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

July 23, 2015

Vice President, Operations
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT – SUPPLEMENTAL INFORMATION NEEDED FOR ACCEPTANCE OF RELIEF REQUEST NUMBER RR 4-22 – PROPOSED ALTERNATIVE, USE OF ALTERNATE ASME CODE CASE N-770-1 BASELINE EXAMINATION (TAC NO. MF6448)

Dear Sir or Madam:

By letter dated July 7, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15190A262), Entergy Nuclear Operations, Inc. (the licensee), proposed an alternative to 10 CFR 50.55a(g)(6)(ii)(F)(3) for Palisades Nuclear Plant (Palisades). This regulation defines the inspection requirement for branch connection butt welds at Palisades in accordance with American Society of Mechanical Engineers Boiler and Pressure Vessel Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR [Pressurized Water Reactor] Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities," with U.S. Nuclear Regulatory Commission (NRC) conditions. The licensee is requesting an extension of the required inspection of the Alloy 82/182 branch connections to the primary coolant system for at least one cycle of operation as presented in Relief Request RR 4-22.

The purpose of this letter is to provide the results of the NRC staff's acceptance review of this relief request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Pursuant to Section 50.55a(z)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR), the applicant shall demonstrate that compliance with the specified requirements of Section 50.55a would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

The NRC staff has reviewed your application and concluded that additional information, delineated in the enclosure to this letter, is necessary to enable the staff to make an independent assessment regarding the acceptability of the proposed relief request in terms of regulatory requirements and the protection of public health and safety and the environment.

In order to make the application complete, the NRC staff requests that the licensee supplement the application to address the information requested in the enclosure by August 7, 2015. This

will enable the NRC staff to begin its detailed technical review. If the requested information, responsive to the NRC staff's request, is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the staff's detailed technical review by separate correspondence.

The information requested and associated timeframe in this letter, were discussed with your licensing staff on July 21, 2015. If you have any questions, please contact me at (301) 415-1530.

Sincerely,

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-255

Enclosure:
Supplemental Information Request

cc w/encl: Distribution via Listserv

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REQUEST FOR SUPPLEMENTAL INFORMATION

PROPOSED ALTERNATIVE TO 10 CFR 50.55a(g)(6)(ii)(F)(3) REQUIREMENTS FOR EXAMINATION OF BRANCH CONNECTION BUTT WELDS

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT

DOCKET NO. 50-255

By letter dated July 7, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15190A262), Entergy Nuclear Operations, Inc. (the licensee), proposed an alternative to 10 CFR 50.55a(g)(6)(ii)(F)(3) for Palisades Nuclear Plant (Palisades). This regulation defines the inspection requirement for branch connection butt welds at Palisades in accordance with American Society of Mechanical Engineers Boiler and Pressure Vessel Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR [Pressurized Water Reactor] Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities," with U.S. Nuclear Regulatory Commission (NRC) conditions. The licensee is requesting an extension of the required inspection of the Alloy 82/182 branch connections to the primary coolant system for at least one cycle of operation as presented in Relief Request RR 4-22.

This request is similar to a proposed alternative described in RR 4-18 submitted to the NRC by letter dated February 25, 2014 (ADAMS Accession No. ML14056A533). The NRC staff verbally authorized the use of RR 4-18 on March 12, 2014 (ADAMS Accession No. ML14073A274). The NRC staff issued the associated safety evaluation for RR 4-18 by letter dated September 4, 2014 (ADAMS Accession No. ML14223B226). Subsequently, a discrepancy was discovered in one of the calculations used to support RR 4-18. The licensee submitted relief request RR 4-21 by letter dated May 22, 2015 (ADAMS Accession No. ML15147A616) to address the noted discrepancy.

The NRC staff performed an acceptance review of RR 4-22 and identified a significant difference in the output of the licensee's flaw evaluation calculation compared to the previous NRC flaw analysis performed to support the licensee's previous relief request, RR 4-18. As such, the NRC staff requests the following supplemental information to facilitate its review of the licensee's new flaw analysis to support the July 7, 2015 submittal.

Request for Supplemental Information

NRC staff requests all input information available for the licensee's flaw evaluation model, which includes specific and detailed information on each interaction between the major steps of the

analysis: (1) generation of finite element models, (2) weld residual stress simulation, and (3) fracture mechanics modeling to determine stress intensity factors. Examples of requested detailed information between each of these major steps are shown in the following:

(1) Generation of Hot leg and Cold Leg with Drain Nozzle Finite Element Models

1. Geometric dimensions
2. Modeling assumptions
3. Material properties (elastic properties, elastic-plastic properties, creep properties)
4. Mesh density, mesh density sensitivity
5. Element types used
6. Boundary conditions

(2) Weld Residual Stress Simulation

1. The application of weld heat input and cooling affects
2. Weld bead size
3. Element types used
4. Welding direction assumed
5. The interactions between nodes to transmit stress effects
6. The heat treatment application
7. Post welding loading conditions that were applied
8. Boundary conditions
9. Solution process (such as element birth and death process in simulating the welding process)

(3) Fracture Mechanics Modeling to Determine Stress Intensity Factors

1. Generation of crack into the finite element models of Step (1), which includes crack tip generation process, crack tip meshing, types of elements used for crack tip, crack tip nodal positions
2. Process of mapping residual stresses from the weld residual stress analysis into the fracture mechanics models
3. Post-processing extraction of stress intensity factors
4. Stress intensity factors output

will enable the NRC staff to begin its detailed technical review. If the requested information, responsive to the NRC staff's request, is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the staff's detailed technical review by separate correspondence.

The information requested and associated timeframe in this letter, were discussed with your licensing staff on July 21, 2015. If you have any questions, please contact me at (301) 415-1530.

Sincerely,

/RA/

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-255
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Supplemental Information Request

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ADAMS Accession No. ML15203A043 ***via memo**

OFFICE	NRR/DORL/LPL3-1/PM	NRR/DORL/LPL3-1/LA	NRR/DE/EPNB/BC
NAME	JRankin	(*BClayton for*) MHenderson	DAlley*
DATE	7/22/2015	7/22/2015	7/17/2015
OFFICE	NRR/DORL/LPL3-1/BC	NRR/DORL/LPL3-1/PM	
NAME	DPelton	JRankin	
DATE	7/23/2015	7/23/2015	

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