

February 11, 2000

Mr. H. L. Sumner, Jr.  
Vice President - Nuclear  
Hatch Project  
Southern Nuclear Operating  
Company, Inc.  
Post Office Box 1295  
Birmingham, Alabama 35201-1295

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2, RE: EVALUATION OF  
RELIEF REQUESTS (TAC NOS. MA6163 AND MA6164)

Dear Mr. Sumner:

In a letter dated July 30, 1999, you submitted nine relief requests (RRs) for the third 10-year interval for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The third 10-year interval for both units began on January 1, 1996, and ends on December 31, 2005. The staff has reviewed the alternative examinations proposed in eight of the nine RRs against the requirements of the American Society of Mechanical Engineers Code, Section XI, 1992 Edition through 1992 Addenda of Subsection IWE pursuant to Section 50.55a of Part 50 to Title 10 of the *Code of Federal Regulations* (10 CFR 50.55a). The ninth RR, RR-27, is still under review and will be addressed in future correspondence.

The results of this review are provided in the enclosed safety evaluation. The alternatives to the Code requirements proposed in RR-MC-1, RR-MC-4, and RR-23 are hereby authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the remainder of the third 10-year inspection interval on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety. The alternatives provide reasonable assurance of maintaining the pressure integrity of the containment boundary. The alternatives to the Code requirements proposed in RR-MC-2, RR-MC-3, RR-MC-5, RR-MC-6, and RR-24 are hereby authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year inspection interval. These alternative examinations provide an acceptable level of quality and safety.

Sincerely,

*/RA/*

Richard L. Emch, Jr., Chief, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO CONTAINMENT INSERVICE INSPECTION

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

EDWIN I. HATCH NUCLEAR PLANT

DOCKET NUMBERS 50-321 AND 366

1.0 INTRODUCTION

In the Federal Register dated August 8, 1996, the U. S. Nuclear Regulatory Commission (NRC) amended Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, to incorporate by reference Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1992 Edition through 1992.

The regulations require that inservice inspection (ISI) of certain Code Class MC and CC components be performed in accordance with Section XI of the ASME Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (g)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for its facility.

By letter dated July 30, 1999, Southern Nuclear Operating Company, Inc. (SNC), the licensee, proposed alternatives to the requirements of Section XI for Edwin I. Hatch Nuclear Plant, Units 1 and 2 (HNP) for the third 10-year inspection interval. The third 10-year interval for both units began on January 1, 1996, and ends on December 31, 2005. The NRC's findings with respect to authorizing the alternatives or denying the proposed relief requests are given below.

2.0 RELIEF REQUESTS

2.1 Relief Request No. RR-MC-1

The licensee requests relief from the requirements of IWE-2500, Table IWE-2500-1, Category E-D, Item numbers E5.10 and E5.20. The Code requires seals and gaskets to be visually examined once each interval. The licensee proposes to assure their leak-tight integrity by the performance of Appendix J testing.

Enclosure

### 2.1.1 Licensee's Basis for Requesting Relief

The licensee states:

Maintenance personnel, trained in the installation of seals and gaskets and the proper assembly of these closure devices, examine the seals and/or gaskets as well as the mating surfaces during the assembly process. Appendix J leak rate testing after re-assembly then provides a positive confirmation of leak tight integrity. In all practicality, a VT-3 visual examination of these seals and gaskets would then require these joints to be disassembled since many of the associated surfaces are normally inaccessible. The ASME Code Committee has recognized that disassembly of the joints in order to perform visual examinations was not warranted, and the 1998 Edition of ASME Section XI removed this examination requirement. The proposed alternate examination (Appendix J, Option B) provides a periodic, non-intrusive test method which will ensure that the integrity of the seals and gaskets is being maintained. As noted in 10 CFR Part 50, Appendix J, the purpose of the testing is to ensure that leakage of containment penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with seal assemblies remains below established limits. Damage to seals or gaskets, which could affect containment integrity, is best detected with this type test and will be performed as follows:

#### **Electrical Penetrations and Containment Penetrations Whose Design Incorporates Resilient Seals, Gaskets, Or Sealant Compounds**

Those penetrations that are not disassembled during the 10-year interval will receive an Appendix J, Option B test at least once in the 10-year interval. For those penetrations that are disassembled or opened, an Appendix J test is required upon final assembly prior to start-up. Additionally, if a seal (including O-rings or gaskets) is reinstalled or replaced, it will be visually inspected by maintenance personnel before reassembly or closure. These tests and inspections will assure the leak tightness of primary containment and provide an acceptable level of quality and safety.

#### **Airlock and Containment Equipment Hatches**

The personnel airlocks are opened as needed during maintenance outages and refueling outages. Prior to final closure, the accessible portions of gaskets and the door sealing faces are inspected for damage that could affect the leak tightness of the seal. If gasket reinstallation is performed or replacement is necessary, the existing or new gasket will be visually inspected by maintenance personnel before re-assembly or closure. Door seals will be tested, as required by Technical Specifications, in accordance with Appendix J within seven days of opening and once every 30 days during periods of frequent opening.

The containment equipment hatch is normally removed during refueling outages. If gasket replacement is necessary, the new gasket will be visually inspected by maintenance personnel before reassembly or closure. Prior to establishing containment integrity following the refueling outage, the containment equipment hatch is leak rate tested in accordance with Appendix J.

These tests and inspections will assure the leak tightness of primary containment and provide an acceptable level of quality and safety.

Justification for Granting Relief: Functionality of containment penetration seals and gaskets (including those of electrical penetrations) will continue to be verified by Appendix J testing as required by 10 CFR Part 50, Appendix J. All containment devices that have seals or gaskets, and are bolted type connections, fall within the scope of the Plant Hatch Appendix J leak-rate testing program, and Option B requires testing at least every 5-years and after reassembly if disassembled. The alternative examinations are adequate to ensure integrity of containment penetration seals and gaskets, and will provide an acceptable level of quality and safety. Therefore, relief should be granted per 10 CFR 50.55a(a)(3)(i).

#### 2.1.2 Alternative Examination

The licensee proposes:

Leak-tightness of the seals (including O-rings) and gaskets will be confirmed in accordance with 10 CFR 50, Appendix J as described above. If a seal (including O-rings) or gasket is replaced, it will be visually inspected by maintenance personnel before reassembly or closure. Also, an as-left Appendix J leakage test will be performed after installation to ensure leak-tightness.

#### 2.1.3 Evaluation

The components for which relief is requested are the seals and gaskets of Class MC pressure retaining components. The Code, IWE-2500, Table IWE-2500-1, Examination Category E-D, Item Numbers E5.10 and E5.20, requires seals and gaskets on airlocks, hatches, and other devices to be visually examined (VT-3) once each inspection interval to assure containment leak-tight integrity. Instead of performing a visual examination as required by the Code, the licensee proposes to confirm leak tightness by testing in accordance with 10 CFR Part 50, Appendix J.

Performance of VT-3 examinations on seals and gaskets requires that the components be disassembled. This includes determining cables at electrical penetrations, disassembling the joint, removing and examining the gaskets and seals, reassembling the joint, reterminating the cables, performing a post-maintenance test of the cables, and performing a post-maintenance Appendix J test. The 1993 Addenda to ASME Code, Section XI recognizes that disassembly of joints for the sole purpose of performing a visual examination is unwarranted and because of this, Examination Category E-D was modified to remove this requirement.

Disassembling components for the sole purpose of inspecting seals and gaskets places an undue hardship on the licensee and does not offer a compensating increase in the level of quality and safety. Reasonable assurance of the functionality and integrity of the containment penetration seals and gaskets will be provided by the licensee's alternative to perform testing in accordance with 10 CFR Part 50, Appendix J.

#### 2.1.4 Conclusion

The proposed alternative to the requirements of IWE-2500, Table IWE-2500-1, Examination Category E-D, Item Numbers E5.10 and E5.20 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the remainder of the third 10-year inspection interval. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

## 2.2 Relief Request No. RR-MC-2

The Code, IWE-2200(g), requires that when paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records. Relief is requested from the requirement to perform a preservice inspection of new paint or coatings. The licensee proposes to examine the paint and coatings on the containment vessel in accordance with the HNP "Protective Coatings Program."

### 2.2.1 Licensee's Basis for Requesting Relief

The licensee states:

The paint and coatings on the containment boundary were not subject to Code rules when they were originally applied and are not subject to ASME Section XI rules for repair or replacement in accordance with IWA-4111(b)(5). The HNP coatings program, which is controlled in accordance with a quality assurance program which meets the requirements of 10 CFR Part 50, Appendix B, verifies the adequacy of the applied coatings. Recording the condition of reapplied coatings in the preservice record does not substantiate the containment structural integrity. However, SNC acknowledges that the quality and integrity of applied coatings is relevant to the containment's functional integrity. This assurance is best accomplished by visually inspecting the coating, which is accomplished through the HNP "Protective Coatings Program." Should deterioration of the coating in the reapplied area occur, the area would require additional evaluation regardless of the preservice record. Recording the condition of new paint or coatings in the preservice record does not increase the level of quality and safety of the containment.

In NRC SECY-96-080 dated April 17, 1996 the Commission responded to Comment 3.2, which involves IWE-2200(g), by stating, "In the NRC's opinion, this does not mean that a visual examination must be performed with every application of a paint or coating. A visual examination of the topcoat to determine the soundness and the condition of the topcoat should be sufficient." That visual examination is currently accomplished through the HNP "Protective Coatings Program."

Justification for Granting Relief: Coatings inspection programs currently restore the coating to its original condition thereby providing adequate assurance of the integrity of the coating. As a result, relief should be granted under 10 CFR 50.55a(a)(3)(i) because the proposed alternative provides an acceptable level of quality and safety.

### 2.2.2 Alternative Examination

The licensee proposes:

Reapplied paint and coatings on the containment vessel will be examined in accordance with HNP "Protective Coatings Program." If degradation of coatings is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME Section XI based on the Code's response to Inquiry 97-22, repairs to the primary containment boundary, if required, would be conducted in accordance with ASME Section XI Code rules.

### 2.2.3 Evaluation

The Code, IWE-2200(g) requires that when paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records. Relief is requested from the requirement to perform a preservice inspection of new paint or coatings. The licensee proposes to examine the paint and coatings on the containment vessel in accordance with the HNP "Protective Coatings Program."

The licensee's response to Generic Letter 98-04, dated October 19, 1998, contains information on HNP "Protective Coatings Program." HNP Unit 1 was licensed prior to the issuance of Regulatory Guide 1.54-1973, consequently it is not subject to the guidance or applicable American National Standards Institute (ANSI) standards. However, the coatings used in HNP Unit 2 are subject to the guidance of Regulatory Guide 1.54-1973, ANSI N101.2-1972, "Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities," and ANSI N101.4-1972, "Quality Assurance Requirements for Protective Coatings Applied to Nuclear Facilities." Service Level 1 coatings are procured from vendors having a quality assurance program meeting the applicable standards of 10 CFR Part 50, Appendix B, and acceptance activities are conducted in accordance with the standards of ANSI N45.2-1977 and ANSI N18.7-1976.

The licensee's October 19, 1998, letter, states that surface preparation, application, and surveillance activities performed during installation of Service Level 1 coatings used for new applications or repair/replacement activities inside the Unit 1 and Unit 2 containments, meet the applicable portions of the standards and regulatory commitments referenced under HNP Unit 2. The staff finds that the licensee's proposed alternative provides an adequate method for protecting the inside steel surfaces of the HNP containment.

### 2.2.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2200(g) is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year inspection interval. This alternative examination provides an acceptable level of quality and safety.

## 2.3 Relief Request No. RR-MC-3

The licensee requests relief from IWE-2500(b), which requires that paint or coatings be visually examined in accordance with Table IWE-2500-1 prior to removal. The licensee proposes to perform an alternative examination in accordance with the HNP "Protective Coatings Program."

### 2.3.1 Licensee's Basis for Requesting Relief

The licensee states:

10 CFR 50.55a was amended, as cited in the Federal Register (61 FR 41303) to require the use of the 1992 Edition, 1992 Addenda, of ASME Section XI when performing containment examinations. Paint and coatings are not part of the containment pressure boundary under current Code rules because they are not associated with the pressure-retaining function of the components. The interiors of containments are painted to prevent corrosion and to aid in contamination removal efforts. Paint and coatings on the containment pressure boundary were not subject to Code rules when they were originally applied and are not subject to ASME Section XI rules for repair or replacement in accordance with IWA-4111(b)(5). Deterioration of the paint or coating materials, e.g., flaking, scaling, etc., on containment would be an indicator of potential degradation of the containment pressure boundary. Additional measures would be employed to determine the nature and extent of any degradation, if present. The application of ASME Section XI repair or replacement activity, does not provide a compensating increase in the level of quality and safety.

Justification for Granting Relief: Coatings inspection programs currently restore the coating to its original condition thereby providing adequate assurance of the integrity of the coating. As a result, relief should be granted under 10 CFR 50.55a(a)(3)(i) because the proposed alternative provides an acceptable level of quality and safety.

### 2.3.2 Alternative Examination

The licensee proposes:

Paint and coatings on the containment vessel will be examined in accordance with the HNP "Protective Coatings Program." If degradation of coatings is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME Section XI based on the Code's response to Code Interpretation: XI-1-98-14, repairs to the primary containment boundary, if required, would be conducted in accordance with ASME Section XI Code rules.

### 2.3.3 Evaluation

The licensee requests relief from IWE-2500(b), which requires that paint or coatings be visually examined in accordance with Table IWE-2500-1 prior to removal. The licensee proposes to perform an alternative examination in accordance with the HNP "Protective Coatings Program."

As indicated in the Section 2.2.3, the staff finds that the HNP "Protective Coatings Program" is adequate to monitor the proper removal of the old paint and application of the new coatings. Performing an additional examination prior to removal of the old paint and documenting its condition (in addition to the licensee's program which is subject to the quality assurance requirements of 10 CFR Part 50 Appendix B) is not necessary and would not increase the level of quality and safety.

### 2.3.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2500(b) is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year inspection interval. The alternative examination provides an acceptable level of quality and safety.

#### 2.4 Relief Request No. RR-MC-4

The licensee requests relief from IWE-2420(b) and IWE-2420(c), which requires the licensee to perform successive examination of flaws, areas of degradation, and repairs. Relief from the Code is requested only for the successive examination of repairs.

##### 2.4.1 Licensee's Basis for Requesting Relief

The licensee states:

The purpose of a repair is to restore the component to an acceptable condition for continued service in accordance with the acceptance standards of Article IWE-3000. When making repairs, paragraph IWA-4150 requires the owner to conduct an evaluation of the suitability of the repair including consideration of the cause of failure. Successive examinations after repair do not provide an additional safety benefit.

Repairs are performed in accordance with IWA-4000, the intent of which is to use the construction code to restore the component to its original condition where practical. If a repair has restored the component to an acceptable condition, successive examinations are not warranted. If the repair was not suitable, then the repair does not meet Code requirements and the component is not acceptable for continued service; further repair work would be necessary. No similar requirement is found for ASME Class 1, 2, or 3 Section XI repairs. Conducting successive examinations on components that have been repaired would result in hardship without a compensating increase in the level of quality and safety. Additionally, if the repair area is subject to accelerated degradation, the repair would require augmented examination in accordance with Table IWE-2500-1, Examination Category E-C.

Justification for Granting Relief: Repairing components to restore the component to its original condition provides adequate assurance of the integrity of the repair. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; therefore, relief should be granted under 10 CFR 50.55a(a)(3)(ii).

##### 2.4.2 Alternative Examination

The licensee proposes:

Repairs will be performed in accordance with IWA-4000 to restore the component to its original condition and successive examinations as required by IWE-2420(b) and (c) will not be performed. Successive examinations will continue to be done on those flaws or areas of degradation which have been accepted for continued service by evaluation.

### 2.4.3 Evaluation

The licensee requests relief from IWE-2420(b) and IWE-2420(c), which requires the licensee to perform successive examination of flaws, areas of degradation, and repairs. Relief from the Code is requested only for the successive examination of repairs.

Subsections IWB-2420(b), IWC-2420(b), and IWD-2420(b) of Section XI do not require successive inspection of repairs for ASME Code Class 1, 2, and 3 components as required by IWE-2420(b) for ASME Code Class MC components. Considering that the failure mechanism which necessitated the repair is identified and corrected in accordance with the Code, and the repair receives preservice examinations, performance of successive examinations is a hardship on the licensee and does not provide a compensating increase in quality or safety.

### 2.4.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2420(b) and IWE-2420(c) for repaired components is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the remainder of the third 10-year inspection interval. Compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality and safety.

## 2.5 Relief Request No. RR-MC-5

The licensee requests relief from IWE-2500(c)(3) and IWE-2500(c)(4). IWE-2500(c)(3) requires 1-foot-square grids be used when ultrasonic thickness measurements are performed on augmented examination surface areas. IWE-2500(c)(4) requires that the minimum wall thickness within each grid be determined and the location marked such that periodic re-examination of the location can be performed. The licensee proposes to use Code Case N-605 as an alternative to the Code requirements.

### 2.5.1 Licensee's Basis for Requesting Relief

The licensee states:

A gridding size of exclusively one foot square is not sufficiently flexible to accommodate the various surface configurations listed in Subarticle IWE-1241(a) and IWE-1241(b). Also, the methods described in IWE-2500(c)(3) and IWE-2500(c)(4) will produce single point thickness readings. Numerous readings would be required to identify the minimum thickness point within each grid and periodic re-examination would only monitor that single point. This single point may not be the area most susceptible to accelerated degradation. The Flow Accelerated Corrosion programs presently in place in the nuclear industry have proven that thickness readings taken at grid intersections are effective in condition monitoring of balance-of-plant piping. Also, taking numerous ultrasonic thickness readings within a grid, which has not exhibited evidence of degradation, would cause an undue hardship without a compensating increase in the level of quality and safety.

Justification for Granting Relief: The condition monitoring approach detailed in ASME Code Case N-605 will provide superior indication of overall component degradation and

has been approved by the ASME as an acceptable alternative to IWE-2500(c) for augmented examination of surface areas.

### 2.5.2 Alternative Examination

The licensee proposes:

ASME Code Case N-605 will be used for examination of all areas requiring augmented examination.

### 2.5.3 Evaluation

The licensee requests relief from IWE-2500(c)(3) and IWE-2500(c)(4). IWE-2500(c)(3) requires 1-foot-square grids be used when ultrasonic thickness measurements are performed on augmented examination surface areas. IWE-2500(c)(4) requires that the minimum wall thickness within each grid be determined and the location marked such that periodic re-examination of the location can be performed. The licensee proposes to use Code Case N-605 as an alternative to the Code requirements.

Code Case N-605, "Alternative to the Requirements of IWE-2500(c) for Augmented Examination of Surface Areas," requires that when ultrasonic thickness measurements are performed, grids shall be used and ultrasonic examinations shall be performed at the grid line intersections. Grid line spacing shall not exceed 12 inches and need not be less than 2 inches. For examination areas less than 100-square feet, grid line spacing shall be selected such that a minimum of 100 measurements are obtained, unless this requires selecting a grid line spacing of less than 2 inches. For examination areas greater than 100-square feet, the Code Case requires that sufficient points be monitored to ensure at least a 95 percent confidence level that the thickness of the base metal is reduced by no more than 10 percent of the nominal plate thickness at 95 percent of the grid line intersections. Additionally, when an ultrasonic measurement performed at the grid line intersection reveals that the thickness of the base metal is reduced by more than 10 percent of the nominal plate thickness, the minimum wall thickness shall be determined and located within each adjoining grid.

The staff has determined that the licensee's alternative to use Code Case N-605 provides an adequate method for performing ultrasonic examinations on augmented examination surface areas.

### 2.5.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2500(c)(3) and IWE-2500(c)(4) is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year inspection interval. The alternative examination provides an acceptable level of quality and safety.

## 2.6 Relief Request No. RR-MC-6

The licensee requests relief from IWE-3515.1, which requires that bolting material be examined in accordance with the material specifications for defects which may cause the bolted connection to violate either leak-tight or structural integrity. The licensee proposes to examine bolting material in accordance with the 1992 Edition of ASME Section XI, Subsection IWB-3517.1 as an alternative to the Code requirements.

#### 2.6.1 Licensee's Basis for Requesting Relief

The licensee states:

The bolting material specifications provide guidance relative to base material properties and related fabrication discontinuities. For inservice bolting, examination guidelines and acceptance criteria must be specific to inservice discontinuities which are relevant to continued service.

Justification for Granting Relief: Since IWB-3517.1 is a standard specific to inservice discontinuities and presently used for visual examination of Class 1 pressure retaining bolting, it is more than adequate for examination of Class MC pressure retaining bolting. This standard is also one that plant personnel are presently familiar with. As a result, relief should be granted under 10 CFR 50.55a(a)(3)(i) because the proposed alternative provides an acceptable level of quality and safety.

#### 2.6.2 Alternative Examination

The licensee proposes:

Bolting material will be examined in accordance with the inservice standards of the 1992 Edition, with 1992 Addenda of ASME Section XI, Subarticle IWB-3517.1 Standards for Examination Category B-G-1, Pressure Retaining Bolting Greater Than 2 in. in Diameter, and Examination Category B-G-2, Pressure Retaining Bolting 2 in. and Less in Diameter.

#### 2.6.3 Evaluation

The licensee requests relief from IWE-3515.1, which requires that bolting material be examined in accordance with the material specifications for defects which may cause the bolted connection to violate either leak-tight or structural integrity. The licensee proposes to examine bolting material in accordance with the 1992 Edition of ASME Section XI, Subsection IWB-3517.1 as an alternative to the Code requirements.

Subsection IWB-3517.1, "Visual Examination, VT-1," states that the following conditions require correction prior to service or continued service:

- (a) Crack-like flaws that exceed the allowable linear flaw standards
- (b) More than one deformed or sheared thread in the zone of thread engagement of bolts

- (c) Localized general corrosion that reduces the bolt or stud cross-sectional area by more than 5 percent
- (d) Bending, twisting, or deformation of bolts or studs to the extent that assembly or disassembly is impaired,
- (e) Missing or loose bolts, studs, nuts, or washers
- (f) Fractured bolts, studs, or nuts
- (g) Degradation of protective coatings on bolting surfaces
- (h) Evidence of coolant leakage near bolting.

An examination based on the proposed alternative is more appropriate for use in determining functional acceptance or indicating degradation of bolted connections than the Code-required compliance with the material specification. When a condition is identified that may cause the bolting to be unacceptable, the proposed alternative requires that corrective actions be taken prior to returning a component to service. The staff finds that the proposed alternative provides an adequate method for examining bolting for defects that might cause the bolted connection to violate its leak-tight or structural integrity.

#### 2.6.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-3515.1 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year inspection interval. The alternative examination provides an acceptable level of quality and safety.

### 2.7 Relief Request RR-23

This safety evaluation covers a request by the licensee for authorization to use the ASME Code Case N-508-1, titled, "Rotation of Serviced Snubber and Pressure Relief Valves for the Purpose of Testing," for HNP 1 and 2, as an alternative to the ASME Code, Section XI, Article IWA-7000, repair and replacement requirements for snubbers and pressure relief valves. The licensee's ISI program for the current (third) 10-year interval is based on the repair and replacement requirements of Article IWA 7000 of the ASME Code, Section XI, 1989 Edition for its second 10-year ISI program at HNP.

#### 2.7.1 Basis for Relief Request

Snubbers and pressure relief valves require periodic testing. To reduce system out-of-service time, testing is normally accomplished by removing an existing component from service, installing a replacement, then testing the removed component at a later time. The current ASME Code rules stipulate that each snubber/pressure relief valve rotation comply with Section XI, Article-7000 requirements. The IWA-7000 requirements impose extensive administrative and documentation controls. IWA-7250(a)(8) requires that replacements be documented on the Owner's Report for Repairs and Replacements, Form NIS-2. Therefore,

even if an operable snubber or pressure relief valve was replaced with a rebuilt item because the original one was nearing the end of its service life, the subject activity would be documented on an NIS-2 form. Code Case N-508-1, item (g) does not require the use of the NIS-2 form unless the replacement was required due to the original snubber or pressure relief valve being deficient or inoperable.

The IWA-7000 provisions are appropriate for component replacements resulting from failures or design changes, but constitute an unwarranted burden for snubbers and relief valves that are periodically rotated from stock. The added administrative burden imposed by the ASME Code is redundant and imposes unwarranted costs. Code Case N-508-1 provides an effective alternative for snubber and pressure relief valve rotation that will enable HNP 1 and 2 to implement existing program controls without the added burden of redundant ASME requirements. The Code Case allows for snubbers and relief valves to be rotated from stock provided nine specifically-listed requirements are met.

The licensee contends that : 1) ASME Code Case N-508-1 provides an alternative to the administrative controls of ASME Boiler and Pressure Vessel Code, Section XI, Article IWA-7000, requirements; 2) Code Case N-508-1 imposes controls to assure that component traceability and acceptability are determined; 3) Code Case N-508-1 alternatives affect only administrative and documentation controls, and do not affect component safety and quality; and 4) Code Case N-508-1, therefore, provides a cost-effective alternative to existing ASME Code requirements without compromising quality and safety.

#### 2.7.2 Evaluation

Currently, the ASME Code, Section XI, Article IWA-7000, requires that snubber and pressure relief testing rotation be performed in compliance with a Repair/Replacement Program. The program requires the preparation of a replacement plan, completion and submittal of a Code Form NIS-2, and an evaluation, review and concurrence by an authorized nuclear inspector. The licensee considers these Code provisions appropriate when the components are replaced due to design changes or nonconformances, but excessive for the removal and installation of snubbers and pressure relief valves solely for the purpose of testing.

Code Case N-508-1 provides an alternative to the ASME Code, Section XI, Article IWA-7000 requirement to generate a replacement program when removing snubbers or pressure relief valves from a system for testing. The code case allows snubbers and pressure relief valves to be rotated from stock and installed on components and piping systems within the Section XI boundary, provided all the requirements stated in the code case are met. Therefore, for normal rotation of operable snubbers and pressure relief valves with those items from stock, it is the Owner's responsibility to maintain traceability of the affected snubbers, but no Code-required documentation (i.e., NIS-2 Forms) is required.

The licensee's proposed alternative to use the Code Case for the purpose of snubber and pressure relief valve rotation associated with testing will eliminate unnecessary administrative and documentation requirements, minimizing the time during which the affected system is out of service and conserve resources. The staff finds that the same level of quality and safety is maintained when component rotation and testing is performed in accordance with IWA-7000 or Code Case N-508-1.

The staff has determined that the licensee's proposed alternative provides reasonable assurance of operational readiness, and that compliance with the ASME Code requirements would result in hardship without a compensating increase in the level of quality and safety.

### 2.7.3 Conclusion

The staff concludes that the licensee's proposed alternative to use Code Case N-508-1 for rotation of serviced snubbers and pressure relief valves for the purpose of testing, in lieu of ASME Code, Section XI, Article IWA-7000 requirements, is authorized by law, pursuant to 10 CFR 50.55a(a)(3)(ii) for the remainder of the third 10-year inspection interval, based on the determination that the alternative provides reasonable assurance of operational readiness and that compliance with the Code requirements would result in hardship without a compensating increase in the level of quality and safety.

## 2.8 Relief Request RR-24

The licensee requests approval for the implementation of the ASME Section XI Code Case N-323-1 dated December 31, 1996, "Alternative Examination for Welded Attachments to Pressure Vessels" at the HNP. The staff has reviewed and evaluated the licensee's request and the supporting information pertaining to use of Code Case N-323-1 as an alternative to the Code requirements for both units of HNP.

### 2.8.1 Licensee's Basis for Requesting Relief

Code Case N-323-1, which was approved December 31, 1996, by ASME, addresses an alternative to the requirements of Examination Category B-H when only one side of the weld is accessible for examination. The same alternative was incorporated into the 1997 Addenda of the ASME Code, Section XI, not as an alternative, but as the code requirement listed in Table IWB-2500-1, Code Category B-K, Item B10.10 for pressure vessel attachments.

### 2.8.2 Licensees' Proposed Alternative to Code Requirements

SNC will comply with the requirements of the ASME Section XI, Code Case N-323-1 for the configuration in Figure IWB-2500-13 of the Code, which is reproduced in the code case as Figure 1.

### 2.8.3 Evaluation

The licensee has requested approval for implementation of the alternative rules of the ASME Section XI, Code Case N-323-1 dated December 31, 1996, "Alternative Examination for Welded Attachments to Pressure Vessels" in lieu of the requirements of Table IWB-2500-1 of the 1989 Edition, ASME Code, Section XI, Examination Category B-H, Item B8.10. For the configuration shown in Figure IWB-2500-13 of the Code applicable to welded attachment to the HNP reactor vessels, the Code requires examination of both surfaces of the weld. The licensee states that the inside surface of the weld in HNP Unit 1 is not accessible to surface examination. In order for the licensee to comply with the code requirement, the support skirt needs to be modified. For HNP Unit 2, physical access by the examiner is restricted because

of high radiation and obstruction due to control rod drive housings and the support systems. In regard to surface examination, the magnetic particle technique has a drawback due to restricted space and the use of liquid penetrant requires a very thorough cleaning of the weld and the adjacent base material to remove rust and scale. Therefore, the preparation of the weld and the subsequent examination would result in exposing the test crew to a high man-rem dose. The Code Case N-323-1, however, allows a surface examination from the accessible side (outside) as an alternative to the Code requirement. The staff believes that the surface examination from the outside surface of the weld is of limited value since the flaws in the inside surface of the weld are not detectable unless they are through-wall. Therefore, the use of the code case as an alternative to the Code requirement may not provide an equivalent protection as provided by the Code. However, the industry experience indicates that the weld can also be volumetrically examined from the accessible side to detect flaws in the inside surface where surface examination is impracticable. Therefore, it is prudent to perform a best-effort volumetric examination from the accessible side of the weld in order to detect service-related flaws in the inside surface. The licensee is currently performing this best-effort volumetric examination. The staff believes that the proposed surface examination in addition to a best-effort volumetric examination would provide reasonable assurance of structural integrity.

#### 2.8.4 Conclusion

The staff has evaluated the information provided by the licensee in support of its request for relief to implement Code Case N-323-1 as an alternative to the requirements of the 1989 ASME Section XI Code, Figure IWB-2500-13 for the reactor pressure vessel support skirt weld. For HNP Unit 1, the Code-required examination is impractical requiring a modification of the support skirt and thus, it imposes burden on the licensee. The staff concludes that the alternative examination of the weld configuration shown in Figure 1 of Code Case N-323-1 in conjunction with the best-effort volumetric examination from the accessible surface which the licensee is currently performing, would provide reasonable assurance of structural integrity. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the third 10-year inspection interval of HNP Units 1 and 2. The relief granted is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

### 3.0 CONCLUSION

The alternatives to the Code requirements as proposed in RR-MC-2, RR-MC-3, RR-MC-5, RR-MC-6 and RR-23 will provide an acceptable level of quality and safety and are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year inspection interval.

For relief requests RR-MC-1, RR-MC-4 and RR-24 compliance with the Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The proposed alternatives provide reasonable assurance of maintaining the pressure integrity of the containment boundary. For this reason, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the remainder of the inspection interval.

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