

NRR-PMDAPEm Resource

From: Wiebe, Joel
Sent: Thursday, October 20, 2016 7:41 AM
To: Joseph Bauer
Subject: Initial RAIS Related to the Braidwood Unit 2 SX Pump Allowed Outage Time Amendment Request

In its initial look at the Exelon Generation Company, LLC's (Exelon's) submittal dated September 30, 2016, related to the technical specification allowed outage time for the 2A emergency service water (SX) pump in support of maintenance activities, for the Braidwood Station (Braidwood), Unit 2, the NRC staff has determined that additional information is needed. Additional requests for information are being developed and are expected to be provided to you in the next week. The NRC staff is treating this review as a high priority, but based on the NRC staff's need to receive and review the information below to identify any needed clarifications, meeting your requested issuance date of November 17, 2016, will be very challenging. The actual review and approval schedule will depend on the timing and completeness of the response to the below requests for additional information.

Regulatory Basis:

The guidelines of Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," Revision 1, dated May 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100910008), state that the NRC staff desires to base its decisions on proposed Technical Specification changes from the results of traditional engineering evaluations, supported by insights (derived from the use of PRA methods) about the risk significance of the proposed changes. Decisions are expected to be reached in an integrated fashion, considering traditional engineering and risk information. One of the traditional engineering considerations is evaluating defense in depth. Defense in depth includes a reasonable balance in prevention of core damage, not having an over-reliance on programmatic activities, and having system redundancy and independence commensurate with the expected frequency of challenges to the system.

Braidwood was one of the sites with applicability to Generic Issue 130 and the corresponding Generic Letter 91-13 as noted in the September 30, 2016, submittal. The submittal did not address redundancy of the emergency service water system (SX) and prevention of core damage for the risk of an extended Loss of Offsite Power and failure of the 2B Emergency Diesel Generator (EDG). A fire in the Unit 2 Engineered Safety Feature (ESF) switchgear could also affect similar equipment losses. Loss of the 2B EDG with a LOOP would cause the immediate loss of SX to unit 2 and threaten loss of the 2A EDG due to lack of SX.

- 1) The licensee is requested to supplement the application by addressing the scenario of an extended LOOP with failure of the 2B EDG. Include in your response as a minimum:
 - a) All operator actions and response times needed,
 - b) How primary plant pressure and inventory will be controlled considering available electrical power and cooling to charging pumps and available cooling to letdown and the effect on 2A EDG,
 - c) How feed water is supplied to the steam generators considering available power and cooling to auxiliary feed water pumps,
 - d) RCP seal injection/cooling,
 - e) Available clean water inventory for SG feed for an extended LOOP, Discuss SG feed sources for LOOP that extends several days and/or the ability to use RHR for shutdown cooling.
 - f) How containment cooling is achieved
 - g) Are there analysis/calculations in place that demonstrate that the required SX flow from the unit crosstie can meet the SX needs of both units for the above scenario? Explain.

h) Are there procedures in place to mitigate the above described scenario? Explain.

2. Describe actions being taken during the extended allowed outage time to minimize the possibility of strainer fouling similar to that described in Licensee Event Report 2008-001-00, "2A Essential Service Water Train Inoperable due to Strainer Fouling from Bryozoa Deposition and Growth," dated December 8, 2008 (ADAMS Accession No. ML083450328). If no actions are necessary, explain why not.

Regulatory Basis:

Another feature of defense in depth is avoiding over reliance on programmatic activities. The Braidwood fire PRA identified an ICCDP greater than $1.0E-06$, but less than $1.0E-05$, which may be deemed acceptable with effective compensatory measures implemented to reduce the sources of increased risk. Braidwood identified several compensatory actions to reduce the risk of fire leading to core damage. However, compensatory actions are considered programmatic.

3. Discuss whether or not reliance on these compensatory actions pose an over reliance on programmatic activity.
4. Clarify the applicability of the technical specification change by:
 - a. Providing an expiration date for the proposed change.
 - b. Providing a discussion of whether or not repeated entry would be possible and if a cumulative limit for time in the condition should be identified.
5. Provide a discussion/justification for categorizing the compensatory measures as regulatory commitments as opposed to a license condition or incorporating the compensatory measures into a TS requirement.

Regulatory Basis:

NUREG-1764, "Guidance for the Review of Changes to Human Actions," (ADAMS Accession No. ML072640413) provides guidance for determining the level of human factors engineering review for human actions. In its initial review of the September 30, 2016, submittal, the NRC has made an initial determination that a Level-II review is appropriate. Based on this initial determination, the following additional information is needed to complete the review.

6. Clarification of Operator Actions
 - a. Identify any operator manual actions that will be added, deleted, or changed to support the proposed license amendment.
 - b. What cues are provided to personnel that manual action(s) is/are required?
 - c. What cues are provided to personnel that the proposed action(s) is/are no longer required?
 - d. What administrative controls exist to assure that, when the action(s) is/are no longer required, the plant configuration is put in the correct configuration for the plant status?
7. Staffing - Describe any changes to staffing or qualification needed to support the proposed license amendment, including compensatory measures identified in the submittal and mitigating actions required to address the scenario in RAI 1, above, including actions to use an opposite unit SX train to supply water.
8. Procedures
 - a. Please describe any changes to operating procedures needed to support the proposed license amendment, including compensatory measures identified in the submittal and mitigating actions required to address the scenario in RAI 1, above, including actions to use an opposite unit SX train to supply water

- b. If the Emergency Operating Procedures are affected, describe any changes that were required of the Control Room task analysis that was done as part of your Detailed Control Room Design Review. If no update to the task analysis was necessary, describe how task requirements to support the proposed amendment were developed.

9. Human Action Verification

- a. Describe the process used to verify and validate the ability of your operators to accomplish the tasks required for the proposed LAR, including compensatory measures identified in the submittal and mitigating actions required to address the scenario in RAI 1, above, including actions to use an opposite unit SX train to supply water. In lieu of a description, you may provide the relevant administrative procedure(s) for verification and validation. Did the Validation include a representative sample of operators, and was it done with Technical Specification (TS) minimum staffing and nominal staffing?
- b. What has been or will be done to assure that any new or changed human actions can be done within the time limits of the relevant scenario(s)? Include in your discussion the mitigating actions required to address the scenario in RAI 1, above, including actions to use an opposite unit SX train to supply water.

- 10. Training - Describe any changes to training and the simulator needed to support the proposed license amendment, including the compensatory measures identified in the submittal and mitigating actions required to address the scenario in RAI 1, above, including actions to use an opposite unit SX train to supply water.

Regulatory Basis:

NUREG-1764, Section 2.5, allows the NRC staff to add selected Level-I review criteria to a Level-II review, rather than elevating the entire review to Level-II. The NRC staff has determined that an operating experience review should be conducted because some of the manual actions presented are infrequently performed, are potentially risk important, and have the potential to affect the other unit. If there are likely errors identified in an operating experience review, reasonable preventative measures and/or mitigating measures should be taken.

- 11. Operating Experience – Provide the results of an operating experience review, including plant-specific condition reports, Licensee Event Reports, INPO reports, and other relevant sources. Include a brief description of any preventative or mitigating actions that are planned to minimize the effects of errors identified in the OER.

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Mail Envelope Properties (Joel.Wiebe@nrc.gov20161020074000)

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Amendment Request
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From: Wiebe, Joel

Created By: Joel.Wiebe@nrc.gov

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"Joseph Bauer" <Joseph.Bauer@exeloncorp.com>
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Post Office:

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MESSAGE	9259	10/20/2016 7:40:00 AM

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
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