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RS-16-079

10 CFR 50.55a(z)

April 11, 2016

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

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

Subject: Response to Request for Additional Information Regarding the Request for Exemption from 10 CFR 50.55a, "Codes and standards," Paragraph (h)(2), "Protection systems," Including Change to Request NRC Approval Under 10 CFR 50.55a, Paragraph (z), "Alternatives to codes and standards requirements," vice 10 CFR 50.12, "Specific exemptions"

References:

(1) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U. S. NRC, "Request for Exemption from 10 CFR 50.55a, 'Codes and standards,' Paragraph (h)(2), 'Protection systems,'" dated April 6, 2015

(2) Letter from J. S. Wiebe (U. S. NRC) to B. C. Hanson (Exelon Generation Company, LLC), "Braidwood Station, Units 1 and 2, and Byron Station, Unit Nos. 1 and 2 – Request for Additional Information Related to Exemption Request From 10 CFR 50.55a, 'Codes and standards,' Paragraph (h)(2), 'Protection systems,'" (CAC Nos. MF6079, MF6080, MF6081, and MF6082) dated January 20, 2016

(3) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U. S. NRC, "Response to Request for Additional Information Regarding the Request for Exemption from 10 CFR 50.55a, 'Codes and standards,' Paragraph (h)(2), 'Protection systems,'" dated January 29, 2016

(4) Email from J. S. Wiebe (U. S. NRC) to J. A. Bauer (Exelon Generation Company, LLC), "Preliminary Additional RAIs Related to the Request for Exemption Regarding MSIV Bypass Valves," dated March 2, 2016

In Reference 1, in accordance with 10 CFR 50.12, "Specific exemptions," Exelon Generation Company, LLC (EGC) requested a permanent exemption from the requirements of 10 CFR 50.55a, "Codes and standards," Paragraph (h)(2), "Protection systems," for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2. Paragraph (h)(2) states: "For nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, protection systems must meet the requirements stated in either of IEEE [Standard] Std. 279, 'Criteria for Protection Systems for Nuclear Power Generating Stations,' or in IEEE Std. 603-1991, 'Criteria for Safety Systems for Nuclear Power Generating Stations,' and the correction sheet dated January 30, 1995." Braidwood and Byron Stations are currently committed to the requirements of IEEE Std. 279 – 1971; however, a discrepancy was discovered such that the manual isolation signal for the Main Steam Isolation Valve (MSIV) bypass valves does not conform to the requirements of IEEE-279.

The exemption was requested in accordance with the requirements of 10 CFR 50.12(a)(2)(ii) as the application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule.

In Reference 2, the NRC requested that EGC provide additional information to support their review of the subject Exemption Request (i.e., Reference 1). The response to these requests was provided in Reference 3.

In Reference 4, the NRC requested further additional information. The response to this request is provided in Attachment 1 to this letter. Of particular note, in Question 1 of Reference 4, the NRC stated that an exemption to the regulations is not warranted because 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," allows the NRC to authorize the use of alternatives to requirements in 10 CFR Section 50.55a(h). EGC concurs with the NRC's conclusion and therefore, EGC is no longer requesting an exemption to 10 CFR 50.55a(h)(2); rather, the subject licensing action is being requested pursuant to 10 CFR 50.55a(z)(1), "Acceptable level of quality and safety." Justification for requesting this permanent alternative is provided in Attachment 1.

It was agreed that EGC would provide the information requested in Reference 4 on or before April 11, 2016.

EGC has reviewed the information supporting the Environmental Assessment that was previously provided to the NRC in Reference 1. The additional information provided in this submittal does not affect the conclusion that the proposed permanent alternative will not have a significant effect on the quality of the human environment.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), EGC is notifying the State of Illinois of this additional information by transmitting a copy of this letter and its attachment to the designated State Official.

This letter contains no new regulatory commitments. If you have any questions concerning this letter, please contact Joseph A. Bauer at (630) 657-2804.

Respectfully,

David M. Gullott
Manager – Licensing
Exelon Generation Company, LLC

Attachment 1: Response to Request for Additional Information

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector, Braidwood Station
NRC Senior Resident Inspector, Byron Station
Illinois Emergency Management Agency – Division of Nuclear Safety

ATTACHMENT 1
Response to Request for Additional Information

In Reference 1, in accordance with 10 CFR 50.12, "Specific exemptions," Exelon Generation Company, LLC (EGC) requested a permanent exemption from the requirements of 10 CFR 50.55a, "Codes and standards," Paragraph (h)(2), "Protection systems," for Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2. Paragraph (h)(2) states: "For nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, protection systems must meet the requirements stated in either of IEEE [Standard] Std. 279, 'Criteria for Protection Systems for Nuclear Power Generating Stations,' or in IEEE Std. 603-1991, 'Criteria for Safety Systems for Nuclear Power Generating Stations,' and the correction sheet dated January 30, 1995." Braidwood and Byron Stations are currently committed to the requirements of IEEE Std. 279 – 1971; however, a discrepancy was discovered such that the manual isolation signal for the Main Steam Isolation Valve (MSIV) bypass valves does not conform to the requirements of IEEE-279.

The exemption was requested in accordance with the requirements of 10 CFR 50.12(a)(2)(ii) as the application of the regulation in this particular circumstance is not necessary to achieve the underlying purpose of the rule.

In Reference 2, the NRC requested that EGC provide additional information to support their review of the subject Exemption Request (i.e., Reference 1). The response to these requests was provided in Reference 3. In Reference 4, the NRC requested further additional information. The response to this request is provided below.

It should be noted that in RAI 1 below, the NRC stated that an exemption to the regulations is not warranted because 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," allows the NRC to authorize the use of alternatives to requirements in 10 CFR Section 50.55a(h). EGC concurs with the NRC's conclusion and therefore, EGC is no longer requesting an exemption to 10 CFR 50.55a(h)(2); rather, the subject licensing action is being requested as a permanent alternative pursuant to 10 CFR 50.55a(z)(1), "Acceptable level of quality and safety," as discussed in the response to RAI 1 below.

NRC Request for Additional Information (RAI)

In reviewing the Exelon Generation Company, LLC (Exelon's) submittal dated April 6, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15097A123), related to the request for exemption from Title 10 of the Code Of Federal Regulations (10 CFR), Section 50.55a, Paragraph (h)(2), "Codes and Standards," for the Braidwood Station, Units 1 and 2, and Byron Station, Unit Nos. 1 and 2, the U.S. Nuclear Regulatory Commission (NRC) staff has determined that the following information is needed in order to complete its review:

RAI 1

By e-mail from Russell Haskell dated May 11, 2015 (ADAMS Accession No. ML15131A424), the NRC staff accepted Exelon's April 6, 2015, submittal. After further consideration, the NRC staff has determined that an exemption to the regulations is not warranted because 10 CFR Part 50.55a (z) allows the NRC staff to authorize the use of alternatives to requirements in 10 CFR Section 50.55a (h). Based on the above, the NRC staff will not further consider issuance of an exemption to 10 CFR Section 50.55a (h)(2).

ATTACHMENT 1
Response to Request for Additional Information

To continue the NRC staff review of the request for use of an alternative, provide a clear statement of the alternative requested and demonstrate that: (1) the alternative provides an acceptable level of quality and safety, or (2) hardship without a compensating increase in quality and safety as required by 10 CFR Section 55a (z). Examples of hardship or unusual difficulty are identified in the NRC staff Office Instruction, LIC-102, "Relief Request Reviews," Revision 2, dated August 24, 2009 (ADAMS Accession No. ML091380595). If portions of this information is already available on the docket, you may provide specific reference to the information. You should also clearly state that you are no longer requesting an exemption to 10 CFR Section 50.55a (h)(2).

Response to RAI 1

EGC concurs with the NRC's conclusion that *"an exemption to the regulations is not warranted because 10 CFR Part 50.55a(z) allows the NRC staff to authorize the use of alternatives to requirements in 10 CFR Section 50.55a(h)."* Therefore, EGC is no longer requesting an exemption to 10 CFR 50.55a(h)(2); rather, the subject licensing action is being requested pursuant to 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," Item (1), "Acceptable level of quality and safety."

As noted above, 10 CFR 50.55a(h)(2) states: "For nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, protection systems must meet the requirements stated in either of IEEE [Standard] Std. 279, 'Criteria for Protection Systems for Nuclear Power Generating Stations,' or in IEEE Std. 603-1991, 'Criteria for Safety Systems for Nuclear Power Generating Stations,' and the correction sheet dated January 30, 1995."

EGC proposes to maintain the existing design of the MSIV bypass valves as an alternative to meeting all the requirements specified in IEEE Std. 279. The following discussion will demonstrate that the proposed permanent alternative would provide an acceptable level of quality and safety.

Non-Conformance with IEEE Std. 279

The MSIV bypass valve non-conformance with IEEE Std. 279 is described in detail in Reference 1, Attachment 1, Section II.3, "Regulatory Requirement Non-Conformance." At the conclusion of this section, EGC states:

> "Since the MSIV bypass valves do not receive a manual isolation signal "at the system level," the requirements of IEEE Std. 279 and the guidance in RG 1.62 are not met. Also, the existing individual MSIV bypass valves manual control switches, located on the main control board, are single train switches such that a single failure of a switch could prevent the manual initiation of the protective action (i.e., prevent closure of the MSIV bypass valve)."

Proposed Alternative Provides an Acceptable Level of Quality and Safety

The composite information presented in References 1 and 3 demonstrate why the existing design of the MSIV bypass valves would provide an acceptable level of quality and safety in lieu of the requirements of IEEE Std. 279, specifically, the non-conformance issues noted above.

ATTACHMENT 1
Response to Request for Additional Information

Reference 1, Attachment 1, Section II, "Bases for Exemption Request," notes that the underlying purpose of 10 CFR 50.55a(h)(2), as stated in IEEE Std. 279, Section 1, "Scope," is to:

> *"...establish minimum requirements for the safety-related functional performance and reliability of protection systems..."*

The existing design of the MSIV bypass valves are described in Reference 1, Attachment 1, Section II.2, "System Description and Design Basis Function." Addition details of the MSIV bypass valve design; and automatic and manual closure features are provided in Reference 3, under the Response to RAI 1.b.ii, starting on page 5 of 20.

Reference 1, Attachment 1, Section II.5, "Safety Analysis Assumptions," identifies the design basis accident scenarios that involve the MSIVs and MSIV bypass valves. Reference 1, Attachment 1, Section II.6, "Exemption Request Safety Consequences," goes on to evaluate each of these accident scenarios and demonstrates that the existing design of the MSIV bypass valves, which does not conform to the requirements of IEEE Std. 279, as described above, will have no impact on the consequences associated with the subject design basis accident scenarios.

In Reference 3, EGC provided additional information to specific NRC questions. This information included the following:

RAI 1.a A list of all actions that are performed during an automatic and manual initiation of the MSIVs and MSIV bypass valves; how they are performed, and how they are confirmed.

RAI 1.b.i Additional information on the analysis performed to determine the effects of one or more MSIV bypass valves failing open.

RAI 1.b.ii An explanation addressing how the containment isolation function is single failure proof and why the current configuration is acceptable.

RAI 1.c. A description of the equipment and circuitry, or portions thereof, which are common to automatic and manual initiation, whether it be component or system level initiation.

RAI 2.a An explanation of the additional actions involved with the MSIV bypass valve that would be necessary to be equivalent to the automatic initiation described above to insure it has gone to completion.

RAI 2.b. A description of the type of switch, the positions available, any spring-return actions, and what is required to manipulate it; including necessary indications that confirm the actions have taken place.

RAI 3 A discussion of time limitations for operators to manipulate both sets of switches (i.e., both the MSIV and MSIV bypass valve switches); and a discussion of whether the operator actions are identified in a procedure and part of a drill or exercise.

RAI 4.a A discussion of whether the group-level Containment Isolation switches operate the MSIV bypass valves.

RAI 4.b A discussion addressing if the original intent of the MSIV bypass valve manual control switches was to be used for testing only.

RAI 5 Figures and photos showing the relative physical location of switches and indicators used for the system level main steam line manual isolation and the individual MSIV bypass valves switches and indicators.

RAI 6 A description of the major modifications to the systems, structures and components necessary to eliminate the non-conformance with IEEE Std. 279; and the impacts on the schedule and operation of the Byron/Braidwood Station units.

RAI 7 An explanation why additional TS revisions are not necessary given the actual plant configuration.

RAI 8 A discussion on how GDC 21, "Protection system reliability and testability," is met since the manual switches are single train.

RAI 9 Additional justification why it is not necessary to update the TS to reflect the lack of a system level MSIV bypass valve switch.

RAI 10 A discussion addressing the limiting single failure assumption for the safety analysis; specifically addressing if the safety analysis assumed that the MSIV bypass valves had a manual system level switch in addition to the manual single operation switch.

RAI 11 A discussion addressing whether there is a single failure that would cause all four MSIV bypass valves manual initiation function to fail.

RAI 12 Additional discussion of what components are credited during the steam generator tube rupture event if a MSIV bypass valve fails to close on the ruptured steam generator; and whether the credited components are safety related or non-safety related.

Conclusion

Based on the totality of the information described above, it is concluded that the non-compliance with IEEE Std. 279 does not affect the functional performance and reliability of the main steam isolation protection system. EGC has; therefore, demonstrated that the existing design of the MSIV bypass valves (i.e., the proposed permanent alternative) would provide an acceptable level of quality and safety in lieu of the requirements of IEEE Std. 279, specifically, the non-conformance issues noted above.

RAI 2

The submittal dated April 6, 2015, states that each accident scenario that requires a main steam line isolation has been reviewed. The submittal, in the evaluation of the Steam Generator Tube Rupture event, states that Emergency Operating Procedure, B(w)EP-3, "Steam Generator Tube Rupture," directs the operator to isolate the MSIV and bypass valve on the ruptured steam generator. The NRC staff is aware of other Emergency Operating Procedures that contain direction to operators to isolate MSIVs and bypass valves.

ATTACHMENT 1
Response to Request for Additional Information

Provide the following:

a. *Identify all emergency operating procedures (EOPs) that direct the operator to isolate one or more MSIVs and bypass valves.*

b. *Evaluate the related event(s) in the above identified EOPs to determine if it is impacted by the absence of a system level closure of the MSIV bypass valves.*

c. *Provide a discussion of these events and provide summaries of the impacts*

Response to RAI 2.a, b and c

The following is a list of the affected EOP's (specific to Byron Station, Unit 1) and associated procedure steps pertaining to closure of the MSIV bypass valves. The impact of the absence of a system level closure of the MSIV bypass valves is noted for each EOP/event. Note that similar procedure steps exist for Byron Station, Unit 2 and Braidwood Station, Units 1 and 2.

1BEP-0, "Reactor Trip or Safety Injection"

Step 2 Response Not Obtained column (i.e., RNO) states to manually actuate Main Steam Line Isolation and verify the MSIV bypass valves are closed when turbine throttle and governor valves do not go closed. This action is done to prevent uncontrolled cool down of the Reactor Coolant System (RCS) based on the steam demand required by the turbine.

Step 8c RNO requires closure of MSIV's and bypass valves if RCS is less than 557°F. This action is to prevent further RCS cool down.

Step 9 of Attachment B requires closure of MSIV's and bypass valves if there are indications of a faulted steam generator either inside or outside containment. This action is performed to prevent further cool down of the RCS and isolates the affected steam generator.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BEP-1, "Loss of Reactor or Secondary Coolant"

Step 15e RNO requires MSIV and bypass valves to be closed on the affected steam generator with unacceptable dose projection. This action is performed in case there was a preexisting primary to secondary leak and LOCA caused fuel damage, to prevent a radioactive release to the environment.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BEP-2, "Faulted Steam Generator Isolation"

Step 1a RNO requires MSIV and bypass valves to be manually closed if not closed and or failed to close on actuation of Main Line Steam Isolation. This action is performed to prevent further cool down of the RCS and isolates the affected steam generator.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BEP-3, "Steam Generator Tube Rupture"

Step 3d and Step 3d RNO: Step 3d closes the MSIV and bypass valve on the ruptured steam generator, then, if unsuccessful, Step 3d RNO states to manually actuate the Main Steam Line Isolation to close the MSIVs and to manually close the MSIV bypass valves. This action is performed to isolate the ruptured steam generator and prevent further releases.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BEP-ES-0.1, "Reactor Trip Response"

Step 1d RNO requires MSIV and bypass valves to be closed if RCS cool down continues below 557°F. This action is performed when RCS temperature continues to drop below the No Load Tavg temperature of 557°F. Step 1d RNO is performed following RNO (a) - stop dumping steam; RNO (b) - isolating blowdown valves; and RNO (c) - control of feed water flow greater than 500 gpm until steam generator narrow range level greater than 10%. This action is preformed to stop any further cool down of the RCS.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BEP-ES-3.3, "Post SGTR Cool Down Using Steam Dump"

Step 16c requires the MSIV bypass valves to be closed if releasing steam from the ruptured steam generator. This action is performed to stop any further release from a ruptured steam generator.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BCA-0.0, "Loss of All AC Power"

Step 2a requires the actuation of Main Steam Line Isolation.

Step 2b states to verify that all MSIVs and MSIV bypass valves are closed.

Step 2b RNO requires manual closure of MSIV and bypass valves if unable to verify actuation and closure from Steps 2a and 2b. These actions are required to ensure the turbine is tripped and prevent an uncontrolled cool down of the RCS.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

1BCA-2.1, "Uncontrolled Depressurization of All Steam Generators"

Step 1b states to check that the MSIV bypass valves are closed.

Step 1b RNO states to manually close the valves; then, if any of the valves will not close, then locally close the valves in the MSIV rooms.

There is no impact by the absence of a system level closure of MSIV bypass valves as this is accomplished using the individual MSIV bypass valve component level control switches. Note that the MSIV bypass valves are normally closed in accordance with 1BGP 100-1, "Plant Heatup," Step 35; and remain closed during power operations with the exception of surveillance testing when they are cycled.

RAI 3

In the response to the request for additional information (RAI) 1.b.ii, in letter dated January 29, 2016 (ADAMS Accession No. ML16029A408), Exelon has now provided two independent methods to manually close the MSIV bypass valves.

Provide clarification whether or not the single-failure aspect in Section 4.17 of Institute of Electrical and Electronic Engineers Std. 279 is satisfied by the two manual means of closing the valves.

Response to RAI 3

For clarity, the specific IEEE Std. 279 requirement that the MSIV bypass valves do not meet is Requirement 4.17, "Manual Initiation." Requirement 4.17 states the following:

> *The protection system shall include means for manual initiation of each protective action at the system level (for example, reactor trip, containment isolation, safety injection, core spray, etc). No single failure, as defined by the note following Section 4.2, within the manual, automatic, or common portions of the protection system shall prevent initiation of protective action by manual or automatic means. Manual initiation should depend upon the operation of a minimum of equipment.*

The note in IEEE Std. 279 following Section 4.2, "Single Failure Criterion," referenced in the above paragraph, states the following:

> *NOTE: "Single failure" includes such events as the shorting or open-circuiting of interconnecting signal or power cables. It also includes single credible malfunctions of events that cause a number of consequential component, module, or channel failures. For example, the overheating of an amplifier module is a "single failure: even though several transistor failures result. Mechanical damage to a mode switch would be a "single failure" although several channels might become involved."*

As noted in Reference 3, Response to RAI 1.b.ii, EGC indicated that there are two independent methods to manually close the MSIV bypass valves. The following description was provided:

> "A manual closure of a MSIV bypass valve can be performed by actuating the individual MSIV bypass valve component level control switch (one per loop) on PM06J (Figure 3). The component-level control switch for each MSIV bypass valve only interacts with the "A" solenoid for its respective valve; however, it should also be noted that each MSIV bypass valve has its own positioner, current to pressure transducer, and valve position demand controller to allow opening/closing its respective valve. This arrangement allows a MSIV bypass valve to be closed by turning the component-level switch to "CLOSE," which de-energizes the "A" solenoid and bleeds instrument air from the valve positioner; or by turning the valve position demand controller (see Figure 3) to "zero" which also bleeds instrument air off the valve positioner, independent of the solenoid. Therefore, although manual closure of a MSIV bypass valve does not have redundant closure signals (i.e., an "A" Train and "B" Train), there are two independent methods to manually close the valve. It is also noted that the MSIV bypass valves fail closed (i.e., in the safe direction) on loss of power."

As stated above, the MSIV bypass valve component level control switch interacts with the "A" train solenoid for each individual MSIV bypass valve. The "A" train solenoids are powered from Division 1, safety related, 125 VDC power. Again, as stated above, each MSIV bypass valve has its own current to pressure transducer and position demand controller. These components are supplied power from two different non-safety related, 120 VAC power sources (i.e., A and C MSIV bypass valves are supplied from Division 1, non-safety related, 120 AC power; and the B and D MSIV bypass valves are supplied from Division 2, non-safety related, 120 AC power). For Byron and Braidwood Stations, the "A" train Division 1, safety related, 125 VDC solenoid wiring for each MSIV bypass valve was validated to be routed independently/separately from the non-safety related AC instrument wiring for the current to pressure transducers.

The electrical separation between safety related 125 VDC control power and non-safety related 120 VAC instrumentation power, coupled with individual MSIV bypass valve component level control switches and individual MSIV bypass valve position control instrumentation provides high confidence that the MSIV bypass valve will close on demand. However, it was concluded that this configuration did not meet the single failure requirements of IEEE 279 since Requirement 4.17, "Manual Initiation," is addressing requirements for the "protection system." It is assumed that "protection system" components are required to have a safety related power source. Since only one of the methods to manually close the MSIV bypass valves is powered from safety related power, compliance with IEEE 279 was not achieved.

ATTACHMENT 1
Response to Request for Additional Information

RAI 4

In the response to RAI 1.c, in letter dated January 29, 2016, Exelon stated "These position controllers receive power from 125V AC power and are independent from the manual single valve control switches and have a different power source than the automatic MSL [main steam line] isolation signals."

Provide clarification whether or not the term "different power sources" can be applied to the two means of closing the valves and if they are both safety-related.

Response to RAI 4

The term "different power sources" does apply to the two means of manually closing the MSIV bypass valves. The MSIV bypass valve component level control switch interacts with the "A" train solenoid for each individual MSIV bypass valve. The "A" train solenoids are powered from Division 1, safety related, 125 VDC power. Each MSIV bypass valve has its own current to pressure transducer and position demand controller. These components are supplied power from two different non-safety related 120 VAC power sources (i.e., A and C MSIV bypass valves are supplied from Division 1, non-safety related, 120 AC power; and the B and D MSIV bypass valve are supplied from Division 2, non-safety related, 120 AC power).

REFERENCES

(1) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U. S. NRC, "Request for Exemption from 10 CFR 50.55a, 'Codes and standards,' Paragraph (h)(2), 'Protection systems,'" dated April 6, 2015

(2) Letter from J. S. Wiebe (U. S. NRC) to B. C. Hanson (Exelon Generation Company, LLC), "Braidwood Station, Units 1 and 2, and Byron Station, Unit Nos. 1 and 2 – Request for Additional Information Related to Exemption Request From 10 CFR 50.55a, 'Codes and standards,' Paragraph (h)(2), 'Protection systems,'" (CAC Nos. MF6079, MF6080, MF6081, and MF6082) dated January 20, 2016

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