



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

April 26, 2016

Site Vice President  
Entergy Operations, Inc.  
Waterford Steam Electric Station, Unit 3  
17265 River Road  
Killona, LA 70057-3093

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – REQUEST FOR  
ADDITIONAL INFORMATION REGARDING REQUEST FOR ALTERNATIVE TO  
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) OPERATIONS  
AND MAINTENANCE (OM) CODE REQUIREMENTS FOR HIGH-PRESSURE  
SAFETY INJECTION (HPSI) PUMP TESTING (CAC NO. MF7485)

Dear Sir or Madam:

By letter dated March 17, 2016 (Agencywide Documents Access and Management System Accession No. ML16077A376), Entergy Operations, Inc. (Entergy or the licensee), submitted Relief Request PRR-WF3-2016-1 for the Waterford Steam Electric Station, Unit 3. In the submittal the licensee proposed an alternative to the ASME OM Code requirements for HPSI Pump AB [SI-MPMP-0002AB] testing requirements.

The licensee requests authorization of an alternative to the requirement contained in ASME OM Code Section ISTB-6200, "Corrective Action," to double the frequency of testing if a parameter falls within the Alert range. The licensee proposes to perform Inservice Testing Group A quarterly tests on the HPSI Pump AB until corrective actions can be performed. The Nuclear Regulatory Commission's (NRC's) regulatory requirements related to the content of the relief request are contained in Title 10 of the *Code of Federal Regulations*, Section 50.55a, "Codes and standards."

The NRC staff is reviewing the information provided by the licensee in its March 17, 2016, relief request and has determined that additional information is needed to complete its review.

The specific information requested is addressed in the enclosure to this letter. During a discussion with Ms. Leia Milster and others of your staff on April 21, 2016, it was agreed that you would provide a response within 30 days from the date of this letter. Please provide the additional information requested in the enclosure within 30 days of the date of this letter.

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If you have any questions, please contact me at 301-415-1390 or via e-mail at [April.Pulvirenti@nrc.gov](mailto:April.Pulvirenti@nrc.gov).

Sincerely,

A handwritten signature in cursive script, appearing to read "April L. Pulvirenti".

April L. Pulvirenti, Project Manager  
Plant Licensing IV-2 and Decommissioning  
Transition Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:  
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING REQUEST FOR ALTERNATIVE TO AMERICAN SOCIETY OF MECHANICAL  
ENGINEERS (ASME) OPERATIONS AND MAINTENANCE (OM) CODE  
REQUIREMENTS  
FOR HIGH-PRESSURE SAFETY INJECTION (HPSI) PUMP TESTING  
ENTERGY OPERATIONS, INC.  
WATERFORD STEAM ELECTRIC STATION, UNIT 3  
DOCKET NUMBER 50-382

By letter dated March 17, 2016 (Agencywide Documents Access and Management System Accession No. ML16077A376), Entergy Operations, Inc. (Entergy or the licensee), submitted Relief Request PRR-WF3-2016-1 for the Waterford Steam Electric Station, Unit 3 (Waterford 3). In the submittal, the licensee proposed an alternative to ASME OM Code requirements for HPSI Pump AB [SI-MPMP-0002AB] testing requirements.

The licensee requests authorization of an alternative to the requirement contained in ASME OM Code Section ISTB-6200, "Corrective Action," to double the frequency of testing if a parameter falls within the Alert range. The licensee proposes to perform Inservice Testing (IST) Group A quarterly tests on the HPSI Pump AB until corrective actions can be performed. The Nuclear Regulatory Commission's (NRC's) regulatory requirements related to the content of the relief request are contained in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, "Codes and standards."

The NRC staff is reviewing the information provided by the licensee in its March 17, 2016, relief request and has determined that the following additional information is needed to complete its review.

**Request for Additional Information (RAI) EPNB-1**

Alternative Relief Request PRR-WF3-2016-1 states that it is submitted in accordance with 10 CFR 50.55a(a)(3)(ii). In the 10 CFR dated January 1, 2015, paragraph 50.55a(a)(3)(ii) was moved to paragraph 50.55a(z)(2). The NRC staff plans to review the alternative request under paragraph 50.55a(z)(2). Confirm that paragraph 50.55a(z)(2) of 10 CFR is the correct paragraph under which the NRC staff should conduct its review.

**RAI EPNB-2**

Confirm that Waterford 3 is currently in the third inservice test interval, that the start date of the interval was December 1, 2007, and that the end date of the interval is scheduled for November 30, 2017.

Enclosure

### **RAI EPNB-3**

In the Background section of the submittal, it is stated, in part that:

A cause evaluation performed following the elevated vibration condition identified during RF20 [Refueling Outage 20] determined that the HPSI AB pump is in the beginning stages of end of life.

In the Analysis section of the submittal, it is stated, in part that:

The preceding information demonstrates the HPSI AB pump is capable of performing its safety function because the pump bearing vibrations do not improve or worsen with higher flow rates and longer periods of operation, the pump has consistently achieved TS [Technical Specification] 4.5.2(h) flow requirements during each refueling outage, has achieved TS 4.5.2(f)(1) differential pressure during each quarterly surveillance during Operating Cycle 20 prior to RF20, and has been within IST Comprehensive test differential pressure [DP] acceptance criteria with no degrading trend in pump hydraulic performance.

Provide the mission time for the HPSI AB pump during a design-basis accident, and discuss why the pump is able to meet its mission time when it is in the beginning stages of end-of-life. Also define the term "longer periods of operation" that is quoted from the Analysis section.

### **RAI EPNB-4**

In the Background section of the submittal, it is stated, in part, that:

Recommendations regarding operation of this pump to avoid further wear are being utilized to the extent practical. These consist of avoidance of using the pump for non-accident, non-surveillance scenarios/tasks that can be accomplished with other pumps, use of HPSI Pump A (which has an upgraded rotating assembly) as the preferred pump, minimizing the pump stop/start cycles as much as possible, and minimizing operation above 120% of the best efficiency point.

ASME OM Code ISTB-2000, "Supplemental Definitions," states that Group B pumps are "pumps in standby systems that are not operated routinely except for testing." The recommendations above imply that HPSI pump AB may not meet the definition of a Group B pump. Explain why HPSI pump AB is currently classified as a Group B pump. If the pump does meet the definition of a Group B pump, explain why the recommendations above are applicable to the pump.

### **RAI EPNB-5**

In Section 3 of the submittal, "Applicable Code Requirement(s)," Table ISTB-3510-1 is listed. There is no Table ISTB-3510-1 in the ASME OM Code (2001 Edition through 2003 Addenda). Provide the correct Table number.

**RAI EPNB-6**

In Section 5 of the submittal, "Proposed Alternative and Basis for Use," it is stated, in part, that:

Test data will be compared to the Group A vibration and DP acceptance criteria which were established when the pump was known to be operating acceptably.

Explain how Group A vibration and DP acceptance criteria were established if the pump is classified as a Group B pump and has been tested as a Group B pump.

**RAI EPNB-7**

In Section 5 of the submittal, it is stated that the proposed Group A tests will be performed at approximately 250 gallons per minute (gpm). It is also stated, in part, that:

The quarterly pump test was changed in October 2013 such that only the minimum recirculation line is utilized with flow rates of approximately 30 gpm.

Discuss where 250 gpm and 30 gpm are located on the pump curve for HPSI Pump AB, and if they are located on a sloped portion of the curve where pump degradation can be detected. Also, provide a copy of the pump curve for HPSI Pump AB.

**RAI EPNB-8**

In the precedent given in Section 7 of the submittal, "Precedents," the licensee for the referenced precedent (i.e., Palo Verde Nuclear Generating Station, Unit 3), performed a vibration frequency analysis on the subject pump. Discuss whether a vibration frequency spectrum analysis was performed during the last comprehensive pump test for HPSI Pump AB at Waterford 3, and if not, why not.

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If you have any questions, please contact me at 301-415-1390 or via e-mail at [April.Pulvirenti@nrc.gov](mailto:April.Pulvirenti@nrc.gov).

Sincerely,

**/RA/**

April L. Pulvirenti, Project Manager  
Plant Licensing IV-2 and Decommissioning  
Transition Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:  
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**ADAMS Accession No.: ML16117A045**

**\*by email**

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DATE	4/26/2016	4/26/2016	4/14/2016
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