

NUCLEAR REGULATORY COMMISSION

**Notice of Availability of Model Safety Evaluation and  
Model License Amendment Request on  
Technical Specification Improvement Regarding  
Use of the Improved Banked Position Withdrawal Sequence for  
General Electric Boiling Water Reactors  
Using the Consolidated Line Item Improvement Process**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Request for comment.

**SUMMARY:** Notice is hereby given that the staff of the U. S. Nuclear Regulatory Commission (NRC) has prepared a model license amendment request (LAR), model safety evaluation (SE), and model proposed no significant hazards consideration (NSHC) determination related to changes to Standard Technical Specification (STS) 3.1.6, "Rod Pattern Control," and STS 3.3.2.1, "Control Rod Block Instrumentation" for NUREG-1433 and NUREG-1434. The proposed changes would revise the Technical Specifications (TS) and Bases for STS 3.1.6, "Rod Pattern Control," and STS 3.3.2.1, "Control Rod Block Instrumentation" to allow licensees to use an improved control rod banked position withdrawal sequence (BPWS) when performing a reactor shutdown. In addition, the proposed changes would add a footnote to Table 3.3.2.1-1, "Control Rod Block Instrumentation" for NUREG-1433 and NUREG-1434. The requirements for implementing the improved BPWS are described in General Electric Licensing Topical Report (LTR) NEDO-33091-A, Revision 2, "Improved BPWS Control Rod Insertion Process," dated July 2004. The General Electric Boiling Water Reactor Owner's Group (BWROG) participants in the Technical Specifications Task Force (TSTF) initially proposed these changes to the STS in TSTF-476, Revision 0, "Improved BPWS Control Rod Insertion Process (NEDO-33091)." TSTF-476, Revision 1 was submitted on January 9, 2007 and was

later accepted by NRC. Hereafter, all references to TSTF-476 refer to TSTF-476, Revision 1, unless otherwise noted. Technical Specifications and Bases changes provided in TSTF-476 completely supersede the proposed Technical Specification changes included in NEDO-3309 1-A.

The purpose of these models is to permit the NRC to efficiently process amendments to incorporate these changes into plant-specific (TS) for General Electric Boiling Water Reactors (BWRs). Licensees of nuclear power reactors to which the models apply can request amendments conforming to the models. In such a request, a licensee should confirm the applicability of the model LAR, model SE and NSHC determination to its plant.

**DATES:** The NRC staff issued a **Federal Register** Notice (71 FR 26118, May 3, 2006) which provided for public comment a model SE, model LAR, and NSHC determination related to changes to STS 3.1.6, "Rod Pattern Control," and STS 3.3.2.1, "Control Rod Block Instrumentation" for NUREG-1433 and NUREG-1434. Similarly, the NRC staff herein provides a revised model SE, revised model LAR, and NSHC determination. The NRC staff can most efficiently consider applications based upon the model LAR, which references the Model SE, if the application is submitted within one year of this Federal Register Notice.

**FOR FURTHER INFORMATION CONTACT:** Timothy Kobetz, Mail Stop: O-12H2, Division Inspection and Regional Support, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-1932.

**SUPPLEMENTARY INFORMATION:**

**Background**

Regulatory Issue Summary 2000-06, "Consolidated Line Item Improvement Process (CLIIP) for Adopting Standard Technical Specifications Changes for Power Reactors," was issued on March 20, 2000. The CLIIP is intended to improve the efficiency and transparency of

NRC licensing processes. This is accomplished by processing proposed changes to the STS in a manner that supports subsequent license amendment applications. The CLIP includes an opportunity for the public to comment on proposed changes to the STS following a preliminary assessment by the NRC staff and finding that the change will likely be offered for adoption by licensees.

The CLIP directs the NRC staff to evaluate any comments received for a proposed change to the STS and to either reconsider the change or proceed with announcing the availability of the change for proposed adoption by licensees. In several instances, the staff's evaluation did result in changes to the model LAR. Those licensees opting to apply for the subject change to TS are responsible for reviewing the staff's evaluation, referencing the applicable technical justifications, and providing any necessary plant-specific information. The model LAR shows licensees the expected level of detail that needs to be included in order to adopt TSTF-476, as well as guidelines for staff review. The NRC has established an internal review plan that designates the appropriate staff and approximate time lines to review plant-specific LARs that reference TSTF-476. Each amendment application made in response to the notice of availability will be processed and noticed in accordance with applicable NRC rules and procedures.

This notice involves implementation of an improved BPWS, which allows licensees of General Electric BWRs to follow the improved BPWS when inserting control rods into the core during a reactor shutdown. By letter dated January 9, 2007, the BWROG proposed these changes for incorporation into the STS as TSTF-476. These changes are based on the NRC staff-approved LTR NEDO-33091-A, "Improved BPWS Control Rod Insertion Process," dated July 2004, as approved by NRC in a SE dated June 16, 2004, accessible electronically from the Agency-wide Documents Access and Management System's (ADAMS) Public Electronic Reading Room on the Internet (ADAMS Accession No. ML041700479) at the NRC web site

<http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS, should contact the NRC Public Document Room Reference staff by telephone at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr@nrc.gov](mailto:pdr@nrc.gov).

**Applicability:**

These changes revise the Section 3.1.6 and Section 3.3.2.1 TS and Bases for NUREG-1433 and NUREG-1434 (General Electric BWR/4 and BWR/6 plants, respectively), and TS Table 3.3.2.1-1 for NUREG-1433 and NUREG-1434.

To efficiently process the incoming license amendment applications, the NRC staff requests each licensee applying for the changes addressed by TSTF-476 use the CLIIP to submit a LAR that adheres to the following model. Any deviations from the model LAR should be explained in the licensee's submittal. The CLIIP does not prevent licensees from requesting an alternative approach, proposing the changes without providing the information described in the eight model LAR conditions, or making the requested commitment. Variations from the approach recommended in this notice may, however, require additional review by the NRC staff and may increase the time and resources needed for the review. Significant variations from the approach, or inclusion of additional changes to the license, may result in staff rejection of the submittal. Instead, licensees desiring significant variations and/or additional changes should either submit a LAR that does not claim to adopt TSTF-476, or specifically state in their LAR that they are adopting TSTF-476 without using the CLIIP.

**Public Notices**

In a notice in the **Federal Register** dated May 3, 2006 (71 FR 26118), the staff requested comment on the use of the CLIIP to process requests to revise Section 3.1.6 and Section 3.3.2.1 TS and Bases and TS Table 3.3.2.1-1 for for NUREG-1433 and NUREG-1434,

as discussed in TSTF-476. In response to this notice, the staff received one set of comments (developed by the Technical Specifications Task Force and submitted in a letter dated May 31, 2006 (ADAMS Accession No. ML061520129)). Specific comments on the model LAR were offered. These comments, along with the NRC staff's responses, are summarized and discussed below:

1. *Comment:* In the Applicability Section of the Notice and the model application, the terms "BWR/4" and "BWR/6" are used incorrectly. These terms should be revised to NUREG-1433 and NUREG-1434, respectively. The changes proposed are applicable to BWR/2-6 plants, if they have adopted the standard banked position withdrawal sequence (BPWS). TSTF- 476 proposes changes to the Improved Standard Technical Specifications (ISTS) included in NUREG-1433 and NUREG-1434, which may be applied to any BWR type.

*Response:* The staff agrees with this comment. References to BWR/4 and BWR/6 have been replaced with NUREG-1433 and NUREG-1434, respectively.

2. *Comment:* The notice, the model application, and the model Safety Evaluation imply that a license amendment is needed for plants with Technical Specifications based on NUREG-1433 to adopt TSTF-476. This is not correct. No license amendment request is required to adopt the proposed Bases changes included in TSTF-476 and no Technical Specification change is needed to adopt TSTF-476 for plants with Technical Specifications based on NUREG-1433. Bases changes are made using the licensee Technical Specification Bases Control Program.

*Response:* The changes proposed by TSTF-476, Revision 0, for NUREG-1433 (BWR/4) were only changes to the Bases sections. However, a revised TSTF-476 was submitted to the NRC on January 9, 2007. The revised version of TSTF-476 includes changes to the Technical Specifications and Bases sections for both NUREG-1433 (BWR/4) and

NUREG-1434 (BWR/6). Therefore, licensees proposing to adopt TSTF-476 are required to submit a license amendment request.

3. *Comment:* In some BWR designs, the rod worth minimizers (RWMs) (e.g., NUMAC) cannot be reprogrammed to accept a new shutdown sequence. The notice should state that bypassing the RWM and entering the plant-specific action equivalent to NUREG-1433 Specification 3.3.2.1, Required Action D. 1, for an inoperable RWM during shutdown (which requires the use of a second qualified person to verify rod movement in accordance with BPWS) is acceptable and would not be considered entering a Required Action for "operational convenience" as discussed in the LCO 3.0.2 Bases.

*Response:* During the comment disposition process it became apparent that revisions to TSTF-476 would be necessary. The changes proposed in TSTF-476, Revision 0, included bases changes to both NUREG-1433 (BWR/4) and NUREG-1434 (BWR/6). In addition, a note was proposed to be added to TS Table 3.3.2.1-1 of NUREG-1434 to allow the rod pattern controller to be bypassed in Modes 1 and 2 so that the BPWS can be used. A similar note was not included in NUREG-1433 since some BWR/4 plants rod worth minimizer (RWM) can be reprogrammed to accommodate the BPWS. However, the RWM of some BWR/4 plants cannot be reprogrammed to accommodate the BPWS, and need a similar note to that proposed for the BWR/6 NUREG-1434. Therefore, to be acceptable, a [bracketed] note similar to that proposed to be added to TS Table 3.3.2.1-1 of the BWR/6 NUREG-1434, was incorporated into TSTF-476, revision 1. A revised TSTF-476 was submitted to the NRC on January 9, 2007. The changes incorporated in the revised version of TSTF-476 include changes to the Technical Specifications and Bases sections that require the adopting licensee to submit a license amendment request.

4. *Comment:* The notice should state that the Technical Specifications and Bases changes provided in TSTF-476 completely supersede the proposed Technical Specification

changes included in NEDO-3309 1-A.

*Response:* An appropriate statement has been added in this notice.

5. *Comment:* Throughout the notice, the acronym BPWS is defined incorrectly. The term BPWS stands for “Banked Position Withdrawal Sequence,” not “Bank Position Withdrawal Sequence.”

*Response:* Appropriate corrections have been made throughout the notice and its attachments.

6. *Comment:* Cover letter, 1st paragraph - The license amendment request will revise Table 3.3.2.1-1 only. The associated Bases changes will be made by the licensee upon implementation using the Technical Specifications Bases Control Program. This also affects Sections I and 2 of Enclosure I.

*Response:* The changes incorporated in TSTF-476 include changes to the Technical Specifications and Bases sections that are needed by the adopting licensee to submit a license amendment request. While the Bases remain subject to licensee control, a more timely review will be possible if the licensee requesting to adopt the changes includes Technical Specification Bases changes in its application.

7. *Comment:* Cover letter, 3rd paragraph - Many licensees do not provide final Technical Specifications pages with the application. The final pages are provided only after NRC review has determined that no changes from the draft are required. Revised Bases pages are not required to be provided with an application. The Technical Specification Bases Control Program requires revised Bases pages to be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

*Response:* While the Bases remain subject to licensee control, for this application the NRC staff plans to review marked-up Technical Specification and Technical Specification Bases

pages, as well as pages that represent how the final Technical Specification and Technical Specification Bases pages will appear, in order to review a licensee's license amendment application in the most timely manner.

8. *Comment:* Enclosure 1, Section 2.0, Proposed Changes, the first bullet should reference the Bases for Specification 3.1.6, not 3.6.1, if the discussion of specific Bases changes is retained in this section.

*Response:* Appropriate corrections of the errors have been made to the model.

9. *Comment:* Enclosure 1, Section 2.0, Proposed Changes, the second bullet should discuss the rod pattern controller, not the rod worth minimizer, if the discussion of specific Bases changes is retained in this section. In addition, both bypassing and reprogramming should be discussed.

*Response:* TSTF-476, revision 0 called for changes to Technical Specification Section 3.3.2.1 Bases for NUREG-1434. TSTF-476, revision 1 calls for changes to Technical Specification Section 3.3.2.1 Bases for both NUREG-1433 and NUREG-1434. The specific equipment nomenclature differs between the two standards. The model has been updated using the bracketing convention to allow the selection of the appropriate equipment nomenclature by the licensee prior to amendment application.

10. *Comment:* Enclosure 1, Section 5.1, the last sentence should be deleted. The NRC staff has already determined in the Safety Evaluation for NEDO-33091 for all BWRs that no single failure of the boiling water reactor mechanical or hydraulic system can cause a control rod to drop completely out of the reactor core during the shutdown process. It is unnecessary and a burden with no safety benefit to require individual licensees to verify the statement when it has been generically approved by the NRC for all BWRs.

*Response:* The staff's approval and safety evaluation are predicated upon this determination, and the licensee's verification is deemed essential.

11. *Comment:* In Enclosure 1, Section 5.1 and in the model Safety Evaluation, Section 3.0, commitment 1 should be deleted. For those plants with Technical Specifications based on NUREG-1434 which will be submitting a license amendment request to adopt TSTF-476, the proposed change to Table 3.3.2. 1-1 requires confirming control rod coupling integrity; therefore a separate commitment to do the same is not necessary.

*Response:* This is a commitment to establish appropriate detailed operational procedures prior to implementation, and is deemed essential.

12. *Comment:* Enclosure 1, Section 5. 1, and in the model Safety Evaluation, Section 3.0 commitment 2 should be deleted. This “commitment” is a summary of the improved BPWS. The model amendment, the model Safety Evaluation, and the proposed Bases reference the NRC approved Topical Report as the basis for the improved BPWS sequence. It is unclear what is required by this commitment that is not already required by adoption of the Technical Specifications and Bases. It is unnecessary to develop and track a separate regulatory commitment to do what is already required by the amendment and Topical Report.

*Response:* This is a commitment to establish appropriate detailed operational procedures prior to implementation, and is deemed essential.

13. *Comment:* Description - Amendment requests will only be submitted by licensees with Technical Specifications based on NUREG-1434. Therefore, delete references to NUREG-1433.

*Response:* BWR/4 plants with a RWM that cannot be reprogrammed to accommodate the BPWS will need to amend their TS in order to adopt TSTF-476. Therefore, references to NUREG-1433 are not deleted.

14. *Comment:* Description and Criterion I - The improved BPWS insertion process applies during reactor shutdowns. Delete the word “normal” before shutdown. The term “normal shutdown” is not used in the model Safety Evaluation or Topical Report. The improved

BPWS insertion process applies to all shutdowns as long as the conditions for use are met.

*Response:* The word “normal” has been removed as a modifier for the term “shutdown” in applicable sections of the model.

15. *Comment:* Criterion 2 - Delete the phrase “in the absence of other unrelated failures” from the first sentence. Criterion 2 only evaluates the possibility of a new or different kind of accident related to the proposed change, not other unrelated events.

*Response:* The extraneous phrase has been removed from the model SE.

**FOR INCLUSION ON THE TECHNICAL SPECIFICATION WEB PAGE  
THE FOLLOWING EXAMPLE OF AN APPLICATION WAS PREPARED BY THE NRC STAFF  
TO FACILITATE THE ADOPTION OF TECHNICAL SPECIFICATIONS TASK FORCE (TSTF)  
TRAVELER TSTF-476, REVISION 1 "IMPROVED BPWS CONTROL ROD INSERTION  
PROCESS (NEDO-33091)." THE MODEL PROVIDES THE EXPECTED LEVEL OF DETAIL  
AND CONTENT FOR AN APPLICATION TO ADOPT TSTF-476, REVISION 1. LICENSEES  
REMAIN RESPONSIBLE FOR ENSURING THAT THEIR ACTUAL APPLICATION FULFILLS  
THEIR ADMINISTRATIVE REQUIREMENTS AS WELL AS NRC REGULATIONS.**

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U. S. Nuclear Regulatory Commission

Document Control Desk

Washington, D. C. 20555

SUBJECT: PLANT NAME, DOCKET NO. 50-[xxx,] RE: APPLICATION FOR TECHNICAL  
SPECIFICATION IMPROVEMENT TO ADOPT TSTF-476, REVISION 1,  
"IMPROVED BPWS CONTROL ROD INSERTION PROCESS (NEDO-33091)

Dear Sir or Madam:

In accordance with the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR), [LICENSEE] is submitting a request for an amendment to the technical specifications (TS) for [PLANT NAME, UNIT NOS.].

The proposed changes would revise Sections 3.1.6, "Rod Pattern Control," and 3.3.2.1, "Control Rod Block Instrumentation," to allow [PLANT NAME] to reference a new Banked Position Withdrawal Sequence (BPWS) shutdown sequence in the TS Bases. In addition, a footnote is added to Table 3.3.2.1-1, "Control Rod Block Instrumentation."

The changes are consistent with NRC approved Industry Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-476, Revision 1, "Improved BPWS Control Rod Insertion Process (NEDO-33091)." The availability of this TS

improvement was announced in the *Federal Register* on [DATE] ([ FR ]) as part of the consolidated line item improvement process (CLIIP).

Enclosure 1 provides a description and assessment of the proposed changes, as well as confirmation of applicability. Enclosure 2 provides the existing TS pages and TS Bases marked-up to show the proposed changes. Enclosure 3 provides final TS pages and TS Bases pages.

[LICENSEE] requests approval of the proposed license amendment by [DATE], with the amendment being implemented [BY DATE OR WITHIN X DAYS]. In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated [STATE] Official.

I declare under penalty of perjury under the laws of the United States of America that I am authorized by [LICENSEE] to make this request and that the foregoing is true and correct. [Note that request may be notarized in lieu of using this oath or affirmation statement]. If you should have any questions regarding this submittal, please contact [ ].

Sincerely,

Name, Title

Enclosures: 1. Description and Assessment of Proposed Changes  
2. Proposed Technical Specification Changes and Technical Specification Bases Changes  
3. Final Technical Specification and Bases pages.

cc: NRR Project Manager  
Regional Office  
Resident Inspector  
State Contact

ITSB Branch Chief

## 1.0 DESCRIPTION

This letter is a request to amend Operating License(s) [LICENSE NUMBER(S)] for [PLANT/UNIT NAME(S)].

The proposed changes would revise the Bases sections of Technical Specification (TS) 3.1.6, "Rod Pattern Control", and 3.3.2.1, "Control Rod Block Instrumentation," along with TS Table 3.3.2.1-1, "Control Rod Block Instrumentation," to allow reference to an improved, optional Banked Position Withdrawal Sequence (BPWS) for use during reactor shutdown.

The new BPWS is described in Topical Report NEDO-33091-A, Revision 2, "Improved BPWS Control Rod Insertion Process," dated July 2004, and approved by the NRC by Safety Evaluation (SE) dated June 16, 2004 (ADAMS ML041700479). Technical Specification Task Force (TSTF) change traveler TSTF-476, Revision 1, "Improved BPWS Control Rod Insertion Process (NEDO-33091)" was announced for availability in the Federal Register on [DATE] as part of the consolidated line item improvement process (CLIP).

## 2.0 PROPOSED CHANGES

Consistent with NRC-approved TSTF-476, Revision 1, the proposed TS and Bases changes include:

- Revised TS Section 3.1.6 Bases to allow use of an optional BPWS during plant shutdown.
- Revised TS Section 3.3.2.1 Bases to allow reprogramming of the [rod worth minimizer / rod pattern controller] during the optional BPWS shutdown sequence.
- Revised TS Table 3.3.2.1-1, "Control Rod Block Instrumentation," which adds a footnote that allows operators to bypass the [rod worth minimizer / rod pattern controller] if conditions for the optional BPWS shutdown process are satisfied.

### 3.0 BACKGROUND

The background for this application is as stated in the model SE in NRC's Notice of Availability published on [DATE] ([ ] FR [ ]), the NRC Notice for Comment published on [DATE] ([ ] FR [ ]), and TSTF-476, Revision 1.

### 4.0 TECHNICAL ANALYSIS

[LICENSEE] has reviewed NEDO-33091-A, Revision 2, and the staff's SE dated June 16, 2004, as well as TSTF-476, Revision 1, and the model SE published on [DATE] ([ ] FR [ ]) as part of the CLIP Notice for Comment. [LICENSEE] has applied the methodology in NEDO-33091-A, Revision 2 to the develop the proposed TS changes. [LICENSEE] has also concluded that the justifications presented in TSTF-476, Revision 1 and the model SE prepared by the NRC staff are applicable to [PLANT, UNIT NOS.], and justify this amendment for the incorporation of the changes to the [PLANT] TS.

### 5.0 REGULATORY ANALYSIS

A description of this proposed change and its relationship to applicable regulatory requirements and guidance was provided in the NRC Notice of Availability published on [DATE] ([ ] FR [ ]), the NRC Notice for Comment published on May 3, 2006 (71 FR 26118), and TSTF-476, Revision 1.

#### 5.1 Regulatory Commitments

As discussed in the model SE published in *Federal Register* on [DATE] for this technical specification improvement, the following plant-specific verifications/commitments were performed. The safety evaluation for NEDO-33091-A explained that the potential for the control rod drop accident (CRDA) will be eliminated

by the following changes to the operational procedures, which [PLANT NAME] [has made/will commit to make prior to implementation]:

1. Before reducing power to the low power setpoint (LPSP), operators shall confirm control rod coupling integrity for all rods that are fully withdrawn. Control rods that have not been confirmed coupled and are in intermediate positions must be fully inserted prior to power reduction to the LPSP. No action is required for fully-inserted control rods.

If a shutdown is required and all rods, which are not confirmed coupled, cannot be fully inserted prior to the power dropping below the LPSP, then the original/standard BPWS must be adhered to. The original/standard BPWS can be found in Licensing Topical Report (LTR) NEDO-21231, "Banked Position Withdrawal Sequence," January 1977, and is referred to in NUREG-1433 and NUREG-1434.

2. After reactor power drops below the LPSP, rods may be inserted from notch position 48 to notch position 00 without stopping at the intermediate positions. However, GE Nuclear Energy recommends that operators insert rods in the same order as specified for the original/standard BPWS as much as is reasonably possible. If a plant is in the process of shutting down following improved BPWS with the power below the LPSP, no control rod shall be withdrawn unless the control rod pattern is in compliance with standard BPWS requirements.

In addition to the procedure changes specified above, the staff previously concluded, based on its review of NEDO-33091-A, that no single failure of the boiling water reactor control rod drive (CRD) mechanical or hydraulic system can cause a control rod to drop completely out of the reactor core during the shutdown process. Therefore, the proper use of the improved BPWS will prevent a CRDA from occurring while power is below the LPSP. [LICENSEE] has verified, in accordance with NEDO-33091-A, Revision 2, that no single failure of the boiling water reactor CRD mechanical or hydraulic system can cause a control rod to drop completely out of the reactor core during the shutdown process.

#### 6.0 NO SIGNIFICANT HAZARDS CONSIDERATION

[LICENSEE] has reviewed the proposed no significant hazards consideration determination published on [DATE] ([ ] FR [ ]) as part of the CLIIP. [LICENSEE] has concluded that the proposed determination presented in the notice is applicable to [PLANT] and the determination is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

#### 7.0 ENVIRONMENTAL EVALUATION

[LICENSEE] has reviewed the environmental consideration included in the model SE published on [DATE] ([ ] FR [ ]) as part of the CLIIP. [LICENSEE] has concluded that the staff's findings presented therein are applicable to [PLANT] and the determination is hereby incorporated by reference for this application.

#### 8.0 REFERENCES

Federal Register Notices:

Notice for Comment published on [DATE] ([ ] FR [ ])

Notice of Availability published on [DATE ] ([ ] FR [ ])

MODEL SAFETY EVALUATION  
U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
TECHNICAL SPECIFICATION TASK FORCE TSTF-476, REVISION 1  
“IMPROVED BPWS CONTROL ROD INSERTION PROCESS (NEDO-33091)”

1.0 INTRODUCTION

By letter dated [\_\_\_\_\_, 20\_\_], [LICENSEE] (the licensee) proposed changes to the technical specifications (TS) for [PLANT NAME]. The requested changes are the adoption of TSTF-476, Revision 1, “Improved BPWS Control Rod Insertion Process (NEDO-33091-A),” to the Boiling Water Reactor (BWR) Standard Technical Specifications (STS), which was proposed by the Technical Specifications Task Force (TSTF) by letter on January 9, 2007. This TSTF involves changes to NUREG-1433 and NUREG-1434 Section 3.1.6 “Rod Pattern Control,” Section 3.3.2.1 “Control Rod Block Instrumentation,” and Table 3.3.2.1-1. The proposed TSTF would allow the use of the improved banked position withdrawal sequence (BPWS) during shutdowns if the conditions of NEDO-33091-A, Revision 2, “Improved BPWS Control Rod Insertion Process,” dated July 2004, have been satisfied.

2.0 REGULATORY EVALUATION

The control rod drop accident (CRDA) is the design basis accident for the subject TS changes. In order to minimize the impact of a CRDA, the BPWS process was developed to minimize control rod reactivity worth for BWR plants. The proposed improved BPWS further simplifies the control rod insertion process, and in order to evaluate it, the staff followed the guidelines of Standard Review Plan Section 15.4.9, and referred to General Design Criterion (GDC) 28 of Appendix A to 10 CFR Part 50 as its regulatory requirement. GDC 28 states that

the reactivity control systems shall be designed with appropriate limits on the potential amount and rate of reactivity increase to assure that the effects of postulated reactivity accidents can neither (1) result in damage to the reactor coolant pressure boundary greater than limited local yielding nor (2) sufficiently disturb the core, its support structures or other reactor pressure vessel internals to impair significantly the capability to cool the core.

### 3.0 TECHNICAL EVALUATION

In its safety evaluation for Licensing Topical Report NEDO-33091-A, "Improved BPWS Control Rod Insertion Process," dated June 16, 2004, (ADAMS ML041700479) the staff determined that the methodology described in TSTF-476, Revision 1, to incorporate the improved BPWS into the STS, is acceptable.

TSTF-476, Revision 1 states that the improved BPWS provides the following benefits: (1) allows the plant to reach the all-rods-in condition prior to significant reactor cool down, which reduces the potential for re-criticality as the reactor cools down; (2) reduces the potential for an operator reactivity control error by reducing the total number of control rod manipulations; (3) minimizes the need for manual scrams during plant shutdowns, resulting in less wear on control rod drive (CRD) system components and CRD mechanisms; and, (4) eliminates unnecessary control rod manipulations at low power, resulting in less wear on reactor manual control and CRD system components.

[PLANT NAME] has been approved to use the improved BPWS, and the potential for a CRDA with power below the low power setpoint (LPSP) has been eliminated. The safety evaluation for NEDO-33091-A explained that the potential for the CRDA will be eliminated by the following changes to operational procedures, which [PLANT NAME] [has made/will commit to make prior

to implementation]:

1. Before reducing power to the LPSP, operators shall confirm control rod coupling integrity for all rods that are fully withdrawn. Control rods that have not been confirmed coupled and are in intermediate positions must be fully inserted prior to power reduction to the LPSP. No action is required for fully-inserted control rods.

If a shutdown is required and all rods, which are not confirmed coupled, cannot be fully inserted prior to power dropping below the LPSP, then the original/standard BPWS must be adhered to.

2. After reactor power drops below the LPSP, rods may be inserted from notch position 48 to notch position 00 without stopping at the intermediate positions. However, GE Nuclear Energy recommends that operators insert rods in the same order as specified for the original/standard BPWS as much as reasonably possible. If a plant is in the process of shutting down following improved BPWS with the power below the LPSP, no control rod shall be withdrawn unless the control rod pattern is in compliance with standard BPWS requirements.

In addition to the procedure changes specified above, the staff previously verified during its review of NEDO-33091-A, Revision 2 that no single failure of the boiling water reactor CRD mechanical or hydraulic system can cause a control rod to drop completely out of the reactor core during the shutdown process. Therefore, the proper use of the improved BPWS will prevent a CRDA from occurring while power is below the LPSP.

The staff finds the proposed Technical Specification changes in [PLANT NAME's] amendment request properly incorporate the improved BPWS procedure into the STS, and that [PLANT NAME] accurately adopted the TSTF-476 changes. Therefore, the staff approves the [PLANT NAME] license amendment request to adopt TSTF-476, Revision 1.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the [ \_\_\_\_\_ ] State official was notified of the proposed issuance of the amendment. The State official had [(1) no comments or (2) the following comments - with subsequent disposition by the staff].

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment[s] change[s] a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or 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 published [DATE] ([ ] FR [ ]). 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 amendment.

#### 6.0 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.

Principal Contributor: J. Hardy, SRXB/DSSA

301-415-4029

## Proposed No Significant Hazards Consideration Determination

*Description of Amendment Request:* [Plant name] requests adoption of an approved change to the standard technical specifications (STS) for Boiling Water Reactor (BWR) Plants (NUREG-1433 & NUREG-1434) and plant specific technical specifications (TS), to allow the use of the improved banked position withdrawal sequence (BPWS) during shutdowns in accordance with NEDO-33091-A, Revision 2, "Improved BPWS Control Rod Insertion Process," dated July 2004. The changes are consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-476, Revision 1.

*Basis for proposed no-significant-hazards-consideration determination:* As required by 10 CFR 50.91(a), an analysis of the issue of no-significant-hazards-consideration is presented below:

**Criterion 1**—The Proposed Change Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated

The proposed changes modify the TS to allow the use of the improved banked position withdrawal sequence (BPWS) during shutdowns if the conditions of NEDO-33091-A, Revision 2, "Improved BPWS Control Rod Insertion Process," July 2004, have been satisfied. The staff finds that the licensee's justifications to support the specific TS changes are consistent with the approved topical report and TSTF-476, Revision 1. Since the change only

involves changes in control rod sequencing, the probability of an accident previously evaluated is not significantly increased, if at all. The consequences of an accident after adopting TSTF-476 are no different than the consequences of an accident prior to adopting TSTF-476. Therefore, the consequences of an accident previously evaluated are not significantly affected by this change. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

**Criterion 2—The Proposed Change Does Not Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated**

The proposed change will not introduce new failure modes or effects and will not, in the absence of other unrelated failures, lead to an accident whose consequences exceed the consequences of accidents previously evaluated. The control rod drop accident (CRDA) is the design basis accident for the subject TS changes. This change does not create the possibility of a new or different kind of accident from an accident previously evaluated.

**Criterion 3—The Proposed Change Does Not Involve a Significant Reduction in the Margin of Safety**

The proposed change, TSTF-476, Revision 1, incorporates the improved BPWS, previously approved in NEDO-33091-A, into the improved TS. The control rod drop accident (CRDA) is the design basis accident for the subject TS changes. In order to minimize the impact of a CRDA, the BPWS process was developed to minimize control rod reactivity worth for BWR plants. The proposed improved BPWS further simplifies the control rod insertion process, and

in order to evaluate it, the staff followed the guidelines of Standard Review Plan Section 15.4.9, and referred to General Design Criterion 28 of Appendix A to 10 CFR Part 50 as its regulatory requirement. The TSTF stated the improved BPWS provides the following benefits: (1) Allows the plant to reach the all-rods-in condition prior to significant reactor cool down, which reduces the potential for re-criticality as the reactor cools down; (2) reduces the potential for an operator reactivity control error by reducing the total number of control rod manipulations; (3) minimizes the need for manual scrams during plant shutdowns, resulting in less wear on control rod drive (CRD) system components and CRD mechanisms; and, (4) eliminates unnecessary control rod manipulations at low power, resulting in less wear on reactor manual control and CRD system components. The addition of procedural requirements and verifications specified in NEDO-33091-A, along with the proper use of the BPWS will prevent a control rod drop accident (CRDA) from occurring while power is below the low power setpoint (LPSP). The net change to the margin of safety is insignificant. Therefore, this change does not involve a significant reduction in a margin of safety.

Based upon the above discussion of the amendment request, the requested change does not involve a significant hazards consideration.

Dated at Rockville, Maryland, this 10th day of May 2007

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Timothy J. Kobetz, Branch Chief  
Technical Specifications Branch  
Division of Inspection & Regional Support  
Office of Nuclear Reactor Regulation

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Based upon the above discussion of the amendment request, the requested change does not involve a significant hazards consideration.

Dated at Rockville, Maryland, this 10th day of May 2007

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\*see separate concurrence sheets

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