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

November 26, 2019

Technical Specifications Task Force
11921 Rockville Pike, Suite 100
Rockville, MD 20852

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RE: TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER TSTF-554, "REVISE REACTOR COOLANT LEAKAGE REQUIREMENTS" (EPID: L-2019-PMP-0181)

Dear Members of the Technical Specifications Task Force:

By letter dated May 7, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19127A238), you submitted to the U.S. Nuclear Regulatory Commission (NRC) for review Traveler TSTF-554. Upon review of the information provided, the NRC staff has determined that additional information is needed to complete the review. On November 19, 2019, Mr. Brian Mann, Vice President of Industry Programs, EXCEL Services Corporation, agreed that the NRC staff will receive your response to the enclosed request for additional information (RAI) questions within 90 calendar days of the date of this letter.

The review schedule that was provided in the acceptance letter dated August 20, 2019 (ADAMS Accession No. ML19211D284), has not changed.

MILESTONE	SCHEDULE DATE
Issue Draft Safety Evaluation	July 17, 2020
Issue Final Safety Evaluation	December 18, 2020

If you have any questions, please contact me at (301) 415-1774 or via e-mail to Michelle.Honcharik@nrc.gov.

Sincerely,

/RA/

Michelle C. Honcharik, Senior Project Manager
Technical Specifications Branch
Division of Safety Systems
Office of Nuclear Reactor Regulation

Project No. 753

Enclosure:
Request for Additional Information

cc: See next page

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ADAMS Accession No. ML19318E150; *concurred via e-mail NRR-106

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REQUEST FOR ADDITIONAL INFORMATION

TECHNICAL SPECIFICATIONS TASK FORCE

TRAVELER TSTF-554, "REVISE REACTOR COOLANT LEAKAGE REQUIREMENTS"

(EPID: L-2019-PMP-0181)

By letter dated May 7, 2019, the Technical Specifications Task Force (TSTF) submitted Revision 0 of Traveler TSTF-554, "Revise Reactor Coolant Leakage Requirements" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19127A238). The U.S. Nuclear Regulatory Commission (NRC) staff provided draft request for additional information (RAI) questions (ADAMS Accession No. ML19323D534) to support a clarification call. Following the clarification call some of the RAI questions changed. The draft RAI number is noted in parenthesis for each RAI below.

The regulation at Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, General Design Criterion (GDC) 14 requires that the reactor coolant pressure boundary be designed, fabricated, erected, and tested to ensure an extremely low probability of abnormal leakage, rapidly propagating failure, and gross rupture. GDC 30 requires means for detecting and, to the extent practical, identifying the source of reactor coolant leakage. The technical specifications (TS) limit reactor coolant system (RCS) operational leakage to amounts that do not compromise safety and ensure appropriate action is taken before the integrity of the RCS is impaired. Further, 10 CFR 50.55a, "Codes and Standards," requires the performance of inservice inspection and testing of nuclear power plant components to identify defects. These requirements minimize the probability of rapidly propagating failure and gross rupture of the RCS pressure boundary attributable to material degradation. The NRC staff requires the following additional information:

1. (Draft RAI – 1)

Section 2.3, "Reason for the Proposed Change," states the following:

> There is disagreement on what is required for isolation. The industry has historically held that isolation must be within the expected capabilities of the isolation device and some normal leakage past the isolation device is acceptable. This position is consistent with other uses of the term "isolate" in Standard Technical Specifications and in Section XI of the ASME [American Society of Mechanical Engineers] Code. The NRC position has been that isolation must be complete with no leakage past the isolation device.

Request

State the basis for how Section XI of the ASME Code supports the historical industry position of some normal leakage past the isolation device being acceptable or delete "and in Section XI of the ASME Code".

2. (Draft RAI – 3)

The Bases, Action A.1 of the Babcock & Wilcox, Westinghouse, Combustion Engineering, and AP1000 Standard Technical Specifications (STS) state in part that:

> If there is no available isolation device or if the flaw cannot be isolated from the RCS due to physical or operational reasons, then Condition C applies.

Similarly, the Bases, Action A.1 of the General Electric BWR/4 and General Electric BWR/6 STS state in part that:

> If there is no available isolation device or if the flaw cannot be isolated from the RCS due to physical or operational reasons, then Condition D applies.

These statements, though captured in the Bases, are not reflected in the in the STS changes in the Action tables. The proposed STS changes only assign a COMPLETION TIME of "Immediately" and the Required Action states, “Initiate action to isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.” There is no completion time for isolation of the flaw. For example, initiating action can be the installation of a blind flange, which will require a significant engineering, planning, and work execution effort without any intermediate isolation of leakage.

Request

Explain why the Required Action statement does not have a completion time for isolation of the flaw.

3. (New RAI)

Section 2.2 states (emphasis added):

> Note that the Reactor Coolant System pressure boundary considered in the RCS Operational LEAKAGE TS and the corresponding definitions are not equivalent to the reactor coolant pressure boundary as defined in 10 CFR [50.2], "Definitions.”

It is the NRC staff’s understanding that the definitions in 10 CFR 50.2 and the STS are meant to be consistent. They should be consistent because any RCPB leakage requires a shutdown within the time limits associated with the Reactor Coolant System LCO. The only way the licensee can avoid the shutdown is to isolate the leakage in accordance with the definition in 10 CFR 50.2 (i.e., isolating the fault from the RCS by closing two valves between the fault and the RCS). The valves must remain closed as indicated in the definition, and Action required per the TS.

Request

Clarify why the definitions are not the consistent or remove the sentence.

4. (In lieu of draft RAI – 2, consider the following recommendation)

Section 2.4 "Description of the Proposed Change," states in part that:

> The new Condition A provides a clear action to follow if pressure boundary leakage exists. The Bases for Required Action A.1 state that normal leakage past the isolation device is acceptable and it is included in identified or unidentified LEAKAGE and subject to the TS limits. The Bases also state that if there is no available isolation device or if the flaw cannot be isolated from the RCS due to physical or operational reasons, then Condition C (an immediate plant shutdown) applies.

Allowed leakage past the isolation device is permitted as described in the STS Actions A.1. However, aside from the clause in the definition of IDENTIFIED LEAKAGE which states that leakage cannot interfere with the operation of leakage detection systems, the change does not define limits on the allowable amount of leakage. However, even after isolation, continued propagation of the degradation at the isolated location may occur, which might impact the structural integrity of the system not only at the location of the degradation, but within the isolation boundary as well.

An example would be a flaw downstream of a closed isolation device. Though the pressure boundary function of the isolated section of the system is no longer required, structural failure at the location of the degradation (e.g., due to a licensing basis seismic event) could lead to a loss of support for the section of piping inboard of the isolation value and lead to its failure during the same licensing basis seismic event.

The NRC staff concludes that, even when isolation of the degraded portion of the system is achieved, a structural evaluation of the system should be conducted to ensure that structural integrity of the part of the system within the isolation boundary will be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location.

Recommendation:

Based on the above discussion, the NRC staff offers the following (strike out and underlined bolded italic) revisions to the proposed STS 3.4.7 Bases for Action A1:

> If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve. Normal LEAKAGE past the isolation device is acceptable if the LEAKAGE is within the pressure boundary LEAKAGE limits, as it will limit RCS LEAKAGE ~~and prevent further deterioration~~. ***While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location.*** LEAKAGE past the isolation device is included in identified or unidentified LEAKAGE. If there is no available isolation device or if the flaw cannot be isolated from the RCS due to physical or operational reasons, then Condition C applies…