

July 3, 2001

Mr. John T. Herron
Vice President Operations
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - ISSUANCE OF
AMENDMENT RE: ELIMINATION OF POST-ACCIDENT SAMPLING
(TAC NO. MB1885)

Dear Mr. Herron:

The Commission has issued the enclosed Amendment No. 172 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 May 3, 2001.

The amendment deletes TS Section 6.8.4.d, "Post-accident Sampling," for Waterford 3 and thereby eliminates the requirements to have and maintain the post-accident sampling system (PASS). The amendment also revises TS 6.8.4.a, "Primary Coolant Sources Outside Containment," to reflect the elimination of PASS.

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. 172 to NPF-38
2. Safety Evaluation

cc w/encls: See next page

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ENERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 172
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc. (the licensee) dated May 3, 2001, 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. 172, 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. This license amendment is effective as of its date of issuance and shall be implemented on or before February 28, 2002.

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: July 3, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 172

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

6-15
6-16

Insert

6-15
6-16

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 172 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 May 3, 2001, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Waterford Steam Electric Station, Unit 3, Technical Specifications (TSs). The requested change would delete TS 6.8.4.d, "Post-accident Sampling."

In the aftermath of the accident at Three Mile Island Nuclear Station (TMI), Unit 2, the Nuclear Regulatory Commission (NRC, or the Commission) imposed requirements on licensees for commercial nuclear power plants to install and maintain the capability to obtain and analyze post-accident samples of the reactor coolant and containment atmosphere. The desired capabilities of the Post-Accident Sampling System (PASS) were described in NUREG-0737, "Clarification of TMI Action Plan Requirements." The NRC issued orders to licensees with plants operating at the time of the TMI accident to confirm the installation of PASS capabilities (generally as they had been described in NUREG-0737). A requirement for PASS and related administrative controls was added to the TS of the operating plants and was included in the initial TS for plants licensed during the 1980s and 1990s. Additional expectations regarding PASS capabilities were included in Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants To Assess Plant and Environs Conditions During and Following an Accident."

Significant improvements have been achieved since the TMI accident in the areas of understanding risks associated with nuclear plant operations and developing better strategies for managing the response to potentially severe accidents at nuclear plants. Recent insights about plant risks and alternate severe accident assessment tools have led the NRC staff to conclude that some TMI Action Plan items can be revised without reducing the ability of licensees to respond to severe accidents. The NRC's efforts to oversee the risks associated with nuclear technology more effectively and to eliminate undue regulatory costs to licensees have prompted the NRC to consider eliminating the requirements for PASS in TS and other parts of the licensing bases of operating reactors.

The staff has completed its review of the topical reports submitted by the Combustion Engineering Owners Group (CEOG) and the Westinghouse Owners Group (WOG) that

proposed the elimination of PASS. The justifications for the proposed elimination of PASS requirements center on evaluations of the various radiological and chemical sampling and their potential usefulness in responding to a severe reactor accident or making decisions regarding actions to protect the public from possible release of radioactive materials. As explained in more detail in the staff's safety evaluations (SEs) for the two topical reports, the staff has reviewed the available sources of information for use by decision-makers in developing protective action recommendations and assessing core damage. Based on this review, the staff found that the information provided by PASS is either unnecessary or is effectively provided by other indications of process parameters or measurement of radiation levels. The staff agrees, therefore, with the owners groups that licensees can remove the TS requirements for PASS, revise (as necessary) other elements of the licensing bases, and pursue possible design changes to alter or remove existing PASS equipment.

2.0 BACKGROUND

In a letter dated May 5, 1999 (as supplemented by letter dated April 14, 2000), the CEOG submitted topical report CE NPSD-1157, Revision 1, "Technical Justification for the Elimination of the Post-Accident Sampling System From the Plant Design and Licensing Bases for CEOG Utilities." A similar proposal was submitted on October 26, 1998 (as supplemented by letters dated April 28, 1999, and April 10 and May 22, 2000), by the WOG in its topical report WCAP-14986, "Post Accident Sampling System Requirements: A Technical Basis." The reports provided evaluations of the information obtained from PASS samples to determine the contribution of the information to plant safety and accident recovery. The reports considered the progression and consequences of core damage accidents and assessed the accident progression with respect to plant abnormal and emergency operating procedures, severe accident management guidance, and emergency plans. The reports provided the owners groups' technical justifications for the elimination of the various PASS sampling requirements. The specific samples and the staff's findings are described in the following evaluation.

The NRC staff prepared this model SE relating to the elimination of requirements on post-accident sampling and solicited public comments (65 FR 49271, published August 11, 2000) in accordance with the consolidated line item improvement process (CLIIP). The use of the CLIIP in this matter is intended to help the NRC to efficiently process amendments that propose to remove the PASS requirements from TS. Licensees of nuclear power reactors to which this model applies were informed by *Federal Register* notice (65 FR 65018, published October 31, 2000) that they could request an amendment confirming the applicability of the SE to their reactors and provide the requested plant-specific verifications and commitments.

3.0 EVALUATION

The technical evaluations for the elimination of PASS requirements are provided in the SEs dated May 16, 2000, for the CEOG topical report CE NPSD-1157, and June 14, 2000, for the WOG topical report WCAP-14986. The NRC staff's SEs approving the topical reports are located in the NRC's Agencywide Documents Access and Management System (ADAMS) (Accession Numbers ML003715250 for CE NPSD-1157 and ML003723268 for WCAP-14986).

The way in which the requirements and recommendations for PASS 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 TMI accident are likely to have been the subject of confirmatory orders that imposed the PASS functions described in NUREG-0737 as obligations. The issuance of plant-specific amendments to adopt this change, which would remove PASS and related administrative controls from the TS, supersede the PASS-specific requirements imposed by post-TMI confirmatory orders.

As described in its SEs for the topical reports, the staff finds that the following PASS requirements may be eliminated for plants of Combustion Engineering and Westinghouse designs:

1. reactor coolant dissolved gases
2. reactor coolant hydrogen
3. reactor coolant oxygen
4. reactor coolant pH
5. reactor coolant chlorides
6. reactor coolant boron
7. reactor coolant conductivity
8. reactor coolant radionuclides
9. containment atmosphere hydrogen concentration
10. containment oxygen
11. containment atmosphere radionuclides
12. containment sump pH
13. containment sump chlorides
14. containment sump boron
15. containment sump radionuclides

The staff agrees that sampling of radionuclides is not required to support emergency response decision-making during the initial phase of an accident because the information provided by PASS is either unnecessary or is effectively provided by other indications of process parameters or measurement of radiation levels. Therefore, it is not necessary to have dedicated equipment to obtain this sample in a prompt manner.

The staff does, however, believe that there could be significant benefits to having information about the radionuclides existing post-accident in order to address public concerns and plan for long-term recovery operations. As stated in the SEs for the topical reports, the staff has found that licensees could satisfy this function by developing contingency plans to describe existing sampling capabilities and what actions (e.g., assembling temporary shielding) may be necessary to obtain and analyze highly radioactive samples from the reactor coolant system (RCS), containment sump, and containment atmosphere. (See item 4.1 under Licensee Verifications and Commitments.) These contingency plans must be available to be used by a licensee during an accident; however, these contingency plans do not have to be carried out in emergency plan drills or exercises. The contingency plans for obtaining samples from the RCS, containment sump, and containment atmosphere may also enable a licensee to derive information on parameters such as hydrogen concentrations in containment, and boron concentration and pH of water in the containment sump. The staff considers the sampling of the containment sump to be potentially useful in confirming calculations of pH and boron concentrations, and confirming that potentially unaccounted for acid sources have been sufficiently neutralized. The use of contingency plans for obtaining samples would depend on

the plant conditions and the need for information by the decision-makers responsible for responding to the accident.

In addition, the staff considers radionuclide sampling information to be useful in classifying certain types of events (such as a reactivity excursion or mechanical damage) that could cause fuel damage without having an indication of overheating on core exit thermocouples. However, the staff agrees with the topical reports' contentions that other indicators of failed fuel, such as letdown radiation monitors (or normal sampling system), can be correlated to the degree of failed fuel. (See item 4.2 under Licensee Verifications and Commitments.)

In lieu of the information that would have been obtained from PASS, the staff believes that licensees should maintain or develop the capability to monitor radioactive iodines that have been released to offsite environs. Although this capability may not be needed to support the immediate protective action recommendations during an accident, the information would be useful for decision-makers trying to limit the public's ingestion of radioactive materials. (See item 4.3 under Licensee Verifications and Commitments.)

The staff believes that the changes related to the elimination of PASS that are described in the topical reports, related SEs, and this proposed change to the TS are unlikely to result in a decrease in the effectiveness of a licensee's emergency plan. Each licensee, however, must evaluate possible changes to its emergency plan in accordance with 10 CFR 50.54(q) to determine if the change decreases the effectiveness of its site-specific plan. Evaluations and reporting of changes to emergency plans should be performed in accordance with applicable regulations and procedures.

The staff notes that redundant, safety-grade, containment hydrogen concentration monitors are required by 10 CFR 50.44(b)(1), are addressed in NUREG-0737 Item II.F.1 and Regulatory Guide 1.97, and are relied upon to meet the data reporting requirements of 10 CFR Part 50, Appendix E, Section VI.2.a.(i)(4). The staff concludes that, during the early phases of an accident, the safety-grade hydrogen monitors provide an adequate capability for monitoring containment hydrogen concentration. The staff sees the value in maintaining the capability to obtain grab samples for complementing the information from the hydrogen monitors in the long term (i.e., by confirming the indications from the monitors and providing hydrogen measurements for concentrations outside the range of the monitors). As previously mentioned, the licensee's contingency plan (see item 4.1) for obtaining highly radioactive samples will include sampling of the containment atmosphere and may, if deemed necessary and practical by the appropriate decision-makers, be used to supplement the safety-related hydrogen monitors.

The TS include an administrative requirement for a program to minimize, to levels as low as practicable, the leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident. The program includes preventive maintenance, periodic inspections, and leak tests for the identified systems. PASS is specifically listed in TS 6.8.4.a as falling under the scope of this requirement. The applicability of this specification depends on whether or not PASS is maintained as a system that is a potential leakage path.

The licensee has stated that a plant change may be implemented such that PASS would not be a potential leakage path outside containment for highly radioactive fluids. The modification may

not, however, be made during the implementation period for this amendment. The licensee has proposed to add the following phrase to the reference to PASS in TS 6.8.4.a:

“...(pending a modification to eliminate PASS as a potential leakage path)...”

The above phrase makes clear that TS 6.8.4.a remains applicable to the PASS as long as it is a possible leakage path and reflects that the actual modification of the piping system may be scheduled beyond the implementation period for this amendment. Requirements in NRC regulations (10 CFR Part 50, Appendix J) and other TSs provide adequate regulatory controls over the licensee's modification to eliminate PASS as a potential leakage path. Following the modification to eliminate PASS as a potential leakage path, the licensee may elect (in order to maintain clarity and simplicity of the requirement) to revise TS 6.8.4.a to remove the reference to PASS, including the phrase added by this amendment.

4.0 VERIFICATIONS AND COMMITMENTS

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

4.1 Contingency Plans

Each licensee should verify that it has, and make a regulatory commitment to maintain (or make a regulatory commitment to develop and maintain), contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, containment sump, and containment atmosphere.

The licensee has made a regulatory commitment to develop contingency plans for obtaining and analyzing highly radioactive samples from the RCS, containment sump, and containment atmosphere. The licensee has committed to maintain the contingency plans within its emergency plan implementing procedures. The licensee will implement this commitment during the implementation period for this amendment (i.e., on or before February 28, 2002).

4.2 Classifying Fuel Damage Events

Each licensee should verify that it has, and make a regulatory commitment to maintain (or make a regulatory commitment to develop and maintain), a capability for classifying fuel damage events at the Alert level threshold (typically this is 300 $\mu\text{Ci/ml}$ dose equivalent iodine). This capability may utilize the normal sampling system and/or correlations of sampling or letdown line dose rates to coolant concentrations.

The licensee has made a regulatory commitment to develop a capability for classifying fuel damage events at the Alert level threshold. The licensee has committed to maintain the capability for the Alert classification within its emergency plan implementing procedures. The licensee will implement this commitment during the implementation period for this amendment (i.e., on or before February 28, 2002).

4.3 Monitor Radioactive Iodines Released Offsite

Each licensee should verify that it has, and make a regulatory commitment to maintain (or make a regulatory commitment to develop and maintain), the capability to monitor radioactive iodines that have been released to offsite environs.

The licensee has made a regulatory commitment to establish the capability to monitor radioactive iodines that have been released to offsite environs. The licensee has committed to maintain the capability for monitoring iodines within its emergency plan implementing procedures. The licensee will implement this commitment during the implementation period for this amendment (i.e., on or before February 28, 2002).

The NRC staff finds that reasonable controls for the implementation and 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, final safety analysis report, or other document with established regulatory controls, the associated regulations would define the appropriate change-control and reporting requirements. The 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 the Nuclear Energy Institute (NEI) report, 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 Regulatory Issue Summary 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 industry guidance or comparable criteria employed by a specific licensee. The staff may choose to verify the implementation and maintenance of these commitments in a future inspection or audit.

The licensee proposed to take advantage of this opportunity to consolidate TS 6.8.4.b, "In-Plant Radiation Monitoring," onto TS Page 6-15. No changes were made to the requirements and the staff agrees that the movement of the text improves the format of the affected TS pages. The change is therefore acceptable.

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 the 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 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 29353, published May 30, 2001). 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 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: W. Reckley

Date: July 3, 2001

Waterford Generating Station 3

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