

March 21, 2002

Mr. Joseph E. Venable
Vice President Operations
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - ISSUANCE OF
AMENDMENT RE: REPLACEMENT OF PART-LENGTH CONTROL ELEMENT
ASSEMBLIES (TAC NO. MB2379)

Dear Mr. Venable:

The Commission has issued the enclosed Amendment No. 182 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3 (Waterford 3). The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 9, 2001, as supplemented by letters dated October 23, 2001, January 17, and February 1, 2002.

The amendment deletes the requirements associated with part-length control element assemblies (PLCEAs) from the Waterford 3 TS. During the spring 2002 refueling outage, the PLCEAs will be replaced with five-element full-length, full-strength control element assemblies (CEAs). Additionally, all four of the four-element CEAs on the core periphery will be removed and no longer used.

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

Sincerely,

/RA/

N. Kalyanam, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosures: 1. Amendment No. 182 to NPF-38
2. Safety Evaluation

cc w/encls: See next page

March 21, 2002

Mr. Joseph E. Venable
Vice President Operations
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - ISSUANCE OF
AMENDMENT RE: REPLACEMENT OF PART-LENGTH CONTROL ELEMENT
ASSEMBLIES (TAC NO. MB2379)

Dear Mr. Venable:

The Commission has issued the enclosed Amendment No. 182 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3 (Waterford 3). The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 9, 2001, as supplemented by letters dated October 23, 2001, January 17, and February 1, 2002.

The amendment deletes the requirements associated with part-length control element assemblies (PLCEAs) from the Waterford 3 TS. During the spring 2002 refueling outage, the PLCEAs will be replaced with five-element full-length, full-strength control element assemblies (CEAs). Additionally, all four of the four-element CEAs on the core periphery will be removed and no longer used.

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

Sincerely,
/RA/

N. Kalyanam, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-382

- Enclosures: 1. Amendment No. 182 to NPF-38
2. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:

PUBLIC PDIV-1 Reading RidsNrrDripRorp (RDennig)
RidsNrrDlpmPdiv (SRichards) RidsOgcRp RidsAcrcAcnwMailCenter
RidsNrrDlpmPdivLpdiv1 (RGramm) G.Hill(2) RidsNrrPMNKalyanam
RidsNrrLADJohnson RTaylor AAttard
RidsRgn4MailCenter (KBrockman) L.Hurley, RIV D. Bujol, RIV
RidsNrrDssaSrxb(JWermiel) **TS: ML020840443 PKG .: ML020860347**

Accession No.: ML020810499 NRR-058 * SE provided by staff used with minor editorial changes

OFFICE	PDIV-1/PM	PDIV-1/LA	SRXB*	OGC Nlo sub to chg-P.4 of SE	PDIV-1/SC
NAME	NKalyanam	DJohnson	FAkstulewicz	JHeck	RGramm
DATE	3/19/02	3/14/02	3/13/2002	3/20/02	3/21/02

ENERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 182
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc. (EOI or the licensee), dated July 9, 2001, as supplemented by letters dated October 23, 2001, January 17, and February 1, 2002, 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, 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 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.

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-38 is hereby amended to read as follows:

- (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 182, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. EOI shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Robert A. Gramm, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 21, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 182

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

IV
1-6
3/4 1-1
3/4 1-3
3/4 1-18
3/4 1-19
3/4 1-20
3/4 1-22
3/4 1-23
3/4 1-24
3/4 1-25
3/4 1-26
3/4 1-28
3/4 2-4
3/4 3-7
3/4 9-1
3/4 10-1
3/4 10-2
5-5
6-20
6-20a

Insert

IV
1-6
3/4 1-1
3/4 1-3
3/4 1-18
3/4 1-19
3/4 1-20
3/4 1-22
3/4 1-23
3/4 1-24
3/4 1-25
3/4 1-26
3/4 1-28
3/4 2-4
3/4 3-7
3/4 9-1
3/4 10-1
3/4 10-2
5-5
6-20
6-20a

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 182 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated July 9, 2001, (Reference 1) as supplemented by letters dated October 23, 2001, (Reference 2), January 17, (Reference 3), and February 1, 2002, (Reference 4), Entergy Operations, Inc. (EOI, the licensee), submitted a license amendment request for changes to the Waterford Steam Electric Station, Unit 3 (Waterford 3), Technical Specifications (TSs). EOI requested changes to the TS to support modifications to the core control element assemblies. In response to verbal requests for additional information from the NRC staff, EOI in Reference 2, submitted scoping studies performed by Westinghouse to justify the proposed core modifications. In addition, EOI submitted in References 3 and 4, updated transient analyses demonstrating the operational characteristics of the Cycle 12 core with the proposed control element assembly (CEA) modifications and configuration.

The supplemental letters dated October 23, 2001, January 17, and February 1, 2002, provided additional information that did not change the scope of the request or the initial proposed no significant hazard consideration determination (66 FR 41617, published August 8, 2001).

2.0 BACKGROUND

In the July 9, 2001 submittal, the licensee requested to amend the current TSs for Waterford 3 to support relocation and replacement of multiple CEAs in the core. The licensee proposed to perform the following core reactivity control system modifications: (1) replace the eight part-length CEAs (PLCEAs), which are reaching the end of their operational life, with new full-length CEAs, (2) remove the four-finger full-length CEAs from the periphery of the core, and (3) regroup and relocate many of the CEAs within the core. The licensee plans to implement the changes during refueling outage 11.

The PLCEAs currently located in the Waterford 3 core will reach the end of their operational life at the end of Cycle 11. These PLCEAs contain a neutron absorber section only in the upper 10 percent of the assembly and were originally installed to provide axial power distribution control. EOI proposes to replace these PLCEAs with five-finger full-length CEAs to improve shutdown margin. In addition, EOI has requested to remove the four-finger full-length CEAs from the periphery of the core. The initial operating license required the inclusion of these CEAs in the core to provide additional shutdown margin. Early core designs which had higher

neutron fluxes near the periphery of the core required additional reactivity control measures to ensure shutdown margin during a postulated steamline break event. EOI contends that the modern low-leakage fuel management designs used at Waterford 3 and the replacement of the PLCEAs with full-length CEAs negates the necessity of the four-finger CEAs. Finally, EOI proposes to regroup the CEAs to improve reactivity control. The new full-length CEAs and the existing Group A shutdown bank will be redistributed between a new Group P bank and the Group A shutdown bank. Waterford 3 Cycle 12 operations will use core pattern "C" as described in Reference 2.

The licensee's submittal requested the NRC staff review the proposed changes to the current TSs. These changes are necessary to support the modifications to the CEAs. The modifications to the TSs can be summarized in three general classifications: (1) removal of any reference to PLCEAs or full-length CEAs, (2) inclusion of references to a new Group P bank consisting of CEAs currently located in the core and the replacement of full-length CEAs, and (3) changes to support the removal of the four-element CEAs from the periphery of the core.

3.0 EVALUATION

During the review of the submittal, the NRC staff reviewed the safety analyses performed by EOI demonstrating the acceptability of the proposed changes to the CEAs. The NRC staff and licensee agreed to the transients which may be adversely affected by the changes. Other events were not reanalyzed by the licensee or NRC staff due to the positive benefits of the increased reactivity provided by the changes to the Waterford 3 core. The events for which an increase in individual control element assembly or overall core reactivity could cause a reduction in safety margin were only reviewed. The licensee provided the transient analyses for the following four events meeting this criteria:

- (1) Steam Line Break
[Updated Final Safety Analysis Report (UFSAR) Sections 15.1.3.1 and 15.1.3.2]
- (2) Uncontrolled Control Element Assembly Withdrawal at Power
(UFSAR Section 15.4.1.2)
- (3) Uncontrolled Control Element Assembly Withdrawal from Subcritical
(UFSAR Section 15.4.1.1)
- (4) Spectrum of Control Element Assembly Ejection Accidents
(UFSAR Sections 15.2.4.6 and 15.4.5)

3.1 Steam Line Break (UFSAR Sections 15.1.3.1 and 15.1.3.2)

The Standard Review Plan (SRP) describes the acceptance criteria for a Steam Line Break using the following two factors:

- (1) Maintain pressure in the reactor coolant and main steam systems below acceptable design limits, and
- (2) Maintain minimum departure from nucleate boiling ratio (DNBR) above the 95/95 TS safety limit.

In Reference 4, EOI submitted the transient analysis for a Steam Line Break at Waterford 3 during Cycle 12 operations using the proposed core configurations. This analysis demonstrated that the acceptance criteria described above would continue to be met for the event during Cycle 12 operations with the proposed core modifications. The analysis was conducted without violating the safety limits described in the acceptance criteria.

3.2 Uncontrolled Control Element Assembly Withdrawal at Power (UFSAR 15.4.1.2)

The SRP describes the acceptance criteria for an Uncontrolled CEA Withdrawal at Power using the following factors:

- (1) The thermal margin limit, DNBR, identified in the TSs continues to be met, and
- (2) The Fuel Centerline Temperature (FCT) limit specified in the TSs continues to be met.

EOI submitted the Uncontrolled CEA Withdrawal at Power transient analysis in Reference 3. This analysis demonstrated that the acceptance criteria described above would continue to be met for the event during cycle 12 operations with the proposed core modifications. The minimum DNBR and the maximum FCT remained within the limits specified in the TSs.

3.3 Uncontrolled Control Element Assembly Withdrawal from Subcritical (UFSAR 15.4.1.1)

The SRP describes the acceptance criteria for an Uncontrolled CEA Withdrawal from Subcritical using the following factors:

- (1) The DNBR limit specified in the TSs continues to be met, and
- (2) The FCT limit specified in the TSs continues to be met.

EOI submitted the Uncontrolled CEA Withdrawal from Subcritical transient analysis in Reference 3. This licensee's analysis demonstrated that the acceptance criteria described above would continue to be met for the event during Cycle 12 operations with the proposed core modifications. The minimum DNBR and the maximum FCT remained within the limits specified in the TSs.

3.4 Spectrum of Control Element Assembly Ejection Accidents (UFSAR Sections 15.2.4.6 and 15.4.5)

The SRP describes the acceptance criteria for a CEA Ejection Accidents using the following factors:

- (1) Maintaining radially averaged fuel rod enthalpy less than 280 cal/g at any axial location in any fuel rod,
- (2) Maintaining reactor pressure during the accident less than TS safety limits, and
- (3) The radiation limits for individuals at the boundary of the exclusion area and at the outer boundary of the low population zone are met.

In Reference 4, EOI submitted the transient analyses for CEA Ejection accidents at Waterford 3 during Cycle 12 operations using the proposed core configurations. These analyses demonstrated that the acceptance criteria described above continue to be met for the events during Cycle 12 operations with the proposed core modifications.

The NRC staff used NUREG-800 "Standard Review Plan", Revision 3 to evaluate the acceptability of each of the events reanalyzed for safety and regulatory compliance. For each event identified above, the NRC staff reviewed the analysis to determine if all applicable TS safety limits and limiting conditions for operation (LCOs) were satisfied. The NRC staff reviewed the initial conditions chosen for each event to ensure compliance with the applicable LCOs. Additionally, the NRC staff verified the results of each event were bounded by the licensee's safety limits. The NRC staff found that the licensee met all of the required TS safety limits and LCOs for each event reanalyzed.

The four analyses described above were done using methodologies and computer codes, such as CESEC, CETOP, TORC, STRIKIN, HERMITE, and ROCS, that were previously approved by the NRC staff. The NRC approved topical reports (TRs), and corresponding Safety Evaluation Reports, along with the UFSAR describe the acceptability of the codes for the intended application. The codes and methodologies utilized in these analyses are consistent with their intended application. The initial conditions and validity of the codes were reviewed with respect to the TR requirements and found acceptable. The NRC staff, therefore, finds the analyses acceptable.

4.0 SUMMARY

The NRC staff has reviewed the proposed modifications to the CEAs at Waterford 3 and found that they do not result in a safety margin reduction and regulatory requirements will continue to be met. The NRC staff approves the following changes to the Waterford 3 CEAs:

- (1) Replacement of the eight PLCEAs with new full-length CEAs identical to others currently in the core,
- (2) Removal of the four-element CEAs from the periphery of the core, and
- (3) Regrouping and relocating many of the CEAs in the core consistent with pattern "C" described in Reference 2.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (66 FR 41617, published on August 8, 2001). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. Letter from J.T. Herron (WSES) to U.S. Nuclear Regulatory Commission, "Technical Specification Change Request NPF-38-234, Replacement of Part-Length Control Element Assemblies," dated July 9, 2001.
2. Letter from A.J. Harris (WSES) to U.S. Nuclear Regulatory Commission, "Supplemental Information in Support of TSCR NPF-38-234, Replacement for Part-Length Control Element Assembly," dated October 23, 2001.
3. Letter from B.S. Allen (WSES) to U.S. Nuclear Regulatory Commission, "Supplement to Amendment Request NPF-38-234, Replacement for Part-Length Control Element Assemblies," dated January 17, 2002.
4. Letter from J.T. Herron (WSES) to U.S. Nuclear Regulatory Commission, "Supplement to Amendment Request NPF-38-234, Replacement for Part-Length Control Element Assemblies," dated February 1, 2002.

Principal Contributors: A. Attard
R. Taylor

Date: March 21, 2002

Waterford Generating Station 3

cc:

Mr. Michael E. Henry, Administrator
and State Liaison Officer
Department of Environmental Quality
P. O. Box 82135
Baton Rouge, LA 70884-2135

Vice President, Operations Support
Entergy Operations, Inc.
P. O. Box 31995
Jackson, MS 39286-1995

Director
Nuclear Safety Assurance
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

Wise, Carter, Child & Caraway
P. O. Box 651
Jackson, MS 39205

General Manager Plant Operations
Waterford 3 SES
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

Licensing Manager
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

Winston & Strawn
1400 L Street, N.W.
Washington, DC 20005-3502

Resident Inspector/Waterford NPS
P. O. Box 822
Killona, LA 70066-0751

Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Parish President Council
St. Charles Parish
P. O. Box 302
Hahnville, LA 70057

Executive Vice-President
and Chief Operating Officer
Entergy Operations, Inc.
P. O. Box 31995
Jackson, MS 39286-1995

Chairman
Louisiana Public Services Commission
P.O. Box 91154
Baton Rouge, LA 70825-1697