

ATTACHMENT 2

Safety Evaluation  
for the  
Proposed Changes to Permit Fuel Reconstitution

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Safety Evaluation  
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1.0 Summary

The purpose of this proposed change is to modify the South Texas Project Technical Specifications to allow limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations. The proposed change to the Technical Specifications follows that described in the USNRC Generic Letter 90-02, Supplement 1 (Reference 1).

Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by tests or analyses to comply with all fuel safety design bases. Since fuel assemblies containing filler rods will be shown to meet the current design limits on a cycle-specific basis, there is no impact on the design basis of the plant. Therefore, the effects of the proposed changes do not pose a significant increase in hazards.

2.0 Purpose

The objective of this effort is to permit fuel assembly reconstitution to restore the usefulness of fuel assemblies containing damaged or leaking fuel rod(s). This is accomplished by allowing a limited number of fuel rods to be substituted with zirconium alloy or stainless steel filler rods. The restoration of fuel assemblies is a direct economic benefit to the South Texas Project.

This submittal proposes a revised description of a fuel assembly and includes changes to the pertinent section of the Technical Specifications. The proposed change to the Technical Specifications follows that described in the USNRC Generic Letter 90-02, Supplement 1 (Reference 1).

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3.0 Description of Change

This submittal proposes to modify Section 5.3.1 of the South Texas Project Technical Specifications to allow the substitution of filler rods for fuel rods and to allow a limited number of lead test assemblies. The wording for the proposed change is that suggested by the USNRC in Reference 1. The proposed Technical Specification is presented in Attachment 4.

The proposed change to Technical Specification 5.3.1 is a complete substitution of the existing specification. As such, it supersedes the change to this Technical Specification proposed in the submittal package in Reference 3.

The actual process used for fuel assembly reconstitution will be governed by plant procedures. The procedures will be reviewed for any unreviewed safety questions using the internal South Texas Project 10CFR50.59 review process.

4.0 Safety Evaluation.

The purpose of this section is to discuss the impact of the proposed change on the design and licensing basis of the plant.

The USNRC has suggested a revised section for the fuel assembly Design Features in the Standard Technical Specifications to accommodate limited fuel reconstitution based on NRC-approved generic topical reports or on similar plant-specific reports (Reference 1). The proposed change to the South Texas Project Technical Specifications description of a fuel assembly is consistent with the NRC-suggested wording for this section, as presented in Reference 1.

Fuel assemblies containing filler rods will be shown to meet the current nuclear, mechanical, and thermal-hydraulic design limits on a cycle-specific basis. A description of the methodology that will be used to analyze fuel assemblies that have been reconstituted using solid filler rods is found in Reference 2 (WCAP-13060-P-A), "Westinghouse Fuel Assembly Reconstitution Evaluation Methodology". Since fuel assemblies containing filler rods will be shown to meet the current design limits on a cycle-specific basis, there is no impact on the design basis of the plant.

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Replacement of fuel rods with fuel rods containing natural uranium or fuel rods from fresh or burned assemblies will be evaluated by South Texas Project's internal 10CFR50.59 review process. Reconstituted fuel assemblies with fuel rods containing natural uranium and/or fuel rods from fresh or burned assemblies will be analyzed using the normal design methodology as described in Section 6.9.1.6 of the Technical Specifications.

The USNRC requested that "[Westinghouse] must confirm on a reload application basis that the incorporation of solid replacement rods does not introduce a change in radial gradients in the flow and enthalpy distribution of the hot channel of the reconstituted assembly as described in Section 4.3 of this [Technical Evaluation Report] (Reference 3)." This requirement will be met by a cycle-by-cycle evaluation of correlation parameters of the DNBR correlation for the reconstituted assembly, per Reference 4.

The proposed changes do not allow vacancies (i.e. water holes) in the fuel assembly. This is consistent with GL 90-02, Supplement 1. The proposed changes require that filler rods be used in accordance with NRC-approved applications of fuel rod configurations. The current Technical Specifications do not require that the application have prior approval.

The current Technical Specifications require that the fuel be similar in physical design to the first cycle fuel. This requirement is not included in the proposed changes. The deletion of this requirement is consistent with GL 90-02, Supplement 1. In addition, the physical constraints on the fuel assembly resulting from the core envelope dimensions, preclude any significant changes in the physical design.

The proposed changes require that the fuel assembly configurations be limited to those fuel designs that have been analyzed with applicable NRC Staff-approved codes and methods. These changes have no impact since approved methods are already required for changes such as this which affect the Core Operating Limits Report (COLR).

The words in the current Technical Specifications about the enrichment of the initial core are no longer relevant and are deleted by the proposed changes. This is consistent with the recommendations of GL 90-02, Supplement 1.

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The proposed changes require that the fuel be uranium dioxide. The current Technical Specifications only require that it be enriched U-235. This change has no impact since there are no plans to use anything except uranium dioxide in the fuel.

The proposed changes allow use of lead test assemblies in limited numbers and in non-limiting core locations. The current Technical Specifications do not have any such allowance. Licensees have traditionally been allowed this ability, since lead test assemblies are an important part of product development and improvement. This change is also consistent with the recommendations of GL 90-02, Supplement 1.

#### 5.0 Conclusion

The proposed change to the Technical Specifications, as described above, is acceptable because the proposed change does not pose a significant increase in hazard or involve a significant reduction in a margin of safety.

#### 6.0 References

1. Generic Letter 90-02, Supplement 1, "Supplement 1 to Generic Letter 90-02, 'Alternative Requirements for Fuel Assemblies in the Design Features Section of Technical Specifications'," USNRC, 31 Jul 1992.
2. WCAP 13060-P-A, "Westinghouse Fuel Assembly Reconstitution Evaluation Methodology," September, 1991.
3. "South Texas Project Units 1 and 2 Docket Nos. STN 50-498; 50-499 Proposed Licensing Amendment Concerning Technical Specifications Based Upon Nuclear Fuel Upgrade, Plant Safety Evaluation, and Revised Thermal Design Procedure," Letter from S.L. Rosen, HL&P, to USNRC, dated May 27, 1993, ST-HL-AE-4364.
4. "Fuel Assembly Reconstitution," Letter from N.J. Liparulo, Westinghouse, to USNRC, dated 1 June 1993, ET-NRC-3-3897.

ATTACHMENT 3

Determination of No Significant Hazards  
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**Determination of No Significant Hazards  
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Pursuant to 10CFR50.91, this analysis provides a determination that the proposed change to the Technical Specifications does not involve significant hazards considerations as defined in 10CFR50.92.

The proposed change modifies Section 5.3.1 of the South Texas Project Technical Specifications to allow the substitution of filler rods for fuel rods and to allow a limited number of lead test assemblies. The wording for the proposed change is based upon that suggested by the USNRC in Reference 1.

- (1) The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Fuel assemblies containing filler rods will be shown to meet the current nuclear, mechanical, and thermal-hydraulic design limits on a cycle-specific basis. Since fuel assemblies containing filler rods will be shown to meet the current nuclear, mechanical, and thermal-hydraulic design limits on a cycle-specific basis, there is no impact on the design basis of the plant.

Replacement of fuel rods with fuel rods containing natural uranium or fuel rods from fresh or burned assemblies will be evaluated by South Texas Project's internal 10CFR50.59 review process. Reconstituted fuel assemblies with fuel rods containing natural uranium and/or fuel rods from fresh or burned assemblies will be analyzed using the normal design methodology as described in Section 6.9.1.6 of the Technical Specifications.

Since current reload core design limits will be met by fuel assemblies using zirconium alloy or stainless steel filler rods, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.



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

The use of filler rods does not involve any alteration to plant equipment or procedures which would introduce any new or unique operational modes or accident precursors. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- (3) The proposed change does not involve a significant reduction in a margin of safety.

The use of filler rods does not change the reload design or safety analysis limits for a reload core. Their use will be evaluated on a cycle-specific basis using NRC-accepted fuel rod configurations and analysis techniques. Since the safety analysis limits are unaffected and since the modified fuel assemblies will be shown to meet existing design limits on nuclear, mechanical, and thermal-hydraulic parameters, the proposed change does not involve a significant reduction in a margin of safety.

The USNRC requested that "[Westinghouse] must confirm on a reload application basis that the incorporation of solid replacement rods does not introduce a change in radial gradients in the flow and enthalpy distribution of the hot channel of the reconstituted assembly as described in Section 4.3 of this [Technical Evaluation Report] (Reference 3)." This requirement will be met by a cycle-by-cycle evaluation of correlation parameters of the DNBR correlation for the reconstituted assembly, per Reference 4.

Since the proposed change does not result in a significant increase in hazards, Houston Lighting & Power requests approval of the changes.

Implementation Plan

Houston Lighting & Power requests an implementation time of 30 days from the effective date to complete procedures and make appropriate document distribution.

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References

1. Generic Letter 90-02, Supplement 1, "Supplement 1 to Generic Letter 90-02, 'Alternative Requirements for Fuel Assemblies in the Design Features Section of Technical Specifications'," USNRC, 31 Jul 1992.
2. WCAP-13060-P-A, "Westinghouse Fuel Assembly Reconstitution Evaluation Methodology," September, 1991.
3. "Acceptance for Referencing of Topical Report WCAP-13060-P, 'Westinghouse Fuel Assembly Reconstitution Evaluation Methodology' (TAC No. M82139)," A.C. Thadahi, Director, Division of Systems Safety and Analysis, USNRC, to S.R. Tritch, Westinghouse Electric Corporation, 30 March 1993.
4. "Fuel Assembly Reconstitution," Letter from N.J. Liparulo, Westinghouse, to USNRC, dated 1 June 1993, ET-NRC-3-3897.