



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUESTS FROM ASME SECTION XI REQUIREMENTS

FOR CONTAINMENT INSPECTION

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-321 AND 50-366

1.0 INTRODUCTION

In the *Federal Register* dated August 8, 1996 (61 FR 41303), the Nuclear Regulatory Commission (NRC) amended its regulations to incorporate by reference the 1992 edition with 1992 addenda of Subsections IWE and IWL of Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code (Code). Subsections IWE and IWL provide the requirements for inservice inspection (ISI) of Class CC (concrete containment), and Class MC (metallic containment) of light-water cooled power plants. The amended rule which became effective on September 9, 1996, requires licensees to incorporate the new requirements into their ISI plans and to complete the first containment inspection by September 9, 2001. However, a licensee may propose alternatives to or submit a request for relief from the requirements of the regulation pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(a)(3) or (g)(5).

By letter dated August 18, 1999, Southern Nuclear Operating Company, Inc. (SNC/licensee), proposed an alternative to the requirements of 10 CFR 50.55a for Edwin I. Hatch Nuclear Plant (Hatch), Units 1 and 2.

2.0 EVALUATION

2.1 Unit No. 1

2.1.1 Code Requirements

IWE Table-2500-1, Category E-A, Item E1.11, as supplemented by 10 CFR 50.55a(b)(2)(x)(E), requires a general visual examination of all accessible containment surfaces at least once every ISI period and prior to each 10 CFR Part 50, Appendix J, Type A test. Section 50.55a (g)(6)(ii)(B) requires that licensees implement the containment ISI examinations specified for the first period of the first inspection interval in Subsection IWE by September 9, 2001.

2.1.2 Specific Relief Requested

In lieu of meeting the schedule of general visual examination in accordance with 10 CFR 50.55a(g)(6)(ii)(B), the licensee proposed to defer implementation of the IWE general visual examination of the containment until the 20th refueling outage which is scheduled for the spring (March) of 2002.

2.1.3 Basis for Relief

Section 50.55a(g)(6)(ii)(B) would require performance of the initial containment general visual examination no later than the 19th refueling outage which is scheduled for the fall (early October) of 2000. This is approximately one-year prior to the required completion date of September 9, 2001.

In accordance with ASME Section XI, Subsection IWE, Table IWE-2500-1, Category E-A, Item E1.11, the containment general visual examination is required prior to each 10 CFR Part 50, Appendix J, Type A test.

The next 10 CFR Part 50, Appendix J, Type A test is required during the 20th refueling outage which is scheduled for spring (March) 2002.

IWE allows visual examination from either the inside or outside surfaces of the containment; however, 10 CFR Part 50, Appendix J, requires visual examination of accessible areas of both the inside and outside of the containment. The general visual examination at Hatch will consist of all accessible surfaces from the inside and outside of containment which satisfies both the IWE and Appendix J examination requirements.

A containment examination program was first implemented in 1991. These initial examinations included video probe examination of the drywell air gap, sand cushion, and sand cushion drain lines. Video probe examination of the drywell sand cushion and drain lines required removal of the sand for the drain lines to allow adequate access. These examinations were conducted to ensure that these areas were functional and that no moisture was present, such as was experienced at Oyster Creek. Examinations also included the drywell mastic seal, a general examination of the condition of the interior of the drywell, and the vapor space and exterior surfaces of the suppression pool.

During the 15th refueling outage in the fall of 1994, SNC began implementation of a containment inspection program based on the guidance included in the draft Boiling Water Reactor Owners' Group (BWROG) model containment inspection program. Examinations included: drywell air gap and sand cushion drain lines, removal of drywell stabilizer hatches and examination for moisture in the air gap region, interior of suppression pool shell in the vapor space area, exterior of suppression pool shell, interior of drywell shell, and sample ultrasonic thickness measurement on each course of the drywell shell to determine design margins. These examinations were performed in accordance with approved procedures by an engineer with experience in containment construction, design, and testing requirements and by qualified nondestructive examination (NDE) personnel. The drywell mastic seal was also replaced during this outage because periodic monitoring had detected some degradation.

The drywell sand cushion and air gap drain lines, drywell mastic seal, interior drywell shell, exterior suppression pool shell and interior suppression pool vapor space have been examined during every refueling outage since 1994 (i.e., 1996, 1997, 1999) with no significant changes identified.

Sample ultrasonic thickness measurements of the submerged surfaces of the suppression pool shell were taken during the 18th refueling outage (spring 1999) to determine design margins. The actual thickness was determined to be greater than the nominal for all locations measured. The submerged portion of the suppression pool shell has been included in a coatings inspection and spot repair program since the early 1990s. Visual examination and desludging of the suppression pool have been implemented on a routine frequency. Some pitting has been identified and spot repaired; however, no significant degradation has been identified. The program includes determination of corrosion rates, and they have been calculated to be relatively minor and pose no problem associated with maintaining the integrity of the suppression pool pressure boundary.

Underwater divers with ASME Section XI visual certification were utilized during the 18th refueling outage (spring 1999) to perform VT-3 examination of the suppression pool wetted surfaces in accordance with ASME Section XI, Subsection IWE, Category E-A, Item E1.12. This examination is not required by Subsection IWE until the end of the IWE ISI interval, which is March 9, 2008. However, SNC decided to implement the examination early in order to identify any potential problem areas. Results of the examination did not indicate any significant degradation of the suppression pool shell or the coating. The VT-3 examination confirmed integrity of the submerged suppression pool surfaces.

A visual examination, per 10 CFR Part 50, Appendix J, Option B, was performed on the containment during the 18th refueling outage (spring 1999). This examination was performed to satisfy the once-per-period (40-month) Appendix J visual examination requirement and included the interior drywell shell, exterior suppression pool shell and support structure, and interior suppression pool vapor space. Examinations were performed in accordance with approved procedures by personnel knowledgeable in Appendix J requirements.

Hatch has a comprehensive safety-related coatings program that routinely monitors the condition of the coatings on the accessible containment surfaces. This program determines examination frequencies based on the condition of the coatings and also includes requirements for coatings removal, examination, re-application, and re-examination. All examinations are performed by certified coatings inspection personnel.

In order to satisfy both the expedited examination required by 10 CFR 50.55a(g)(6)(ii)(B) and 10 CFR Part 50 Appendix J, Option B, an IWE general visual examination would be required during the 19th (fall 2000) and 20th (spring 2002) refueling outages. Previous examinations during approximately twenty-three years of operating experience have not indicated any degradation that would significantly impact the pressure retaining integrity of the containment.

2.1.4 Staff Evaluation

In lieu of meeting the schedule of performing the general visual examination required by IWE-2500 and 10 CFR 50.55a(g)(6)(ii)(B), the licensee proposed to defer the implementation of this general visual examination of the containment from the 19th refueling outage (scheduled for early October 2000) to the 20th refueling outage (scheduled for early March 2002) which is approximately seven months after the required completion date of September 9, 2001.

In its request, SNC described the results of examinations conducted for various containment components under different programs, such as the containment examination program, the

containment inspection program based on the guidance of the draft BWROG model containment inspection program, inspections performed during refueling outages, sample ultrasonic thickness measurements of the submerged surfaces of the suppression pool shell, VT-3 examination on the suppression pool wetted surfaces, visual examination per 10 CFR Part 50, Appendix J, Option B. The licensee stated that the degradation of the containment was minimal and repairs of this degradation have been completed. The licensee also stated that all other IWE required examinations will continue to be implemented in accordance with the requirements of 10 CFR 50.55a and ASME Section XI, Subsection IWE. Based on the discussion above, the staff finds that the containment pressure boundary integrity is being adequately maintained and inspected in a sufficient manner to allow the licensee to postpone its general visual examination of all accessible containment surfaces for an additional seven months and perform its general visual examination in conjunction with its 10 CFR Part 50, Appendix J leakage test. The licensee will complete its first containment inservice inspection by April 9, 2002. In addition, the licensee noted that the alternative schedule for performance of the IWE general visual examinations will result in a significant savings in manpower and radiation exposure. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety.

2.2 Unit No. 2

2.2.1 Code Requirements

IWE Table-2500-1, Category E-A, Item E1.11, as supplemented by 10 CFR 50.55a(b)(2)(x)(E), requires a general visual examination of all accessible containment surfaces at least once every ISI period and prior to each 10 CFR Part 50, Appendix J, Type A test. Section 50.55a(g)(6)(ii)(B) requires that licensees implement the containment ISI examinations specified for the first period of the first inspection interval in Subsection IWE by September 9, 2001.

2.2.2 Specific Relief Requested

In lieu of meeting the schedule of general visual examination in accordance with 10 CFR 50.55a(g)(6)(ii)(B), the licensee proposed to defer implementation of the IWE general visual examination of the containment until the 16th refueling outage which is scheduled for the fall (September) 2001.

2.2.3 Basis for Relief

Section 50.55a(g)(6)(ii)(B) would require performance of the initial containment general visual examination no later than the 15th refueling outage which is scheduled for the spring (early April) of 2000. This is approximately a year and a half prior to the required completion date of September 9, 2001.

In accordance with ASME Section XI, Subsection IWE, Table IWE-2500-1, Category E-A, Item E1.11, the containment general visual examination is required prior to each 10 CFR Part 50, Appendix J, Type A test.

The next 10 CFR Part 50, Appendix J, Type A test is required during the 17th refueling outage which is scheduled for the spring of 2003.

IWE allows visual examination from either the inside or outside surfaces of the containment; however, 10 CFR Part 50 Appendix J, requires visual examination of accessible areas of both the inside and outside of the containment. The general visual examination at Hatch will consist of all accessible surfaces from the inside and outside of containment which satisfies both the IWE and Appendix J examination requirements.

A containment examination program was first implemented in 1991. These examinations included video probe examination of the drywell air gap, sand cushion, and sand cushion drain lines. Video probe examination of the drywell sand cushion and drain lines required removal of the sand for the drain lines to allow adequate access. These examinations were conducted to ensure that these areas were functional and that no moisture was present, such as was experienced at Oyster Creek. Examinations also included the drywell mastic seal, a general examination of the condition of the interior of the drywell, and the vapor space and exterior surfaces of the suppression pool.

During the 12th refueling outage, fall 1995, SNC began implementation of a containment inspection program based on the guidance included in the draft BWROG model containment inspection program. Examinations included: drywell air gap and sand cushion drain lines, removal of drywell stabilizer hatches and examination for moisture in the air gap region, interior of suppression pool shell in the vapor space area, exterior of suppression pool shell, interior of drywell shell, and sample ultrasonic thickness measurement on each course of the drywell shell to determine design margins. These examinations were performed in accordance with approved procedures, by an engineer with experience in containment construction, design, and testing requirements and by qualified NDE personnel. The drywell mastic seal was also replaced during this outage because periodic monitoring had detected some degradation.

The drywell sand cushion and air gap drain lines, drywell mastic seal, interior drywell shell, exterior suppression pool shell and interior suppression pool vapor space have been examined during every refueling outage since 1995 (i.e., 1997, 1998) with no significant changes identified.

Sample ultrasonic thickness measurements of the submerged surfaces of the suppression pool shell were taken during the 14th refueling outage (fall 1998) to determine design margins. The actual thickness was determined to be greater than the nominal for all locations measured. The submerged portion of the suppression pool shell has been included in a coatings inspection and spot repair program since the early 1990s. Visual examination and desludging of the suppression pool have been implemented on a routine frequency. Some pitting has been identified and spot repaired; however, no significant degradation has been identified. The program includes determination of corrosion rates, and they have been calculated to be relatively minor and pose no problem associated with maintaining integrity of the suppression pool pressure boundary.

Underwater divers with ASME Section XI visual certification were utilized during the 14th refueling outage (fall 1998) to perform the VT-3 examination of the suppression pool wetted surfaces in accordance with ASME Section XI, Subsection IWE, Category E-A, Item E1.12. This examination is not required by Subsection IWE until the end of the IWE ISI interval, which is March 9, 2008. However, SNC decided to implement the examination early in order to identify any potential problem areas. Results of the examination did not indicate any significant

degradation of the suppression pool shell or the coating. The VT-3 examination confirmed integrity of the submerged suppression pool surfaces.

A visual examination per 10 CFR Part 50, Appendix J, Option B was performed on the containment during the 14th refueling outage (fall 1998). This examination was performed to satisfy the once-per-period (40-month) Appendix J visual examination requirement and included the interior dry-well shell, exterior suppression pool shell and support structure, and interior suppression pool vapor space. Examinations were performed in accordance with approved procedures by personnel knowledgeable in Appendix J requirements.

Hatch has a comprehensive safety related coatings program that routinely monitors the condition of the coatings on the accessible containment surfaces. This program determines examination frequencies based on the condition of the coatings and also includes requirements for coatings removal, examination, re-application, and re-examination. All examinations are performed by certified coatings inspection personnel.

In order to satisfy the expedited examination required by 10 CFR 50.55a(g)(6)(ii)(B), an IWE general visual examination would be required during the 15th (spring 2000) refueling outage. Previous examinations during approximately twenty years of operating experience have not indicated any degradation that would significantly impact the pressure retaining integrity of the containment.

The 16th refueling outage is scheduled for the fall of 2001 (September 2001). The outage start date has not been specifically determined and slight changes could occur just prior to the intended date due to uncontrolled circumstances. However, the refueling outage will begin in close proximity to the expedited examination requirement, but examination may not be completed by the September 9, 2001 deadline.

2.2.4 Staff Evaluation

In lieu of meeting the schedule of performing the general visual examination required by IWE-2500 and 10 CFR 50.55a(g)(6)(ii)(B), the licensee proposed to defer the implementation of this general visual examination of the containment from the 15th refueling outage (scheduled for early April 2000) to the 16th refueling outage (scheduled for the fall 2001) which is approximately one month after the required completion date of September 9, 2001.

In its request, the licensee described the results of examinations conducted for various containment components under different programs, such as the containment examination program, the containment inspection program based on the guidance of the draft BWROG model containment inspection program, inspections performed during refueling outages, sample ultrasonic thickness measurements of the submerged surfaces of the suppression pool shell, VT-3 examination on the suppression pool wetted surfaces, visual examination in accordance with 10 CFR Part 50, Appendix J, Option B. The licensee stated that the degradation of the containment was minimal and repairs of this degradation have been completed. The licensee also stated that all other IWE-required examinations will continue to be implemented in accordance with the requirements of 10 CFR 50.55a and ASME Section XI, Subsection IWE. Based on the discussion above, the staff finds that the containment pressure boundary integrity is being adequately maintained and inspected in a sufficient manner to allow the licensee to postpone its general visual examination of all accessible containment surfaces

for an additional one month and perform its general visual examination in conjunction with its 10 CFR Part 50, Appendix J leakage test. The licensee will complete its first containment inservice inspection by October 9, 2001. In addition, the licensee noted that the alternative schedule for performance of the IWE general visual examinations will result in a significant savings in manpower and radiation exposure. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety.

3.0 CONCLUSIONS

Based on our review of the information provided in the requests for relief, the staff concludes that the licensee's proposed alternatives would provide an acceptable level of quality and safety. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i).

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Date: November 19, 1999