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**To:** [\[Licensee\] Ron Reynolds \(Exelon\)](#)  
**Cc:** [James Danna \(James.Danna@nrc.gov\)](#); ["Kristensen, Kenneth J.\(GenCo-Nuc\)"](#); ["kevin.mattessich@exeloncorp.com"](#)  
**Subject:** SUBJECT: NINE MILE POINT, Unit 1 - REQUEST FOR ADDITIONAL INFORMATION REGARDING REACTOR PRESSURE VESSEL WATER INVENTORY CONTROL LICENSE AMENDMENT REQUEST (L-2017-LLA-0426)  
**Date:** Wednesday, August 15, 2018 12:38:00 PM

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Hello Ron,

By letter dated December 15, 2017 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML17349A027), Exelon Generation Company, LLC, (the licensee), submitted a license amendment request (LAR), to revise the Nine Mile Point Nuclear Station, Unit 1 (NMP1) Technical Specifications (TS) by replacing existing requirements related to "operations with a potential for draining the reactor vessel" (OPDRVs) with new requirements on reactor pressure vessel water (RPV) inventory control (WIC). The proposed changes are based on Technical Specifications Task Force Improved Standard Technical Specifications Change Traveler (TSTF) TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control" (ADAMS Accession No. ML16074A448). In the LAR the licensee states that the proposed TS changes are consistent with TSTF-542, Revision 2. In the LAR, the licensee has identified variations from the TSTF with supporting explanations.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in the LAR and has determined that additional information is needed to complete its review. Below is the NRC staff's request for additional information. The request for additional information was discussed with you and other representatives of Exelon on August 7 and 15, 2018, and it was agreed that your response would be provided within 45 days from the date of this email.

#### REQUEST FOR ADDITIONAL INFORMATION

The NRC's regulatory requirements related to the content of the TS are contained in Section 50.36, "Technical specifications," of Title 10 of the *Code of Federal Regulations* (10 CFR). Specifically, 10 CFR 50.36 requires technical specifications to include:

[...] settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded.

*Limiting conditions for operation* [...] When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial [required] action permitted by the technical specifications until the condition can be met. When a limiting condition for operation of any process step in the system of a fuel reprocessing plant is not met, the licensee shall shut down that part of

the operation or follow any remedial action permitted by the technical specifications until the condition can be met.

*Surveillance requirements.* Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

- 1) The licensee proposed to relocate the “Core Spray” functions from NMP1 TS Tables 3.6.2d and 4.6.2d to Proposed TS Marked-Up Tables 3.6.2m and 4.6.2m for the “Shutdown Condition - Cold and Refuel,” which is similar to TSTF-542, Revision 2, Table 3.3.5.2. The Proposed TS Marked-Up Table 3.6.2m (LAR Attachment 2, page 247b) lists “Manual” as the only “Start Core Spray Pumps” parameter. In the current TS Table 3.6.2d, the “Start Core Spray Pumps” parameters include “High Drywell Pressure” and “Low-Low Reactor Water Level.” In Section 2.2.5.1 of Attachment 1 to the LAR, the licensee stated:

To start the Core Spray pumps, either Parameter (1) High Drywell Pressure or (2) Low-Low Reactor Water Level, is required. Additionally, Table 3.6.2d includes Parameter (3) Reactor Pressure to open the Core Spray discharge valves, in conjunction with one of either Core Spray Pump start Parameters. In alignment with TSTF-542, Revision 2, Proposed Safety Basis (Section 3.3.1), the High Drywell Pressure Parameter is not realistic in the Shutdown Condition – Cold and is not transferred to the new Table 3.6.2m/4.6.2m.

Additionally, on page 249a of the Proposed TS Bases Marked-Up the licensee described NMP 1’s manual initiation instrumentation as follows:

Manual initiation is available for scram, reactor isolation, and containment isolation. In order to manually initiate other systems, each pump and valve is independently initiated from the control room.

The NMP1 core spray system is one of the “other systems” described above. Based on this information, the NMP1 design does not align with design description for ECCS Manual Initiation in the related section of TSTF-542, Revision 2, bases for STS 3.3.5.2, “RPV Water Inventory Control Instrumentation,” which assumes that an entire emergency core cooling system (ECCS) subsystem can be started with the press of one button.

Furthermore, TSTF-542 STS 3.3.5.2 Bases for Required Action D.1 states, in part:

If a manual initiation function is inoperable, the ECCS subsystem pumps can be started manually and the valves can be opened manually, but this is not the preferred condition.

The 24 hour Completion Time was chosen to allow time for the operator to

evaluate and repair any discovered inoperabilities.

The Completion Time is appropriate given the ability to manually start the ECCS pumps and open the injection valves and to manually ensure the pump does not overheat.

- a) Provide technical justification for not including the “Low-Low Reactor Water Level Parameter” under the “Start Core Spray Pumps” function in Proposed TS Marked-Up Tables 3.6.2m and 4.6.2m.
- b) Since the NMP1 core spray design does not have channels that start an entire ECCS subsystem, as described in the TSTF-542, revision 2 bases for STS 3.3.5.2, provide technical justification for the “Manual” parameter under the “Start Core Spray Pumps” function in Proposed TS Marked-Up Tables 3.6.2m and 4.6.2m.
- c) Since the NMP1 design does not have the capability to start an entire core spray subsystem with one button, the individual component controls for the pumps and valves would be the only method to inject water. Should any of those controls become inoperable, there would be no backup means to inject water using the associated required core spray subsystem, rendering it inoperable as well. Proposed NMP1 Note (d) to TS Tables 3.6.2m and 4.6.2m would allow the plant to remain in this condition, without injection capability, for up to 24 hours, which is a non-conservative TS action considering the assumptions described in the STS. Provide technical justification for why proposed Note (d) would be appropriate for the “Manual” parameter.
- d) On Page 79a of the Proposed TS Marked-Up, Specification e of Surveillance Requirement 4.1.9 states, “Verify the required core spray subsystem actuates on a manual initiation signal, in accordance with the Surveillance Frequency Control Program.” Considering that the NMP1 core spray design does not have manual initiation capability to start an entire subsystem with a manual initiation channel, please provide technical justification for Specification e.
- e) On page 247b of the Proposed TS Mark-Up, the Table 3.6.2m parameter, “Reactor Pressure and (1) above,” listed under Open Core Spray Discharge Valves has “1 per pump” in the columns for “Minimum No. of Tripped or Operable Trip Systems” and “Minimum No. of Operable Instrument Channels per Operable Trip System.” This parameter originated from Table 3.6.2d, which has “2” in the same columns. This requirement is similar to the TSTF-542 standard technical specification (STS) Table 3.3.5.2-1 Function 1.a, Core Spray - Reactor Steam Dome Pressure - Low (Injection Permissive). This function’s mode 4 and 5 requirements were moved from STS Table 3.3.5.1-1 Function 1.c; the same number of required channels per function were maintained in Table 3.3.5.2-1.

The LAR includes technical justifications for several variations from TSTF-542, Revision 2, but the LAR does not include a technical justification for this variation. Provide technical justification for this variation.

- f) Since the NMP1 design has no backup to the manual core spray function to inject water should the individual component controls become inoperable, the application

of the equivalent to STS 3.3.5.2 Condition D in NMP1 TS Tables 3.6.2m and 4.6.2m, Note (d), appears to be a non-conservative action, which could allow the plant to be without injection capability via its required ECCS subsystem for up to 24 hours. Please provide technical justification for why Note (d) would be appropriate for the "Manual" parameter.

- 2) Proposed TS Marked-Up Table 4.6.2m includes a "Start Core Spray Pumps, Manual" parameter. This parameter includes surveillance requirements for sensor check, instrument channel test, and instrument channel calibration. While the instrument channel test appears to be equivalent to the TSTF-542, Revision 2, surveillance requirement (SR) 3.3.5.2.2, Channel Functional Test. It is not clear why the sensor check and instrument channel calibration SRs are included for the "Manual" parameter. TSTF-542, Revision 2 includes only SR 3.3.5.2.2 for the equivalent "Core Spray System, Manual" parameter. The LAR includes technical justifications for several variations from TSTF-542, Revision 2, but the LAR does not include a technical justification for this variation.

- a) Provide technical justification for including the "Manual" parameter.
- b) Provide technical justification for the variation from TSTF-542, Revision 2 described for the "Start Core Spray Pump, Manual" parameter's SRs.

- 3) The Proposed TS Marked-Up Table 4.6.2m "Open Spray Core Discharge Valves Reactor Pressure" parameter includes SRs for a sensor check, instrument channel test, and an instrument channel calibration. This parameter is proposed to have its "Shutdown Condition – Cold and Refuel" mode applicability relocated to TS Tables 3.6.2m and 4.6.2m from TS Tables 3.6.2d and 4.6.2d. In the current TS tables, this parameter does not include a sensor check SR.

Provide justification for why a sensor check surveillance requirement was proposed for this parameter in Proposed TS Marked-Up Table 4.6.2m.

- 4) The licensee proposed NMP1 TS Marked-Up Tables 3.6.2m and 4.6.2m to capture the TSTF-542, Revision 2, RPVWIC instrumentation requirements. The notes for these proposed tables are similar to the TSTF-542, Revision 2 STS 3.3.5.2 conditions, required actions, and completion times. Specifically, proposed NMP1 Marked-Up Tables 3.6.2m and 4.6.2m notes (d) and (e) are similar to TSTF-542, Revision 2, STS 3.3.5.2 Conditions D and E, respectively. The LAR describes the variations from TSTF-542, Revision 2. However, the application does not contain an explanation for how the equivalents to Conditions A, B, and C in TSTF-542, Revision 2 STS 3.3.5.2 were incorporated. The LAR includes technical justifications for several variations from TSTF-542, Revision 2, but the LAR does not include a technical justification for this variation.

Provide justification for the variation from the TSTF-542, Revision 2 conditions, required actions, and completion times.

- 5) The LAR for NMP1 proposed that Surveillance Requirements Sensor Check, Instrument Channel Test, and Instrument Channel Calibration are to be included in Proposed TS Marked-Up 3.6.2m and 4.6.2m. These SRs differ from the STS SR

wording in the equivalent section, TSTF-542, Revision 2 STS 3.3.5.2, of channel check, channel functional test, and logic system functional test. The NMP1 definitions for sensor checks and instrument channel tests are similar to the STS definitions for channel checks and channel functional tests, respectively. However, the NMP1 definition for an instrument channel calibration does not align with the STS definition for a logic system functional test; it is similar to the STS definition for a channel calibration. The LAR includes technical justifications for several variations from TSTF-542, Revision 2, but the LAR does not include technical justifications for these variations.

Please provide technical justification for the following variations from TSTF-542, Revision 2 in NMP1 Proposed TS Marked-Up Tables 3.6.2m and 4.6.2m:

- a) inclusion of an Instrument Channel Calibration SR, and
  - b) omission of an equivalent to the TSTF-542, Revision 2 STS SR 3.3.5.2.3, "Logic System Functional Test."
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- 6) In the LAR, the interrelationship between some related specifications in the Proposed TS Marked-Up is unclear. For example, in Tables 3.6.2m and 4.6.2m, there are several table notes that state, "...take the ACTION required by Specification 3.6.2a for that Parameter." However, under Specification a of LCO 3.6.2 in the Proposed TS Marked-Up, the actions would require entering the appropriate actions for inoperable core spray subsystems under LCO 3.1.4, which is only applicable during the "Power Operating Condition or Shutdown Condition – Hot," instead of LCO 3.1.9, which would apply when the reactor coolant temperature is less than or equal to 212 degrees Fahrenheit.

Verify the references related specifications are "linked" to the appropriate specification.

- 7) Section 2.2.5.1 of Attachment 1 to the LAR states, in part, "The applicability in the Refuel position of the mode switch is removed from Table 3.6.2d, for the Parameters Start Core Spray Pumps and Open Core Spray Discharge Valves." This statement is inconsistent with the Proposed TS Mark-Up for Table 3.6.2d. The Refuel column still contains an "x" for each, indicating applicability.

Clarify whether the applicability in the refuel position of the mode switch is or is not being removed from Proposed TS Mark-Up Table 3.6.2d.

- 8) TSTF-542 STS Table 3.3.5.2-1 Footnote (a), applied to the Required Channels per Function column requirements, is an exception to the instrumentation operability requirements. It states, "Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, 'Reactor Pressure Vessel Water Inventory Control.'" Without a reference to Footnote (a), the Table 3.3.5.2-1 functions would be required to be operable for all low pressure ECCS subsystems, regardless of whether the subsystem is credited to meet LCO 3.5.2. In addition, after the NRC approved TSTF-542 for adoption, a generic issue was identified where the footnote was missed on two of the functions in Table 3.3.5.2-1.

Therefore, the TSTF-542 Table 3.3.5.2-1 functions to which Footnote (a) should be applied are as follows:

#### Core Spray System

- 1.a Reactor Steam Dome Pressure – Low (Injection Permissive)
- 1.b Core Spray Pump Discharge Flow – Low (Bypass)
- 1.c Manual Initiation

#### Low Pressure Coolant Injection System

- 2.a Reactor Steam Dome Pressure – Low (Injection Permissive)
- 2.b Low Pressure Coolant Injection Pump Discharge Flow – Low (Bypass)
- 2.c Manual Initiation

TSTF-542 STS Table 3.3.5.2-1 and LCO 3.5.2 are similar to proposed NMP1 Table 3.6.2m and LCO 3.1.9, respectively. However, NRC staff did not locate an equivalent to Footnote (a) in the LAR. Please provide technical justification for this variation.

- 9) TSTF-542, Revision 2 states the following (emphasis added):

[...] an additional method of water injection, *to augment* the newly required ECCS subsystem, *is also required* when the Drain Time is less than 8 hours". This is especially true for action D, "Drain time < 8 hours.

In the LAR, LCO 3.1.9 in the Proposed TS Marked-Up would maintain only one core spray subsystem operable. The application does not contain an explanation for what additional method(s) of water injection would be used especially when drain time is less than 8 hours.

Describe the additional method(s) of injection that would be used when taking the required action described in Specification e(1) of Proposed TS Marked-Up 3.1.9. In the description, state whether the additional method(s) of injection is able to operate without offsite electrical power.

- 10) TSTF-542, Revision 2 includes a note before Required Action D.1 in TS 3.5.2 that states:

Required ECCS injection/spray subsystem or additional method of water injection shall be capable of operating without offsite electrical power.

The equivalent required action in the Proposed TS Marked-Up is Specification e(1) in LCO 3.1.9. Specification e(1) does not include the note. The LAR includes technical justifications for several variations from TSTF-542, Revision 2, but the LAR does not include technical justifications for this variation.

Provide technical justification for the variation from the TSTF-542, Revision 2 note concerning additional method of water injection.

- 11) In the LCO 3.1.9 of the Proposed TS Marked-Up, the stated objective is "To assure the RPV water inventory is maintained -10 inches indicator scale." However, Specification a supplied with LCO 3.1.9 cites "top of active fuel (TAF)" instead of "-10 inches indicator scale." This appears to be contrary to the discussion in Section 2.2.2 of the LAR and the stated objective of proposed LCO 3.1.9.

Clarify whether water level will be maintained to the TAF or -10 inches indicator scale.

Best Regards,  
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Senior Project Manager

Plant Licensing Branch I  
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