

May 23, 2007

Mr. Kevin T. Walsh
Vice President of Operations
Entergy Operations, Inc.
17265 River Road
Killona, LA 70057-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - ISSUANCE OF
AMENDMENT RE: LEAKAGE RATE TESTING OF CONTAINMENT PURGE
VALVES (TAC NO. MD2711)

Dear Mr. Walsh:

The Commission has issued the enclosed Amendment No. 213 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated August 2, 2006.

The amendment change deletes the augmented testing requirement for containment purge supply and exhaust isolation valves with resilient seal materials and allows the surveillance intervals to be set in accordance with the Containment Leakage Rate Testing Program.

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
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosures: 1. Amendment No. 213 to NPF-38
2. Safety Evaluation

cc w/encls: See next page

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ADAMS Accession No.: Amendment/License/TS Pgs ML071290447

*Via SE input memorandum; **previously concurred

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DSS/SCVB	OGC - NLO	NRR/DORL/LPL4/BC
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OFFICIAL RECORD COPY

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May 2007

ENERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 213

License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc., dated August 2, 2006, 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 and paragraph 2.C.2. of Facility Operating License No. NPF-38 as indicated in the attachment to this license amendment.
3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Thomas G. Hiltz, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: May 23, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 213

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace the following pages of the Facility Operating License and 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.

Facility Operating License

REMOVE

INSERT

- 4 -

- 4 -

Technical Specifications

REMOVE

INSERT

3/4 6-15

3/4 6-15

or indirectly any control over (i) the facility, (ii) power or energy produced by the facility, or (iii) the licensees of the facility. Further, any rights acquired under this authorization may be exercised only in compliance with and subject to the requirements and restrictions of this operating license, the Atomic Energy Act of 1954, as amended, and the NRC's regulations. For purposes of this condition, the limitations of 10 CFR 50.81, as now in effect and as they may be subsequently amended, are fully applicable to the equity investors and any successors in interest to the equity investors, as long as the license for the facility remains in effect.

- (b) Entergy Louisiana, LLC (or its designee) to notify the NRC in writing prior to any change in (i) the terms or conditions of any lease agreements executed as part of the above authorized financial transactions, (ii) any facility operating agreement involving a licensee that is in effect now or will be in effect in the future, or (iii) the existing property insurance coverages for the facility, that would materially alter the representations and conditions, set forth in the staff's Safety Evaluation enclosed to the NRC letter dated September 18, 1989. In addition, Entergy Louisiana, LLC or its designee is required to notify the NRC of any action by equity investors or successors in interest to Entergy Louisiana, LLC that may have an effect on the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter 1 and is subject to all applicable provisions of the Act and to the rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

1. Maximum Power Level

EOI is authorized to operate the facility at reactor core power levels not in excess of 3716 megawatts thermal (100% power) in accordance with the conditions specified herein.

2. Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 213, 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.

CONTAINMENT SYSTEMS

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.7 Each containment purge supply and exhaust isolation valve (CAP 103, CAP 104, CAP 203, and CAP 204) shall be OPERABLE and may be open at no greater than the 52° open position allowed by the mechanical stop for less than 90 hours per 365 days.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With a containment purge supply and/or exhaust isolation valve(s) open for greater than or equal to 90 hours per 365 days at any open position, close the open valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With a containment purge supply and/or exhaust isolation valve(s) having a measured leakage rate exceeding the limits of Surveillance Requirement 4.6.1.7.2, restore the inoperable valve(s) to OPERABLE status within 24 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.7.1 The cumulative time that the purge supply or exhaust isolation valves are open during the past 365 days shall be determined at least once per 7 days.

4.6.1.7.2 Each containment purge supply and exhaust isolation valve with resilient material seals shall be demonstrated OPERABLE in accordance with the Containment Leakage Rate Testing Program.

4.6.1.7.3 Each containment purge supply and exhaust isolation valve shall be demonstrated OPERABLE during each COLD SHUTDOWN exceeding 24 hours by verifying that the mechanical stops limit the valve opening to a position < 52° open.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 213 TO
FACILITY OPERATING LICENSE NO. NPF-38
EXTENSION OF LOCAL LEAKAGE RATE TESTING INTERVALS
FOR CONTAINMENT PURGE AND VENT VALVES
ENTERGY OPERATIONS, INC.
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated August 2, 2006 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML062270490), Entergy Operations, Inc. (the licensee), requested a technical specification (TS) change for the Waterford Steam Electric Station, Unit 3 (Waterford 3). Specifically, the change would delete the augmented testing requirements for the containment purge valves with resilient seals and allow the surveillance intervals to be set in accordance with the Containment Leakage Rate Testing Program (TS 6.15). The Containment Leakage Rate Testing Program requires that testing be performed in accordance with Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. RG 1.163 allows a nominal test interval of 30 months for containment purge and vent valves.

2.0 REGULATORY EVALUATION

The U.S. Nuclear Regulatory Commission (NRC) staff finds that the licensee in its August 2, 2006, submittal, identified the applicable regulatory requirements. The regulatory requirements and guidance that the staff considered in assessing the proposed TS change are as follows:

Part 50, Appendix J, Option B, "Primary Reactor Containment Leakage Testing For Water-Cooled Power Reactors, Performance-Based Requirements," of Title 10 of the *Code of Federal Regulations* (10 CFR) provides assurance that leakage through these containments or systems and components penetrating these containments does not exceed allowable leakage rates specified in the TS, and integrity of the containment structure is maintained during its service.

General Design Criteria 54, 55, 56, and 57 of Appendix A to 10 CFR Part 50 require, in part, that piping systems penetrating primary reactor containment be provided with

isolation capabilities that reflect the importance to safety of isolating these piping systems.

RG 1.163 provides guidance on an acceptable performance-based leak-test program, leakage rate test methods, procedures, and analyses that may be used to comply with the performance-based Option B in Appendix J to 10 CFR Part 50.

3.0 TECHNICAL EVALUATION

3.1 Proposed TS Change

Current TS Surveillance Requirement (SR) 4.6.1.7.2 states:

At least once per 3 months each containment purge supply and exhaust isolation valve with resilient material seals shall be demonstrated OPERABLE in accordance with the Containment Leakage Rate Testing Program.

The licensee's proposal is to revise TS SR 4.6.1.7.2 by deleting "At least once per 3 months." No changes to the TS Bases will be required.

3.2 Background

At the time that Waterford 3 received its operating license, 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," required containment isolation valves, including containment purge and vent valves, to be subjected to local leakage rate tests at every refueling outage, but not to exceed 2-year intervals. Then and now, compliance with Appendix J provides assurance that the leakage rate of the containment, including those systems and components that penetrate the containment, does not exceed the allowable leakage rate specified in the TS and TS Bases. The allowable leakage rate is determined so that the leakage rate assumed in the safety analyses is not exceeded.

However, in the 1970s, the staff had determined that containment purge and vent valves were, as a class, a special problem in terms of leakage rate. Experience had shown that containment purge and vent valves with resilient seals were more susceptible than other containment isolation valves to degradation caused by environmental factors (such as temperature extremes, and changes in humidity and barometric pressure) and mechanical factors (such as wear and tear, and hardening of resilient seals due to aging and exposure to radiation). This degradation not only could cause high and rapidly increasing leakage rates, but the radiological consequences of such leaks were more significant than for other valves because of the containment purge and vent valves' typically large diameters and the direct connection they provided between the containment atmosphere and the outside environment.

As part of the resolution of Generic Issue B-20 (also known as Multi-Plant Action MPA-B020), "Containment Leakage Due to Seal Deterioration," the staff decided to increase the frequency of local leakage rate testing of containment purge and vent valves, beyond the frequency required by Appendix J (additional background may be found in Office of Inspection and Enforcement (IE) Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals," issued September 6, 1977). This would limit the time during which the valves might be

inoperable due to excessive leakage, and make it more likely that a licensee would catch and correct advancing degradation before it became extreme. Although there was some variation, a typical testing arrangement was to have "passive" valves (those not opened during plant operation) tested every 6 months, and "active" valves (those opened during plant operation) tested every 3 months. This is essentially the current testing arrangement at Waterford 3, where the test interval is 3 months for valves that have been opened.

The staff notes that the NRC did not implement the increased testing frequencies through regulations, but rather through plant TS. Appendix J does not contain any special requirements for containment purge and vent valves, and the 3 and 6-month tests are not Appendix J tests *per se*, although the same tests are usually used to fulfill Appendix J requirements when they become due.

In 1995, the NRC revised Appendix J to add a new, performance-based option for testing, called Option B. The NRC also published RG 1.163 which was developed as a method acceptable to the NRC staff for implementing Option B. This RG states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, Revision 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995, provides methods acceptable to the NRC staff for complying with Option B, with four exceptions, which are described therein. Virtually all of the plants that have adopted Option B, including Waterford 3, have adopted TS that require compliance with the provisions of RG 1.163.

RG 1.163 allows an extension in the Type A (integrated leakage rate) test interval to 10 years based upon two consecutive successful tests. Type B tests (local leakage rate tests of containment penetrations such as electrical penetrations) may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests. Type C tests (local leakage rate tests of containment isolation valves) may have intervals extended to 5 years based on two consecutive successful tests.

However, despite the fact that other containment isolation valves may have test intervals of up to 5 years, RG 1.163 does not let the containment purge and vent valves go onto an extended interval; they must remain on the nominal 30-month interval. This is in consideration of their past poor operating experience and the safety significance of their large diameter and direct connection between the containment atmosphere and the outside environment. Also, although RG 1.163 discusses a 30-month interval, this still does not directly affect the more frequent (3- and 6-month) tests contained in plant TS, which, as before, go beyond the requirements of Appendix J.

Subsequent to the problems observed in the 1970s, the industry has made considerable strides in correcting the deficiencies of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have largely corrected valve deficiencies in many plants. Several plants have requested, and the staff has granted, TS changes to eliminate the more frequent testing requirements, allowing testing at what is essentially a refueling outage interval. The staff has granted these reliefs on the basis of good valve performance demonstrated by plant-specific historical leakage rate testing results. Each plant must show that its containment purge and vent valves have had consistently good performance and are thus unlikely to experience significant degradation between tests when the test interval is lengthened.

3.3 Analysis

In order to determine if the requested extension could be granted and reasonable assurance of safety maintained, the staff examined the surveillance and maintenance history for the "Containment Atmospheric Purge Valves Test" that was provided to the staff via the licensee's submittal. The leakage rate results include two penetrations, both consisting of two valves. Dating back to 1996, there were two "as found" leak rate test failures identified out of approximately 90 surveillance tests. Both failures required an adjustment of the T-ring seat of one of the two valves associated with the penetration.

The staff determined its evaluation based on the past performance of the surveillance on containment purge valves with resilient seals having produced acceptable results, except for the two "as found" test failures mentioned above. Considering that there have only been two failures in approximately 90 tests, and that the cause of the failures was corrected through post testing maintenance, it is the staff's judgment, on the basis of qualitative analysis, that the requested extension to the nominal interval between leakage rate tests of the containment purge and vent valves to 30 months, in accordance with RG 1.163, should be granted, and that reasonable assurance of safety will be maintained.

Based on the evaluation above, the staff finds that the proposed TS change is acceptable.

4.0 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.

5.0 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. 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 September 26, 2006 (71 FR 56191). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

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

Principal Contributor: Brian Lee

Date: May 23, 2007