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10 CFR 50.55a

September 22, 2005

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U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Byron Station, Units 1 and 2  
Facility Operating License Nos. NPF-37 and NPF-66  
NRC Docket Nos. 50-454 and 50-455


Subject: Inservice Inspection Program Relief Request I2R-52

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), Exelon Generation Company, LLC (EGC), is requesting relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," on the basis that compliance with the specified requirements for pressure testing buried piping would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Specifically, relief is requested to perform an alternative flow impairment test of certain portions of Byron Station essential service water buried piping in lieu of either a pressure decay test or a flow change test. The details of the request for relief are enclosed.

EGC requests approval of this request by March 2006 in order to support the close-out of Byron Station ISI Interval 2 activities. If there are any questions or comments, please contact David J. Chrzanowski at (630) 657-2816.

Respectfully,



David M. Hoots  
Plant Manager  
Byron Nuclear Generating Station

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Enclosure: Byron Station Relief Request I2R-52

**Enclosure**

**Byron Station**

**Relief Request I2R-52**

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**Request for Relief for Hardship Or Unusual Difficulty Without Compensating Increase  
In Level Of Quality Or Safety  
Proposed Alternative Examination Requirements  
ASME Section XI, IWA-5244, "Buried Components"  
In Accordance with 10 CFR 50.55a(a)(3)(ii)**

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**1.0 ASME CODE COMPONENTS AFFECTED:**

Code Class: 3  
Reference: IWA-5244  
Examination Category: D-B  
Item Number: D2.10  
Description: Alternative Examination Requirements of ASME Section XI, IWA-5244, "Buried Components"  
Component Number(s): Supply Lines: 0SX01AA-48", 0SX01AB-48", 0SXA8AA-3/4", 0SXA8AB-3/4", 1SX01BA-36", 1SX01BB-36", 2SX01BA-36", 2SX01BB-36",  
Return Lines: 0SX03CA-48", 0SX03CB-48", 0SX79AA-6", 0SX79AB-6", 0SX97AA-24", 0SX97AB-24", 0SX97AC-24", 0SX97AD-24", 0SX97AE-24", 0SX97AF-24", 0SX97AG-24", 0SX97AH-24", 0SX98AA-24", 0SX98AB-24", 0SX98AC-24", and 0SX98AD-24"  
Drawing Number(s): M-42-1A, M-42-1B, M-42-2A, M-42-2B, M-42-6, and M-42-7

**2.0 APPLICABLE CODE EDITION AND ADDENDA:**

The Inservice Inspection program is based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 1989 Edition.

**3.0 APPLICABLE CODE REQUIREMENT:**

The following Code requirements are paraphrased from the 1989 Edition of ASME Section XI.

IWA-5244(a) requires nonredundant/isolable buried components that are isolable by means of valves be tested to determine the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components.

IWA-5244(b) requires redundant/nonisolable buried components be tested to determine the change in flow between the ends of the buried components. If an annulus exists, the area around the annulus at each end shall be visually examined.

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IWA-5244(c) requires nonredundant/nonisolable buried components be tested through verification that the flow during operation is not impaired.

IWA-5244 does not address the case of redundant/isolable buried components. The Essential Service Water (SX) suction and discharge lines at Byron Station fall into this category. The most appropriate choice for the testing requirements of these components would be IWA-5244(a).

**4.0 REASON FOR REQUEST:**

Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested 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 and safety.

The buried piping in question consists of two 48" Unit 0 supply headers and two 48" Unit 0 return headers between the Essential Service Water Cooling Towers (SXCT) and the Auxiliary Building. Each 48" supply header with 3/4" sampling lines, branches into two 36" pump suction lines (each unit). Each 48" return header branches into four 24" risers and two 24" hot water bypass lines, and also has a 6" blowdown line connection. Both 48" return headers and each of the 24" risers have a line-stop fitting that was previously installed for maintenance of the system. These components are all buried between the SXCT and the Turbine Building (TB) or encased in the TB foundation. There is no access to the buried sections without excavation. No annulus was provided during original construction that would allow for examination of these buried sections of piping.

IWA-5244(a) requires a test that isolates the buried sections of piping to conduct a pressure decay or to perform a test that determines the change in flow between the buried ends. It would be necessary to close three large butterfly valves<sup>1</sup> to isolate the buried portion of each supply header. Such a test methodology would be difficult to perform and would remove one train of essential service water to each unit. This configuration would put the on-line unit/s into a Yellow online risk profile. For the return headers, it would be necessary to close several large butterfly valves<sup>2</sup> to isolate the buried portions. This would also result in the isolation of an entire return train of SX, which is a configuration not allowed by the Byron Station Technical Specifications. These valves are not designed to and are not expected to provide an adequate pressure test boundary, which is necessary to conduct a pressure decay test. System modification would be required to perform an adequate pressure decay test, as it would be necessary to either replace these butterfly valves with those of better leakage characteristics or to install blind flanges to conduct this test.

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<sup>1</sup> A-Train: 0SX138A, 1SX001A, and 2SX001A.

B-Train: 0SX138B, 1SX001B, and 2SX001B.

<sup>2</sup> A-Train: 1SX010, 2SX010, 1SX015A, 2SX015A, 1SX057A, 2SX057A, 1SX114A, 2SX114A, 1SX147A, 2SX147A, 0SX162A, 0SX162C, 0SX163A, 0SX163B, 0SX163C, and 0SX163D.  
B-Train: 1SX015B, 2SX015B, 1SX057B, 2SX057B, 1SX114B, 2SX114B, 1SX136, 2SX136, 2SX147B, 1SX147B, 0SX162B, 0SX162D, 0SX163E, 0SX163F, 0SX163G, and 0SX163H.

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The other potential test to be performed would be a change in flow test as described in IWA-5244(b). However, the buried SX system supply and return headers were not designed with plant instrumentation and flow orifices on both sides that would be required to determine the flow rates, and there are not sufficient lengths of accessible straight pipe for reliable use of ultrasonic flow meters. For these reasons, the configuration of the SX system will not allow for determining the change in flow between the ends of the buried piping.

Compliance with the specified requirements is a hardship without a compensating increase in the level of quality and safety. Performing the specified examinations would require excavation of buried piping between the SXCT and the Turbine Building (Supply Headers), and the Turbine Building and SXCT (Return Headers) and reconfiguration of the existing SX system, and/or entry into a dual unit 72 hour LCOAR.

**5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:**

Byron Station proposes to utilize the requirements of IWA-5244(c) to provide an adequate level of quality and safety. These requirements call for a test that confirms flow is unimpaired in nonisolable buried components. To confirm that flow is unimpaired in these buried pipes, Inservice Testing procedures will be used to ensure adequate flow during operation.

For the buried piping sections required to provide flow from the SXCT through the 48" headers and each of the 36" suction lines to the SX Pumps (Supply Headers) and the buried piping sections required to return flow from the SX system through the 48" headers to the 24" branch lines into the SXCT (Return Header), a test will be conducted to confirm unimpaired flow. The pump test acceptance criteria also ensures the required flow to support the safety function is maintained for any buried piping leakage or loss of flow and pump degradation.

Additional protection of the pressure boundary integrity for the SX system is assured through the Byron Station the water chemistry program. This program assures that the SX system water is chemically controlled to mitigate various degradation mechanisms. The chemicals include a biocide to prevent Microbiological Induced Corrosion (MIC), sulfuric acid to reduce corrosion rates and scaling, and additional additives to provide a protective layer (zinc chloride) and inhibit calcium carbonate scaling.

**6.0 DURATION OF PROPOSED ALTERNATIVE:**

Relief is requested for the second inspection interval for Byron Station Units 1 and 2.

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**7.0 PRECEDENTS:**

Relief requests addressing similar issues include:

Point Beach Nuclear Plant Fourth Inspection Interval Relief Request 15, dated January 21, 2005, (ADAMS accession number ML050250178).

**8.0 REFERENCES:**

None