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10 CFR 50  
10 CFR 51  
10 CFR 54

RS-14-170

June 16, 2014

U. S. Nuclear Regulatory Commission  
Attention: 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

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

**Subject:** Responses to NRC Requests for Additional Information, Set 30, dated May 22, 2014, related to the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, License Renewal Application

- References:**
1. Letter from Michael P. Gallagher, Exelon Generation Company LLC (Exelon) to NRC Document Control Desk, dated May 29, 2013, "Application for Renewed Operating Licenses"
  2. Letter from Lindsay R. Robinson, US NRC to Michael P. Gallagher, Exelon, dated May 22, 2014, "Request for Additional Information for the Review of the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, License Renewal Application, Set 30 (TAC NOS. MF1879, MF1880, MF1881, and MF1882)"

In Reference 1, Exelon Generation Company, LLC (Exelon) submitted the License Renewal Application (LRA) for the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2 (BBS). In Reference 2, the NRC requested additional information to support staff review of the LRA.

Enclosure A contains the responses to these requests for additional information.

Enclosure B contains updates to sections of the LRA (except for the License Renewal Commitment List) affected by the responses.

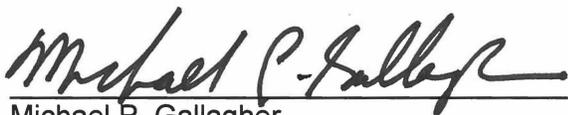
Enclosure C provides an update to the License Renewal Commitment List (LRA Appendix A, Section A.5). There are no other new or revised regulatory commitments contained in this letter.

If you have any questions, please contact Mr. Al Fulvio, Manager, Exelon License Renewal, at 610-765-5936.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 06-16-2014

Respectfully,



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Michael P. Gallagher  
Vice President - License Renewal Projects  
Exelon Generation Company, LLC

Enclosures: A. Responses to Requests for Additional Information  
B. Updates to affected LRA sections  
C: License Renewal Commitment List Changes

cc: Regional Administrator – NRC Region III  
NRC Project Manager (Safety Review), NRR-DLR  
NRC Project Manager (Environmental Review), NRR-DLR  
NRC Senior Resident Inspector, Braidwood Station  
NRC Senior Resident Inspector, Byron Station  
NRC Project Manager, NRR-DORL-Braidwood and Byron Stations  
Illinois Emergency Management Agency - Division of Nuclear Safety

**Enclosure A**

**Byron and Braidwood Stations (BBS), Units 1 and 2  
License Renewal Application**

**Responses to Requests for Additional Information**

RAI B.2.1.31-1a

RAI B.2.1.31-1b

**RAI B.2.1.31-1a**

Applicability:

Byron Station (Byron) and Braidwood Station (Braidwood), Units 1 and 2

Background:

The Generic Aging Lessons Learned (GALL) Report XI.S3 Program Description states that the requirements of American Society of Mechanical Engineers (ASME) Section XI, Subsection IWF, which is imposed by 10 CFR 50.55a, are augmented to include monitoring of high-strength structural bolting (actual measured yield strength greater than or equal to 150 ksi) for cracking. The “detection of aging effects” program element states that volumetric examination may be waived with adequate plant-specific justification.

By letter dated March 4, 2014, the applicant responded to request for additional information (RAI) B.2.1.31-1, which indicated that the program will use plant-specific history on volumetric examinations of high-strength bolts greater than one-inch nominal diameter and periodic visual examinations to detect a corrosive environment with supplemental volumetric examinations (if needed) in order to justify taking an exception to the GALL Report recommendation that periodic volumetric examinations be performed.

The response to RAI B.2.1.31-1 states that the ASME Section XI, Subsection IWF Program will be enhanced (Enhancement #4) to perform one-time volumetric examinations of a sample of American Society for Testing and Materials (ASTM) A490 bolts greater than one-inch nominal diameter, for the detection of stress corrosion cracking (SCC) prior to the period of extended operation (PEO). The RAI response also states, “[a]ny adverse results of the volumetric examinations will be entered into the corrective action program and will be evaluated by engineering to determine if additional actions are warranted such as expansion of sample size, scope, and frequency of any additional supplemental visual or volumetric examinations, as well as any code requirements specified by ASME Section XI, Subsection IWF.”

Issue:

1. IWF-2430 contains requirements for the performance of additional examinations when VT-3 visual examinations, performed in accordance with Table IWF-2500-1, reveal flaws or relevant conditions that exceed the acceptance standards of IWF-3400. However, the staff notes that the volumetric examinations that will be performed on high-strength bolts to support a plant-specific exception to the GALL Report are not specifically called out in, nor specifically subject to, the requirements of IWF-2430 for additional examinations. The ASME Section XI, Subsection IWF aging management program (AMP) has not established criteria for expansion in inspection scope for these components in the case of adverse results of volumetric examinations. The staff needs additional information regarding whether procedures for performing these examinations will include criteria for expansion in scope, consistent with the methodology of ASME Code Subsection IWF.
2. If the one-time volumetric examinations show signs of cracking, it is not clear whether the ASME Section XI, Subsection IWF AMP would be revised to include periodic volumetric, instead of visual, examinations.

**Request:**

1. State whether the one-time volumetric examinations planned, on a sampling basis to support an exception to GALL Report recommendations, will be subject to criteria for expansion of inspection scope, similar to the methodology used by the ASME Code for IWF components.
2. If the one-time volumetric examinations show signs of cracking, state whether the program would be revised to include periodic volumetric examinations. If not, provide the supporting technical basis.

**Exelon Response:**

1. The ASME Section XI, Subsection IWF aging management program will establish criteria for expanding the inspection scope for these components in the case of adverse results of the one-time volumetric examinations similar to the methodology used by the ASME Code IWF-2430 for IWF component supports. Specifically, the implementing documents for performing the one-time volumetric examinations will contain criteria for extending the ASTM A490 bolt examination scope to other ASTM A490 bolts used in similar joint configurations and environmental exposure conditions in the case of an adverse result of a volumetric examination of an ASTM A490 bolt. The criteria for extending the scope of examination of ASTM A490 bolts will be similar to the methodology used by the ASME Code IWF-2430 for IWF component supports.
2. The ASME Section XI, Subsection IWF aging management program will be revised to include periodic volumetric examinations of ASTM A490 bolts in sizes greater than one-inch nominal diameter if the one-time volumetric examinations of an ASTM A490 bolt show signs of cracking. The periodic examinations of the ASTM A490 bolts are included in the periodic examination of the supports. For the periodic examinations, the population of the supports examined is specified in Table IWF-2500-1. Consistent with the GALL Report, the periodic examinations will include volumetric examinations of ASTM A490 bolts to detect cracking, if required, in addition to the VT-3 examinations.

As a result of the response to RAI B.2.1.31-1a, LRA Appendix A, Section A.2.1.31 and Appendix B, Section B.2.1.31 are revised as shown in Enclosure B, and LRA Table A.5, Item 31, is revised as shown in Enclosure C. Enhancement #4 is revised to add information describing the criteria for extending the examination scope in the case of adverse results of volumetric examinations of ASTM A490 bolts and information describing that the ASME Section XI, Subsection IWF aging management program would be revised to include periodic volumetric examinations of the ASTM A490 bolts if the one-time volumetric examinations show signs of cracking.

As a result, the periodic visual examinations of all high-strength bolts greater than one-inch nominal diameter, combined with the volumetric examinations of a sample of ASTM A490 bolts performed prior to PEO, will be effective in detecting SCC or a corrosive environment with the potential for SCC throughout the period of extended operation.

**RAI B.2.1.31-1b**

Applicability:

Byron and Braidwood

Background:

GALL Report XI.S3 Program Description states that the requirements of ASME Section XI, Subsection IWF, which is imposed by 10 CFR 50.55a, are augmented to include monitoring of high-strength structural bolting (actual measured yield strength greater than or equal to 150 ksi) for cracking.

The “detection of aging effects” program element states that volumetric examination may be waived with adequate plant-specific justification. By letter dated March 4, 2014, the applicant responded to RAI B.2.31-1 and RAI B.2.31-3 regarding high strength ASTM A490 and high strength A540 bolts, respectively, by stating that the program will justify an exception to the GALL Report recommendations using (1) plant-specific history of volumetric examinations for a representative sample of high-strength bolts and (2) periodic visual examinations of 100 percent of applicable bolting to detect a corrosive environment conducive to SCC potential prior to the PEO and at 10-year intervals thereafter. The RAI response states that conditions identified during the periodic visual examinations that identify a “potential” corrosive environment that supports SCC will be entered into the corrective action program.

The RAI response states that the periodic visual examinations will include parameters and criteria to identify if the bolting has been exposed to moisture or other contaminants by evidence of moisture, residue, foreign substance, or corrosion. The RAI response further states that adverse conditions identified during the periodic visual examination will be evaluated by engineering to determine if a bolt has been exposed to a corrosive environment with the potential to cause SCC. The conditions will be subjected to supplemental visual examination or analysis of residue for additional information to determine if there is a potential for SCC. The RAI response states that the bolts determined to have been exposed to an environment with the potential to cause SCC will be included in a sample population of bolts (20 percent of the entire population of bolts, with a maximum of 25 bolts) subject to supplemental volumetric examinations. The results of the volumetric examinations will be evaluated by engineering to determine if additional actions are warranted such as expanding the sample population, scope, and frequency of any additional supplemental visual or volumetric examinations, as well as any code requirements specified by ASME Section XI, Subsection IWF.

Issue:

1. The RAI response states that the periodic visual examinations that will be performed will identify conditions that show evidence that a bolt has been exposed to a potentially corrosive environment and that an engineering evaluation will determine if the bolt has actually been exposed to a corrosive environment with the potential to cause SCC. The AMP does not address what factors engineering will consider in determining whether a “potential” corrosive environment is indeed a corrosive environment (and therefore the need to perform supplemental volumetric examinations), particularly when no moisture is present.

2. NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), states that the "parameters monitored or inspected" program element should identify the aging effects that the program manages and should provide a link between the parameters that will be monitored and how the monitoring of these parameters will ensure adequate aging management. The SRP-LR also states that the parameters monitored or inspected should be capable of detecting the presence and extent of aging effects. For the visual inspections proposed by the applicant to be conducted at a 10-year interval, the staff noted that the program relies on indications related to the current or former presence of moisture and does not directly detect the aging effect of cracking due to SCC. Given that these environmental impact indicators used to detect a corrosive environment could be removed over time (e.g., clean-up of water stains, painting of steel), the staff needs additional information to assess whether using visual inspections for the listed parameters at a 10-year interval will be able to ensure adequate aging management of high-strength (measured yield strength greater than 150 ksi) SA 540 bolts greater than 1" diameter.

**Request:**

For high-strength (measured yield strength greater than 150 ksi) SA 540 bolts greater than 1" diameter:

1. With regards to determining whether a "potential" corrosive environment identified during visual inspections is actually a corrosive environment which would lead to performing supplemental volumetric examinations, describe the qualitative or quantitative acceptance criteria that will be used to (a) determine whether a corrosive environment exists or existed and (b) conclude that supplemental volumetric examinations will be performed.
2. Clarify whether the acceptance criteria used for monitoring to detect this aging effect are the existence of environmental indicators that a corrosive environment exists or existed. If not, state the acceptance criteria to be used for monitoring. If so, given that those environmental indicators of a corrosive environment could be removed prior to visual inspections being conducted, provide information to support a conclusion that monitoring these parameters using visual inspection over a 10-year interval will be effective in managing this aging effect even if the environmental indicators of a present or past corrosive environment are removed.

**Exelon Response:**

1. Enhancement #5 to the ASME Section XI, Subsection IWF program, provided in the response to RAI B.2.31-1 and RAI B.2.31-3, describes periodic visual examinations, performed during each 10-year interval, which include parameters and criteria to detect a corrosive environment that supports SCC potential for all SA 540 high-strength bolting greater than one-inch nominal diameter .

In response to this RAI, the ASME Section XI, Subsection IWF aging management program basis document and implementing documents will be revised to (a) address the following parameters and criteria that engineering will consider in determining whether a "potential"

corrosive environment is indeed a corrosive environment and (b) therefore, conclude the need to perform supplemental volumetric examinations. The additional parameters and criteria to address the qualitative and quantitative acceptance criteria are described below:

- i. If moisture is present at or near a bolt or stud, factors considered by engineering include, but will not be limited to:
  - 1) The source of leakage or condensation that supplied the moisture.
  - 2) The proximity of the moisture to the bolt or stud.
  - 3) The probable or analyzed chemical characteristics of the moisture, including the presence of contaminants.
  - 4) The visible or likely pathway, if any, that the liquid traversed to arrive at or near the bolt or stud.
  - 5) The amount of any corrosion on or near the bolt or stud.
  - 6) The material condition of the coatings on the bolt or stud, and associated support.
  - 7) The characteristics of any corrosion on or near the bolt or stud.
  - 8) The proximity to the bolt or stud of any nearby evidence of corrosion.
  - 9) The material condition of accessible concrete or grout near the bolt or stud.
  
- ii. If there is evidence that moisture had been present at or near a bolt or stud, but no moisture is present at or near a bolt or stud, factors considered by engineering include, but will not be limited to:
  - 1) The probable sources of past leakage or condensation that could have supplied the moisture.
  - 2) The proximity to the bolt or stud to the evidence that moisture had been present.
  - 3) The probable or analyzed chemical characteristics of any moisture residue, including the presence of contaminants.
  - 4) The visible or likely pathway, if any, that the liquid may have traversed to arrive at or near the bolt or stud.
  - 5) The amount of any corrosion on or near the bolt or stud.
  - 6) The material condition of any coatings on the bolt or stud, and associated support.
  - 7) The characteristics of any corrosion on or near the bolt or stud.
  - 8) The proximity to the bolt or stud of any nearby evidence of corrosion.
  - 9) The material condition of concrete or grout near the bolt or stud.

The extent to which each of the above environmental indicators will be considered and weighed in the engineering evaluation will be determined by the conditions that are observed during the initial visual examinations of the bolting locations and during any follow-up visual examination or analysis. Some of the listed environmental indicators may not be present, e.g., moisture. Some of the factors that are observed may have minimal impact on the outcome of the evaluation. Environmental indicators, which are present at each evaluated SA 540 bolt, will be evaluated together to provide the most accurate characterization of the environment. If the engineering evaluation concludes that the bolting material had been subjected to an environment with the potential to cause SCC, then the affected bolts will be included in the sample population subject to supplemental volumetric examinations.

The qualitative and quantitative criteria described above will be used to evaluate the results of the periodic visual examinations of SA 540 bolts greater than one-inch in diameter, as part of the ASME Section XI, Subsection IWF aging management program. Therefore, the ASME Section XI, Subsection IWF aging management program will be effective in detecting SCC, or a corrosive environment with the potential for SCC, and in concluding whether supplemental volumetric examinations need to be performed throughout the period of extended operation.

2. The acceptance criteria, which are used for the monitoring to detect the potential for SCC, are the existence of environmental indicators that a corrosive environment exists or existed as described in *Response 1* to this RAI.

Monitoring the environmental indicators, using visual examination over a 10-year interval, as described in *Response 1* to this RAI, will be effective in managing this aging effect, even if the environmental indicators of a present or past corrosive environment are removed prior to the examination. This conclusion is based upon (a) the bolting material is carbon steel, (b) plant design and procedures limiting the potential for contamination, and (c) plant programs and procedures are already established to identify leakage in this area onto any component or structure during outages and plant operation. Each of these considerations is described in more detail below.

(a) Carbon Steel Bolting Material

SA 540 bolts are used as reactor coolant pump and pressurizer hold-down bolts. SA 540 bolts are carbon steel bolts, so if a corrosive environment exists, the bolts would also exhibit surface corrosion that can be detected through visual examinations. Surface corrosion on carbon steel will persist until physically removed so even if the corrosive environment is removed, the surface corrosion will persist and be detected during the visual examination.

(b) Plant Design and Procedures Limiting Potential for Contamination

Since all of the ASME Section XI, Subsection IWF program components utilizing high strength bolting are located within the same confined area inside the secondary shield wall, the SA 540 bolts share a common environment and have a low potential to be exposed to a corrosive environment due to the limited components contained in the area. In addition, the chemical control program and procedures limit the types of chemicals, which that can be brought into this area and potentially spilled, to those chemicals not detrimental to steel components. Systems and components such as the reactor coolant drain tank and the reactor containment fan coolers are outside of the secondary shield wall and there is no fire protection piping inside the secondary shield wall. Therefore, there are no systems containing raw water inside of the secondary shield wall. The other components inside the secondary shield wall that could potentially leak onto the SA 540 bolts are associated with the reactor coolant system and attached systems such as safety injection, chemical and volume control, component cooling, main steam, and feedwater systems. These systems contain treated water or treated borated water. The components inside the secondary shield wall are monitored by several aging management programs and procedures that require performance of examinations as described below.

(c) Plant Programs and Procedures Identify Leakage

Other programs such as the Boric Acid Corrosion (B.2.1.4), ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD (B.2.1.1), Closed Treated Water Systems (B.2.1.12), and External Surfaces Monitoring of Mechanical Components (B.2.1.23) aging management programs require performance of examinations of components inside of the secondary shield wall. Any adverse environmental conditions, should they occur, will also be identified during these examinations and reported in the Corrective Action Program. In addition, leakage monitoring, required by Technical Specifications, is performed during reactor operation and start-up. This provides additional assurance that any changes to current environmental conditions, should they occur, will be identified and appropriate actions taken throughout the 10-year inspection interval and period of extended operation.

Therefore, visual examinations performed on a 10-year inspection interval, for the parameters listed in *Response 1* to this RAI, will provide effective aging management of high-strength (measured yield strength greater than 150 ksi) SA 540 bolts greater than one-inch diameter throughout the period of extended operation.

**Enclosure B**

**Byron and Braidwood Stations, Units 1 and 2  
License Renewal Application (LRA) updates resulting  
from the response to the following RAI:**

RAI B.2.1.31-1a

Note: To facilitate understanding, the original LRA pages have been repeated in this Enclosure, with revisions indicated. Existing LRA text is shown in normal font. Changes are highlighted with ***bolded italics*** for inserted text.

As a result of the response to RAI B.2.1.31-1a provided in Enclosure A of this letter, LRA Section A.2.1.31, Enhancement #4, as provided by the response to RAI B.2.1.31 (Exelon Letter RS-14-052, dated March 04, 2014, Enclosure B, page 8 of 22), is revised as shown below. For clarity, entire sentences from the LRA as modified by previous RAI responses, are shown in normal font. Inserted text as a result of the response to RAI B.2.1.31-1a is highlighted by **bolded italics**.

4. Perform one-time volumetric examinations on a sample of ASTM A490 bolts, greater than one-inch nominal diameter for the detection of stress corrosion cracking prior to the period of extended operation. Volumetric examinations will be performed in accordance with the requirements of ASME Code Section XI, Appendix VIII, Supplement 8. The sample will consist of bounding and representative A490 bolt sizes, joint configurations, and environmental exposure conditions. The sample will consist of 20% of the ASTM A490 bolts greater than one-inch nominal diameter or a maximum of 25 ASTM A490 bolts total for both Byron and Braidwood stations. The selection of the samples will consider susceptibility to stress corrosion cracking (e.g., actual measured yield strength) and ALARA principles. Any adverse results of the volumetric examinations will be entered into the corrective action program and will be evaluated by engineering to determine if additional actions are warranted such as expansion of sample size, scope, and frequency of any additional supplemental visual or volumetric examinations, as well as any code requirements specified by ASME Section XI, Subsection IWF. ***Specifically, the implementing documents for performing the one-time volumetric examinations will contain criteria for extending the ASTM A490 bolt examination scope to other ASTM A490 bolts used in similar joint configurations and environmental exposure conditions if the volumetric examination of an ASTM A490 bolt shows adverse results, which is similar to the methodology used by the ASME Code IWF-2430 for IWF component supports. In addition, the program will be revised to include periodic volumetric examinations of ASTM A490 bolts in sizes greater than one-inch nominal diameter, if the one-time volumetric examination of an ASTM A490 bolt shows signs of cracking. The periodic examinations of the ASTM A490 bolts are included in the periodic examination of the supports. For the periodic examinations of supports, the population of the supports examined is specified in Table IWF-2500-1. Consistent with the GALL Report, the periodic examinations will include volumetric examinations of high-strength bolts to detect cracking, if required, in addition to the VT-3 examinations of the high-strength bolts.***

As a result of the response to RAI B.2.1.31-1a provided in Enclosure A of this letter, LRA Section B.2.1.31, **Justification for Exception #2**, as provided by the response to RAI B.2.1.31 (Exelon Letter RS-14-052, dated March 04, 2014, Enclosure B, page 19 of 22), is revised as shown below. For clarity, entire sentences from the LRA as modified by previous RAI responses, are shown in normal font. Inserted text as a result of the response to RAI B.2.1.31-1a is highlighted by ***bolded italics***.

- One-time volumetric examinations will be performed on a sample of ASTM A490 bolts, greater than one-inch nominal diameter for the detection of stress corrosion cracking prior to the period of extended operation. These volumetric examinations together with the extensive volumetric examinations that have been performed on the ASME SA 540 reactor head closure studs are used to justify taking an exception to the GALL report recommendation that periodic volumetric examination be performed to manage SCC. The volumetric examinations will be performed in accordance with the requirements of ASME Code Section XI, Appendix VIII, Supplement 8. The sample will consist of bounding and representative A490 bolt sizes, joint configurations, and environmental exposure conditions. The sample will consist of 20% of the ASTM A490 bolts greater than one-inch nominal diameter or a maximum of 25 ASTM A490 bolts total for both Byron and Braidwood stations. The selection of the samples will consider susceptibility to stress corrosion cracking (e.g., actual measured yield strength) and ALARA principles. Any adverse results of the volumetric examinations will be entered into the corrective action program and will be evaluated by engineering to determine if additional actions are warranted such as expansion of sample size, scope, and frequency of any additional supplemental visual or volumetric examinations, as well as any code requirements specified by ASME Section XI, Subsection IWF. ***Specifically, the implementing documents for performing the one-time volumetric examinations will contain criteria for extending the ASTM A490 bolt examination scope to other ASTM A490 bolts used in similar joint configurations and environmental exposure conditions if the volumetric examination of an ASTM A490 bolt shows adverse results, which is similar to the methodology used by the ASME Code IWF-2430 for IWF component supports. In addition, the program will be revised to include periodic volumetric examinations of ASTM A490 bolts in sizes greater than one-inch nominal diameter, if the one-time volumetric examination of an ASTM A490 bolt shows signs of cracking. The periodic examinations of the ASTM A490 bolts are included in the periodic examination of the supports. For the periodic examinations of supports, the population of the supports examined is specified in Table IWF-2500-1. Consistent with the GALL Report, the periodic examinations will include volumetric examinations of high-strength bolts to detect cracking, if required, in addition to the VT-3 examinations of the high-strength bolts.*** This activity will be an enhancement to the ASME Section XI, Subsection IWF program and be implemented prior to the period of extended operation.

As a result of the response to RAI B.2.1.31-1a provided in Enclosure A of this letter, LRA Section B.2.1.31, Enhancement #4, as provided by the response to RAI B.2.1.31 (Exelon Letter RS-14-052, dated March 04, 2014, Enclosure B, page 21 of 22), is revised as shown below. For clarity, entire sentences or paragraphs from the LRA, as modified by previous RAI responses, are shown in normal font. Inserted text as a result of the response to RAI B.2.1.31-1a is highlighted by ***bolded italics***.

4. Perform one-time volumetric examinations on a sample of ASTM A490 bolts, greater than one-inch nominal diameter for the detection of stress corrosion cracking prior to the period of extended operation. Volumetric examinations will be performed in accordance with the requirements of ASME Code Section XI, Appendix VIII, Supplement 8. The sample will consist of bounding and representative A490 bolt sizes, joint configurations, and environmental exposure conditions. The sample will consist of 20% of the ASTM A490 bolts greater than one-inch nominal diameter or a maximum of 25 ASTM A490 bolts total for both Byron and Braidwood stations. The selection of the samples will consider susceptibility to stress corrosion cracking (e.g., actual measured yield strength) and ALARA principles. Any adverse results of the volumetric examinations will be entered into the corrective action program and will be evaluated by engineering to determine if additional actions are warranted such as expansion of sample size, scope, and frequency of any additional supplemental visual or volumetric examinations, as well as any code requirements specified by ASME Section XI, Subsection IWF. ***Specifically, the implementing documents for performing the one-time volumetric examinations will contain criteria for extending the ASTM A490 bolt examination scope to other ASTM A490 bolts used in similar joint configurations and environmental exposure conditions if the volumetric examination of an ASTM A490 bolt shows adverse results, which is similar to the methodology used by the ASME Code IWF-2430 for IWF component supports. In addition, the program will be revised to include periodic volumetric examinations of ASTM A490 bolts in sizes greater than one-inch nominal diameter, if the one-time volumetric examination of an ASTM A490 bolt shows signs of cracking. The periodic examinations of the ASTM A490 bolts are included in the periodic examination of the supports. For the periodic examinations of supports, the population of the supports examined is specified in Table IWF-2500-1. Consistent with the GALL Report, the periodic examinations will include volumetric examinations of high-strength bolts to detect cracking, if required, in addition to the VT-3 examinations of the high-strength bolts.*** Program Elements Affected: Detection of Aging Effects (Element 4), Monitoring and trending (Element 5), Acceptance Criteria (Element 6), Corrective Actions (Element 7)

## Enclosure C

### Byron and Braidwood Stations (BBS) Units 1 and 2 License Renewal Commitment List Changes

This Enclosure identifies commitments made in this document and is an update to the Byron and Braidwood Station (BBS) LRA Appendix A, Table A.5, License Renewal Commitment List. Any other actions discussed in the submittal represent intended or planned actions and are described to the NRC for the NRC's information and are not regulatory commitments. Changes to the BBS LRA Appendix A, Table A.5 License Renewal Commitment List are as a result of the Exelon response to the following RAI:

RAI B.2.1.31-1a

#### Notes:

- To facilitate understanding, portions of the original License Renewal Commitment List have been repeated in this Enclosure, with revisions indicated.
- Existing LRA text is shown in normal font. Changes are highlighted with ***bolded italics*** for added text.

As a result of the response to RAI B.2.1.31-1a provided in Enclosure A of this letter, LRA Section A.5, Item 31, Enhancement #4, as modified by the response to RAI B.2.1.31 (Exelon Letter RS-14-052, dated March 4, 2014, Enclosure C, page 7 of 8), is revised as shown below. For clarity, entire sentences from the LRA, as modified by previous RAI responses, are shown in normal font. Inserted text as a result of the response to RAI B.2.1.31-1a is highlighted by ***bolded italics***.

**A.5 License Renewal Commitment List**

NO.	PROGRAM OR TOPIC	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE
31	ASME Section XI, Subsection IWF	<p>4. Perform one-time volumetric examinations on a sample of ASTM A490 bolts, greater than one-inch nominal diameter for the detection of stress corrosion cracking prior to the period of extended operation. Volumetric examinations will be performed in accordance with the requirements of ASME Code Section XI, Appendix VIII, Supplement 8. The sample will consist of bounding and representative A490 bolt sizes, joint configurations, and environmental exposure conditions. The sample will consist of 20% of the ASTM A490 bolts greater than one-inch nominal diameter or a maximum of 25 ASTM A490 bolts total for both Byron and Braidwood stations. The selection of the samples will consider susceptibility to stress corrosion cracking (e.g., actual measured yield strength) and ALARA principles. Any adverse results of the volumetric examinations will be entered into the corrective action program and will be evaluated by engineering to determine if additional actions are warranted such as expansion of sample size, scope, and frequency of any additional supplemental visual or volumetric examinations, as well as any code requirements specified by ASME Section XI, Subsection IWF. <b><i>Specifically, the implementing documents for performing the one-time volumetric examinations will have criteria for extending the ASTM A490 bolt examination scope to other ASTM A490 bolts used in similar joint configurations and environmental exposure conditions if the volumetric examination of a bolt shows adverse results, which is similar to the methodology used by the ASME Code IWF-2430 for IWF component supports. In addition, the program will be revised to include periodic volumetric examinations, of ASTM A490 bolts in sizes greater than one-inch nominal diameter, if the one-time volumetric examination of an ASTM A490 bolt shows signs of cracking. The periodic examinations of the ASTM A490 bolts are included in the periodic examination of the supports. For the periodic examinations of supports, the population of the supports examined is specified in Table IWF-2500-1. Consistent with the GALL Report, the periodic examinations will include volumetric examinations of high-strength bolts to detect cracking, if required, in addition to the VT-3 examinations of the high-strength bolts.</i></b></p>	<p>Program to be enhanced and one-time volumetric examinations to be performed prior to the period of extended operation.</p>	<p>Section A.2.1.31</p> <p>Exelon Letter RS-14-052 03/04/2014 RAIs B.2.1.31-1 B.2.1.31-2 B.2.1.31-3</p> <p><b><i>Exelon Letter RS-14-170 06/16/2014 RAI B.2.1.31-1a</i></b></p>