

August 1, 2005

Mr. Mark B. Bezilla
Vice President-Nuclear, Davis-Besse
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 - ISSUANCE OF
AMENDMENT RE: COMBUSTIBLE GAS CONTROL SYSTEMS
(TAC NO. MC3901)

Dear Mr. Bezilla:

The Commission has issued the enclosed Amendment No. 265 to Facility Operating License No. NPF-3 for the Davis-Besse Nuclear Power Station, Unit 1. The amendment revises the Technical Specifications (TSs) in response to your application dated July 29, 2004.

This amendment revises TSs by eliminating the requirements related to combustible gas control systems. A notice of availability for a related TS improvement using the consolidated line item improvement process was published in the *Federal Register* on September 25, 2003 (68 FR 55416).

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

Sincerely,

/RA/

William A. Macon, Jr., Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosures: 1. Amendment No. 265 to NPF-3
2. Safety Evaluation

cc w/encls: See next page

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Package Accession Number: ML052130311

Amendment Accession Number: ML051780078 Nrr-058

TS Accession Number: ML Nrr-100

OFFICE	CLIIP LPM	PM:PD3-2	LA:PD3-2	SPLB	OGC	SC:PD3-2
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Davis-Besse Nuclear Power Station, Unit 1

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FIRSTENERGY NUCLEAR OPERATING COMPANY

DOCKET NO. 50-346

DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 265
License No. NPF-3

1. The U.S. Nuclear Regulatory Commission (Commission) has found that:
 - A. The application for amendment by the FirstEnergy Nuclear Operating Company (the licensee) dated July 29, 2004, 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-3 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 265, are hereby incorporated in the license. FirstEnergy Nuclear Operating Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Gene Y. Suh, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: August 1, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 265

FACILITY OPERATING LICENSE NO. NPF-3

DOCKET NO. 50-346

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

VI
XI
3/4 6-23
3/4 6-25
3/4 6-26
3/4 6-27
6-14c
6-14d

Insert

VI
XI
3/4 6-23
3/4 6-25
3/4 6-26
3/4 6-27
6-14c
6-14d

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 265 TO FACILITY OPERATING LICENSE NO. NPF-3
FIRSTENERGY NUCLEAR OPERATING COMPANY
DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1
DOCKET NO. 50-346

1.0 INTRODUCTION

By application to the U.S. Nuclear Regulatory Commission (NRC or Commission) dated July 29, 2004 (Agencywide Documents Access and Management System Accession No. ML042170068), FirstEnergy Nuclear Operating Company (the licensee) requested changes to the technical specifications (TSs) for the Davis-Besse Nuclear Power Station, Unit 1 (Davis-Besse). The proposed amendment eliminates the requirements in the TSs associated with combustible gas control systems. A notice of availability for a related TS improvement using the Consolidated Line Item Improvement Process (CLIIP) was published in the *Federal Register* on September 25, 2003 (68 FR 55416).

In 2003, the NRC revised Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.44, "Standards for combustible gas control for nuclear power reactors." The amended standards eliminated the requirements for hydrogen recombiners and relaxed the requirements for hydrogen and oxygen monitoring. In letters dated December 17, 2002, and May 12, 2003, the Nuclear Energy Institute (NEI) Technical Specification Task Force (TSTF) proposed to remove requirements for hydrogen recombiners and hydrogen and oxygen monitors from the standard technical specifications (STS) (NUREGs 1430 - 1434) on behalf of the industry to incorporate the amended standards. This proposed change was designated TSTF-447.

The NRC staff prepared a model safety evaluation (SE) for the elimination of requirements regarding containment hydrogen recombiners and the removal of requirements from TSs for containment hydrogen and oxygen monitors and solicited public comment (67 FR 50374, published August 2, 2002) in accordance with the CLIIP. The use of the CLIIP was intended to help the NRC to efficiently process amendments that propose to remove the hydrogen recombiner and hydrogen and oxygen monitor requirements from TSs. Licensees of nuclear power reactors to which this model applied were informed (68 FR 55416, published September 25, 2003) that they could request amendments conforming to the model, and, in such requests, should confirm the applicability of the SE to their reactors and provide the requested plant-specific verifications and commitments.

The licensee's proposal differs from TSTF-447 and the CLIIP model SE in that the TSs for Davis-Besse include requirements for a containment hydrogen dilution system and hydrogen purge system instead of hydrogen recombiners (use of a hydrogen recombiner is an alternative at Davis-Besse but is not addressed in the plant's TSs). The 10 CFR 50.44 rulemaking addressed such systems and although not specifically addressed in TSTF-447, the discussion in the CLIIP model SE is largely applicable. This SE revises the model previously published and used for many plant-specific amendments in order to address the specific variations included for Davis-Besse.

2.0 BACKGROUND

Regulatory Issue Summary (RIS) 2000-06, "Consolidated Line Item Improvement Process for Adopting Standard Technical Specification Changes for Power Reactors," was issued on March 20, 2000. The CLIIP is intended to improve the efficiency of NRC licensing processes. This is accomplished by processing proposed changes to the STS in a manner that supports subsequent license amendment applications. The CLIIP 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 NRC staff evaluates any comments received for a proposed change to the STS and either reconsiders the change or proceeds with announcing the availability of the change for proposed adoption by licensees. Those licensees opting to apply for the subject change to TSs are responsible for reviewing the NRC staff's evaluation, referencing the applicable technical justifications, and providing any necessary plant-specific information. Each amendment application made in response to the notice of availability would be processed and noticed in accordance with applicable rules and NRC procedures.

The Commission's regulatory requirements related to the content of TSs are set forth in 10 CFR 50.36, "Technical specifications." This regulation requires that the TSs include items in five specific categories. These categories include (1) safety limits, limiting safety system settings and limiting control settings, (2) limiting conditions for operation (LCO), (3) surveillance requirements, (4) design features, and (5) administrative controls. However, the regulation does not specify the particular TSs to be included in a plant's license.

Additionally, 10 CFR 50.36(c)(2)(ii) sets forth four criteria to be used in determining whether an LCO is required to be included in the TSs. These criteria are as follows:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
4. A structure, system or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Existing LCOs and related surveillances included as TS requirements which satisfy any of the criteria stated above must be retained in the TSs. Those TS requirements which do not satisfy these criteria may be relocated to other licensee-controlled documents.

As part of the rulemaking that revised 10 CFR 50.44, the Commission retained requirements for ensuring a mixed atmosphere, inerting Mark I and II containments, and providing hydrogen control systems capable of accommodating an amount of hydrogen generated from a metal-water reaction involving 75 percent of the fuel cladding surrounding the active fuel region

in Mark III and ice condenser containments. The Commission eliminated the design-basis loss-of-coolant accident (LOCA) hydrogen release from 10 CFR 50.44 and consolidated the requirements for hydrogen and oxygen monitoring to 10 CFR 50.44, while relaxing safety classifications and licensee commitments to certain design and qualification criteria. The Commission also relocated without change the hydrogen control requirements in 10 CFR 50.34(f) to 10 CFR 50.44 and the high point vent requirements from 10 CFR 50.44 to 10 CFR 50.46a.

TSTF-447 does not specifically address the proposed TS changes associated with the hydrogen dilution system and hydrogen purge system. The following comment received following the initial publication of the proposed CLIIP model SE and the NRC staff response were included in the notice of availability published on September 25, 2003 (68 FR 55416).

Comment: A licensee recommended that the SE also include conclusions as to the acceptability of eliminating containment purging as the design basis method for post loss-of-coolant accident (LOCA) hydrogen control. Some licensees use containment purging as the design basis method for compliance with the current 10 CFR 50.44, rather than hydrogen recombiners. Although the containment purge requirements were not incorporated into the TS, as was done for hydrogen recombiners, the requirement for purging exists in docketed commitments to the NRC and in the Final Safety Analysis Report (FSAR). The process of changing the FSAR and the docketed commitments would be simplified if the NRC SE included consideration of containment purging.

Response: The NRC model SE only addresses requirements in the STS or plant specific TS. In this case, the NRC model SE is for the elimination of the requirements of hydrogen recombiners, and hydrogen and oxygen monitors from TS. Since containment purging requirements are not in the STS, the NRC model SE did not make conclusions about the acceptability of eliminating containment purging as the design basis method for post-LOCA hydrogen control. However, the following statement from the Statements of Considerations was added to the model SE to address the comment:

...the Commission eliminated the hydrogen release associated with a design basis LOCA from § 50.44 and the associated requirements that necessitated the need for the hydrogen recombiners and the backup hydrogen vent and purge systems.

In the case of Davis-Besse, the hydrogen dilution and purge systems have been the primary means of combustible gas control and a recombiner is discussed as a backup method. The staff considers this to be a variance from the CLIIP and related TSTF-447 and reviewed that portion of the licensee's proposal using normal procedures.

3.0 EVALUATION

The ways in which the requirements and recommendations for combustible gas control were incorporated into the licensing bases of commercial nuclear power plants varied as a function of when plants were licensed. Plants that were operating at the time of the Three Mile Island (TMI), Unit 2 accident are likely to have been the subject of confirmatory orders that imposed the combustible gas control functions described in NUREG-0737, "Clarification of TMI Action

Plan Requirements," as obligations. The issuance of plant-specific amendments to adopt these changes, which would remove hydrogen recombiner and hydrogen monitoring controls from TS, supersedes the combustible gas control specific requirements imposed by post-TMI confirmatory orders.

3.1 Hydrogen Dilution and Purge Systems

The revised 10 CFR 50.44 no longer defines a design-basis LOCA hydrogen release, and eliminates the requirements for hydrogen control systems to mitigate such a release. The installation of hydrogen recombiners and/or vent and purge systems required by the former 10 CFR 50.44(b)(3) was intended to address the limited quantity and rate of hydrogen generation that was postulated from a design-basis LOCA. The Commission has found that this hydrogen release is not risk-significant because the design-basis LOCA hydrogen release does not contribute to the conditional probability of a large release up to approximately 24 hours after the onset of core damage. In addition, these systems were ineffective at mitigating hydrogen releases from risk-significant beyond design-basis accidents (DBAs). Therefore, the Commission eliminated the hydrogen release associated with a design-basis LOCA from 10 CFR 50.44 and the associated requirements that necessitated the need for the hydrogen recombiners and the backup hydrogen vent and purge systems. As a result, the NRC staff has stated that the requirements related to hydrogen recombiners no longer meet any of the four criteria in 10 CFR 50.36(c)(2)(ii) for retention in TSs and the existing TS requirements may, therefore, be eliminated for all plants. The elimination of the design-basis hydrogen release likewise supports the proposed removal from TSs requirements of the hydrogen dilution and purge systems for Davis-Besse.

The hydrogen dilution and purge systems at Davis-Besse may be used during normal operations or other plant conditions for purposes other than controlling the concentration of hydrogen in containment. While acknowledging that the systems are no longer needed for combustible gas control and approving the removal of related requirements from TSs, the NRC staff has not assessed other uses of the system or the plant modifications that may follow the issuance of this amendment. Requirements in NRC regulations (e.g., 10 CFR 50.59, "Changes, tests, and experiments," and 10 CFR Part 50, Appendix J, "Primary reactor containment leakage testing for water-cooled power reactors") and other TSs may apply to the licensee's implementation of this amendment. The licensee is also required to assess the implications of any system or procedural modifications on programs such as their emergency plans and severe accident management guidelines. The NRC staff finds that these regulatory requirements and programmatic reviews establish the necessary regulatory controls of the licensee's implementation of the license amendment.

The elimination of the requirements for the hydrogen dilution and purge systems is also reflected in TS 6.8.4.f, "Ventilation Filter Testing Program." The NRC staff finds that the elimination of requirements for the hydrogen purge system supports its removal from the testing program for the related filters and support features in TS 6.8.4.f.

3.2 Hydrogen Monitoring Equipment

Section 50.44(b)(1), the STS, and plant-specific TSs currently contain requirements for monitoring hydrogen. Licensees have also made commitments to design and qualification criteria for hydrogen monitors in Item II.F.1, Attachment 6 of NUREG-0737 and Regulatory Guide (RG) 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess

Plant and Environs Conditions During and Following an Accident." The hydrogen monitors are required to assess the degree of core damage during a beyond DBA and confirm that random or deliberate ignition has taken place. If an explosive mixture that could threaten containment integrity exists during a beyond DBA, then other severe accident management strategies, such as purging and/or venting, would need to be considered. The hydrogen monitors are needed to implement these severe accident management strategies.

With the elimination of the design-basis LOCA hydrogen release, hydrogen monitors are no longer required to mitigate DBAs and, therefore, the hydrogen monitors do not meet the definition of a safety-related component as defined in 10 CFR 50.2., "Definitions." RG 1.97 recommends classifying the hydrogen monitors as Category 1. Category 1 in RG 1.97 is intended for key variables that most directly indicate the accomplishment of a safety function for DBA events and, therefore, are items usually addressed within TSs. As part of the rulemaking to revise 10 CFR 50.44, the Commission found that the hydrogen monitors no longer meet the definition of Category 1 in RG 1.97. The Commission concluded that Category 3, as defined in RG 1.97, is an appropriate categorization for the hydrogen monitors because the monitors are required to diagnose the course beyond DBAs. Hydrogen monitoring is not the primary means of indicating a significant abnormal degradation of the reactor coolant pressure boundary. Section 4 of Attachment 2 to SECY-00-0198, "Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes to 10 CFR 50.44 (Combustible Gas Control)," found that the hydrogen monitors were not risk-significant. Therefore, the NRC staff finds that hydrogen monitoring equipment requirements no longer meet any of the four criteria in 10 CFR 50.36(c)(2)(ii) for retention in TSs and, therefore, may be relocated to other licensee-controlled documents.

However, because the hydrogen monitors are required to diagnose the course beyond DBAs, each licensee should verify that it has, and make a regulatory commitment to maintain, a hydrogen monitoring system capable of diagnosing beyond DBAs.

The elimination of post-accident sampling system requirements from some plant-specific TS (and associated CLIP notices) indicated that during the early phases of an accident, safety-grade hydrogen monitors provide an adequate capability for monitoring containment hydrogen concentration. The NRC staff has subsequently concluded that Category 3 hydrogen monitors also provide an adequate capability for monitoring containment hydrogen concentration during the early phases of an accident.

4.0 VERIFICATIONS AND COMMITMENTS

As requested by the NRC staff in the notice of availability for this TS improvement, the licensee has addressed the following plant-specific verifications and commitments.

- 4.1 Each licensee should verify that it has, and make a regulatory commitment to maintain, a hydrogen monitoring system capable of diagnosing beyond design-basis accidents.

The licensee has verified that it has a hydrogen monitoring system capable of diagnosing beyond DBAs. The licensee has, in its July 29, 2004, application, a commitment to maintain the hydrogen monitors within the Technical Requirements Manual. The licensee will implement this

commitment concurrent with the implementation of this license amendment (within 120 days of issuance).

The NRC staff finds that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitments are provided by the licensee's administrative processes, including its commitment management program. Should the licensee choose to incorporate a regulatory commitment into the emergency plan, FSAR, or other document with established regulatory controls, the associated regulations would define the appropriate change-control and reporting requirements. The NRC staff has determined that the commitments do not warrant the creation of regulatory requirements which would require prior NRC approval of subsequent changes. The NRC staff has agreed that NEI 99-04, Revision 0, "Guidelines for Managing NRC Commitment Changes," provides reasonable guidance for the control of regulatory commitments made to the NRC staff. (See RIS 2000-17, "Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC Staff," dated September 21, 2000.) The commitments should be controlled in accordance with the industry guidance or comparable criteria employed by a specific licensee. The NRC staff may choose to verify the implementation and maintenance of these commitments in a future inspection or audit.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

This 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. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent 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 (70 FR 7764, February 15, 2005). 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.

7.0 CONCLUSION

The NRC staff 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: W. Reckley

Date: August 1, 2005