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

June 30, 2015

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION, UNIT NO. 1 - RELIEF FROM THE REQUIREMENTS OF THE ASME CODE (TAC NO. MF5554)

Dear Mr. Hanson:

By letter dated January 5, 2015 (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML15005A380), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements at Byron Station, Unit No. 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(ii) (retitled paragraph 50.55a(z)(2) by 79 FR 65776, dated November 5, 2014), the licensee requested to use an alternative pressure retaining boundary for the system leakage test on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has reviewed the subject request and determines that the proposed alternative provides reasonable assurance of structural integrity and leak tightness of the subject piping segments and the associated welded connections, and complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes the use of I3R-26 at Byron Station, Unit No. 1, for the remainder of the third 10-year inservice inspection interval which is scheduled to end on July 15, 2016.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and authorized herein by the NRC staff remain applicable, including the third party review by the Authorized Nuclear In-service Inspector.

If you have any questions, please contact the project manager at 301-415-6066 or via e-mail at Joel.Wiebe@nrc.gov.

Sincerely,

Benjamin G. Beasley, Acting Branch Chief
Plant Licensing Branch III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. STN 50-454

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUEST I3R-26 REGARDING PRESSURE RETAINING BOUNDARY

DURING SYSTEM LEAKAGE TEST

EXELON GENERATION COMPANY, LLC

BYRON STATION, UNIT NO. 1

DOCKET NO. STN-50-454

1.0 INTRODUCTION

By letter dated January 5, 2015 (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML15005A380), Exelon Generation Company, LLC (the licensee) submitted an alternative request I3R-26 to the U.S. Nuclear Regulatory Commission (NRC). The licensee proposed an alternative to certain requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI. I3R-26 relates to the inservice inspection (ISI) requirements of IWB-5222(a) and IWB-5222(b) for system leakage testing conducted at or near the end of the inspection interval. The licensee submitted this request for the Byron Station (Byron), Unit No. 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(ii), the licensee proposed an alternative pressure retaining boundary for the system leakage test on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), the ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code, incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the start of the 120-month interval, subject to the conditions listed therein.

By *Federal Register* Notice 79FR 65776, dated November 5, 2014, which became effective on December 5, 2014, the paragraphs headings in 10 CFR 50.55a were revised. Accordingly,

alternative requests that had been previously covered by 10 CFR 50.55a(a)(3)(i) are now covered under the equivalent 10 CFR 50.55a(z)(1) and alternative requests that had been previously covered by 10 CFR 50.55a(a)(3)(ii) are now covered under the equivalent 10 CFR 50.55a(z)(2). 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," states that Alternatives to the requirements of paragraphs (b) through (h) of this sections or portions thereof may be used when authorized by the Director, Office of Nuclear Reactor Regulation, or Director, Office of New Reactors, as appropriate. A proposed alternative must be submitted and authorized prior to implementation. The applicant or licensee must demonstrate that:

(1) Acceptable level of quality and safety. The proposed alternative would provide an acceptable level of quality and safety; or

(2) Hardship without a compensating increase in quality and safety. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in quality and safety.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the NRC to authorize the alternative requested by the licensee.

Applicable Code Edition and Addenda

ASME Code, Section XI, 2001 Edition through 2003 Addenda

Applicable Code Requirements

ASME Code, Section XI, Table IWB-2500-1, "Examination Categories," Examination Category B-P, Item B15.10 requires that a system leakage test be conducted prior to startup following each refueling outage in accordance with the requirements of IWB-5220.

ASME Code, Section XI, Paragraph IWB-5222(a), requires that the pressure retaining boundary during the system leakage test shall correspond to the reactor coolant boundary, with all valves in the position required for normal reactor operation startup with the visual examination extended to include the second closed valve at the boundary extremity.

ASME Code, Section XI, Paragraph IWB-5222(b), requires the pressure retaining boundary during the system leakage test conducted at or near the end of each inspection interval shall extend to all Class 1 pressure retaining components within the system boundary.

ASME Code Case N-798, "Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices," states that for portions of Class 1 vent, drain and test piping between the first and second isolation devices that normally remain closed during plant operation, only the boundaries of IWB-5222(a) shall apply.

ASME Code Case N-800, "Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Injection Valves," states that for portions of the Class 1 boundary between the first and second isolation valves in the injection and return path of standby safety systems, the system leakage test may be conducted by pressurization of the Class 1 volume

using the Class 2 safety system to pressurize the volume. It further states that such alternative tests shall be performed each inspection interval and the system leakage test shall be conducted using the pressure associated with the Class 2 system function that provides the highest pressure between the Class 1 isolation valves.

ASME Code Cases N-798 and N-800 were approved by the ASME Code Committee and published on December 20, 2010. The NRC staff has approved these code cases for incorporation into draft Regulatory Guide (RG) 1.147, Revision 18, because they are consistent with relief requests that have been authorized by NRC. Draft RG 1.147, Revision 18, has been incorporated by reference into the final rulemaking of 10 CFR 50.55a, which is scheduled to be issued in the fall of 2015.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Relief Request [or Alternative]

The components affected by this request include ASME Code Class 1, Table IWB-2500-1, Examination Category B-P, Item No. B15.10, pressure retaining components Identified in Table 1 and Table 2 of I3R-26. Table 1 identifies Class 1 piping segments between the first and second Vent, Drain, and Test Isolation Devices of the affected systems. Table 2 identifies Class 1 piping segments between the first and second isolation valves of the affected systems.

The code of record for the third 10-year ISI interval at Byron, Unit No. 1, is the 2001 Edition through 2003 Addenda of the ASME Code. The ASME Code, Section XI, IWB-2500, Table IWB-2500-1, Examination Category B-P, establishes requirements to conduct the system leakage test and the VT-2 visual examination in accordance with IWB-5220 and IWA-5240, respectively, prior to plant startup following each refueling outage. As required by IWB-5221(a), the system leakage test shall be conducted at a pressure not less than the pressure corresponding to 100 percent rated reactor power. In accordance with IWB-5222(a), the pressure retaining boundary during system leakage test shall correspond to the reactor coolant pressure boundary (RCPB) with all valves in the position required for normal reactor operation startup. The required visual examination shall, however, extend to and include the second closed valve at the boundary extremity. In accordance with IWB-5222(b), the pressure retaining boundary during system leakage test conducted at or near the end of each inspection interval shall extend to all Class 1 pressure retaining components within the system boundary.

The design of some Byron, Unit No. 1, Class 1 process piping requires substantial effort to extend the boundary subject to reactor coolant system (RCS) pressure where check valves or non-redundant components serve as the first system isolation from the RCS. Such configurations would require temporary piping installations, such as high-pressure hoses, and/or other unusual temporary system configurations in order to achieve test pressures at upstream piping and valves required by IWB-5222(b).

These components are located in areas involving occupational radiation exposure, and leakage testing of these lines would require significant dose. Establishing and restoring such temporary configurations would result in an unwarranted increase of worker radiation exposure. It is estimated that extending the boundary to the second isolation device for all Class 1 components would result in a total dose of 1.858 rem (roentgen equivalent man) and require an estimated 644 person-hours. This estimate is based on the dose and personnel records of the activities

performed during the previous Byron, Unit No. 1, 10-year interval refueling outage (B1R13) in the spring of 2005. The activities associated with this work include scaffold erection, insulation removal, valve manipulations, freeze seals, examinations, re-installation of insulation, and scaffold removal.

Based on the above, the extension of the boundary subjected to RCS pressure during system leakage tests to include all Class 1 pressure retaining components within the system boundary in accordance with IWB-5222(b) represents a hardship and unusual difficulty that does not provide a compensating increase in the level of quality and safety provided by the examination.

These piping segments are included in the examination population for visual examination (VT-2) through the entire length as part of the Class 1 system leakage test at the conclusion of each refueling outage. The proposed leakage test will not specifically pressurize past the first isolation valve for this examination. No external or visible leakage will be allowed. Since this type of test will assure that the combined first and second isolation devices are effective in maintaining the RCPB at normal operating temperature and pressure, the increase in safety achieved from the IWB-5220 required leakage test is not commensurate with the hardship of performing such testing.

The licensee proposed an alternative to IWB-5222(b). For portions of Class 1 piping identified in Table 1, between the first and the second vent, drain, and test isolation devices that normally remain closed during plant operation, the licensee proposed to use the boundaries specified in ASME Code Case N-798 "Alternative Pressure Testing Requirements for Class 1 Piping between the First and Second Vent, Drain, and Test Isolation Devices." ASME Code Case N-798 permits the boundaries of IWB-5222(a) to apply. This means that under ASME Code Case N-798, the system leakage test of the affected piping can be performed without satisfying IWB-5222(b) as long as IWB-5222(a) is satisfied.

For portions of the Class 1 piping, identified in Table 2, between the first and the second isolation valves in the injection and return path of standby safety systems, the licensee proposed to use the boundaries specified in ASME Code Case N-800 "Alternative Pressure Testing Requirements for Class 1 Piping between the First and Second Injection Valves." ASME Code Case N-800 permits the system leakage test to be conducted by pressurizing the Class 1 volume using the Class 2 safety system pressure.

The NRC staff has not approved ASME Code Cases N-798 and N-800 in Regulatory Guide (RG) 1.147, Revision 17, "Inservice Inspection Code Case Acceptability, ASME Code, Section XI, Division 1." Pursuant to 10 CFR 50.55a(z)(2), licensees are permitted to submit alternatives such as Code Cases N-798 and N-800 to the ASME Code requirements as presented in the subject relief request. Use of the above code cases as an alternative to the ASME Code, Section XI, requires the NRC pre-authorization.

The basis for this request is provided in Section 4.0 and 5.0 of I3R-26. During the proposed system leakage test, the piping segments identified in Table 1 of I3R-26 will remain in their normal operating configuration and will not be pressurized. During the proposed system leakage test, the piping segments identified in Table 2 of I3R-26 will remain in their normal operating configuration and will not be pressurized to the RCS system pressure, but will be examined at full operating pressures commensurate with their respective safety functions.

The licensee submitted this request for the remainder of the Byron, Unit No. 1, third 10-year ISI interval currently scheduled to end on July 15, 2016.

3.2 NRC Staff Evaluation

The NRC staff has evaluated I3R-26 pursuant to 10 CFR 50.55a(a)(z)(ii). The NRC staff evaluated whether compliance with the specified requirements of 10 CFR 50.55a(g), or portions thereof, would result in hardship or unusual difficulty, and if there is a compensating increase in the level of quality and safety despite the hardship.

The NRC staff notes that the current I3R-26 is similar to the request RFA9 that was authorized by the NRC on November 25, 2013, for the third 10-year ISI interval of St. Lucie, Unit 2, (ADAMS Accession No. ML13308C426). Within the context of I3R-26, the NRC staff determined that the licensee provided adequate description and technical information to support the basis for a hardship or unusual difficulty. The licensee's bases for hardship are as follows.

The design of some Byron, Unit No. 1, Class 1, process piping requires substantial effort to extend the boundary subject to RCS pressure where check valves or non-redundant components serve as the first system isolation from the RCS. Such configurations would require temporary piping installations, such as high-pressure hoses, and/or other unusual temporary system configurations in order to achieve test pressures at upstream piping and valves required by IWB-5222(b).

These components are located in areas involving occupational radiation exposure, and leakage testing of these lines would require significant dose. Establishing and restoring such temporary configurations would result in an unwarranted increase of worker radiation exposure. It is estimated that extending the boundary to the second isolation device for all Class 1 components would result in a total dose of 1.858 rem and require an estimated 644 person-hours. This estimate is based on the dose and personnel records of the activities performed during the previous Byron, Unit No. 1, 10-year interval refueling outage (B1R13) in the spring of 2005. The activities associated with this work include scaffold erection, insulation removal, valve manipulations, freeze seals, examinations, re-installation of insulation, and scaffold removal.

The NRC staff finds that the above technical information constitutes a justifiable hardship or unusual difficulty if ASME Code requirements were to be imposed upon the licensee.

The NRC staff has reviewed the technical information provided by the licensee specifically for piping segments identified in Table 1 and Table 2 of I3R-26. Table 1 contains piping segments between the first and the second vent, drain, and test isolation devices that normally remain closed during plant operation. Table 2 contains piping segments between the first and the second isolation valves in the injection and return path of standby safety systems including the high pressure safety injection (HPSI), hot-leg recirculation (HLR), cold-leg safety injection (CLSI), and the residual heat removal (RHR)/hot-leg suction (HLS).

Class 1 Piping Segments between the First and Second Vent, Drain, and Test Isolation Devices (Table 1 of I3R-26)

The Class 1 vent or drain lines range in size from 3/4 inch to 2 inches and are equipped with inboard isolation valves and outboard isolation valves, blind flanges or pipe caps that provide

double isolation of the RCPB. The valves are maintained in the closed position during normal plant operation and the downstream pipe and blind flange or pipe cap are not normally pressurized. To pressurize those piping segments at 100 percent rated power as required by IWB-5222(b), it would be necessary to open the inboard valves manually to pressurize the downstream piping and connections. Pressurization by this method defeats the double isolation and reduces the margin of personnel safety for those performing venting and draining operations on high-pressure components. Furthermore, performing the test with the inboard isolation valves open requires several person-hours to position the valves for the test and restore the valves to their closed positions once the test is completed. These valves are located in close proximity to the RCS and would require personnel entry into high radiation areas within the containment and a consequential increase in radiation exposure. Therefore, opening the valve and performing the ASME Code, Section XI, compliant test exposes the licensee's personnel to an additional radiation dose, which would be an as low as reasonable achievable (ALARA) concern. Based on the above technical information, the NRC staff has determined that requiring the licensee to conduct the IWB-5222(b) required system leakage test of the RCS Class 1 vent and drain lines identified in Table 1 at 100 percent rated reactor power would result in hardship.

For the RCS vents and drains piping segments, the NRC staff finds the proposed system leakage testing is consistent with ASME Code Case N-798 because the piping between the first and second isolation device normally remains closed during plant operation and the portion downstream of the inboard valve is not pressurized. The NRC staff finds that performing the proposed system leakage testing with all valves in the position required during plant startup, and extending the required VT-2 visual examinations to include the second isolation devices or valves, provides reasonable assurance of structural integrity and leak tightness of the subject RCS vents and drains piping segments.

<u>Class 1 Piping Segments Between the First and Second Isolation Valves (Table 2 of I3R-26)</u>

The Class 1 piping segments between the isolation valves for HPSI/CLSI, identified in Table 2, provide flow paths for safety injection into the RCS. The primary isolation devices are the four 1.5 inch check valves at the cold-leg oriented to flow into the RCS. The upstream isolation is at a single 3-inch check valve. The piping segments provide the required double isolation barrier for the RCPB. Leakage testing at RCS pressure requires a pressure source to be connected by way of temporary high pressure hose connections. To pressurize these lines past the first check valve to conduct a system leakage test in accordance with IWB-5222(b), the licensee has to perform a number of unusual temporary system configurations. These temporary configurations would violate the design requirement for two primary coolant pressure boundary isolation devices. These activities would reduce the margin of safety for occupational hazards and radiation exposure for those performing the test. Based on the above technical information, the NRC staff finds that requiring the licensee to conduct the IWB-5222(b) required system leakage test of the piping segments between the isolation valves of for HPSI/CLSI at 100 percent rated power would result in hardship.

In lieu of the requirement, the licensee will inspect the entire length of these lines by the required VT-2 visual examinations as part of the Class 1 system leakage test at the end of each refueling outage while these piping segments remain in their normal operating configurations at the pressure associated with the Class 2 system function. For the affected piping segments, the NRC staff finds the proposed system leakage testing is consistent with ASME Code Case N-800

and provides reasonable assurance of structural integrity and leak tightness of the subject piping segments between the first and second isolation valve.

The Class 1 piping segments between the isolation valves for HLR/CLSI, identified in Table 2, provides flow path for safety injection into the RCS. The primary isolation devices are the two 10-inch check valves oriented to flow into the RCS with 6-inch and 2-inch second isolation valves on branch lines. These piping segments provide the design required double isolation barrier for the RCPB. Leakage testing at RCS pressure would require unusual temporary system configurations, which would challenge the Class 2 piping and components should the Class 1 to Class 2 boundary valve leak by toward the Class 2 system(s). This configuration would violate the design requirement for two RCPB isolation devices during testing. Based on the above technical information, the NRC staff finds that requiring the licensee to conduct the IWB-5222(b) required system leakage test of the piping segments between the isolation valves for HLR/CLSI at 100 percent rated power would result in hardship.

In lieu of the requirement, the examination of these affected piping segments will be performed using the outboard Class 2 system functional pressure associated with the safety injection accumulators. For the affected piping segments, the NRC staff finds that the proposed system leakage testing is consistent with ASME Code Case N-800 and provides reasonable assurance of structural integrity and leak tightness of the subject piping segment between the first and second isolation valve.

There are two 12-inch hot-leg shutdown cooling suction lines in Table 2. The piping segments consist of piping segments between the two secondary containment system valves on each train of the system (valves 1RH8701B and 1RH8701A on Train A and valves 1RH8702B and 1RH8702A on Train B). These valves are open-interlocked at a required set point below 337 psig to avoid over-pressurization of the Shutdown Cooling System. The interlock prevents manual opening of the valves from the Control Room when RCS pressure is above the set point. In order to comply with IWB-5222(b), the licensee has to either open the inboard isolation valve or bypass the valve by making design modifications to the existing piping configuration. Both opening and bypassing the valve defeat the double isolation criteria. Furthermore, additional radiation dose incurred by the licensee's personnel performing activities such as opening or bypassing the valve and conducting the IWB-5222(b) system leakage test would be an ALARA concern. Based on the above technical information, the NRC staff finds that requiring the licensee to conduct the IWB-5222(b) required system leakage test of the piping segments between the isolation valves for HLS at 100 percent rated power would result in hardship.

In lieu of the requirement, the examination of these piping segments will be performed using the outboard Class 2 system functional pressure associated with the normal shutdown cooling system pressure and valve configurations during the performance of RCS pressure isolation valve test. The piping segment is visually examined (VT-2) through the entire length as part of the Class 1 system inspection at the conclusion of each refueling outage, as well as when the Shutdown Cooling System is in service. Based on the above technical information, the NRC staff finds that the proposed system leakage testing is consistent with ASME Code Case N-800 and provides reasonable assurance of structural integrity and leak tightness of the subject piping segment between the first and second isolation valve.

By letter dated January 15, 2015, the licensee also provided information on operating experience and stated that the majority of welds encompassed by the boundaries described in Table 2 were in the population of welds subject to examination under ASME Section XI (Examination Category B-J) in the first and second ISI intervals and in the population of the current third interval Risk Informed Inservice Inspection (RI-ISI) program. These programs are intended to verify the structural integrity of piping welds. The selection criteria for inspection under the current interval RI-ISI program are determined by the probabilistic risk assessment risk rankings and degradation mechanism assessments. During the first, second, and third intervals at Byron, Unit No. 1, there have been no failures during examinations performed on selected welds.

RCS Leakage Detection Instrumentation

The objective of the required extended pressure boundary conditions in accordance with IWB-5222(b) is to detect evidence of leakage, and thereby verify the integrity of the RCPB beyond the first isolation valve. By letter dated January 15, 2015, the licensee provided additional technical information on RCS leakage detection instrumentation. The licensee stated in part:

> In the unlikely event of a through wall leak in the piping segments identified in Tables 1 and 2 during normal operation, the leak would result in unidentified RCS leakage. RCS leakage detection instrumentation have been designed to aid operating personnel in differentiating between possible sources of detected leakage within the containment and identifying the physical location of the leak. The RCS leakage detection instrumentation consists of the containment sump monitor and the containment atmosphere radioactivity monitor (gaseous or particulate). Technical Specifications (TS) 3.4.15, "RCS Leakage Detection Instrumentation," requires the containment sump monitor, in combination with a gaseous or particulate radioactivity monitor to be operable.

The containment floor drain sump flow monitor (RF008) and the reactor cavity sump flow monitor (RF010) are normally utilized to fulfill the containment sump monitor requirement used to collect unidentified leakage. Alarms are provided to alert the operator of leakages of 1.0 gallon per minute (gpm). When the alarm function is not capable of detecting 1.0 gpm of unidentified leakage within one hour, the containment floor drain sump flow indication may be periodically monitored to ensure the capability of detecting 1.0 gpm of unidentified leakage within one hour. In lieu of the containment floor drain sump flow monitor (RF008), either containment sump level monitor (PC002 or P0003) can be used by monitoring a change in sump level over a period of time in such a manner as to ensure the capability of detecting 1.0 gpm of unidentified leakage within one hour.

The reactor coolant contains radioactivity that, when released to the containment, can be detected by the gaseous (PRO11B) or particulate (PRO11A) containment atmosphere radioactivity monitor. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS leakage. The gaseous or particulate containment atmosphere radioactivity monitor is operable when it is capable of detecting 1.0 gpm increase in unidentified leakage within one hour given an RCS activity equivalent to that assumed in the design calculations for the monitors.
TS 3.4.13, "RCS Operational LEAKAGE," limit system operation in the presence of leakage from RCS components to amounts that do not compromise safety. Surveillance requirement 3.4.13.1 requires the performance of RCS water inventory balance to verify RCS leakage is

within limits to ensure that the integrity of the RCPB is maintained. In the event that unidentified leakage increases greater than 0.10 gpm above the normal, steady state value for a given plant condition during the performance of the RCS water inventory balance, administrative procedures require that the controls and actions that establishes the controls and expectations for monitoring RCS leakage under the boric acid corrosion control (BACC) program be implemented.

Actions that implement the BACC program define the methodology used to establish acceptable baseline values, establish unidentified leakage action levels, the criteria used to ensure adequate monitoring of RCS leakage occurs, and the minimum actions that could be taken at each action level to ensure the safe operation of the plant. The program also addresses abnormal trends in RCS primary system leakage indicators, which may provide indication of leaks much smaller than the technical specification requirements and RCS leakage levels.

Based on the above technical information on RCS leakage detection instrumentation at Byron, Unit No. 1, the NRC staff finds that any RCS leakage greater than 1 gpm will be detected, location identified, and action be taken to ensure the safe operation of the plant

On the basis of the above evaluation, the NRC staff finds that complying with the requirement specified in IWB-5222(b) would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The NRC staff also finds that the licensee's proposed alternative is consistent with ASME Code Case N-798 and N-800, and provide a reasonable assurance of the structural integrity and leak tightness of the subject piping segments and their associated welded connections.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative provides reasonable assurance of structural integrity and leak tightness of the subject piping segments and the associated welded connections, and complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes the use of I3R-26 at Byron, Unit No. 1, for the reminder of the third 10-year ISI interval which is scheduled to end on July 15, 2016.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and authorized herein by the staff remain applicable, including the third party review by the Authorized Nuclear In-service Inspector.

Principal Contributor(s): John Huang

Date of issuance: June 30, 2015.

If you have any questions, please contact the project manager at 301-415-6066 or via e-mail at Joel.Wiebe@nrc.gov.

Sincerely,

/RA/

Benjamin G. Beasley, Acting Branch Chief
Plant Licensing Branch III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. STN 50-454

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

DISTRIBUTION:
PUBLIC
Branch Reading
RidsNrrDorlDpr Resource
RidsNrrDorlLpl3-2 Resource
RidsNrrDeEpnb Resource
RidsAcrsAcnw_MailCTR Resource
RidsNrrLASRohrerResource
RidsNrrPMByron Resource
RidsRgn3MailCenter Resource
Kimyata Morgan Butler, EDO RIII

ADAMS Accession No. ML15173A436

OFFICE	NRR/DORL/LPL3-2/PM	NRR/DORL/LPL3-2/LA	NRR/DE/EPNB	NRR/DORL/LPL3-2/(A)BC
NAME	JWiebe	SRohrer	DAlley	BBeasley
DATE	6/22 /15	6/24/15	6/11/15	6/30/15

OFFICIAL RECORD COPY