

10 CFR 50.90

January 29, 2021

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

Peach Bottom Atomic Power Station, Units 2 and 3
Subsequent Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Response to Request for Additional Information
License Amendment Request to Revise Technical Specifications to Adopt
Risk Informed Completion Times TSTF-505, Revision 2, "Provide Risk-
Informed Extended Completion Times - RITSTF Initiative 4b."

- References:
1. Letter from David P. Helker, Exelon Generation Company, LLC, to the U.S. Nuclear Regulatory Commission, "License Amendment Request to Revise Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 2, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b,'" dated May 29, 2020 (ADAMS Accession No. ML20150A007).
 2. Email from Jennifer Tobin, U.S. Nuclear Regulatory Commission, to David Helker, Exelon Generation Company, LLC, "Peach Bottom Units 2 and 3 - Request for Additional Information - TSTF-505 (EPID L-2019-LLA-0120)," dated December 21, 2020 (ADAMS Accession No. ML20357A097).

By letter dated May 29, 2020 (Reference 1), Exelon Generation Company, LLC (Exelon) requested approval for proposed changes to the Technical Specifications (TS), Appendix A of Subsequent Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, respectively.

The proposed amendments would modify TS requirements to permit the use of Risk Informed Completion Times (RICT) in accordance with TSTF-505, Revision 2, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b," (ADAMS Accession No. ML18183A493).

By email dated December 21, 2020 (Reference 2), the NRC notified Exelon that additional information is needed to complete its review of the Reference 1 submittal. The attachment to this letter provides a response to the request for additional information contained in the Reference 2 email.

Exelon has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in the Reference 1 letter. Exelon has concluded that the information provided in this response does not affect the bases for concluding that the proposed license amendments

do not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, Exelon has concluded that the information in this response does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendments.

There are no regulatory commitments contained in this response.

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

Should you have any questions concerning this submittal, please contact Glenn Stewart at (610) 765-5529.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 29th day of January 2021.

Respectfully,



David P. Helker
Sr. Manager, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachment:

Response to NRC Request for Additional Information

cc:	USNRC Region I, Regional Administrator	w/ attachment
	USNRC Project Manager, PBAPS	"
	USNRC Senior Resident Inspector, PBAPS	"
	Director, Bureau of Radiation Protection - Pennsylvania Department of Environmental Protection	"
	S. Seaman - State of Maryland	"

ATTACHMENT

License Amendment Request

**Peach Bottom Atomic Power Station, Units 2 and 3
Docket Nos. 50-277 and 50-278**

**Revise Technical Specifications to Adopt Risk Informed
Completion Times TSTF-505, Revision 2, "Provide Risk-Informed
Extended Completion Times - RITSTF Initiative 4b."**

Response to NRC Request for Additional Information

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1. Letter from David P. Helker, Exelon Generation Company, LLC, to the U.S. Nuclear Regulatory Commission, "License Amendment Request to Revise Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 2, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b,'" dated May 29, 2020 (ADAMS Accession No. ML20150A007).
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 3. American Society of Mechanical Engineers (ASME), "Standard for Level 1 /Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, Addenda to ASME/ANS RA-S-2008", ASME/ANS RA-Sb-2013, September 30, 2013.

By letter dated May 29, 2020 (Reference 1), Exelon Generation Company, LLC (Exelon) requested approval for proposed changes to the Technical Specifications (TS), Appendix A of Subsequent Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, respectively.

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By email dated December 21, 2020 (Reference 2), the NRC notified Exelon that additional information is needed to complete its review of the Reference 1 submittal. This attachment provides a response to the request for additional information contained in the Reference 2 email. NOTE: The NRC staff's questions are in italics throughout this attachment to distinguish from the Exelon responses.

RAI #1

By application dated May 29, 2020, Exelon Generation Company, LLC (the licensee) submitted a license amendment request (LAR) for Peach Bottom Atomic Power Station, Units 2 and 3 (Peach Bottom) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20150A007). Section 2.3 of LAR Attachment 1 states that the application of a risk-informed completion time (RICT) will be evaluated using the guidance provided in Nuclear Energy Institute (NEI) Topical Report NEI 06-09, Revision 0-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document," dated November 6, 2006 (ADAMS Package Accession No. ML122860402) (hereafter NEI 06-09). NEI 06-09 was approved by the NRC on May 17, 2007 (ADAMS Accession No. ML071200238). The NRC safety evaluation (SE) for NEI 06-09, states, "[t]he impact of the proposed change should be monitored using performance measurement strategies." NEI 06-09 considers the use of NUMARC 93-01, Revision 4F, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants (ADAMS Accession No. ML18120A069), as endorsed by Regulatory Guide (RG) 1.160, Revision 4 (ADAMS

Accession No. ML18220B281), for the implementation of the Maintenance Rule. NUMARC 93-01, Section 9.0, contains guidance for the establishment of performance criteria.

Furthermore, Section 2.3 of LAR Attachment 1 states:

In addition, the NEI 06-09-A, Revision 0 methodology satisfies the five key safety principles specified in Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision-making: Technical Specifications," dated August 1998 (ADAMS Accession No. ML003740176), relative to the risk impact due to the application of a RICT.

NRC staff position C.3.2 provided in RG 1.177 for meeting the fifth key safety principle acknowledges the use of performance criteria to assess degradation of operational safety over a period of time. It is unclear to the NRC staff how the licensee's process for the risk-informed application captures performance monitoring for the structures, systems, and components (SSCs) within-scope of the application. In light of these observations, address either (a) or (b) below.

a) Confirm that the Peach Bottom Maintenance Rule program incorporates the use of performance criteria to evaluate SSC performance as described in the NRC-endorsed guidance in NUMARC 93-01.

OR

b) Describe the approach/method used by Peach Bottom for SSC performance monitoring as described in Regulatory Position C.3.2 referenced in RG 1.177 for meeting the fifth key safety principle. In the description, include criteria (e.g., qualitative or quantitative), along with the appropriate risk metrics, and explain how the approach and criteria demonstrate the intent to monitor the potential degradation of SSCs in accordance with the NRC SE for NEI 06-09.

Response

Peach Bottom, like all operating Exelon sites, follows NEI 18-10, "Monitoring the Effectiveness of Nuclear Power Plant Maintenance," guidance for meeting the requirements of 10 CFR 50.65 (Maintenance Rule). This is an alternative to the NRC-endorsed guidance in NUMARC 93-01. Therefore, the RAI response will address option (b) above. NEI 18-10 differs from NUMARC 93-01 guidance primarily regarding how (a)(2) SSC functions are managed.

Regarding the Risk Informed Completion Time (RICT) program, NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines Industry Guidance Document," outlines the requirements that must be followed to allow extension of allowable completion times. This includes evaluating the acceptability of a single completion time extension and the cumulative risk contribution based on the extension of all RICT windows throughout a 24-month period. The RICT program manages risk through use of several risk metrics and also through the use of Risk Management Actions (RMAs). The risk metrics are described in NEI 06-09 and include limits while in a RICT, limits to prevent entry into potential high risk configurations, and cumulative tracking limits imposed to assure that the guidance of RG 1.174, Revision 1, is met. These limits aid in minimizing the impact on plant safety.

In the NRC Final Safety Evaluation (SE) for NEI Topical Report (TR) 06-09 (ADAMS Accession No. ML071200238, dated May 17, 2007), the five key safety principles of risk-informed decisionmaking presented in RG 1.174, Revision 1, for risk-informed applications are addressed including the fifth key safety principle:

"The impact of the proposed change should be monitored using performance measurement strategies."

As stated in the SE, the cumulative impact of implementation of a RMTS is periodically assessed and must be shown to result in a total risk impact below certain values (on an annual basis). The SE concludes that these criteria are consistent with the guidance of RG 1.174, Revision 1, for acceptable small changes in risk. The SE also acknowledges that "the NRC staff anticipates that the use of extended CTs [Completion Times] within an RMTS program is unlikely to be a routine practice, since licensees already accomplish planned maintenance activities within the existing TS CTs." Furthermore, the SE states:

Although the RMTS are permitted to be applied to planned maintenance activities, other requirements, such as 10 CFR 50.65 performance monitoring, and regulatory oversight of equipment performance, are disincentives to a licensee for incurring significant additional unavailability of plant equipment, even when allowed by an RMTS program. This provides a further control on the use of the RMTS which could result in a significant increase in equipment unavailability and the commensurate risk.

The SE then considers a single CT extension which could (alone) approach the risk limits of NEI 06-09, but acknowledges that while allowable, such configurations are not routinely encountered during plant maintenance activities and are not the anticipated application of the RMTS. The SE concludes that:

"...the performance monitoring and feedback specified in the TR, is sufficient to reasonably assure changes in risk due to the implementation of the RMTS are small, and are consistent with Section 3.2 of RG 1.177. Thus, the fifth key safety principle of RG 1.177 is satisfied."

Demonstration that the SSCs within-scope of the RICT application remain capable of performing their intended functions is addressed by NEI 18-10 guidance, which includes measures to prevent incurring significant additional unavailability of plant equipment and analyzes equipment failures in the context of maintenance program effectiveness. The approach/method used by Peach Bottom (and all operating Exelon plants) for demonstrating that SSCs remain capable of performing their intended functions includes an examination of Core Damage Frequency (CDF) trends. NEI 18-10, Section 9.1.3, and Exelon procedure, "Maintenance Rule 18-10 – Periodic (a)(3) Assessment," require review of CDF trends over the assessment period for the purpose of ensuring a proper balance of SSC availability and reliability, as required by 10 CFR 50.65 paragraph (a)(3). While cumulative risk tracking (specifically intended for RICT) examines the incremental risk (above the front stop) for RICT entries on a 24-month basis, CDF trending (performed for broader Maintenance Rule purposes) examines the aggregate risk of *all online work – not just RICT window entries*, and is performed as a 12-month rolling average for Maintenance Rule purposes.

The results of CDF trending are addressed in the periodic (a)(3) assessment of the effectiveness of maintenance actions, performed once per fuel cycle. This assessment is required by 10CFR 50.65, paragraph (a)(3) which states (in part):

"... ensure that the objective of preventing failures of structures, systems, and components through maintenance is appropriately balanced against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventive maintenance."

CDF trending (for Maintenance Rule purposes) examines the risk impact associated with both planned and unplanned maintenance and considers the impact of failures through the associated unplanned maintenance. CDF trending also provides an aggregate assessment of maintenance planning and execution. The Internal Events PRA model (including internal flooding) is used for CDF trending. External events such as fire, seismic and external flooding are excluded because they are not explicitly quantified in the (a)(4) process. The calculated aggregate risk is compared to the annual average base CDF. The CDF trend evaluation is then used to perform the required periodic assessment in accordance with Engineering procedure, "Maintenance Rule 18-10 – Periodic (a)(3) Assessment." The process requires:

- obtaining the CDF trends for the assessment period from the *PARAGON* configuration risk management tool, and then
- evaluating fluctuations in the trend.

CDF trends are reviewed during the periodic (a)(3) assessment for a minimum of:

- long unavailability durations,
- peak periods of risk increase,
- need to update PRA, and
- multiple occurrences of the same configuration due to ineffective maintenance.

Any such fluctuations found are then examined for purposes of identifying multiple occurrences of the same unplanned configuration due to ineffective maintenance, or an imbalance in planned maintenance activities per the maintenance strategy to unplanned events requiring corrective maintenance activities. Excessive instances of long unavailability windows and/or frequent extension of completion times are indicative of an ineffective maintenance strategy. If any concerns are identified, an Issue Report (IR) is generated in the Corrective Action Program (CAP) to evaluate cause and an (a)(1) determination is performed. This will lead to SSC functions moving to (a)(1) monitoring requirements and goal setting.

NEI 18-10 guidance handles reliability as follows. If an event or failure occurs and an IR is generated in CAP associated with a scoped in SSC with High Safety Significant (HSS) function(s), the IR will be reviewed for HSS Maintenance Rule Functional Failures (MRFF). Any HSS MRFF will result in an immediate (a)(1) determination (i.e., every HSS function has an equivalent of a reliability performance criterion value of 0). All IRs that represent a Plant Level Event (PLE) will result in an immediate (a)(1) determination. For Low Safety Significant (LSS) functions the reliability is monitored by evaluation of system performance trends. When a trend in system/function performance is observed, this would drive an immediate (a)(1) determination. Trends are identified on an ongoing/continuous basis by identification through engineer review, through operating experience review, or during the (a)(3) assessment. LSS trending is taking system health inputs (e.g., IRs, degraded conditions, preventive and predictive maintenance

results, etc.) and determining if issues are occurring repeatedly such that the maintenance program is ineffective. There is no set limit or number to constitute a trend. While trend reviews are performed by engineers real-time, an additional review is performed by the Maintenance Rule Coordinator as part of the (a)(3) assessment.

In this fashion, 10 CFR 50.65 performance monitoring complements the RICT program, and ensures that significant additional unavailability of plant equipment leading to a degradation of plant safety will not be incurred and, therefore, meeting the fifth key safety principle of RG 1.177.

RAI #2

RG 1.174, Revision 3 states the licensee should assess whether the proposed licensing basis change meets the defense-in-depth principle by not over-relying on programmatic activities as compensatory measures associated with the change in the licensing basis. RG 1.174 further elaborates that human actions (e.g., manual system actuation) are considered as one type of compensatory measure.

In LAR Attachment 5, if the only diverse means identified are the manual actuations, then provide a summary of the evaluation that these means are adequate. For example, confirm that these "manual actuations" identified as the only diverse means are modeled in the plant PRA, defined in plant operation procedures to which operators are trained, and confirm the manual action completion times associated with these actions are evaluated as adequate.

This information is needed to demonstrate compliance with 10 CFR 50.36 and 50.55(a).

Response

Manual actions for failed automatic functions are, by definition, recovery actions. ASME/ANS PRA Standard (RA-Sb-2013) (Reference 3) SRs HRA-D1 (CC II) and HR-H1(CC II) state: "INCLUDE operator recovery actions that can restore the functions, systems, or components *on an as-needed basis* (emphasis added) to provide a more realistic evaluation of significant accident sequences." Therefore, while risk-significant recovery actions are required to be included in the PRA model as referenced above, not all recovery actions available to the operators are modeled. In the absence of a modeled recovery action, failure of the automatic function results in a failure of the function in the fault tree. This is conservative but acceptable for non-risk significant recovery actions for automatic functional failures.

Manual actions that recover automatic functional failures are defined in plant operation procedures to which operators are trained, including the Emergency Operating Procedures. Additionally, the Exelon procedure governing operator fundamentals specifies that licensed operators are to take manual actions when automatic actions do not occur. If such recovery actions are risk-significant and time sensitive, they are included in the Operator Response Time Program procedure which subjects them to periodic time validation.