

August 19, 1997

Mr. William T. Cottle
Group Vice-President, Nuclear
Houston Lighting & Power Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - AMENDMENT NOS. 89
AND 76 TO FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80
(TAC NOS. M98450 AND M98451)

Dear Mr. Cottle:

The Commission has issued the enclosed Amendment Nos. 89 and 76 to Facility Operating License Nos. NPF-76 and NPF-80 for the South Texas Project, Units 1 and 2 (STP). The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated April 22, 1997.

The amendments revise TS 5.3.1, Fuel Assemblies, and 6.9.1.6, Core Operating Limits Report, to allow use of an alternate zirconium-based fuel cladding, ZIRLO, and limited substitution of fuel rods by ZIRLO filler rods.

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

Sincerely,

ORIGINAL SIGNED BY: J. Kennedy for
Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures: 1. Amendment No. 89 to NPF-76
2. Amendment No. 76 to NPF-80
3. Safety Evaluation

cc w/encls: See next page

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Document Name: STP98450.AMD

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NAME	TAlexion/vw <i>JK</i>	CHawes <i>CMH</i>	JLyons <i>#6158A</i>	<i>W/NO</i>
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 19, 1997

Mr. William T. Cottle
Executive Vice-President &
General Manager, Nuclear
Houston Lighting & Power Company
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A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

A handwritten signature in cursive script that reads "Janet Kennedy for".

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

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cc w/encls: See next page

Mr. William T. Cottle
Houston Lighting & Power Company

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

HOUSTON LIGHTING & POWER COMPANY
CITY PUBLIC SERVICE BOARD OF SAN ANTONIO
CENTRAL POWER AND LIGHT COMPANY
CITY OF AUSTIN, TEXAS
DOCKET NO. 50-498
SOUTH TEXAS PROJECT, UNIT 1
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 89
License No. NPF-76

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Houston Lighting & Power Company* (HL&P) acting on behalf of itself and for the City Public Service Board of San Antonio (CPS), Central Power and Light Company (CPL), and City of Austin, Texas (COA) (the licensees), dated April 22, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

*Houston Lighting & Power Company is authorized to act for the City Public Service Board of San Antonio, Central Power and Light Company and City of Austin, Texas and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-76 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 89, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Janet Kennedy for

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: August 19, 1997



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

HOUSTON LIGHTING & POWER COMPANY
CITY PUBLIC SERVICE BOARD OF SAN ANTONIO
CENTRAL POWER AND LIGHT COMPANY
CITY OF AUSTIN, TEXAS
DOCKET NO. 50-499
SOUTH TEXAS PROJECT, UNIT 2
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 76
License No. NPF-80

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Houston Lighting & Power Company* (HL&P) acting on behalf of itself and for the City Public Service Board of San Antonio (CPS), Central Power and Light Company (CPL), and City of Austin, Texas (COA) (the licensees), dated April 22, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

*Houston Lighting & Power Company is authorized to act for the City Public Service Board of San Antonio, Central Power and Light Company and City of Austin, Texas and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-80 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 76, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Janet Kennedy for

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: August 19, 1997

ATTACHMENT TO LICENSE AMENDMENT NOS. 89 AND 76
FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80
DOCKET NOS. 50-498 AND 50-499

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE

5-6
6-22
6-23

INSERT

5-6
6-22
6-23

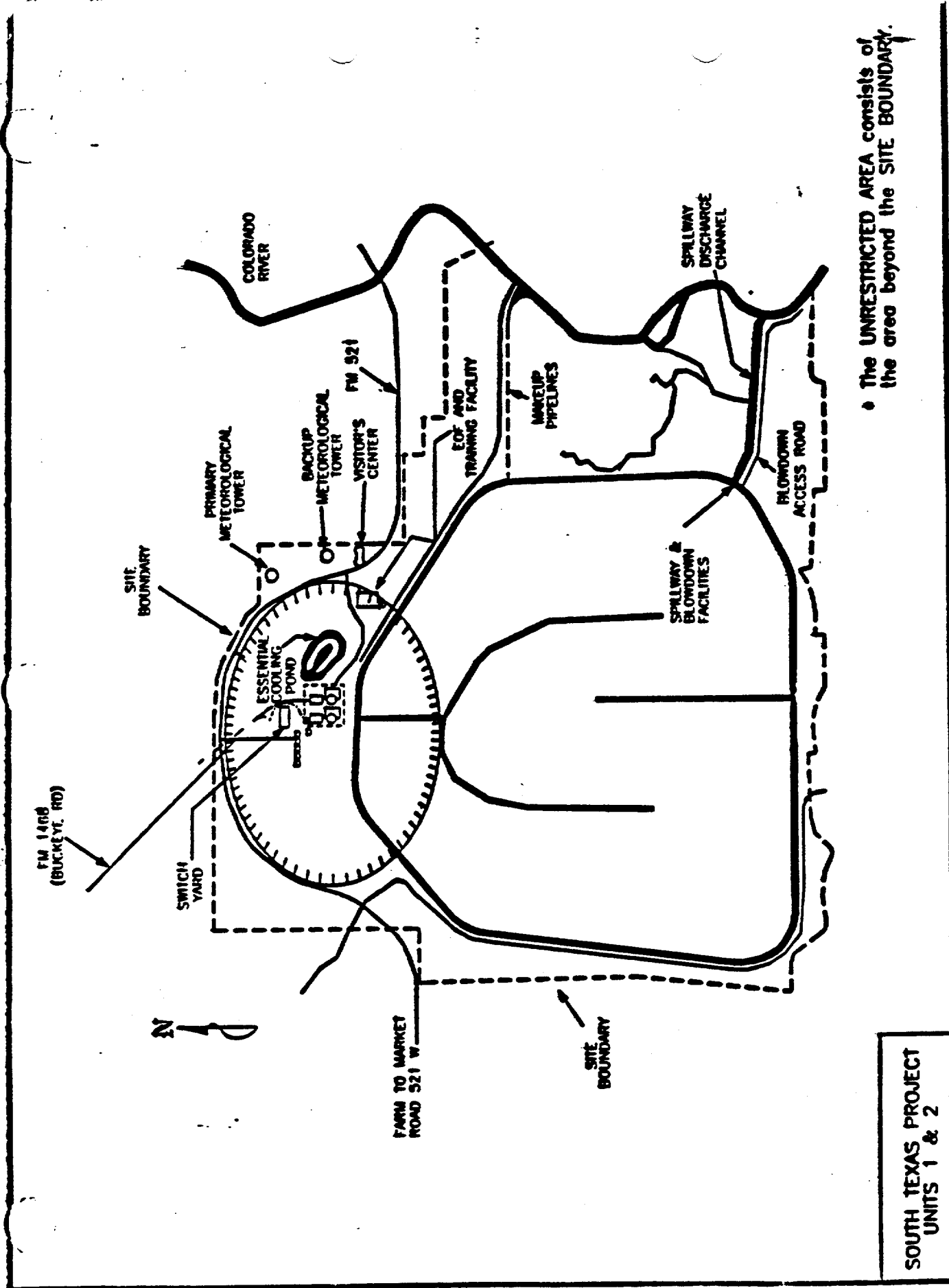


FIGURE 5.1-4
UNRESTRICTED AREA AND SITE BOUNDARY FOR RADIOACTIVE LIQUID EFFLUENTS

ADMINISTRATIVE CONTROLS

MONTHLY OPERATING REPORTS

6.9.1.5 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the PORVs or safety valves, shall be submitted on a monthly basis to the Director, Office of Resource Management, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the Regional Administrator of the Regional Office of the NRC, no later than the 15th of each month following the calendar month covered by the report.

CORE OPERATING LIMITS REPORT

6.9.1.6.a Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle, or any part of a reload cycle for the following:

1. Moderator Temperature Coefficient BOL and EOL limits, and 300 ppm surveillance limit for Specification 3/4.1.1.3,
2. Shutdown Bank Insertion Limit for Specification 3/4.1.3.5,
3. Control Bank Insertion Limits for Specification 3/4.1.3.6,
4. Axial Flux Difference limits and target band for Specification 3/4.2.1,
5. Heat Flux Hot Channel Factor, $K(Z)$, Power Factor Multiplier, and (F_{xy}^{RTP}) for Specification 3/4.2.2, and
6. Nuclear Enthalpy Rise Hot Channel Factor, and Power Factor Multiplier for Specification 3/4.2.3.

The CORE OPERATING LIMITS REPORT shall be maintained available in the Control Room.

6.9.1.6.b The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in:

1. WCAP 9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY", July, 1985 (W Proprietary).

(Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient, 3.1.3.5 - Shutdown Rod Insertion Limit, 3.1.3.6 - Control Bank Insertion Limits, 3.2.1 - Axial Flux Difference, 3.2.2 - Heat Flux Hot Channel Factor, and 3.2.3 - Nuclear Enthalpy Rise Hot Channel Factor.)

- 1.A. WCAP 12942-P-A, "SAFETY EVALUATION SUPPORTING A MORE NEGATIVE EOL MODERATOR TEMPERATURE COEFFICIENT TECHNICAL SPECIFICATION FOR THE SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 AND 2."

CORE OPERATING LIMITS REPORT (Continued)

6.9.1.6.d The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements thereto, shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk, with copies to the Regional Administrator and Resident Inspector.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator of the Regional Office of the NRC within the time period specified for each report.

6.10 RECORD RETENTION

6.10.1 In addition to the applicable record retention requirements of Title 10, Code of Federal Regulations, the following records shall be retained for at least the minimum period indicated.

6.10.2 The following records shall be retained for at least 5 years:

- a. Records and logs of unit operation covering time interval at each power level;
- b. Records and logs of principal maintenance activities, inspections, repair, and replacement of principal items of equipment related to nuclear safety;
- c. ALL REPORTABLE EVENTS;
- d. Records of surveillance activities, inspections, and calibrations required by these Technical Specifications;
- e. Records of changes made to the procedures required by Specification 6.8.1;
- f. Records of sealed source and fission detector leak tests and results; and
- g. Records of annual physical inventory of all sealed source material of record.

6.10.3 The following records shall be retained for the duration of the unit Operating License:

- a. Records and drawing changes reflecting unit design modifications made to systems and equipment described in the Final Safety Analysis Report;
- b. Records of new and irradiated fuel inventory, fuel transfers, and assembly burnup histories;
- c. Records of doses received by all individuals for whom monitoring was required;
- d. Records of gaseous and liquid radioactive material released to the environs;



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NOS. 89 AND 76 TO
FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80
HOUSTON LIGHTING & POWER COMPANY
CITY PUBLIC SERVICE BOARD OF SAN ANTONIO
CENTRAL POWER AND LIGHT COMPANY
CITY OF AUSTIN, TEXAS
DOCKET NOS. 50-498 AND 50-499
SOUTH TEXAS PROJECT, UNITS 1 AND 2

1.0 INTRODUCTION

By application dated April 22, 1997, Houston Lighting & Power Company, et.al., (the licensee) requested changes to the Technical Specifications (TSs) (Appendix A to Facility Operating License Nos. NPF-76 and NPF-80) for the South Texas Project, Units 1 and 2 (STP). The proposed changes would revise TS 5.3.1, Fuel Assemblies, and 6.9.1.6, Core Operating Limits Report, to allow use of an alternate zirconium-based fuel cladding, ZIRLO, and limited substitution of fuel rods by ZIRLO filler rods.

2.0 BACKGROUND

The use of ZIRLO clad material in Westinghouse fuel was described in Topical Report WCAP-12610, "VANTAGE+ Fuel Assembly Reference Core Report," and was approved by the Nuclear Regulatory Commission (NRC) staff for irradiation up to 60,000 MWD/MTU rod average burnup. Extensive testing of this fuel has been conducted by Westinghouse through lead test assembly programs and it has been selected as reload fuel by other utilities.

3.0 EVALUATION

TS 5.3.1 requires, in part, that each fuel assembly shall consist of a matrix of zircaloy clad fuel rods. Zircaloy or stainless steel filler rods may be substituted in place of fuel rods in accordance with approved applications of the fuel rod configurations and by cycle-specific reload analysis. The proposed amendment would modify TS 5.3.1 to allow fuel rods to be constructed with ZIRLO and allow fuel assembly reconstitution with ZIRLO filler rods. The use of other zirconium alloys would require an exemption from 10 CFR 50.46 in that only zircaloy and ZIRLO are identified in that regulation.

TS 6.1.9.6 lists the analytical methods, which have been reviewed and approved by the NRC, that are used to determine the core operating limits.

The staff approved the ZIRLO fuel design in a safety evaluation (SE) dated July 1, 1991, of Westinghouse Topical Report WCAP-12610. The NRC staff also approved loss of coolant accident (LOCA) methodologies in another SE, dated October 9, 1991, of Westinghouse Topical Reports WCAP-12610, Appendix F, "LOCA NOTRUMP Evaluation Model: ZIRLO Modifications," and Appendix G, "LOCA Plant-Specific Accident Evaluation." The July 1, 1991, SE concluded that:

- a. The mechanical design bases and limits for ZIRLO clad fuel assembly design are the same as those for the previously licensed Zircaloy-4 clad fuel assembly design, except those specified for clad corrosion.
- b. The neutronic evaluations have shown that ZIRLO clad fuel nuclear design bases are satisfied and that key safety parameter limits are applicable. The nuclear design models and methods accurately describe the behavior of ZIRLO clad fuel.
- c. The thermal and hydraulic design basis for ZIRLO clad fuel is unchanged.
- d. The methods and computer codes used in the analysis of the non-LOCA licensing-basis events are valid for ZIRLO clad fuel, and all licensing-basis criteria will be met.
- e. The large-break LOCA evaluation model was modified (without effecting model parameters as specified in Appendix K) to reflect the behavior of the ZIRLO clad material during a LOCA. Consequently, the revised evaluation model satisfies 10 CFR 50.46 and Appendix K of 10 CFR Part 50.

In the October 9, 1991, SE for WCAP-12610, Appendices F and G, the NRC concluded that the LOCA analyses and methods used demonstrated conformance with the criteria given in 10 CFR 50.46 and 10 CFR Part 50, Appendix K. The SE stated that its conclusions were based upon the close similarity between the material properties of the ZIRLO alloy of zirconium to those of other zirconium materials that have been previously licensed for use as cladding material. Based on this similarity, the NRC staff found that it is appropriately conservative to apply the criteria of 10 CFR 50.46 and 10 CFR Part 50, Appendix K, when reviewing VANTAGE+ (ZIRLO) fuel applications, including WCAP-12610, Appendices F and G.

Use of ZIRLO is intended to remediate the phenomenon of incomplete rod insertion, which has been experienced at STP. In-vessel compressive loading and irradiation growth of the fuel assembly guide tubes have been determined

to be the cause of incomplete partial insertion. The material of the guide tubes is being changed to ZIRLO for better dimensional stability and corrosion resistance, as well as compatibility with the fuel assembly skeleton.

Changing to ZIRLO cladding will also inhibit in-core fuel rod corrosion, which studies have shown to be of concern relative to high burnup fuel and longer cycles.

The change from Zircaloy-4 to ZIRLO is consistent with 10 CFR 50.44, 10 CFR 50.46 and NUREG-1431, "Standard Technical Specifications for Westinghouse Plants," which specifically includes ZIRLO as an acceptable cladding material. The licensee proposes to add the Westinghouse report WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," to TS 6.1.9.6 to reflect the methodology used for the rod heatup calculation in the LOCA evaluation models with ZIRLO clad fuel. This methodology adequately models core performance with ZIRLO and is acceptable. Thus, in light of the similarities in hydraulic, mechanical, and thermal characteristics of the fuel, the NRC staff concludes that the use of ZIRLO clad fuel at STP is acceptable.

4.0 TS CHANGES

REACTOR CORE, FUEL ASSEMBLIES, TS 5.3.1

The licensee has proposed to add "ZIRLO" in the fuel rod design in TS 5.3.1 in the following sentences:

Each fuel assembly shall consist of a matrix of Zircaloy or ZIRLO fuel rods....

Limited substitutions of zirconium alloy, or ZIRLO....

On the basis of its evaluation, the NRC staff concludes that the proposed change to add ZIRLO to TS 5.3.1 is acceptable.

CORE OPERATING LIMITS REPORT (COLR), TS 6.9.1.6.b

The licensee also proposed to add a reference to NRC-approved Topical Report WCAP-12610-P-A, April 1995 (Westinghouse Proprietary), for a LOCA evaluation model with ZIRLO clad fuel for the rod heatup calculation (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor).

Use of this approved methodology will ensure that values for cycle-specific parameters are determined such that all applicable limits (e.g., fuel, thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met. Therefore, the staff considers that the modification to Section 6.1.9.6.b is acceptable.

5.0 SUMMARY

The NRC staff has reviewed the licensee's submittal regarding the use of ZIRLO clad fuel and the associated TS changes. On the basis of its evaluation, the staff concludes that use of ZIRLO is consistent with the requirements of 10 CFR 50.46 and 10 CFR Part 50, Appendix K and the proposed changes to the TS and the COLR are acceptable.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Texas State official was notified of the proposed issuance of the amendments. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (62 FR 27795). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Attard

Date: August 19, 1997