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December 27, 2017

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

Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69
NRC Docket No. 50-410

Subject: Supplemental Information for Nine Mile Point Nuclear Station, Unit 2, to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control," Revision 2

References:

1. Letter from J. Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request - Revise Technical Specifications to Adopt TSTF-542, 'Reactor Pressure Vessel Water Inventory Control,' Revision 2," dated February 28, 2017

2. Letter from M. Marshall (Senior Project Manager, U.S Nuclear Regulatory Commission) to Mr. B. Hanson (Exelon Generation Company, LLC), "Nine Mile Point Nuclear Station, Unit 2 - Request for Additional Information Regarding License Amendment Concerning Reactor Pressure Vessel Water Inventory Control (CAC No. MF9357)," dated October 10, 2017

3. Letter from J. Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information by the Office of Nuclear Reactor Regulation to Support Review of Nine Mile Point Nuclear Station, Unit 2, License Amendment Request to Adopt TSTF-542, Revision 2, Reactor Pressure Vessel Water Inventory Control," dated November 3, 2017

4. Public Meeting Announcement, "Meeting with Technical Specifications Task Force (TSTF) RE: TSTF-542, 'Reactor Pressure Vessel Water Inventory Control,' " dated October 27, 2017

By letter dated February 28, 2017 (Reference 1), Exelon Generation Company, LLC (Exelon) requested to change the Nine Mile Point Nuclear Station, Unit 2 (NMP2) Technical Specifications (TS). The proposed amendment request would revise NMP2 TS by replacing the existing specifications related to Operations with a Potential for Draining the Reactor Vessel with revised requirements for Reactor Pressure Vessel Water Inventory Control to protect Safety Limit 2.1.1.3.

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with revised requirements for Reactor Pressure Vessel Water Inventory Control to protect Safety Limit 2.1.1.3.

On October 10, 2017, the U.S. Nuclear Regulatory Commission (NRC) provided a Request for Additional Information (RAI). On November 3, 2017, Exelon submitted to the NRC the RAI response (Reference 3).

On October 27, 2017, a public meeting was held by the NRC and the Boiling Water Reactor Owners Group (BWROG) to discuss a proposed TSTF-542 variation affecting BWR/5 and 6 plants. As noted in the NRC Public Meeting Announcement (Reference 4), the details of the proposed variation were provided in ADAMS Accession Number ML17289A902.

Attachment 1 to this letter contains the supplemental information to address the proposed variation provided in ADAMS Accession Number ML17289A902 and Attachment 2 provides the revised TS and Bases markups. This supplement supersedes the RAI response to Question RAI-1 provided on November 3, 2017 (Reference 3).

Also, two additional supplements are provided in Attachment 2. First, an editorial error was noted in TSTF-542 affecting Bases Page B 3.3.5.2-8. The statement, "This Function isolates the Group 11 valves," is revised to refer to the Group 5 valves. Second, TS page 3.6.4.3-2, Condition E, was incompletely revised in the original submittal (Reference 1). Condition E contains the phrase, "...or during OPDRVs," that is deleted to meet the intent of TSTF-542, Revision 2. See Attachment 2 for the revised TS and Bases markups.

Exelon has reviewed the information supporting a finding of no significant hazards consideration and the environmental consideration provided to the NRC in Reference 1. The supplemental information provided in this letter does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. Furthermore, the supplemental information provided in this letter 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 amendment.

With the supplemental information provided in Attachments 1 and 2 to this letter, Exelon requests approval of the proposed amendment by March 1, 2018. The requested approval date supports the implementation of TSTF-542 prior to the start of the refueling outage. Once approved, the amendment shall be implemented no later than the start of NMP2 2018 refueling outage.

There are no commitments contained in this response.

If you should have any questions regarding this submittal, please contact Ron Reynolds at 610-765-5247.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 27th day of December 2017.

James Barstow
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment 1: Supplemental Information
Attachment 2: Revised Technical Specification Pages and Bases Marked-Up Pages

cc:	USNRC Region I Regional Administrator	w/attachments
	USNRC Senior Resident Inspector – NMP	"
	USNRC Project Manager, NRR – NMP	"
	A. L. Peterson, NYSERDA	"

ATTACHMENT 1

Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License NPF-69
Docket No. 50-410

SUPPLEMENTAL INFORMATION

The Nine Mile Point Unit 2 (NMP2) License Amendment Request (LAR) submittal dated February 28, 2017, for adoption of TSTF-542, is revised to reflect the changes to the Technical Specifications (TS) and Bases as agreed upon between the Boiling Water Reactor Owners Group (BWROG) and the NRC. These changes were discussed during the Public Meeting held on October 27, 2017, with the proposed variation documented in ADAMS Accession Number ML17289A902. Subsequently, a needed change to Surveillance Requirement (SR) 3.5.2.8 was identified for consistency with the proposed variation. See Attachment 2 for revised markups.

Section 2.2, Variations, of the LAR is revised to add the following:

> Table 3.3.5.2-1 is revised to reflect the NMP2 design. Function 3, High Pressure Core Spray (HPCS) System, Function 3.a, "Reactor Vessel Water Level - High, Level 8," and Function 3.e, "Manual initiation," that appear in TSTF-542 are not included in the proposed Technical Specifications. This corrects an error in TSTF-542 that affects the BWR/5 and BWR/6 ECCS instrumentation requirements.
>
> The purpose of the manual initiation function is to allow manual actuation of the ECCS subsystem required by TS 3.5.2 to mitigate a draining event. The Reactor Vessel Water Level - High, Level 8 signal prevents overfilling of the reactor vessel into the main steam lines by closing the HPCS injection valves when the water level is above the Level 8 setpoint. Therefore, if HPCS is the required ECCS subsystem and the water level is above Level 8, manually actuating Function 3.e will not inject inventory into the reactor vessel. This is not the desired response. If the Level 8 function is retained in Table 3.3.5.2-1, the function would need to be rendered inoperable in order to inject water when above the Level 8 water level. This would not be consistent with including the function in Table 3.3.5.2-1.
>
> NMP2 has the capability to manually start the HPCS pump and to open the HPCS injection valve if needed, not utilizing Functions 3.a and 3.e. If desired to inject water into the reactor pressure vessel using the HPCS, the reactor operator can follow procedural steps to take manual control of the pump and injection valve to add inventory. If the water level is above Level 8, then manual override of the Level 8 function can be performed to allow the HPCS injection valve to be opened. These actions can be performed from the control room and can be accomplished well within the 1-hour minimum drain time limit specified in TS 3.5.2, Condition E. Consequently, the Function 3.a and 3.e instrumentation functions are not needed to actuate the HPCS subsystem components to mitigate a draining event.

The ability to override the HPCS Level 8 isolation is already part of the BWR Emergency Operating Procedures and is practiced during Operator training. SR 3.5.2.8 is revised to assure that the HPCS manual start capability (including the HPCS Level 8 isolation override feature) is tested.

TS submittal page 3.3.5.2-5 (Table 3.3.5.2-1, page 2 of 2) is revised to delete Functions 3.a. and 3.e. The remaining Functions under 3. High Pressure Core Spray (HPCS) System are renumbered accordingly. See Attachment 2 for revised markups.

TS submittal page 3.5.2-5 is revised to re-word SR 3.5.2.8 to say, "Verify the required LPCI or LPCS subsystem actuates on a manual initiation signal or the required HPCS subsystem can be manually operated." See Attachment 2 for revised markups.

Bases submittal pages B 3.3.5.2-5 through -8 are revised as follows:

> Functions 3.a and 3.e are deleted. The remaining Functions under 3. High Pressure Core Spray (HPCS) System are renumbered accordingly.

SR 3.5.2.8 description on Bases submittal page B 3.5.2-6 is revised to assure that the HPCS manual start capability (including the HPCS Level 8 isolation override feature) is tested. See Attachment 2 for revised markups.

Also, two additional supplements are provided in this submittal. First, an editorial error was noted in TSTF-542 affecting Bases Page B 3.3.5.2-8. The statement "This Function isolates the Group 11 valves" is revised to refer to the Group 5 valves. Second, TS page 3.6.4.3-2 was incompletely revised in the original submittal (Reference 1). Condition E contains the phrase, "...or during OPDRVs," that is deleted to meet the intent of TSTF-542, Revision 2. See Attachment 2 for the revised TS and Bases markups.

ATTACHMENT 2

Nine Mile Point Nuclear Station, Unit 2
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PROPOSED TECHNICAL SPECIFICATION and BASES MARKED-UP PAGES

TS Pages

3.3.5.2-5

3.5.2-5

3.6.4.3-2

Bases Pages

B 3.3.5.2-5 thru -8

B 3.5.2-6

Table 3.3.5.2-1 (page 2 of 2)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
~~a. Reactor Vessel Water Level High, Level 8~~	~~4, 5~~	~~1 (a)~~	~~E~~	~~SR 3.3.5.2.1~~ ~~SR 3.3.5.2.2~~	~~≤ 209.3~~ ~~inches~~
~~b.~~ Pump Suction Pressure-Low	$4^{(b)}$, $5^{(b)}$	1 (a)	D	~~SR 3.3.5.2.1~~ SR 3.3.5.2.2	≥94.5 inches H_2O
~~c.~~ HPCS Pump Discharge Pressure-High (Bypass) (d)	4, 5	1 per pump (a)	F	SR 3.3.5.2.1 SR 3.3.5.2.2	≥ 220 psig
~~d.~~ HPCS System Flow Rate-Low (Bypass)	4, 5	1 per pump (a)	F	SR 3.3.5.2.1 SR 3.3.5.2.2	> 580 gpm and ≤ 720 gpm
~~e. Manual Initiation (d)~~	~~4, 5~~	~~1 per Subsystem (a)~~	~~F~~	~~SR 3.3.5.2.3~~	~~N/A~~
4. RHR System Isolation					
a. Reactor Vessel Water Level-Low, Level 3	(c)	2 in one Trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2	≥ 157.8 inches
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Reactor Vessel Water Level-Low Low, Level 2	(c)	2 in one Trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2	≥ 101.8 inches

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "Reactor Pressure Vessel Water Inventory Control."
(b) When HPCS is OPERABLE for compliance with LCO 3.5.2, "RPV Water Inventory Control," and aligned to the condensate storage tank.
(c) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.
(d) The injection functions of Drywell Pressure-High ~~and Manual Initiation are~~ not required to be OPERABLE with reactor steam dome pressure less than 600 psig.

Delete
a.
b.
c.
Delete
Delete
Delete
is

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.6	----------NOTE---------- Not required to be met for ECCS pumps aligned for shutdown cooling. ---------- Operate the required ECCS injection/spray subsystem through the recirculation line for ≥ 10 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.8	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify the required ~~ECCS injection/spray~~ subsystem actuates on a manual initiation signal.	In accordance with the Surveillance Frequency Control Program

LPCI or LPCS

or the required HPCS subsystem can be manually operated

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. ~~AND~~ ~~C.2.2 Initiate action to suspend OPDRVs.~~	Immediately ~~Immediately~~
D. Two SGT subsystems inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately
E. Two SGT subsystems inoperable during movement of recently irradiated fuel assemblies in the secondary containment~~, or during OPDRVs.~~ Delete Delete comma and add period	E.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Suspend movement of recently irradiated fuel assemblies in the secondary containment. ~~AND~~	Immediately ~~(continued)~~

High Pressure Core Spray System

Delete

~~3.a. Reactor Vessel Water Level – High, Level 8~~

~~High RPV water level indicates that sufficient cooling water inventory exists in the reactor vessel such that there is no danger to the fuel. Therefore, the Level 8 signal is used to close the HPCS injection valve to prevent overflow into the main steam lines (MSLs).~~

~~Reactor Vessel Water Level – High, Level 8 signals for HPCS are initiated from four differential pressure transmitters from the wide range water level measurement instrumentation. One channel associated with the HPCS System required to be OPERABLE by LCO 3.5.2 is required to be OPERABLE.~~

~~The reactor Vessel Water Level – High, Level 8 Allowable Value is chosen to isolate flow from the HPCS System prior to water overflowing into the MSLs.~~

~~One channel of Reactor Vessel Water Level – High, Level 8 Function is required to be OPERABLE in MODES 4 and 5 when the associated HPCS is required to be OPERABLE by LCO 3.5.2 to ensure HPCS is capable of injecting into the Reactor Pressure Vessel when manually initiated.~~

3.a.

~~3.b~~. Pump Suction Pressure – Low

Low pump suction pressure, which is an indication of low level in the CST, indicates the unavailability of an adequate supply of makeup water from this normal source. Normally the suction valves between HPCS and the CST are open and, upon receiving a HPCS initiation signal, water for HPCS injection would be taken from the CST. However, if the pump suction pressure (indicating low water level in the CST) falls below a preselected level for a preselected time, first the suppression pool suction valve automatically opens, and then the CST suction valve automatically closes. This ensures that an adequate supply of makeup water is available to the HPCS pump. To prevent losing suction to the pump, the suction valves are interlocked so that the suppression pool suction valve must be open before the CST suction valve automatically closes. The Functions are implicitly assumed in the accident and transient analyses (which take credit for HPCS) since the analyses assume that the HPCS suction source is the suppression pool.

(continued)

BASES

APPLICABLE SAFETY ANALYSIS, LCO, and APPLICABILITY (continued)

Pump Suction Pressure – Low signals are initiated from two pressure transmitters. The Pump Suction Pressure – Low Function Allowable Value is high enough to ensure adequate pump suction head while water is being taken from the CST. The pressure at which the transfer occurs also ensures sufficient volume of water is used by the HPCS pump before the transfer occurs and is analytically determined to prevent the effects of vortexing. The Pump Suction Pressure – Timer Function is initiated by a single time delay relay. While the Pump Suction Pressure – Timer Function is provided to prevent spurious suction source automatic swaps, the Allowable Value is low enough such that the automatic suction swap from the CST to the suppression pool will occur before adequate pump suction head is lost.

One channel of the Pump Suction Pressure – Low Function are only required to be OPERABLE when HPCS is required to be OPERABLE to ensure that no single instrument failure can preclude HPCS swap to suppression pool source. In addition, one channel of the Pump Suction Pressure – Timer Function is only required to be OPERABLE when HPCS is required to be OPERABLE. Thus, the Functions are required to be OPERABLE in MODES 1, 2, and 3. In MODES 4 and 5, the Functions are required to be OPERABLE only when HPCS is required to be OPERABLE to fulfill the requirements of LCO 3.5.2, HPCS is aligned to the CST, and the CST water level is not within the limits of SR 3.5.2.2. With CST water level within limits, a sufficient supply of water exists for injection to minimize the consequences of a vessel draindown event. Refer to LCO 3.5.1 and LCO 3.5.2 for HPCS Applicability Bases.

3.b., 3.c.

~~3.c, 3.d.~~ HPCS Pump Discharge Pressure - High (Bypass) and HPCS System Flow Rate - Low (Bypass)

The minimum flow instruments are provided to protect the HPCS pump from overheating when the pump is operating and the associated injection valve is not fully open. The minimum flow line valve is opened when low flow and high pump discharge pressure are

(continued)

APPLICABLE SAFETY ANALYSIS, LCO, and APPLICABILITY (continued)

sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump or the discharge pressure is low (indicating the HPCS pump is not operating). The HPCS System Flow Rate – Low (Bypass) and HPCS Pump Discharge Pressure – High (Bypass) Functions are assumed to be OPERABLE and capable of closing the minimum flow valve to ensure that the ECCS flow assumed during the transients and accidents analyzed in References 1, 2, and 3 are met. The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

One differential pressure transmitter is used to detect the HPCS Systems' flow rate. The logic is arranged such that the transmitter causes the minimum flow valve to open, provided the HPCS pump discharge pressure, sensed by another transmitter, is high enough (indicating the pump is operating). The logic will close the minimum flow valve once the closure setpoint is exceeded. (The valve will also close upon HPCS pump discharge pressure decreasing below the setpoint.)

The HPCS System Flow Rate - Low and HPCS Pump Discharge Pressure - High Allowable Value is high enough to ensure that pump flow rate is sufficient to protect the pump, yet low enough to ensure that the closure of the minimum flow valve is initiated to allow full flow into the core.

The HPCS Pump Discharge Pressure - High Allowable Value is set high enough to ensure that the valve will not be open when the pump is not operating.

One channel of each Function associated with one pump is required to be OPERABLE when HPCS is required to be OPERABLE by LCO 3.5.2 in MODES 4 and 5.

Delete

~~3.e. Manual Initiation~~

~~The Manual Initiation switch and push button channels introduce a signal into the HPCS logic to provide manual initiation capability and is redundant to the automatic protective instrumentation. There is one switch and push button (with two channels) for the HPCS System. One channel of the Manual Initiation Function is only required to be OPERABLE in MODES 4 and 5 when the associated ECCS subsystem is required to be OPERABLE per LCO 3.5.2.~~

~~There is no Allowable Value for this Function since the channel is mechanically actuated based solely on the position of the push button.~~

(continued)

BASES

APPLICABLE SAFETY ANALYSIS, LCO, and APPLICABILITY (continued)

RHR System Isolation

4.a - Reactor Vessel Water Level - Low. Level 3

The definition of DRAIN TIME allows crediting the closing of penetration flow paths that are capable of being automatically isolated by RPV water level isolation instrumentation prior to the RPV water level being equal to the TAF. The Reactor Vessel Water Level - Low, Level 3 Function is only required to be OPERABLE when automatic isolation of the associated RHR penetration flow path is credited in calculating DRAIN TIME.

Reactor Vessel Water Level – Low, Level 3 signals are initiated from two differential pressure transmitters (two per trip system) that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. While four channels (two channels per trip system) of the Reactor Vessel Water Level - Low, Level 3 Function are available, only two channels (all in the same trip system) are required to be OPERABLE.

The Reactor Vessel Water Level - Low, Level 3 Allowable Value was chosen to be the same as the RPS Reactor Vessel Water Level - Low, Level 3 Allowable Value (LCO 3.3.1.1), since the capability to cool the fuel may be threatened.

This Function isolates the Group ~~11~~ 5 valves.

Reactor Water Cleanup (RWCU) System Isolation

5.a - Reactor Vessel Water level - Low Low, Level 2

The definition of DRAIN TIME allows crediting the closing of penetration flow paths that are capable of being automatically isolated by RPV water level isolation instrumentation prior to the RPV water level being equal to the TAF. The Reactor Vessel Water Level - Low Low, Level 2 Function associated with RWCU System isolation may be credited for automatic isolation of penetration flow paths associated with the RWCU System.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.2.~~4~~ 6 ~~(continued)~~

Verifying that the required ECCS injection/spray subsystem can be manually started and operate for at least 10 minutes demonstrates that the subsystem is available to mitigate a draining event. Testing the ECCS injection/spray subsystem through the recirculation line is necessary to avoid overfilling the refueling cavity. The minimum operating time of 10 minutes was based on engineering judgment.
~~Because of the low pressure and low temperature conditions in MODES 4 and 5, sufficient time will be available to manually align and initiate LPCI subsystem operation to provide core cooling prior to postulated fuel uncovery. This will ensure adequate core cooling if an inadvertent vessel draindown should occur.~~

~~The Surveillance is modified by a Note which exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include station a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.5.2.7

Verifying that each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated RPV water level isolation signal is required to prevent RPV water inventory from dropping below the TAF should an unexpected draining event occur. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

Insert A
The HPCS System is verified to start manually from a standby configuration, and includes the ability to override the RPV Level 8 injection valve isolation.

SR 3.5.2.8

or

The required ECCS subsystem is required to actuate on a manual initiation signal. This Surveillance verifies that a manual initiation signal will cause the required ~~LCPI~~ subsystem, LPCS System~~, or HPCS System~~ to start and operate as designed, including pump startup and actuation of all automatic valves to their required positions. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

LPCI

Insert A

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active