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Docket Nos. 50-352
50-353

License Nos. NPF-39
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May 23, 2001

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Limerick Generating Station, Units 1 and 2
Additional Information Regarding the Second Ten-Year Interval Inservice Inspection (ISI)
Program

References: 1) Letter from J. A. Hutton (PECO Energy Company) to U.S. Nuclear Regulatory
Commission (USNRC), dated January 9, 2001

Dear Sir/Madam:

In the Reference 1 letter, Exelon Generation Company, LLC, submitted proposed relief requests and alternatives for review and approval concerning the update of the Second Ten-Year Interval Inservice Inspection (ISI) Program for Limerick Generating Station (LGS), Units 1 and 2. Attached are responses to questions, and revised relief requests discussed in a telephone conversation on May 10, 2001.

If you have any questions, please contact us.

Very truly yours,



James A. Hutton
Director-Licensing

Attachment

cc: H. J. Miller, Administrator, Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS
C. Gratton, Senior Project Manager, USNRC

A047

ADDITIONAL INFORMATION
FOR INSERVICE INSPECTION PROGRAM
LIMERICK GENERATING STATION, UNITS 1 AND 2

Question (Relief Request RR-26):

The staff has no problem with the alternative proposed by the licensee. However, the licensee, in its alternative, needs to indicate who will be responsible for determining the acceptable minimum illumination (decrease from the code required minimum illumination) and the maximum direct examination distance (extended from the code required maximum direct examination distance). The submittal by Fort Calhoun dated 11/17/00 is a good example for the licensee.

Answer:

The "Basis for Alternative" section of Relief Request RR-26 has been revised to state:

The Responsible Engineer will identify minimum size of indications of interest. A demonstration of the procedure and equipment to be used for remote visual examination capable of resolving these minimum indications to the satisfaction of the Responsible Engineer and the Authorized Nuclear Inservice Inspector (ANII), as allowed per IWA-2240, shall be documented.

Attached is revised Relief Request RR-26.

Question (Relief Request RR-29):

In the proposed alternative, the licensee should also commit to either (1) conduct a VT-3 (or general) visual examination during or after the pressure test on areas affected by the repair/replacement activity if a pressure test is performed for the leak-tight integrity of the pressure boundary, or (2) perform a VT-1 (or detailed) visual examination on areas affected by the repair/replacement activity if a pressure test is deferred. For the second option, the requirement of IWE-5240 shall be met, when the pressure test is performed. The licensee can use the draft ASME code case to respond to the staff's concern.

Answer:

The "Alternate Provisions" section of Relief Request RR-29 has been revised to state:

After any repair or replacement affecting the containment pressure boundary, if a pressure test (Type A, Type B, or Type C) is performed to verify the leak tight integrity of the affected pressure boundary, a VT-3 examination of the accessible areas shall be performed during or after the pressure test to ensure the overall integrity of the repaired/replaced component with the containment.

For any repair or replacement affecting the containment pressure boundary, where a pressure test is deferred or not performed, a VT-1 or detailed visual examination shall be performed to ensure the overall integrity of the repaired/replaced component with the containment.

Attached is revised Relief Request RR-29.

Question (Relief Request RR-31):

In the "Alternative Provisions" section of its relief request, the licensee stated that exposed surfaces of bolted connections shall be visually examined in accordance with the requirements of Table IWE-2500-1, Examination Category E-A, Containment Surfaces.

The licensee needs to clarify which visual examination is to be performed; general examination or VT-3? An acceptable alternative to the staff is for licensees to perform a VT-3 examination on all bolted connections. If an area is found to be suspect, then a VT-1 examination must be performed to determine the magnitude and extent of degradation. If required, the bolted connection must be disassembled to support the VT-1 examination. This alternative has been authorized in the Brunswick safety evaluation (SE) dated 08/10/99, Robinson SE (07/26/99) and Quad Cities SE (01/10/00).

Answer:

The "Alternate Provisions" section of Relief Request RR-31, has been revised to include:

Exposed surfaces of bolted connections shall receive a VT-3 examination in accordance with the requirements of Table IWE-2500-1, Examination Category E-A, Containment Surfaces. If an area is found to be suspect, then a VT-1 examination shall be performed to determine the magnitude and extent of degradation. If required, the bolted connection shall be disassembled to support the VT-1 examination; and

Attached is revised Relief Request RR-31.

RELIEF REQUEST No. RR-26
Revision 0
Alternative Requirements for Remote Visual Examinations

I. IDENTIFICATION OF COMPONENTS

Class CC Concrete Components, Examination Category L-A, Concrete, Item Number L.1.11, Concrete Surface All Areas, and Item Number L1.12, Concrete Surface Suspect Areas.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Table IWL-2500-1 requires visual examination, VT-3C, of all containment concrete surface areas and visual examination, VT-1C, of selected containment concrete surfaces with suspected indications of damage or degradation. The VT-1C and VT-3C methods of examinations shall be performed in accordance with paragraphs IWL-2310, Visual Examination and Personnel Qualification and IWA-2210, Visual Examinations. Paragraph IWA-2210 requires specific minimum illumination and maximum direct examination distance for performing the visual examinations.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the requirements of paragraph IWA-2210, Visual Examinations, for minimum illumination and maximum direct examination distance when examining Class CC components under Paragraph IWL-2310.

III. BASIS FOR RELIEF

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. In addition to the requirements of Subsection IWL, the rulemaking also imposes the requirements of Subsection IWA of the 1992 Edition, 1992 Addendum, of ASME Section XI for minimum illumination and maximum direct examination distance of Class CC components, specifically for the examination of concrete under Paragraph IWL-2510.

Accessibility to portions of the containment structure make it a hardship to obtain the maximum direct examination distance and minimum illumination requirements. The installation of extensive temporary scaffold systems or a climbing scaffold system to access these portions of the containment would be necessary. These scaffolds would provide limited access due to containment geometry restrictions as well as structural and equipment interferences. The installation and removal of these scaffolds would increase both worker radiation exposure and challenge personnel safety in order to meet Paragraph IWA-2210 requirements.

The NRC staff received seven comments that were consolidated into Public Comment # 2.3 in Part III of Attachment 6 to SECY-96-080. The Staff response to these concerns is as follows, "Comments received from ASME members on the containment committees indicate that the newer, more stringent requirements of IWA-2210 were not intended to be used for the examination of containments and were inadvertently included in Subsection IWL. The NRC agrees that remote examinations are the only practical method for

RELIEF REQUEST No. RR-26
Revision 0, continued

inspecting much of the containment surface area. § 50.55a(b)(2)(x)(B) has been added to the final rule which contains alternative lighting and resolution requirements which may be used in lieu of the requirements contained in IWA-2210-1."

However, as specified within 50.55a(b)(2)(x)(B) of the final rule, this alternative for lighting and resolution requirements applies only to Subsection IWE. An alternative is requested in accordance with 10CFR50.55a(a)(3)(i) for Subsection IWL. The Responsible Engineer will identify minimum size of indications of interest. A demonstration of the procedure and equipment to be used for remote visual examination capable of resolving these minimum indications to the satisfaction of the Responsible Engineer and the Authorized Nuclear Inservice Inspector (ANII), as allowed per IWA-2240, shall be documented. The use of the alternative lighting and resolution requirements allowed for IWE remote visual examinations per 10CFR50.55a(b)(2)(B) for the IWL remote visual examinations will provide an acceptable level of quality and safety.

IV. ALTERNATE PROVISIONS

When performing remotely the visual examinations required by Subsection IWL, Paragraph IWL-2510, the maximum direct examination distance specified in Table IWA-2210-1 may be extended, and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.

RELIEF REQUEST No. RR-29
Revision 0

Alternative Criteria for VT-2 Visual Examination Following Repair, Replacement or Modification

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Categories E-A, E-C, E-D and E-G, all Item Numbers.

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1992 Edition, 1992 Addenda, Paragraph IWE-5240 requires the performance of a visual examination, VT-2, in accordance with the requirements of Paragraph IWA-5240 following repair, replacement, or modification.

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested from the Paragraph IWE-5240 requirement to perform a VT-2 visual examination in connection with system pressure testing following repair, replacement or modification under Article IWE-5000.

III. BASIS FOR RELIEF

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Paragraph IWE-5210 states that except as noted within Paragraph IWE-5240, the requirements of Article IWA-5000 are not applicable to Class MC or Class CC components. Paragraph IWE-5240 states that the requirements of Paragraph IWA-5240 (corrected from IWA-5246 to IWA-5240 in the 1993 Addenda) for visual examinations are applicable. Paragraph IWA-5240 identifies a "VT-2" visual examination. VT-2 examinations are conducted to detect evidence of leakage from pressure retaining components, with or without leakage collection systems, as required during the conduct of a system pressure test. In addition, personnel performing VT-2 examinations are required to be qualified in accordance with Subarticle IWA-2300 of ASME Section XI.

Table IWE-2500-1, Examination Category E-P, identifies the examination method of 10CFR50, Appendix J and does not specifically identify a VT-2 visual examination. 10CFR50, Appendix J provides requirements for testing as well as acceptable leakage criteria. These tests are performed by Appendix J "Test" personnel and utilize calibrated equipment to determine acceptability. Additionally, 10CFR50.55a(b)(2)(x)(E) requires a general visual examination of the containment each period that would identify any structural degradation that may contribute to leakage. Performance of the visual VT-2 examination, during the conduct of these pressure tests, is in most cases impractical, due to accessibility. Access to perform the visual examination of the repaired/replaced area is normally prohibited by either encapsulation of the pressure test boundary (i.e. Local Leak Rate Test) or personnel access restrictions into containment during testing (Integrated Leak Rate Test). VT-2 examination of the repaired/replaced area from the outside surface of the LGS Units 1 and 2 containments during the pressure test would not be meaningful or practical since the majority of the containment outside surface is concrete. A "VT-2" visual examination will not provide additional assurance of safety beyond that of current Appendix J practices.

RELIEF REQUEST No. RR-29
Revision 0, continued

In accordance with 10CFR50.55a(a)(3)(i), an alternative is requested. Pressure testing in accordance with 10CFR50, Appendix J, provides an adequate level of quality.

IV. ALTERNATE PROVISIONS

Testing shall be conducted in accordance with 10CFR50, Appendix J, in lieu of Paragraph IWE-5240 of ASME Section XI. In addition, examinations following repairs or replacements on containment components will be performed in accordance with the Exelon Generation Company, LLC (Exelon Generation Company) ASME Section XI Repair/Replacement Program, Specification M-679.

Specification M-679 provides the administrative guidance for satisfying the requirements of the Section XI Code, as applicable to repairs and replacements of Class 1, 2, 3, MC and CC components and their supports. Sections 8, 9, and 10 of this specification address the need for satisfying the construction code requirements. Section 12 addresses pressure testing of components following repair or replacement, and Section 13 addresses Preservice Inspections (PSI) required of repaired or replaced components. Accordingly, a repair/replacement of a Class MC or Metallic Liner of a Class CC component shall be implemented, as required by the Exelon Generation Company Repair/Replacement Program, Specification M-679, in accordance with the rules of the original construction code. After completion of the repair/replacement, the original construction code-required NDE shall be performed. Following this, the ASME Section XI requirement for Preservice Inspection (PSI) shall be performed, in accordance with the Containment portion of the ISI Program. As required by Section XI, the method of inspection for the PSI shall be the method originally used to detect the condition which required the repair/replacement, and the method required for subsequent Inservice Inspections (ISI).

The examinations required by the Exelon Generation Company Repair/Replacement Program, Specification M-679, will confirm the structural integrity of the repaired or replaced area of the containment. Confirmation of the leak-tight integrity of the area will then be verified by a pressure test in accordance with the requirements of IWE-5220. The system pressure testing shall be conducted, as applicable, in the area of the repair or replacement, per 10CFR50, Appendix J. The pressure testing shall be conducted by personnel trained in the methods of testing the containment vessel, as required by Appendix J, utilizing equipment and procedures routinely used for the periodic pressure testing of the containment. 10CFR50, Appendix J acceptance criteria for the results of the pressure testing assures that the leak tight integrity of the containment vessel will support NRC safety goals.

After any repair or replacement affecting the containment pressure boundary, if a pressure test (Type A, Type B, or Type C) is performed to verify the leak tight integrity of the affected pressure boundary, a VT-3 examination of the accessible areas shall be performed during or after the pressure test to ensure the overall integrity of the repaired/replaced component with the containment.

RELIEF REQUEST No. RR-29
Revision 0, continued

For any repair or replacement affecting the containment pressure boundary, where a pressure test is deferred or not performed, a VT-1 or detailed visual examination shall be performed to ensure the overall integrity of the repaired/replaced component with the containment.

The above-described examinations and testing assure that the structural integrity and leak-tight integrity of the primary containment will be maintained following any repairs or replacements of the pressure boundary. Nevertheless, a VT-2 visual examination will be performed from the outside surface of the containment, whenever access from the outside surface is available in the area of the repair or replacement being pressure tested.

RELIEF REQUEST No. RR-31
Revision 0
Alternative Criteria for Examination and Testing of Bolted Connections

I. IDENTIFICATION OF COMPONENTS

Class MC and Metallic Liners of Class CC Components, Examination Category E-G, Pressure Retaining Bolting, Item Numbers E8.10, Bolted Connections (Examination) and E8.20, Bolted Connections (Test).

II. CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

ASME Section XI, 1992 Edition through the 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item Number E8.10, requires that Class MC bolted connections be subject to a VT-1 visual examination.

ASME Section XI, 1992 Edition through the 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item Number E8.20, requires that Class MC bolted connections be subject to a bolt torque or tension test.

In accordance with 10CFR50.55a(a)(3)(ii), an alternative is requested from the requirements of ASME Section XI 1992 Edition with the 1992 Addenda, Table IWE-2500-1 Examination Category E-G, Pressure Retaining Bolting, Item Numbers E8.10 and E8.20.

III. BASIS FOR RELIEF

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Per the 1992 Edition though 1992 Addenda of ASME Section XI, pressure retaining bolted connections require a VT-1 visual examination.

Examination Category E-G visual examinations of pressure-retaining bolting may be performed with the bolting in place under tension and do not require removal or disassembly of the bolted connection solely for the purpose of performing the examination. Only those exposed surfaces of the bolting materials need be examined. However, containment surfaces, including bolted connections, are already subject to visual examination in accordance with Table IWE-2500-1, Examination Category E-A. Bolted connections in containment are also subject to the performance of 10CFR50 Appendix J testing.

Containment bolting is not subject to a known degradation mechanism, primarily because it is not in contact with a corrosive environment. There have been no problems with containment bolting identified within the industry. Accordingly, Examination Category E-G has been eliminated from Table IWE-2500-1 in the 1998 Edition of ASME Section XI and the examination requirements for pressure-retaining bolting have been consolidated into Category E-A.

RELIEF REQUEST No. RR-31
Revision 0, continued

The performance of visual examinations on bolted connections in accordance with the 1992 Edition through 1992 Addenda of ASME Section XI, Examination Category E-G represents a hardship with no compensating increase in the level of quality and safety. The reexamination of bolted connections that are already examined as part of Examination Category E-A, and tested in accordance with 10CFR50, Appendix J, unnecessarily increases the number of inservice examinations and the associated radiation exposure to personnel.

In addition to the visual examination of bolted connections, the 1992 Edition through 1992 Addenda of ASME Section XI requires that bolt torque or tension testing be performed on bolted connections that have not been disassembled and reassembled during the inspection interval. Determination of the torque or tension value would require that the bolting be un-torqued and then re-torqued or re-tensioned. The performance of a 10CFR50, Appendix J, Type B test proves that the bolt torque or tension remains adequate to provide a leak rate that is within acceptable limits. The torque or tension value of bolting only becomes an issue if the leak rate is excessive. Once a bolt is torqued or tensioned, it is not subject to dynamic loading that could cause it to experience significant change. Verification of torque or tension values on bolted joints that are proven adequate through Appendix J testing and visual inspection is adequate to demonstrate that design function is met. Torque or tension testing is not required on any other ASME Section XI, Class 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program.

In accordance with 10CFR50.55a(a)(3)(ii), an alternative is requested. 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.

IV. ALTERNATE PROVISIONS

The following examinations and tests required by Subsection IWE ensure the structural integrity and the leak-tightness of Class MC pressure retaining bolting, and, therefore, no additional alternative examinations are proposed:

1. Exposed surfaces of bolted connections shall receive a VT-3 examination in accordance with the requirements of Table IWE-2500-1, Examination Category E-A, Containment Surfaces. If an area is found to be suspect, then a VT-1 examination shall be performed to determine the magnitude and extent of degradation. If required, the bolted connection shall be disassembled to support the VT-1 examination; and,
2. Bolted connections shall meet the pressure test requirements of 10CFR50, Appendix J.