

December 10, 2001

Mr. Michael R. Kansler  
Senior Vice President and  
Chief Operating Officer  
Entergy Nuclear Operations, Inc.  
440 Hamilton Avenue  
White Plains, NY 10601

SUBJECT: RELIEF REQUEST NO. 58 FROM AMERICAN SOCIETY OF MECHANICAL  
ENGINEERS BOILER AND PRESSURE VESSEL CODE SECTION XI, INDIAN  
POINT NUCLEAR GENERATING UNIT NO. 2 (TAC NO. MB1564)

Dear Mr. Kansler:

In a letter dated March 22, 2001, as supplemented on June 12 and September 24, 2001, Consolidated Edison Company of New York, Inc. (Con Edison), submitted Relief Request No. 58 from the requirements of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for the third 10-year inservice inspection (ISI) interval at the Indian Point Nuclear Generating Unit No. 2 (IP2). Specifically, Con Edison requested authorization to use the alternative requirements of ASME Code Case N-597, "Requirements for Analytical Evaluation of Pipe Wall Thinning, Section XI, Division 1." On September 6, 2001, the license for IP2 was transferred from Con Edison to Entergy Nuclear IP2 and Entergy Nuclear Operations, Inc. By letter dated September 20, 2001, Entergy Nuclear Operations requested that the U.S. Nuclear Regulatory Commission (NRC) continue to review and act upon all requests before the Commission which had been submitted by Con Edison.

The NRC staff reviewed the proposed alternative in Relief Request No. 58. The results are provided in the enclosed safety evaluation.

The NRC staff has concluded that the proposed alternative to the ASME Code requirements in Relief Request No. 58, as applied through Electric Power Research Institute Report NSAC-202L-R2 and with the clarifications noted in the safety evaluation, is acceptable for the evaluation for Class 1, 2, and 3 carbon and low-alloy steel piping items subject to flow-accelerated corrosion (FAC) and provides an acceptable level of quality and safety. Pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative is authorized for the third 10-year ISI interval at IP2. However, the application of this code case for corrosion phenomena other than FAC was not within the scope of the NRC staff's evaluation and, therefore, is not authorized. In addition, components to which this code case is applied must be repaired or replaced in accordance with the construction code of record and owners requirements prior to reaching the allowable minimum wall thickness as specified in this code case.

M. Kansler

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If you should have any questions, please contact Patrick Milano at 301-415-1457. This completes the NRC staff's action on TAC No. MB1564.

Sincerely,

***/RA/***

L. Raghavan, Acting Chief, Section 1  
Project Directorate 1  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure: Safety Evaluation

cc w/encl: See next page

M. Kansler

- 2 -

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Division of Licensing Project Management  
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cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN

REQUEST FOR RELIEF NO. 58

ENTERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

1.0 INTRODUCTION

The inservice inspection of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(a)(3). 10 CFR 50.55a(a)(3) states, in part, that alternatives to the requirements may be used provided the licensee demonstrates that (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein and subject to Commission approval. The applicable ASME Code edition and addenda is the 1989 Edition, no Addenda.

By letter dated March 22, 2001, as supplemented by letters dated June 12 and September 24, 2001, Entergy Nuclear Operations, Inc. (the licensee) submitted a request for relief from certain requirements in Section IWA-3100 of the ASME Code, Section XI, for Indian Point Nuclear Generating Unit No. 2 (IP2). The Code provides the process for the disposition of flaw examination evaluations which exceed the acceptance standards for materials and welds applicable to the construction of the component. The licensee proposes to use the provisions of ASME Code Case N-597, "Requirements for Analytical Evaluation of Pipe Wall Thinning, Section XI, Division 1," for the evaluation of Class 1, 2, and 3 carbon and low-alloy steel piping items subjected to wall thinning as a result of flow-accelerated corrosion (FAC).

Enclosure

## 2.0 LICENSEE'S RELIEF REQUEST NO. 58

### 2.1 ASME Section XI Code Requirement

Section IWA-3100, "Evaluation," of ASME Code Section XI provides the process for the disposition of flaw examination evaluations that exceed the acceptance standards for materials and welds specified in the Code applicable to the construction of the component. This provision stipulates that the disposition shall be subjected to review by the regulatory and enforcement authorities having jurisdiction at the plant site.

### 2.2 Licensee's Proposed Alternative and Basis

As an alternative to the requirements of IWA-3100, the licensee proposes to use the provisions of ASME Code Case N-597 for the analytical evaluation and acceptance of Class 1, 2, and 3 carbon and low-alloy steel piping components subjected to FAC-like wall thinning, rather than to repair the component if the construction code minimum wall thickness has been reached. This code case stipulates that the methods for predicting the rate of wall thickness loss and the remaining wall thickness shall be the responsibility of the owner. The licensee stated that it has procedural controls in its IP2 Flow Accelerated Corrosion Program that provide direction for calculating wear rates, forecasting remaining life, and conducting inspections of piping components susceptible to FAC. Also, the methodology is consistent with industry standards in the Electric Power Research Institute (EPRI) Report, NSAC-202L-R2, "Recommendations for an Effective Flow Accelerated Corrosion Program," for calculating wear rates, forecasting remaining life, and conducting inspections as programmatic requirements.

## 3.0 EVALUATION

The ASME Code requires that the component whose flaws exceed the acceptance standards shall be evaluated to determine disposition which shall be subjected to review by the regulatory and enforcement authorities having jurisdiction at the plant site. As an alternative to the Code requirements, the licensee has proposed to use Code Case N-597 for Class 1, 2, and 3 carbon and low-alloy steel piping components at IP2. The NRC staff has reviewed this code case previously in preparing its position for incorporation into Regulatory Guide (RG) 1.147, "Inservice Inspection Code Case Acceptability -- ASME Section XI, Division 1," and determined that it was conditionally acceptable. Since the code case does not address inspection requirements and wall thinning rates, the NRC staff has determined that the code case needs to be reviewed and approved prior to use.

The staff finds that the licensee's proposed use of Code Case N-597 provides an acceptable approach for determining the integrity of piping subjected to wall thinning as a result of FAC. However, the approach in the code case makes note of the owner's responsibility in developing the methods of predicting the rate of wall thickness loss and the value of the predicted remaining wall thickness. Although Code Case N-597 can be applied to FAC and other corrosion phenomenon, the licensee provided information related only to the application of this code case to FAC-like wall thinning. The application of this code case to corrosion phenomena other than FAC is not within the scope of this evaluation.



The licensee provided information on the plant inspection and evaluation procedures for calculating wear rates, remaining life, and predicting remaining wall thickness. These procedures are based on EPRI Report NSAC-202L-R2. The licensee, in its implementation procedures, has eliminated the ambiguities in NSAC-202L-R2; in particular, the licensee clarified the following definitions used in the plant procedures governing their flow accelerated corrosion program:

Shall is a mandatory requirement.

Should is a non-mandatory requirement; however, it is the most preferred or desirable method to be adhered to unless determined otherwise by the FAC program engineer or management.

This information was provided in a letter dated September 24, 2001.

Components to which this code case is applied must be repaired or replaced in accordance with the construction code of record and owners requirements or a later approved edition of ASME Section III prior to reaching the allowable minimum wall thickness as specified in this code case.

Therefore, the NRC staff finds that the licensee's alternative to the use of Code Case N-597 as applied through EPRI Report NSAC-202L-R2, with clarifications of the application of "shall" and "should" in this standard, provides an acceptable level of quality and safety for use in connection with Class 1, 2, and 3 carbon and low-alloy steel piping subject to FAC.

#### 4.0 CONCLUSION

The staff concludes that the use of Code Case N-597, as applied through EPRI Report NSAC-202L-R2 and with the above noted clarifications, as an alternative evaluation for Class 1, 2, and 3 carbon and low-alloy steel piping components subject to FAC is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year inservice inspection interval at IP2 or until such time Code Case N-597 is referenced in a future revision of RG 1.147. At that time, if the licensee intends to continue to implement Code Case N-597, the licensee should follow all provisions in the subject code case with limitations (if any) listed in RG 1.147. The application of this code case for corrosion phenomena other than FAC is not within the scope of this evaluation and, therefore, is not authorized. In addition, components to which this code case is applied must be repaired or replaced in accordance with the construction code of record and owners requirements prior to reaching the allowable minimum wall thickness as specified in this code case.

Principal Contributor: C. Lauron

Date: December 10, 2001