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RS-09-118

10 CFR 50.55a

September 4, 2009

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

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: Submittal of Relief Requests Associated with the Third Inservice Inspection Interval

Reference: Letter from B. Hanson (Exelon Generation Company, LLC) to U. S. NRC, "Submittal of Third Inservice Inspection (ISI) Interval Program Plan," dated March 25, 2009

In the referenced letter, Exelon Generation Company, LLC (EGC), provided for information a copy of the Third Ten-Year Interval Inservice Inspection (ISI) Program Plan for Braidwood Station, Units 1 and 2. As stated in the referenced letter, the relief requests associated with the third ISI interval would be provided in a separate submittal.

In accordance with 10 CFR 50.55a, "Codes and standards," paragraphs (a)(3)(i) and (a)(3)(ii), EGC requests NRC approval of the following requests for the third ISI interval for Braidwood Station, Units 1 and 2:

1. Proposed Alternative for Examination Requirements of ASME Section XI, IWA-5244, "Buried Components" in Accordance with 10 CFR 50.55a(a)(3)(ii)

2. Proposed Alternative for Qualification Requirements of ASME Section XI, Appendix VIII, Supplement 11 for Examination of Structural Weld Overlays (SWOLs) in Accordance with 10 CFR 50.55a(a)(3)(i)

3. Proposed Alternative for IWC-5200 Requirements for Post Accident Hydrogen Monitoring System Piping in Accordance with 10 CFR 50.55a(a)(3)(ii)

4. Request for Relief for IWE-5240 Detailed Visual Examination During Appendix J Pneumatic Leakage Testing in Accordance with 10 CFR 50.55a(a)(3)(ii)

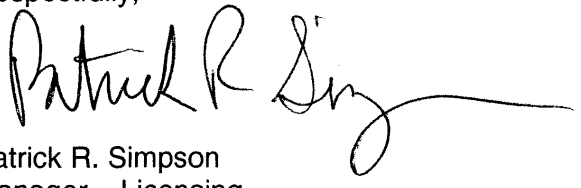
The details of the 10 CFR 50.55a requests are provided in Attachment 1 of this submittal. Please note that all of the attached relief requests were previously approved as a part of the previous ISI interval for Braidwood Station, Units 1 and 2, with the exception of I3R-06 (i.e., item 4 above).

EGC requests approval of these requests by September 4, 2010, to support implementation of the third ISI interval. The American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) of record for the station's third ISI interval is the 2001 Edition through the 2003 Addenda.

There are no regulatory commitments contained within this letter.

Should you have any questions concerning this letter, please contact Ms. Lisa A. Schofield at (630) 657-2815.

Respectfully,



Patrick R. Simpson
Manager – Licensing
Exelon Generation Company, LLC

Attachments:
1. Relief Requests Associated with the Third Inservice Inspection Interval
2. Piping & Instrument Diagrams M-68, Sheet 7 (Unit 1) and M-140, Sheet 6 (Unit 2)

ATTACHMENT 1

RELIEF REQUESTS ASSOCIATED WITH THE THIRD INSERVICE INSPECTION INTERVAL

I3R-02
I3R-03
I3R-05
I3R-06

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Proposed Alternative for Examination Requirements of ASME Section XI, IWA-5244, "Buried Components" In Accordance with 10 CFR 50.55a(a)(3)(ii)

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:	Supply Lines: 0SX01CA-30", 0SX01CB-30", 0SX01CC-30", 0SX01CD-30", 0SX01CE-30", 0SX01CF-30", 0SX01AA-48", 0SX01AB-48", including all associated buried small bore attachment lines Return Lines: 0SX03CA-48", 0SX03CB-48", 0SX03DA-48", 0SX03DB-48", including all associated buried small bore attachment lines
Drawing Number:	M-42 Sheet 1A, M-42 Sheet 1B, M-42 Sheet 2A, M-42 Sheet 2B, and M-42 Sheet 6

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, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

IWA-5244*(b)(1)* requires 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 and the Owner shall establish the acceptable rate of pressure loss or flow.

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.

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The SX suction line buried piping consists of six 30" common (i.e., Unit 0) supply headers that feed into two 48" Unit 0 supply headers and the SX return line buried piping consists of two 48" Unit 0 return headers. Portions of the suction piping are encased in concrete at the Lake Screen House (LSH). The remainder of the SX suction line buried piping runs from the LSH to the Turbine Building. The SX System water is distributed to required system loads and eventually leaves the plant, returning to the SX cooling pond through two Unit 0 48" return headers. All of the return piping between the Turbine Building and the SX cooling pond through the SX discharge structure is buried. The buried piping (both supply and return) is not accessible for examination without excavation, as an annulus allowing for examination of the buried sections of piping was not provided during original construction.

IWA-5244*(b)(1)* requires a test that isolates the buried sections of piping to conduct a pressure decay test or to perform a test that determines the change in flow between the buried ends. In order to perform a pressure decay test, it would be necessary to close two large butterfly valves (i.e., 36") and three large gate valves (i.e., 30") to isolate the buried portion of each supply header. Such a test methodology would render one train of SX to each unit inoperable. This would result in entering Technical Specification (TS) 3.7.8, "Essential Service Water (SX) System," for one unit-specific SX train inoperable on both units.

For the return header piping, it would be necessary to close several large butterfly valves to isolate the buried portions of piping. This would also result in the isolation of a return train of SX from both units, thus requiring entry into TS 3.7.8 for one unit-specific train inoperable on both units. In addition to placing the units in an undesirable condition, the butterfly valves required for isolation of the supply and return headers are not designed or expected to provide an adequate test boundary necessary to conduct a pressure decay test. Extensive maintenance or system modification would be required to perform an adequate pressure decay test, as it would be necessary to either replace the existing butterfly valves with those of better leakage characteristics or to install blind flanges to conduct this test. In addition, as established by the NRC Safety Evaluation Report contained in a letter from R. R. Assa (NRC) to D. L. Farrar (Commonwealth Edison Company), "Issuance of Amendments," dated March 20, 1995, Braidwood Station is required to maintain the SX return to the cooling pond isolation valves (0SX165A and 0SX165B) open with the power removed. Based on this commitment, these SX return butterfly valves cannot be used to isolate the SX System return piping at Braidwood Station.

The other potential test would be a change in flow test. However, the buried SX supply and return headers were not designed with plant instrumentation and flow orifices on the exposed ends of pipe, which are required to determine the flow rates. In addition, sufficient lengths of accessible straight pipe for reliable use of ultrasonic flow meters do not exist. 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 either excavating the buried piping between the LSH Forebay and the Turbine Building (i.e., supply headers), and the Turbine Building and SX cooling pond (i.e., return headers) or rendering an SX System train inoperable on both units. Pressure tests that isolate buried sections of SX piping have a significant impact on core damage frequency since significant portions of Emergency Core Cooling System equipment would need to be isolated. Depending on the line being isolated, the configuration specific risk increase factor ranges from 6 to 50 for Braidwood Station.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

For the buried piping sections required to provide flow from the LSH Forebay to the SX pumps (i.e., supply headers) and the buried piping sections required to return flow from the SX System to the SX cooling pond (i.e., return header), a test will be conducted to confirm unimpaired flow. Braidwood Station proposes to utilize the requirements of IWA-5244*(b)(2)* along with the trending data obtained during quarterly Inservice Testing (IST) to provide an adequate level of quality and safety. The IWA-5244*(b)(2)* requirements call for a test that confirms flow is unimpaired in nonisolable buried components. To confirm that flow is unimpaired in these buried pipes, the Braidwood Station IST Program will be utilized to ensure adequate flow. Braidwood Station will use the Owner established minimum flow rate specified in the site IST surveillances, currently specified at 23,520 gallons per minute (gpm) for all SX pumps, as the acceptance criteria for IWA-5244 pressure testing of SX System buried piping.

If during an IST surveillance the minimum flow could not be achieved and the cause of the deviation not attributed to the test instruments being used, the pump would be declared inoperable and an Issue Report (IR) generated in accordance with the Corrective Action Program as required by the existing IST surveillance. Further corrective actions (i.e., maintenance on the pump, system walk downs, etc.) would be initiated as required to restore the pump and/or the system to an operable status.

Along with the quarterly IST surveillance trending, additional protection of the pressure boundary integrity for the SX System is assured through the Braidwood Station Service Water Chemistry Program. This program assures that the SX System water is chemically treated to mitigate various degradation mechanisms. The chemicals used include a biocide to control microbiological growth, a scale inhibitor, a silt dispersant and a corrosion inhibitor.

In addition, it can be reasonably assumed that catastrophic piping failure is not likely based on the design and construction of the SX System and the system service conditions. The SX piping is coated, wrapped, and protected by a

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cathodic protection system. The SX piping is buried and protected from external forces. The backfill materials used at Braidwood Station were lean concrete, granular material, and bash. Bash is a mixture of cement, flyash, sand, and water. The backfill that encases the SX piping is a lean concrete that covers the piping by a minimum of one foot. This section of piping operates at low pressure and temperature. The maximum pressure of the SX buried piping is 30 psig.

6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the Third Ten-Year Inspection Interval for Braidwood Station Units 1 and 2, which are currently scheduled to end on July 28, 2018 for Unit 1 and October 16, 2018 for Unit 2.

7.0 PRECEDENTS:

Similar relief requests recently approved include:

Braidwood Station (Second Inspection Interval) and Byron Station (Third Inspection Interval) per SE dated January 16, 2007

Millstone Power Station per SE dated July 10, 2008

Vermont Yankee Nuclear Power Station per SE dated January 31, 2008

Prairie Island Nuclear Generating Plant per SE dated October 31, 2007

Point Beach Nuclear Plant per SE dated September 30, 2007

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Proposed Alternative for Qualification Requirements of ASME Section XI, Appendix VIII, Supplement 11 for Examination of Structural Weld Overlays (SWOLs) In Accordance with 10 CFR 50.55a(a)(3)(i)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	1
Reference:	ASME Section XI, Mandatory Appendix VIII, Supplement 11
Examination Category:	R-A
Item Number:	See Table 1 for listing
Description:	Appendix VIII, Supplement 11 examination of Structural Weld Overlays (SWOLs) of the Pressurizer Surge, Spray, Safety, and Relief Nozzles, Dissimilar Metal Welds including the SWOLs of the Adjacent Safe-End to Pipe, Reducer and Elbow Welds on Pressurizer Surge, Spray, Safety, and Relief Nozzles
Component Number:	See Table 1 for listing
Drawing Number:	Unit 1: M-60 Sheet 5, Unit 2: M-135 Sheet 5

2.0 APPLICABLE CODE EDITION AND ADDENDA:

1. American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME), Section XI, 2001 Edition through the 2003 Addenda

2. ASME Section XI, 2001 Edition, No Addenda, Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," mandated through 10 CFR 50.55a(b)(2)(xxiv)

3. ASME Section XI, 2001 Edition, No Addenda, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds," mandated through 10 CFR 50.55a(b)(2)(xxiv)

3.0 APPLICABLE CODE REQUIREMENT:

Full structural weld overlays of austenitic piping welds shall be examined using procedures and examiners qualified in accordance with ASME Section XI, Mandatory Appendix VIII, Supplement 11.

10 CFR 50.55a(b)(2)(xxiv) prohibits use of Appendix VIII and associated supplements beyond the 2001 Edition of ASME Section XI.

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Braidwood Station applied full structural weld overlays (SWOL) on all pressurizer nozzle to safe-end welds dissimilar metal welds (DMWs) and the adjacent similar metal welds to proactively mitigate the DMWs from primary water stress corrosion cracking (PWSCC). These full structural weld overlays must be ultrasonically examined in accordance with Code Case N-504-2/ASME Section XI Nonmandatory Appendix Q, which were conditionally approved for use through Code Case N-504-2 (Reference 2) and in accordance with commitments made in Braidwood Station Second Interval Relief Request I2R-48 (Reference 5).

4.0 REASON FOR REQUEST:

Pursuant to 10 CFR 50.55a(a)(3)(i), Braidwood Station requests relief from the qualification requirements of Supplement 11 and proposes instead to use the ultrasonic (UT) qualification program for weld overlay inspections developed and administered through the Electric Power Research Institute (EPRI) Performance Demonstration Initiative (PDI) qualification program.

U. S. nuclear utilities created the PDI program to implement performance demonstration requirements contained in Section XI, Appendix VIII. PDI has developed into a program for qualifying equipment, procedures, and personnel for examinations of weld overlays in accordance with the UT criteria of Supplement 11. Prior to the Supplement 11 program, EPRI maintained a performance demonstration program for weld overlay examination qualification under the Tri-party Agreement (Reference 3). Instead of having two programs with similar objectives, the NRC recognized the PDI program for weld overlay examination qualifications as an acceptable alternative to the Tri-party Agreement (Reference 4).

Although the PDI program does not fully comport with the existing requirements of Supplement 11, it is routinely assessed by the NRC for consistency with the current ASME Code and proposed changes. The major differences between the PDI program compared to Supplement 11 are associated with flaw locations contained in test specimens and fabricated flaw tolerances. The changes in flaw locations within the test specimens allowed using the test specimens from the Tri-party Agreement, and changes in fabricated flaw tolerances provide UT acoustic responses similar to those associated with intergranular stress corrosion cracking (IGSCC).

Table 2 of this relief request provides the requirements of Supplement 11 along with the associated EPRI PDI requirement. Discussion of the differences between the two programs is as follows:

Paragraph 1.1.(b) of Supplement 11 states limitations to the maximum thickness for which a procedure may be qualified. The ASME Code states, "The specimen set must include at least one specimen with overlay thickness within minus 0.10-inch to plus 0.25-inch of the maximum nominal overlay thickness for which

the procedure is applicable." While the ASME Code requirement addresses the specimen thickness tolerance for a single specimen set, it is confusing when multiple specimen sets are used. The PDI proposed alternative states, "the specimen set shall include specimens with overlays not thicker than 0.10-inch more than the minimum thickness, nor thinner than 0.25-inch of the maximum nominal overlay thickness for which the examination procedure is applicable." The proposed alternative provides clarification on the application of the tolerance. The tolerance is unchanged for a single specimen set; however the proposed alternative clarifies the tolerance for multiple specimen sets by providing tolerances for both the minimum and the maximum thicknesses.

Paragraph 1.1(d)(1) requires that all base metal flaws be cracks. PDI determined that certain Supplement 11 requirements pertaining to location and size of cracks would be extremely difficult to achieve. For example, flaw implantation requires excavating a volume of base material to allow a pre-cracked coupon to be welded into this area. This process would add weld material to an area of the specimen that typically consists of only base material, and could potentially make ultrasonic examination more difficult and not representative of actual field conditions. In an effort to satisfy the requirements, PDI developed a process for fabricating flaws that exhibit crack-like reflective characteristics. Instead of all flaws being cracks, as required by Paragraph 1.1(d)(1), the PDI weld overlay performance demonstrations contain at least 70% cracks with the remainder being fabricated flaws exhibiting crack-like reflective characteristics. The fabricated flaws are semi-elliptical with tip widths of less than 0.002-inches. PDI limits flaws in cases where implantation of cracks produces spurious reflectors that are uncharacteristic of actual flaws.

Paragraph 1.1(e)(1) requires that at least 20% but not less than 40% of the flaws shall be oriented within ±20 degrees of the axial direction (of the piping test specimen). Flaws contained in the original base metal heat-affected zone satisfy this requirement; however, PDI excludes axial fabrication flaws in the weld overlay material. PDI has concluded that axial flaws in the overlay material are improbable because the overlay filler material is applied in the circumferential direction (parallel to the girth weld); therefore, fabrication anomalies would also be expected to have major dimensions in the circumferential direction.

Paragraph 1.1(e)(1) also requires that the rules of IWA-3300 shall be used to determine whether closely spaced flaws should be treated as single or multiple flaws. PDI treats each flaw as an individual flaw and not as part of a system of closely spaced flaws. PDI controls the flaws going into a test specimen set such that the flaws are free of interfering reflections from adjacent flaws. In some cases this permits flaws to be spaced closer than what is allowed for classification as a multiple set of flaws by IWA-3300, thus potentially making the performance demonstration more challenging than the existing requirement.

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Paragraph 1.1(e)(2) requires that specimens be divided into base metal and overlay grading units. The PDI program adds clarification with the addition of the word "fabrication" and ensures that flaw identification will not be masked by other flaws with the addition of "Flaws shall not interfere with ultrasonic detection or characterization of other flaws." PDI alternative provides clarification and assurance that the flaws are identified.

Paragraph 1.1(e)(2)(a)(1) requires that a base grading unit shall include at least three inches of the length of the overlaid weld, and the base grading unit includes the outer 25% of the overlaid weld and base metal on both sides. The PDI program reduced the criteria to one inch of the length of the overlaid weld and eliminated from the grading unit the need to include both sides of the weld. The proposed change permits the PDI program to continue using test specimens from the existing weld overlay program, which have flaws on both sides of the welds. These test specimens have been used successfully for testing the proficiency of personnel for over 16 years. The weld overlay qualification is designed to be a near-side (relative to the weld) examination, and it is improbable that a candidate would detect a flaw on the opposite side of the weld due to the sound attenuation and re-direction caused by the weld microstructure. However, the presence of flaws on both sides of the original weld (outside the PDI grading unit) may actually provide a more challenging examination, as candidates must determine the relevancy of these flaws, if detected.

Paragraph 1.1(e)(2)(a)(2) requires, when base metal cracking penetrates into the overlay material, that a portion of the base grading unit shall not be used as part of the overlay grading unit. The NRC finds that the PDI program adjusts for the changes in Paragraph 1.1(e)(2)(a)(2) and conservatively states that when base metal flaws penetrate into the overlay material, no portion of it shall be used as part of the overlay fabrication grading unit.

Paragraph 1.1(e)(2)(a)(3) requires that for unflawed base grading units, at least one inch of unflawed overlaid weld and base metal shall exist on either side of the base grading unit. This is to minimize the number of false identifications of extraneous reflectors. The PDI program stipulates that unflawed overlaid weld and base metal exists on all sides of the grading unit and flawed grading units must be free of interfering reflections from adjacent flaws which addresses the same concerns as the ASME Code.

Paragraph 1.1(e)(2)(b)(1) requires that an overlay grading unit shall include the overlay material and the base metal-to-overlay interface of at least six square inches. The overlay grading unit shall be rectangular, with minimum dimensions of two inches. The PDI program reduces the base metal-to-overlay interface to at least one inch (in lieu of a minimum of two inches) and eliminates the minimum rectangular dimension. This criterion is necessary to allow use of existing examination specimens that were fabricated in order to meet NRC Generic Letter 88-01 (Tri-party Agreement, July 1984). This criterion may be more challenging

to meet than that of the ASME Code because of the variability associated with the shape of the grading unit.

Paragraph 1.1(e)(2)(b)(2) requires that unflawed overlay grading units shall be surrounded by unflawed overlay material and unflawed base metal-to-overlay interface for at least one inch around it's entire perimeter. The PDI program redefines the area by noting unflawed overlay fabrication grading units shall be separated by at least one inch of unflawed material at both ends and sufficient area on both sides to preclude interfering reflections from adjacent flaws. This change may provide a more challenging demonstration than required by ASME Code because of the possibility for having a parallel flaw on the opposite side of the weld.

Paragraph 1.1(e)(2)(b)(3) requirements are retained in the PDI program. In addition, the PDI program requires that initial procedure qualification contain three times the number of flaws required for a personal qualification. To qualify new values of essential variables, the equivalent of at least one personal qualification is required.

Paragraph 1.1(f)(1) requirements are retained in the PDI program, with the clarification change of the term "flaws" for "cracks." In addition, the PDI program includes the requirements that sizing sets shall contain a distribution of flaw dimensions to verify sizing capabilities. The PDI program also requires that initial procedure qualification contain three times the number of flaws required for a personal qualification. To qualify new values of essential variables, the equivalent of at least one personal qualification is required.

Paragraphs 1.1(f)(3), 1.1(f)(4), and 3.2(a) requirements are clarified by the PDI program by replacing the term "cracking" with "flaws" because of the use of alternative flaw mechanisms.

Paragraphs 2.1 and 2.2(d) requirements are clarified by the PDI program by the addition of the terms "metal" and "fabrication." These terms were added to clarify the description of the grading units present in a specimen. "Metal" was added to "base" to read "base metal" and "fabrication" was added to "overlay" to read "overlay fabrication."

Paragraph 2.3 requires that, for depth sizing tests, 80% of the flaws shall be sized at a specific location on the surface of the specimen identified to the candidate. This requires detection and sizing tests to be performed separately. The PDI revised the weld overlay program to allow sizing to be conducted either in conjunction with, or separately from, the flaw detection test. If performed in conjunction with detection and the detected flaws do not meet the Supplement 11 range criteria, additional specimens will be presented to the candidate with the regions containing flaws identified. Each candidate will be required to determine the maximum depth of the flaw in each region. For separate sizing tests, the

regions of interest will also be identified and the maximum depth and length of each flaw in the region will similarly be determined. In addition, PDI stated that grading units are not applicable to sizing tests, and that each sizing region will be large enough to contain the target flaw, but small enough such that candidates will not attempt to size a different flaw.

Paragraph 3.1 requires that examination procedures, equipment and personnel (as a complete ultrasonic system) are qualified for detection or sizing of flaws, as applicable, when certain criteria are met. The PDI program allows procedure qualification to be performed separately from personnel and equipment qualification. Historical data indicate that, if ultrasonic detection or sizing procedures are thoroughly tested, personnel and equipment using those procedures have a higher probability of successfully passing a qualification test. In an effort to increase this passing rate, PDI has elected to perform procedure qualifications separately in order to assess and modify essential variables that may affect overall system capabilities. For a procedure to be qualified, the PDI program requires three times as many flaws to be detected (or sized) as shown in Supplement 11 for the entire ultrasonic system. The personnel and equipment are still required to meet the Supplement 11 requirement.

Paragraph 3.2(b) requires that all extensions of base metal cracking into the overlay material by at least 0.10-inch are reported as being intrusions into the overlay material. The PDI program omits this criterion because of the difficulty in actually fabricating a flaw with a 0.10-inch minimum extension into the overlay, while still knowing the true state of the flaw dimensions. However, the PDI program requires that cracks be depth-sized to the tolerance specified in the ASME Code which is 0.125-inches. Since the ASME Code tolerance is close to the 0.10-inch value of Paragraph 3.2(b), any crack extending beyond 0.10-inch into the overlay material would be identified as such from the characterized dimensions.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

Pursuant to 10 CFR 50.55a(a)(3)(i), UT inspection of all SWOL will be performed using EPRI PDI demonstrated procedures in conjunction with PDI qualified examiners in lieu of the ASME Section XI, Appendix VIII, Supplement 11. The EPRI PDI qualification program provides a recognized acceptable alternative to the requirements of Supplement 11 and provides an acceptable level of quality and safety.

6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the Third Ten-Year Inspection Interval for Braidwood Station Units 1 and 2, which are currently scheduled to end on July 28, 2018 for Unit 1 and October 16, 2018 for Unit 2.

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As stated in Reference 5, these inservice examinations will be scheduled and performed in accordance with ASME Section XI or alternate inspection schedules as/if mandated in future NRC regulations.

7.0 PRECEDENTS:

Similar relief requests have been approved for:

Braidwood Station Second Inspection Interval Relief Request I2R-48 was authorized per SE dated September 17, 2007 (Reference 5).

Similar relief requests for SWOL of DMW (both PWR and BWR) have been approved for a number of units throughout the industry (See References 5 through 16). A number of units have submitted relief requests citing similar proposed relief request methodology for weld overlay ultrasonic examinations. As unconditionally approved through NRC safety evaluations, all recent SWOL UT examinations have been performed using the EPRI PDI demonstration and qualification program in lieu of the mandated ASME Section XI Appendix VIII requirements.

8.0 REFERENCES:

1) ASME Code, Section XI, 2001 Edition, No Addenda, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds"

2) Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 15, October 2007

3) "Coordination Plan for NRC/EPRI/BWROG Training and Qualification Activities of NDE (Nondestructive Examination) Personnel," July 3, 1984

4) Letter from W. H. Bateman (NRC) to M. Bratton (Entergy Nuclear Southwest), "Weld Overlay Performance Demonstration Administered By PDI as an Alternative for Generic Letter 88-01 Recommendations," dated January 15, 2002

5) Letter from R. Gibbs (NRC) to C. M. Crane (Exelon Generation Company, LLC), "Braidwood Station, Units 1 and 2 Evaluation of Inservice Inspection Program Relief Request I2R-48 Pertaining to Structural Weld Overlays on Pressurizer Spray, Relief, Safety, and Surge Nozzle Safe Ends (TAC Nos. MD4590, and MD4591)," dated September 17, 2007

6) Letter from R. Laufer (NRC) to C. M. Crane (AmerGen), "Three Mile Island Nuclear Station, Unit 1 (TMI-1) Request for Relief From Flaw Removal, Heat Treatment, and Nondestructive Examination Requirements for the Third

10- Year Inservice Inspection (ISI) Interval (TAC No. MC1201)," dated July 21, 2004

7) Letter from R. J. Laufer (NRC) to G. Vanderheyden (Calvert Cliffs), "Calvert Cliffs Nuclear Power Plant, Unit No. 2 - Relief Request For Use Weld Overlay and Associated Alternative Inspection Techniques (TAC Nos. MC6219 and MC6220)," dated July 20, 2005

8) Letter from L. Raghavan (NRC) to M. K. Nazar (Indiana Michigan Power Company), "Donald C. Cook Nuclear Plant, Unit 1 (DCCNP-1) - Alternatives Regarding Repair of Weld 1-PZR-23 on Pressurizer Nozzle to Valve Inlet Line (TAC No. MC6704)," dated December 1, 2005

9) Letter from D. J. Roberts (NRC) to D. A. Christian (Dominion Nuclear Connecticut, Inc.), "Millstone Power Station Unit No. 3 - Issuance of Relief from Code Requirements (TAC No. MC8609)," dated January 20, 2006

10) Letter from R. J. Laufer (NRC) to B. L. Shriver (PPL Susquehanna), "Susquehanna Steam Electric Station, Unit 1 - Relief from American Society of Mechanical Engineers, Boiler and Pressure Vessel Code (ASME Code), Section XI, Appendix VIII, Supplement 11, Requirements and Code Cases N-504-2 and N-638 Requirements (TAC Nos. MC2450, MC2451 and MC2594)," dated June 22, 2005

11) Letter from L. Raghavan (NRC) to P. A. Harden (Nuclear Management Company, LLC), "Palisades Nuclear Plant - Request for Authorization of Relief Request No. 1 for Certain Requirements in ASME Code, Section XI, Code Case N-638-1 at Palisades Nuclear Power Plant (TAC No. MC7993,)" dated March 21, 2006

12) Letter from D. S. Collins (NRC) to M. B. Bezilla (First Energy Operating Company), "Davis-Besse Nuclear Power Station, Unit No. 1 - Evaluation of Request for Relief Re: Full Structural Weld Overlay (TAC No. MD0683)," dated October 19, 2006

13) Letter from R. J. Laufer (NRC) to J. A. Spina (Calvert Cliffs Nuclear Power Plant, Inc.), "Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - Relief Request to Use Weld Overlay And Associated Alternative Techniques (TAC Nos. MC8530 and MC8531)," dated June 28, 2006

14) Letter from D. Terao (NRC) to R. M. Rosenblum (Southern California Edison Company), "San Onofre Nuclear Generating Station, Unit 3 - Re: Third 10-Year Inservice Inspection Interval, Requests for Relief From the Requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (TAC Nos. MD1128 and MD1129)," dated December 14, 2006

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15) Letter from M. L. Marshall (NRC) to C. M. Crane (Exelon Generation Company, LLC), "Byron Station, Unit No. 1 - Evaluation of Relief Request I3R-08 Pertaining to Structural Weld Overlays (TAC No. MD1761)," dated January 29, 2007

16) Letter from R. J. Laufer (NRC) to M. R. Kansler (Entergy Nuclear Operations, Inc.) "Pilgrim Nuclear Power Station Relief Request No. PRR-9 (TAC No. ML8292)," dated March 22, 2006

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TABLE 1 COMPONENT IDENTIFICATION						
Unit 1 Pressurizer 1RY01S Weld Overlays						
NOZZLE	**NOZZLE-TO-SAFE END WELD**	**ITEM #**	**SIZE**	**ADJACENT WELD**	**CONFIGURATION**	**ITEM #**
Surge	1PZR-01-SE-01	R1.11 R1.15	14"	1RC-05-01	Safe-end to Pipe	R1.11
Spray	1PZR-01-SE-05	R1.11 R1.15	4"	1RC-16-01	6"x4" Reducer to Safe-end	R1.11
Relief	1PZR-01-SE-06	R1.15	6"	1RC-35-01	Safe-end to Cut 45° Elbow	R1.20
Safety A	1PZR-01-SE-02	R1.15	6"	1RC-32-01	Safe-end to Cut 90° Elbow	R1.20
Safety B	1PZR-01-SE-03	R1.15	6"	1RC-32-07	Safe-end to Cut 90° Elbow	R1.20
Safety C	1PZR-01-SE-04	R1.15	6"	1RC-32-13	Safe-end to Cut 90° Elbow	R1.20
Unit 2 Pressurizer 2RY01S Weld Overlays						
NOZZLE	**NOZZLE-TO-SAFE END WELD**	**ITEM #**	**SIZE**	**ADJACENT WELD**	**CONFIGURATION**	**ITEM #**
Surge	2PZR-01-SE-01	R1.11 R1.15	14"	2RC-05-01	Safe-end to Pipe	R1.11
Spray	2PZR-01-SE-05	R1.11 R1.15	4"	2RC-16-01	6"x4" Reducer to Safe-end	R1.11
Relief	2PZR-01-SE-06	R1.15	6"	2RC-35-01	Safe-end to Cut 45° Elbow	R1.20
Safety A	2PZR-01-SE-02	R1.15	6"	2RC-32-01	Safe-end to Cut 90° Elbow	R1.20
Safety B	2PZR-01-SE-03	R1.15	6"	2RC-32-07	Safe-end to Cut 90° Elbow	R1.20
Safety C	2PZR-01-SE-04	R1.15	6"	2RC-32-13	Safe-end to Cut 90° Elbow	R1.20

Note: Item numbers reflect Risk-Informed classification per ASME Code Case N-578-1.
R1.11: Elements Subject to Thermal Fatigue.
R1.15: Elements Subject to Primary Water Stress Corrosion Cracking (PWSCC).
R1.20: Elements not Subject to a Damage Mechanism.

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TABLE 2 **MODIFICATIONS TO APPENDIX VIII, SUPPLEMENT 11** **(2001 Edition)**	
Appendix VIII, Supplement 11	**PDI Modification**
1.0 SPECIMEN REQUIREMENTS	
Qualification test specimens shall meet requirements listed herein, unless a set of specimens is designed to accommodate specific limitations stated in the scope of the examination procedure (e.g., pipe size, weld joint configuration, access limitations). The same specimen may be used to demonstrate both detection and sizing qualification.	No Change
1.1 General. The specimen set shall conform to the following requirements.	No Change
1.1(a) Specimens shall have sufficient volume to minimize spurious reflections that may interfere with the interpretation process.	No Change
1.1(b) The specimen set shall consist of at least three specimens having different nominal pipe diameters and overlay thicknesses. They shall include the minimum and maximum nominal pipe diameters for which the examination procedure is applicable. Pipe diameters within a range of 0.9 to 1.5 times a nominal diameter shall be considered equivalent. If the procedure is applicable to pipe diameters of 24 inches or larger, the specimen set must include at least one specimen 24 inches or larger but need not include the maximum diameter. The specimen set must include at least one specimen with overlay thickness within -0.1 inches to +0.25 inches of the maximum nominal overlay thickness for which the procedure is applicable.	The specimen set shall consist of at least three specimens having different nominal pipe diameters and overlay thicknesses. They shall include the minimum and maximum nominal pipe diameters for which the examination procedure is applicable. Pipe diameters within a range of 0.9 to 1.5 times a nominal diameter shall be considered equivalent. If the procedure is applicable to pipe diameters of 24 inches or larger, the specimen set must include at least one specimen 24 inches or larger but need not include the maximum diameter. The specimen set shall include specimens with overlays not thicker than 0.1 inches more than the minimum thickness, nor thinner than 0.25 inches of the maximum nominal overlay thickness for which the procedure is applicable.
1.1(c) The surface condition of at least two specimens shall approximate the roughest surface condition for which the examination procedure is applicable.	No Change

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(d) Flaw Conditions	
1.1(d)(1) Base metal flaws. All flaws must be cracks in or near the butt weld heat-affected zone, open to the inside surface, and extending at least 75% through the base metal wall. Flaws may extend 100% through the base metal and into the overlay material; in this case, intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the cracking. Specimens containing IGSCC [intergranular stress corrosion cracking] shall be used when available.	Base metal flaws. All flaws must be in or near the butt weld heat-affected zone, open to the inside surface, and extending at least 75% through the base metal wall. Intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the base metal flaws. Specimens containing IGSCC shall be used when available. At least 70% of the flaws in the detection and sizing tests shall be cracks and the remainder shall be alternative flaws. Alternative flaw mechanisms, if used, shall provide crack-like reflective characteristics and shall be limited by the following: (a) The use of Alternative flaws shall be limited to when the implantation of cracks produces spurious reflectors that are uncharacteristic of actual flaws. (b) Flaws shall be semielliptical with a tip width of less than or equal to 0.002 inches.
1.1(d)(2) Overlay fabrication flaws. At least 40% of the flaws shall be non-crack fabrication flaws (e.g., sidewall lack of fusion or laminar lack of bond) in the overlay or the pipe-to-overlay interface. At least 20% of the flaws shall be cracks. The balance of the flaws shall be either type.	No Change
(e) Detection Specimens	
1.1(e)(1) At least 20% but less than 40% of the flaws shall be oriented within +/- 20 degrees of the pipe axial direction. The remainder shall be oriented circumferentially. Flaws shall not be open to any surface to which the candidate has physical or visual access. The rules of IWA-3300 shall be used to determine	At least 20% but less than 40% of the base metal flaws shall be oriented within +/- 20 degrees of the pipe axial direction. The remainder shall be oriented circumferentially. Flaws shall not be open to any surface to which the candidate has physical or visual access.

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whether closely spaced flaws should be treated as single or multiple flaws.	
1.1(e)(2) Specimens shall be divided into base and overlay grading units. Each specimen shall contain one or both types of grading units.	Specimens shall be divided into base metal and overlay fabrication grading units. Each specimen shall contain one or both types of grading units. Flaws shall not interfere with ultrasonic detection or characterization of other flaws.
1.1(e)(2)(a)(1) A base grading unit shall include at least 3 inches of the length of the overlaid weld. The base grading unit includes the outer 25% of the overlaid weld and base metal on both sides. The base grading unit shall not include the inner 75% of the overlaid weld and base metal overlay material, or base metal-to-overlay interface.	A base metal grading unit includes the overlay material and outer 25% of the original overlaid weld. The base metal grading unit shall extend circumferentially for at least 1 inch and shall start at the centerline and be wide enough in the axial direction to encompass one half of the original weld crown and a minimum of 0.50 inch of the adjacent base material.
1.1(e)(2)(a)(2) When base metal cracking penetrates into the overlay material, the base grading unit shall include the overlay metal within 1 inch of the crack location. This portion of the overlay material shall not be used as part of any overlay grading unit.	When base metal flaws penetrate into the overlay material, the base metal grading unit shall not be used as part of any overlay fabrication grading unit.
1.1(e)(2)(a)(3) When a base grading unit is designed to be unflawed, at least 1 inch of unflawed overlaid weld and base metal shall exist on either side of the base grading unit. The segment of weld length used in one base grading unit shall not be used in another base grading unit. Base grading units need not be uniformly spaced around the specimen.	Sufficient unflawed overlaid weld and base metal shall exist on all sides of the grading unit to preclude interfering reflections from adjacent flaws.
1.1(e)(2)(b)(1) An overlay grading unit shall include the overlay material and the base metal-to-overlay interface of at least 6 square inches. The overlay grading unit shall be rectangular, with minimum dimensions of 2 inches.	An overlay fabrication grading unit shall include the overlay material and the base metal-to-overlay interface for a length of at least 1 inch.
1.1(e)(2)(b)(2) An overlay grading unit designed to be unflawed shall be	Overlay fabrication grading units designed to be unflawed shall be separated by

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surrounded by unflawed overlay material and unflawed base metal-to-overlay interface for at least 1 inch around its entire perimeter. The specific area used in one overlay grading unit shall not be used in another overlay grading unit. Overlay grading units need not be spaced uniformly about the specimen.	unflawed overlay material and unflawed base metal-to-overlay interface for at least 1 inch at both ends. Sufficient unflawed overlaid weld and base metal shall exist on both sides of the overlay fabrication grading unit to prelude interfering reflections from adjacent flaws. The specific area used in one overlay fabrication grading unit shall not be used in another overlay fabrication grading unit. Overlay fabrication grading units need not be spaced uniformly about the specimen.
1.1(e)(2)(b)(3) Detection sets shall be selected from Table VIII-S2-1. The minimum detection sample set is five flawed base grading units, ten unflawed base grading units, five flawed overlay grading units, and ten unflawed overlay grading units. For each type of grading unit, the set shall contain at least twice as many unflawed as flawed grading units.	Detection sets shall be selected from Table VIII-S2-1. The minimum detection sample set is five flawed base metal grading units, ten unflawed base metal grading units, five flawed overlay fabrication grading units, and ten unflawed overlay fabrication grading units. For each type of grading unit, the set shall contain at least twice as many unflawed as flawed grading units. For initial procedure qualification, detection sets shall include the equivalent of three personnel qualification sets. To qualify new values of essential variables, at least one personnel qualification set is required.
(f) Sizing Specimen	
1.1(f)(1) The minimum number of flaws shall be ten. At least 30% of the flaws shall be overlay fabrication flaws. At least 40% of the flaws shall be cracks open to the inside surface.	The minimum number of flaws shall be ten. At least 30% of the flaws shall be overlay fabrication flaws. At least 40% of the flaws shall be open to the inside surface. Sizing sets shall contain a distribution of flaw dimensions to assess sizing capabilities. For initial procedure qualification, sizing sets shall include the equivalent of three personnel qualification sets. To qualify new values of essential variables, at least one personnel qualification set is required.
1.1(f)(2) At least 20% but less than 40% of the flaws shall be oriented axially. The remainder shall be oriented	No Change

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circumferentially. Flaws shall not be open to any surface which the candidate has physical or visual access.	
1.1(f)(3) Base metal cracking used for length sizing demonstrations shall be oriented circumferentially.	Base metal flaws used for length sizing demonstrations shall be oriented circumferentially.
1.1(f)(4) Depth sizing specimens sets shall include at least two distinct locations where cracking in the base metal extends into the overlay material by at least 0.1 inch in the through-wall direction.	Depth sizing specimen sets shall include at least two distinct locations where a base metal flaw extends into the overlay material by at least 0.1 inch in the through-wall direction.
2.0 CONDUCT OF PERFORMANCE DEMONSTRATION	
The specimen inside surface and identification shall be concealed from the candidate. All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is prohibited.	The specimen inside surface and identification shall be concealed from the candidate. All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is prohibited. The overlay fabrication flaw test and the base metal flaw test may be performed separately.
2.1 Detection Test	
Flawed and unflawed grading units shall be randomly mixed. Although the boundaries of specific grading units shall not be revealed to the candidate, the candidate shall be made aware of the type or types of grading units (base or overlay) that are present for each specimen.	Flawed and unflawed grading units shall be randomly mixed. Although the boundaries of specific grading units shall not be revealed to the candidate, the candidate shall be made aware of the type or types of grading units (base metal or overlay fabrication) that are present for each specimen.
2.2 Length Sizing Test	
2.2(a) The length sizing test may be conducted separately or in conjunction with the detection test.	No Change
2.2(b) When the length sizing test is conducted in conjunction with the detection test and the detected flaws do not satisfy the requirements of 1.1(f),	No Change

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additional specimens shall be provided to the candidate. The regions containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region.	
2.2(c) For separate length sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region.	No Change
2.2(d) For flaws in base grading units, the candidate shall estimate the length of that part of the flaw that is in the outer 25% of the base wall thickness.	For flaws in base metal grading units, the candidate shall estimate the length of that part of the flaw that is in the outer 25% of the base metal wall thickness.
2.3 Depth Sizing Test	
For the depth sizing test, 80% of the flaws shall be sized at a specific location on the surface of the specimen identified to the candidate. For the remaining flaws, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.	(a) The depth sizing test may be conducted separately or in conjunction with the detection test. (b) When the depth sizing test is conducted in conjunction with the detection test and the detected flaws do not satisfy the requirements of 1.1(f), additional specimens shall be provided to the candidate. The regions containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region. (c) For a separate depth sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.
3.0 ACCEPTANCE CRITERIA	
3.1 Detection Acceptance Criteria	
Examination procedures, equipment, and personnel are qualified for detection when the results of the performance demonstration satisfy the acceptance	a) Examination procedures are qualified for detection when; 1) All flaws within the scope of the

TABLE 2 **MODIFICATIONS TO APPENDIX VIII, SUPPLEMENT 11** **(2001 Edition)**	
Appendix VIII, Supplement 11	**PDI Modification**
criteria of Table VIII-S2-1 for both detection and false calls. The criteria shall be satisfied separately by the demonstration results for base grading units and for overlay grading units.	procedure are detected and the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for false calls. (a) At least one successful personnel demonstration has been performed meeting the acceptance criteria defined in (b). (b) Examination equipment and personnel are qualified for detection when the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for both detection and false calls. (c) The criteria in (a), (b) shall be satisfied separately by the demonstration results for base metal grading units and for overlay fabrication grading units.
3.2 Sizing Acceptance Criteria	
Examination procedures, equipment, and personnel are qualified for sizing when the results of the performance demonstration satisfy the following criteria.	No Change
3.2(a) The RMS error of the flaw length measurements, as compared to the true flaw lengths, is less than or equal to 0.75 inch. The length of base metal cracking is measured at the 75% through-base-metal position.	The RMS error of the flaw length measurements, as compared to the true flaw lengths, is less than or equal 0.75 inch. The length of base metal flaws is measured at the 75% through-base-metal position.
3.2(b) All extensions of base metal cracking into the overlay material by at least 0.1 inch are reported as being intrusions into the overlay material.	This requirement is omitted.
3.2(c) The RMS error of the flaw depth measurements, as compared to the true flaw depths, is less than or equal to 0.125 inch.	(b) The RMS error of the flaw depth measurements, as compared to the true flaw depths, is less than or equal to 0.125 inch.

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Proposed Alternative for IWC-5200 Requirements for Post Accident Hydrogen Monitoring System Piping In Accordance with 10 CFR 50.55a(a)(3)(ii)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	2
Reference:	IWC-5200, "System Test Requirements"
Examination Category:	C-H
Item Number:	C7.10
Description:	Alternative Method for Pressure Testing Unit 1 and Unit 2 Post Accident Hydrogen Monitoring System Piping, Process Sampling (PS) System Piping
Component Numbers:	ASME Section XI Class 2 Piping Outside of Containment Between Valves 1(2)PS228A(B) and 1(2)PS230A(B). (Reference Drawings M-68 Sheet 7 (Unit 1) and M-140 Sheet 6 (Unit 2) provided in Attachment 2)

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, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

Table IWC-2500-1, Item Number C7.10 requires that the specified piping be tested using the VT-2 visual examination method at a frequency of each inspection period and each inspection interval, respectively. The portion of the PS System containing the affected piping is not required to operate under normal plant operating conditions; therefore, as required by IWA-5210 and IWC-5221, a system leakage test is required is required in accordance with IWA-5211*(a)*.

IWC-5210*(b)(1)* requires the contained fluid in the system shall serve as the pressurizing medium. IWC-*5210(b)(2)* requires that when gas is the pressurizing medium the test procedure shall include methods for detection and location of through-wall leakage from components of the system tested.

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4.0 REASON FOR REQUEST:

The specified piping serves as the supply flow path from the containment to the Hydrogen Monitors via 1/4" tubing connections and the return flow path from the Hydrogen Monitors (via 1/4" tubing connections) back to the containment. The system medium is air. The system is comprised of two separate trains for each unit. The subject piping is 1/2" NPS (nominal pipe size) and/or 1/4" stainless steel piping/tubing (SA 312 TP 304 pipe along with SA 213 TP 304 or 316 tubing). The system design pressure is 60 psig. The approximate length of piping/tubing per train (supply and return piping combined) is 275' for 1A, 225' for 1B, 245' for 2A, and 185' for 2B. The nominal system operating pressure ranges across the system from vacuum on the suction piping to a maximum of 10 psig at the pump discharge, which decreases for the remainder of the piping. In the past, the piping was tested by pressurizing the volume and then performing a soap bubble or "snoop" test on all welds and piping. During the review of surveillance results in 2005, Braidwood Station determined a portion (approximately 50' of supply and return piping combined) of the piping on the 1A train is located in a pipe tunnel and is physically inaccessible for VT-2 visual examination due to the close proximity of adjacent piping and the pipe tunnel wall. Due to the interferences and congestion in the area, the examiner could not physically get close enough to the associated piping to apply the soap bubble solution necessary to meet the IWC-5210*(b)(2)* requirements for the method of detecting and locating through-wall leakage when gas is the pressurizing medium. The use of an ultrasonic sound gun was considered for the inaccessible piping, but the obstructions surrounding the area of interest significantly reduce the ability to detect and pinpoint a leak.

In addition to the limitations associated with the 1A train, for all trains there are significant portions of the piping outside the pipe tunnel located at upper elevations (approximately 30 feet above the floor) where the performance of the VT-2 visual examination using soap solution creates a personal safety hazard. In order to meet the Code requirements for the examination, the examiner must perform a hand over hand walk down while using fall protection along with a retractable lanyard to get close enough to the piping to apply the soap bubble solution and perform the VT-2 visual examination required by ASME Section XI. Due to the congestion from other piping in the area, scaffolding cannot be erected to provide access to the piping.

As previously stated, the subject piping is a maximum 1/2" NPS stainless steel pipe. The majority of the piping connections are socket welded with only the connections for the 1/4" diameter tubing having threaded connections. For piping 1" NPS and less, IWA-4540*(b)(6)* of the 2001 Edition through the 2003 Addenda of ASME Section XI excludes hydrostatic testing and system leakage testing (VT-2 visual examination) of piping and components after welded replacement; ASME Section XI would not require any pressure testing of replacement of piping and valves for this system.

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5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested on the basis that the existing Code requirement would result in hardship or unusual difficulty without a compensating increase in quality or safety.

Braidwood Station proposes to use an alternate method of testing for system piping outside of containment [piping between valves 1(2)PS228A to 1(2)PS230A and 1(2)PS228B to 1(2)PS230B] for ASME Section XI periodic and interval pressure testing. The Safety Related ASME Class 2 sections of piping and valves associated with the PS system at other containment penetrations in the system where the balance of the system is Non Safety Related (e.g., Penetration P-70) are tested in accordance with the requirements of 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," and are not required to be pressure tested per IWA-5110(c). The proposed alternative is to apply the Appendix J testing method (which is already required for the containment isolation valves at Penetrations P-36 and P-45) on the remaining portion of the ASME Class 2 piping outside of Penetrations P-36 and P-45.

The remaining portion of Class 2 piping outside of the primary containment examination boundary will be examined by pressurizing the remainder of the system to at least the applicable peak accident pressure, which is higher than the system nominal operating pressure, and applying the Appendix J acceptance criteria for the solenoid valves associated with Penetrations P-36 and P-45 to the remainder of the system located outside of containment. The applicable acceptance criteria used for the Appendix J test surveillances (currently ≤ 10 standard cubic feet per hour) would be applied independently to the supply and return piping for each hydrogen monitor train, and subsequent corrective actions would be applied to the remainder of the system. This proposed method of testing is consistent with the requirements of Appendix J and will provide a leak detection method equivalent to the soap bubble solution along with the VT-2 visual examination method for the subject piping.

As with the Appendix J volumes, if test results indicate leakage above the criteria used on the containment penetrations, an Issue Report will be initiated in accordance with the Exelon Corrective Action Program and the appropriate corrective actions would be employed to identify the source of leakage. The source of leakage for the piping outside of containment would most likely be attributed to valve packing or threaded tubing connections, since the majority of the system is socket welded stainless steel piping with no known degradation mechanism or previous history of failure.

6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the Third Ten-Year Inspection Interval for Braidwood Station Units 1 and 2, which are currently scheduled to end on July 28, 2018, for Unit 1 and October 16, 2018, for Unit 2.

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7.0 PRECEDENTS:

Similar relief requests have been approved for:

Braidwood Station Second Inspection Interval Relief Request I2R-47 was authorized per SE dated March 29, 2007. The Third Inspection Interval Relief Request utilizes an identical approach as was previously approved.

Similar relief methodology was approved as follows:

Letter from A. J. Mendiola (NRC) to O. Kingsley (Commonwealth Edison Company), "LaSalle County Station - Request for Relief from ASME Code, Section XI (TAC Nos. MA8728 and MA8729)" dated October 6, 2000

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Request for Relief for IWE-5240 Detailed Visual Examination During Appendix J Pneumatic Leakage Testing In Accordance with 10 CFR 50.55a(a)(3)(ii)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	MC
Reference:	IWE-2000 Examination and Inspection IWE-5000 System Pressure Tests
Examination Category:	E-A and E-C
Item Number:	E1.10, E4.10
Description:	IWE Components Subject to Repair/Replacement Pressure Testing
Component Number:	All Components Subject to Repair/Replacement Pressure Testing

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, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

IWE-5221 requires all repair/replacement activities (except those noted in IWE-5222) performed on the pressure retaining boundary of Class MC or Class CC components be subjected to pneumatic leakage testing in accordance with Title 10, Part 50 of the Code of Federal Regulations, Appendix J, Paragraph IV.A (Appendix J).

IWE-5222 states that leakage tests for the following minor repair/replacement activities performed on the pressure retaining boundary may be deferred until the next scheduled leakage test, provided nondestructive examination is performed in accordance with the Repair/Replacement Program and Plan. Minor repairs include the following activities:

(a) welds of attachments to the surface of the pressure retaining boundary;

(b) weld cavities, the depth of which does not penetrate the required design wall thickness by more than 10%; and

(c) welds attaching penetrations that are NPS 1 or smaller

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IWE-5240 requires a detailed visual examination on areas affected by repair/replacement activities be performed during the Appendix J pneumatic leakage test.

10 CFR 50.55a(b)(2)(ix)(G) requires the VT-1 method to be used to conduct the examination in Item 4.11 (Detailed Visual) of Table IWE-2500-1.

10 CFR 50.55a(b)(2)(ix)(H) requires the VT-3 method to be used to examine containment bolted connections and a subsequent VT-1 examination to be performed if any flaws or degradation are noted during the initial VT-3 examination.

4.0 REASON FOR REQUEST:

Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested from the requirements of IWE-5240 to perform a detailed visual examination during the Appendix J local leak rate test for replacements (installed by mechanical connection) or minor repair activities 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.

Per IWE-2310(d), detailed visual examinations must be performed in accordance with IWE-5240 to assess the structural condition of areas affected by repair/replacement activities.

The majority of the Repair/Replacement activities for Category E-A components at Braidwood Station have been associated with replacement of bolted components (i.e., containment personnel interlock components, containment penetration blind flange bolting, etc.). Existing components have been replaced either to improve reliability, existing components were at the end of service life, or existing material was lost or damaged during disassembly. Class MC replacements or repairs at Braidwood Unit 1 and 2 have not been required due to degradation associated with the conditions described in IWE-1241, which would categorize components as augmented areas.

In accordance with site Repair/Replacement plans, when a Class MC Section XI repair or replacement is to be performed, construction code nondestructive examinations and preservice examinations of replacement items are performed following installation of minor repairs or prior reassembly of the component, when access to surfaces is not limited, permitting the examiner full access to the existing and replacement materials requiring the preservice inspection. Component disassembly is the appropriate time to assess the structural condition of these locations. Components and connections are also inspected by mechanics as standard practice, whether or not the component is scheduled for Section XI periodic inspection.

The Braidwood Station Containment Leakage Rate Testing Program is described in the Braidwood Units 1 & 2 Technical Requirements Manual (TRM) Appendix P. The program is based on the requirements of 10 CFR 50, Appendix J, Option B as modified by approved exemptions. At Braidwood Station, Appendix J pneumatic leakage testing is performed by operators using continuous use surveillances along with calibrated

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equipment. Performing a detailed visual examination in conjunction with the Appendix J surveillance does not provide any additional assurance of safety beyond the current Appendix J practices.

Performing a detailed visual examination (VT-1 per 10 CFR 50.55a(b)(2)(ix)(G)) for replacements or minor repairs during the Appendix J pneumatic leakage test after IWE-2200 preservice examinations are already performed or after the components have been reassembled does not provide any additional assurance of safety. For example, the conditions of interest for the Detailed Visual described in IWE-1241 would be readily apparent to the examiners and mechanics while the component was disassembled.

Additionally, depending on the unit mode of applicability when the minor repair or replacement is performed, plant conditions could be such that the examiner performing the detailed visual during the Appendix J pneumatic leakage test would have to perform the examination in a neutron radiation field (e.g., personnel interlock during unit operation), which would be contrary to radiation ALARA principles.

Depending on which Appendix J surveillance is required, access to the replaced component may not be possible. For example, if an interlock barrel test is required (containment access interlock is pressurized for a minimum of four hours), examiners cannot perform a meaningful examination since the area of interest cannot be entered and access to the replaced component would be limited to looking through a sight glass (only present on the outer access door).

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

In lieu of performing the detailed visual during the Appendix J pneumatic leakage tests after a replacement or minor repair, Braidwood Station proposes to perform VT-1 examinations of Class MC or Class CC component repairs/replacements along with any other required IWE-2200 examinations. These examinations shall be performed in accordance with the Repair/Replacement Program prior to the conduct of the Appendix J pneumatic leakage test.

6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the Third Ten-Year Inspection Interval for Braidwood Station Units 1 and 2, which are currently scheduled to end on July 28, 2018 for Unit 1 and October 16, 2018 for Unit 2.

7.0 PRECEDENTS:

Similar relief was requested and granted through the following:

Letter from L. James (NRR) to R. L. Anderson (Duane Arnold Energy Center), "Duane Arnold Energy Center – Safety Evaluation for Relief Requests MC-R001 and MC-P001 for Second Containment Inservice Inspection Interval (TAC Nos. MD7421 and MD7422)," dated September 22, 2008

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8.0 REFERENCES:

None.

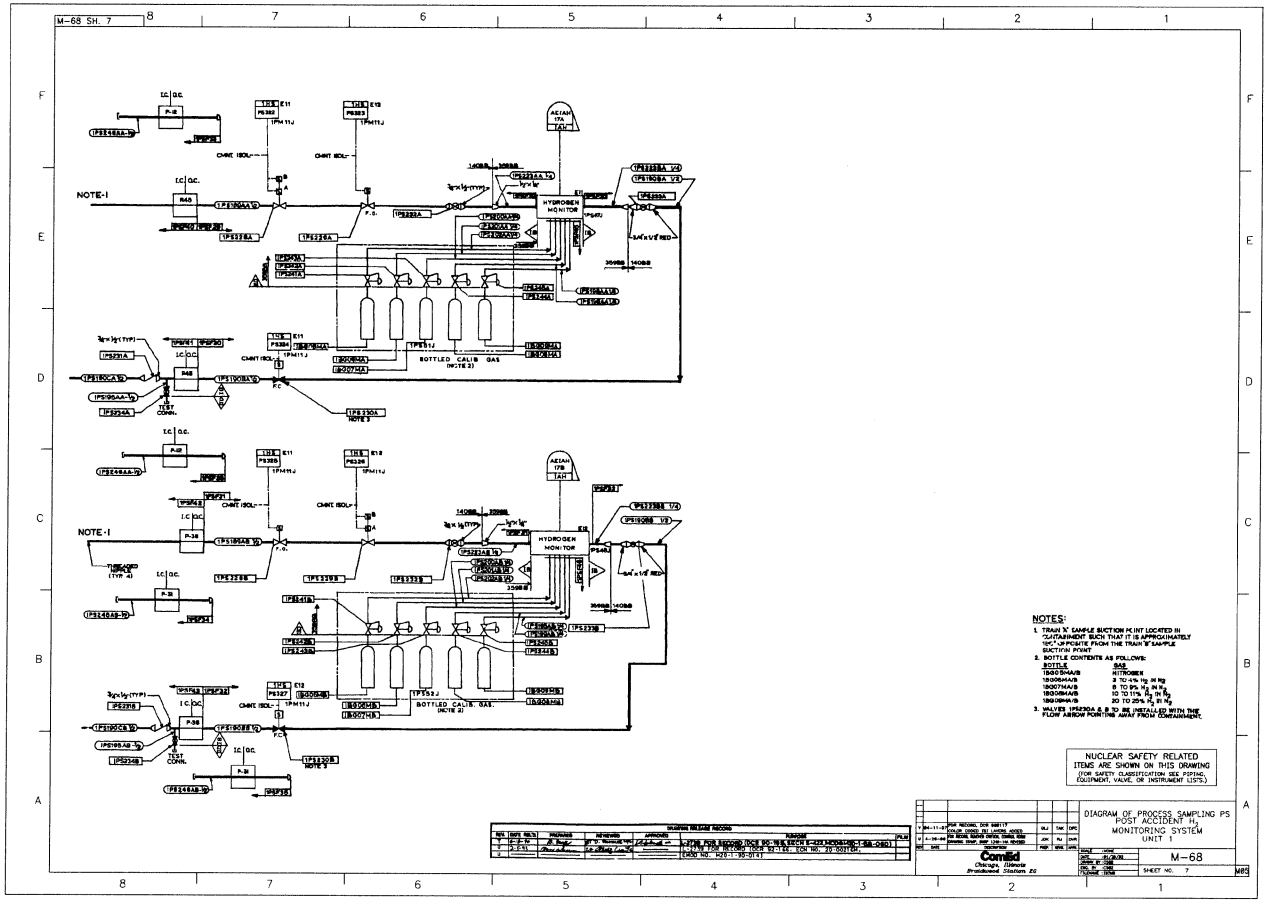
ATTACHMENT 2
TO
10 CFR 50.55a RELIEF REQUEST I3R-05

PIPING & INSTRUMENT DIAGRAMS

M-68, SHEET 7 (UNIT 1)
AND
M-140, SHEET 6 (UNIT 2)

(For Information Only)

ISI/SPT COLOR CODED DRAWINGS



ISI/SPT COLOR CODED DRAWINGS