Brad Berryman
Site Vice President

Susquehanna Nuclear, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.2904 Fax 570.542.1504
Brad.Berryman@TalenEnergy.com

TALEN ENERGY

FEB 16 2018

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

10 CFR 50.90

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT TO LICENSES NPF-14 AND NPF-22: RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION AND SUPPLEMENT TO APPLICATION TO ADOPT TSTF-542, "REACTOR PRESSURE VESSEL WATER INVENTORY CONTROL"
PLA-7673

Docket Nos. 50-387 and 50-388

References:

1) *Letter from B. Berryman (Susquehanna Nuclear, LLC) to U.S. Nuclear Regulatory Commission (NRC), "Application to Revise Technical Specifications to Adopt TSTF-542, Reactor Pressure Vessel Water Inventory Control," dated September 20, 2017 (ML17265A443)*
2) *Electronic mail message from Lisa Williams (Boiling Water Reactor Owners Group (BWROG), Licensing Committee Chairman (TSTF Committee)) to BWROG Members- "TSTF-542 issue re: NUREG-1433 Reactor Steam Dome Pressure - Low," dated December 14, 2017*
3) *Letter from Tanya E. Hood (NRC) to B. Berryman Susquehanna Nuclear, LLC, "Request for Additional Information Regarding License Amendment Request to Revise Technical Specifications to Adopt Technical Specifications Task Force Traveler TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control" (CAC Nos. MG0269 and MG0270; EPID L-2017-LLA-0306), dated January 22, 2018*

By letter dated September 20, 2017 (Reference 1), Susquehanna Nuclear, LLC (Susquehanna) requested an amendment to the Technical Specifications (TS) for Susquehanna Steam Electric Station (SSES) Units 1 and 2, Operating Licenses NPF-14 and NPF-22, to replace existing Technical Specification (TS) requirements related to "operations with a potential for draining the reactor vessel" with new requirements on Reactor Pressure Vessel Water Inventory Control to protect Safety Limit 2.1.1.3.

Subsequently, the Boiling Water Reactor Owners Group (BWROG)/Technical Specification Task Force (TSTF) Committee notified BWROG members of an administrative oversight in the TSTF-542 TS mark-ups for the model application (Reference 2). Since Susquehanna used the model application mark-up in preparing the

SSES request, this letter supplements the original Susquehanna request to address the identified oversight. Details concerning the supplement are provided in Enclosure 1 along with revised replacement TS page mark-ups for SSES, Units 1 and 2, which are included in Enclosure 3.

This letter also addresses an NRC request for additional information (RAI) (Reference 3). Response to an NRC RAI is provided in Enclosure 2.

Susquehanna has reviewed the information supporting a finding of No Significant Hazards Consideration and the Environmental Consideration provided to the NRC in the Reference 1 letter. The supplemental information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the supplemental information provided in this submittal 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.

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Mr. Jason Jennings, Manager – Nuclear Regulatory Affairs at (570) 542-3155.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 2/16/18

B. Berryman

Enclosures:

1. Supplement to Address Administrative Oversight in the TSTF-542 TS Mark-Up
2. Response to NRC Request for Additional Information
3. Revised Marked-Up Technical Specification Pages

Copy: NRC Region I
Ms. L. H. Micewski, NRC Sr. Resident Inspector
Ms. T. E. Hood, NRC Project Manager
Mr. M. Shields, PA DEP/BRP

Enclosure 1 to PLA-7673

Supplement to Address Administrative Oversight in the TSTF-542 TS Mark-Up

SUPPLEMENT TO ADDRESS ADMINISTRATIVE OVERSIGHT IN THE TSTF-542 TS MARK-UP

In an electronic mail message distributed to Boiling Water Reactor Owners Group (BWROG) members dated December 14, 2017, Susquehanna was informed by the Boiling Water Reactor Owners Group (BWROG)/Technical Specification Task Force (TSTF) Committee of an administrative oversight in the TSTF-542 TS mark-ups for the model application, in that a note was inadvertently omitted from NUREG-1433, Table 3.3.5.2-1, Functions 1.a and 2.a. Without the note, the Reactor Steam Dome Pressure - Low functions are required to be operable for all low pressure Emergency Core Cooling System (ECCS) subsystems, regardless of whether they are credited for meeting applicable TS for reactor pressure vessel water inventory control.

Prior to the model application for TSTF-542, NUREG-1433 Functions 1.d and 2.d in TS Table 3.3.5.1-1 had a Mode 4 and 5 applicability modified by a note specifying that these functions are only required when the associated ECCS subsystems are required to be operable. In the model application for TSTF 542, Susquehanna Functions 1.d and 2.d were transferred to Table 3.3.5.2-1 as Functions 1.a and 2.a; however, the note was not transferred with these functions although the applicable TS Bases indicates that it had been.

Without the footnote, Reactor Steam Dome Pressure - Low functions (i.e., Functions 1.a and 2.a) are required to be operable for all low pressure ECCS subsystems, regardless of whether the subsystems are credited to meet applicable TS. Accordingly, Enclosure 3 contains copies of the revised TS page mark-ups for SSES, Units 1 and 2, that reflect the incorporation of the missing note for Functions 1.a and 2.a in Table 3.3.5.2-1.

Enclosure 2 to PLA-7673

Response to NRC Request for Additional Information

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

NRC Request for Additional Information (RAI):

In Enclosure 1 of the LAR, page 3 of 8, the licensee proposed the following variation:

2.2.4. STS [Standard Technical Specifications] Table 3.3.5.1-1, Function 1.d, "Core Spray Pump Discharge Flow - Low (Bypass)," and Function 2.g, "Low Pressure Coolant Injection Pump - Discharge Flow - Low (Bypass)," are not included in the Susquehanna TSs. These functions are not required to ensure manual initiation of CS [core spray] and LPCI [Low Pressure Coolant Injection] and are therefore not included in TS 3.3.5.2, "Reactor Pressure Vessel (RPV) Water Inventory Control," Table 3.3.5.2-1.

TSTF-542 moves the CS and LPCI bypass requirements from STS Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation," to new STS Table 3.3.5.2-1, "RPV Water Inventory Control Instrumentation." In particular, Section 3.3.4.2 of the TSTF-542 technical evaluation describes the purpose of the STS requirement:

"The minimum flow instruments are provided to protect the associated low pressure ECCS [Emergency Core Cooling System] 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 is sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump."

As per the requirements contained in TSTF-542, successful RPV water inventory control is based, in part, on the capability of an operable ECCS pump to inject water as needed to make up the inventory. Sections 6.2.4.3.6.1 and 6.2.4.3.6.2 of the SSES Final Safety Analysis Report describe this protective function of the SSES minimum flow rate instruments to signal automatically opening or closing the valves in the minimum flow bypass lines for the low pressure residual heat removal and CS pumps. Furthermore, the presence or absence of a requirement in a current TS is not in and of itself justification for the proposed TS.

Since the licensee has omitted the equivalent of the TSTF-542 instrumentation requirements for both CS and LPCI Pump Discharge Flow-Low (Bypass) from the proposed TSs, please describe how there is reasonable assurance that a required SSES ECCS pump will operate as expected (e.g., the bypass line will not lessen expected discharge flow, and said pump will not overheat when the associated injection valve is not fully open).

Susquehanna Response:

From a design perspective, the Low Pressure Coolant Injection (LPCI) and Core Spray (CS) injection valves start opening upon receipt of an initiation signal when reactor pressure vessel (RPV) pressure is below the pressure permissive setpoint. The pressure would be expected to be below the permissive setpoint in Modes 4 and 5 when Technical Specification 3.3.5.2 is applicable. As a result, there is no time delay when either system is initiated via the manual push buttons and therefore no potential for deadheading and overheating the pumps.

With regard to lessening expected discharge flow if the minimum flow valve failed to close, system flow capacity is sufficient to mitigate any potential drain down event even with loss the maximum amount of flow that could be diverted by the bypass line.

The following provides additional information regarding existing requirements associated with minimum flow valve operation and testing that demonstrates that pump protection and sufficient flow are maintained during actual operation of the system:

For the Residual Heat Removal (RHR) and CS systems, minimum flow valve opening is a function of the pump breaker being closed (pump running) and system flow less than the setpoint. Testing of the minimum flow function for RHR is performed separately for each pump every 24 months during RHR logic system functional testing. This test is performed using manual component by component logic. For the CS system, the minimum flow valve is verified to open on low flow during the quarterly flow verification.

Existing requirements for manual startup of the Residual Heat Removal (RHR) system in Low Pressure Coolant Injection (LPCI) mode are contained in the RHR System operating procedure. The requirements for manual startup of the Core Spray (CS) system are contained in the Core Spray System operating procedure. All actions associated with manual startup of either LPCI or CS can be performed in the control room and take significantly less than one hour to perform. If manual initiation of either system were to be required to mitigate a drain down event using existing procedures, a more controlled injection would be achieved by quickly overriding injection and taking manual control following initiation via the manual pushbuttons. The procedures include pump minimum flow considerations by verifying proper movement of the minimum flow valve during these actions.

TSTF-542 and the associated NRC safety evaluation for TSTF-542 recognize that a draining event is a slow evolution when compared to a design basis loss of coolant accident (LOCA), which is assumed to occur at full power, and thus there is adequate time to take manual actions (i.e., hours versus minutes). The manual actions described above can be taken from the control room and can be accomplished in significantly less than one hour, consistent with the TSTF-542 justification. The SSES solution for providing a more controlled injection of inventory also addresses pump minimum flow considerations.

Based on the above information, pump protection and adequate flow are assured during a draindown event based on system design. In addition, the methods of initiating ECCS in response to a drain down event provide adequate pump protection and assurance of adequate flow to mitigate the event.

Enclosure 3 to PLA-7673

Revised Marked-Up Technical Specification Pages

Unit 1 TS Page
3.3-47C

Unit 2 TS Page
3.3-47C

Table 3.3.5.2-1 (Page 1 of 1)
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
1. Core Spray System					
a. Reactor Steam Dome Pressure - Low (Injection Permissive)	4, 5	4 (a)	C	SR 3.3.5.2.2 SR 3.3.5.2.3	≤ 433 psig (upper)
b. Manual Initiation	4, 5	1 per subsystem (a)	D	SR 3.3.5.2.3	NA
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Steam Dome Pressure - Low (Injection Permissive)	4, 5	4 (a)	C	SR 3.3.5.2.2 SR 3.3.5.2.3	≤ 433 psig (upper)
b. Manual Initiation	4, 5	1 per subsystem (a)	D	SR 3.3.5.2.3	NA
3. RHR System Isolation					
a. Reactor Vessel Water Level - Low, Level 3	(b)	2 in one trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3	≥ 11.5 inches
4. Reactor Water Cleanup (RWCU) System Isolation					
a. Reactor Vessel Water Level - Low Low, Level 2	(b)	2 in one trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3	≥ -45 inches

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "Reactor Pressure Vessel (RPV) Water Inventory Control."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

Table 3.3.5.2-1 (Page 1 of 1)
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
1. Core Spray System					
a. Reactor Steam Dome Pressure - Low (Injection Permissive)	4, 5	4 (a)	C	SR 3.3.5.2.2 SR 3.3.5.2.3	≤ 433 psig (upper)
b. Manual Initiation	4, 5	1 per subsystem (a)	D	SR 3.3.5.2.3	NA
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Steam Dome Pressure - Low (Injection Permissive)	4, 5	4 (a)	C	SR 3.3.5.2.2 SR 3.3.5.2.3	≤ 433 psig (upper)
b. Manual Initiation	4, 5	1 per subsystem (a)	D	SR 3.3.5.2.3	NA
3. RHR System Isolation					
a. Reactor Vessel Water Level - Low, Level 3	(b)	2 in one trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3	≥ 11.5 inches
4. Reactor Water Cleanup (RWCU) System Isolation					
a. Reactor Vessel Water Level - Low Low, Level 2	(b)	2 in one trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3	≥ -45 inches

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "Reactor Pressure Vessel (RPV) Water Inventory Control."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.