of 212°F. The calculated Spent Fuel Pool bulk water temperatures are less than 212°F; therefore, the design conditions have been met.

9. The calculated Spent Fuel Pool boiling doses are conservative and well below the limits of 10 CFR 100.

10. The Spent Fuel Pool calculation overestimates the heatup rate as compared to plant measured data. Therefore, the calculated results presented in Updated Final Safety Analysis Report Table 9.1-1 are conservative and bounding.

6.0 REFERENCES

1. NUREG-0800, US NRC Standard Review Plan, Section 9.1.3 "Spent Fuel Pool Cooling and Cleanup System," Revision 1, July 1981.

2. NUREG-0781, Safety Evaluation Report Related to the Operation of South Texas Project, Units 1 and 2, including Supplements 3, 6, and 7, Section 9.1 and Appendix BB "Safety Evaluation by the Office of the Nuclear Reactor Regulation Related to the Increase in the Spent Fuel Capacity Through the Use of High Density Storage Racks."

3. NUREG-1346, Technical Specifications, South Texas Project, Unit Nos.1 and 2, Docket Nos. 50-498 and 50-499, Appendix "A" to License Nos. NPF-76 and NPF-80, Section 3/4.9.3 "Decay Time," March 1989.

4. South Texas Project Updated Final Safety Analysis Report, Chapters 3 and 9.

5. EPRI TR-103300, "Guidelines for Boraflex Use in Spent-Fuel Storage Racks," December 1993.

6. ST-HL-AE-2417, "Expansion of the Spent Fuel Pool Storage Capacity Using High Density Spent Fuel Racks;" letter from G. E. Vaughn to U. S. Nuclear Regulatory Commission, dated March 8, 1988.

ATTACHMENT 2

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The South Texas Project has determined that the proposed changes do not involve a significant hazards consideration as defined in 10 CFR 50.92:

1. The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated because:

   (a) The Spent Fuel Pool conditions are not indicative of accident initiators.
   (b) Design and operability requirements of equipment important to safety are not affected.
   (c) Spent Fuel Pool boiling will not occur and the Spent Fuel Pool components will remain within their design bases.
   (d) The complete loss of Spent Fuel Pool cooling event has previously been analyzed and described in Supplement 6 to the Safety Evaluation Report, Appendix BB. The dose consequences for this event have been evaluated and the safety evaluation is described in Updated Final Safety Analysis Report Section 9.1.3.3.4. The results of the evaluation show that the Spent Fuel Pool components would remain within their design bases. Also, the dose consequences of iodine release as a result of Spent Fuel Pool boiling are significantly below the allowable dose limits of 10 CFR 100.

2. The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated because:

   (a) The operability of safety-related equipment is not impacted.
   (b) The probability of safety-related equipment malfunctioning is not increased.
   (c) The scope of the change does not establish a potential new accident precursor.
   (d) The Spent Fuel Pool design considers design basis heat loads for the modified refueling procedure which includes a full-core offload.

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION - (Continued)

(e) For the design basis case, the integrity of the Spent Fuel Pool Boraflex is not adversely impacted.

3. The proposed changes do not involve a significant reduction in a margin of safety because:

(a) No fuel damage would occur as a result of the proposed change.
(b) Technical Specification operability and surveillance requirements are not reduced.
(c) The Spent Fuel Pool boiling doses would be significantly below the allowable dose limits of 10 CFR 100.
(d) The modified refueling procedure (full-core offload) continues to have acceptable margins of safety.
(e) The integrity of the Spent Fuel Pool Boraflex is not adversely impacted.

Based on the safety evaluation presented above for the proposed changes, the South Texas Project has determined that the health and safety of the public will not be jeopardized. Therefore, the proposed changes do not involve a significant hazards consideration.

IMPLEMENTATION PLAN

The South Texas Project requests an implementation time of 30 days from the effective date of the approved license amendment to facilitate distribution and to make appropriate changes to plant documents.

ATTACHMENT 3

Marked-up Updated Final Safety Analysis Report Pages - Revised