



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

June 16, 2014

Timothy S. Rausch  
Senior Vice President & Chief Nuclear Officer  
PPL Susquehanna, LLC  
769 Salem Boulevard  
Berwick, PA 18603

**SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – STAFF ASSESSMENT OF THE FLOODING WALKDOWN REPORT SUPPORTING IMPLEMENTATION OF NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT (TAC NOS. MF0288 AND MF0289)**

Dear Mr. Rausch:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a request for information letter per Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (50.54(f) letter). The 50.54(f) letter was issued to power reactor licensees and holders of construction permits requesting addressees to provide further information to support the NRC staff's evaluation of regulatory actions that may be taken in response to lessons learned from Japan's March 11, 2011, Great Tōhoku Earthquake, resultant tsunami, and subsequent accident at the Fukushima Dai-ichi nuclear power plant. The request addressed the methods and procedures for nuclear power plant licensees to conduct seismic and flooding hazard walkdowns to identify and address degraded, nonconforming, or unanalyzed conditions through the corrective action program, and to verify the adequacy of the monitoring and maintenance procedures.

By letter dated November 21, 2012, PPL Susquehanna, LLC submitted a Flooding Walkdown Report as requested in Enclosure 4 of the 50.54(f) letter for the Susquehanna Steam Electric Station Units 1 and 2 (SSES) site. By letter dated January 29, 2014, PPL Susquehanna, LLC provided a response to the NRC request for additional information dated December 23, 2013, for the staff to complete its assessments.

The NRC staff reviewed the information provided and, as documented in the enclosed staff assessment, determined sufficient information was provided to be responsive to Enclosure 4 of the 50.54(f) letter. This concludes the NRC staff's efforts associated with TAC Nos. MF0288 and MF0289.

T. Rausch

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If you have any questions, please contact me at (301) 415-4090 or by e-mail at [Jeffrey.Whited@nrc.gov](mailto:Jeffrey.Whited@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey Whited", written in a cursive style.

Jeffrey Whited, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure:  
Staff Assessment of Flooding Walkdown  
Report

cc w/encl: Distribution via Listserv

STAFF ASSESSMENT OF FLOODING WALKDOWN REPORT  
NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO  
THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT  
PPL SUSQUEHANNA, LLC  
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2  
DOCKET NOS. 50-387 AND 50-388

1.0 INTRODUCTION

On March 12, 2012,<sup>1</sup> the U.S. Nuclear Regulatory Commission (NRC) issued a request for information per Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (50.54(f) letter) to all power reactor licensees and holders of construction permits in active or deferred status. The request was part of the implementation of lessons learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 4, "Recommendation 2.3: Flooding,"<sup>2</sup> to the 50.54(f) letter requested licensees to conduct flooding walkdowns to identify and address degraded, nonconforming, or unanalyzed conditions using the corrective action program (CAP), verify the adequacy of monitoring and maintenance procedures, and report the results to the NRC.

Enclosure 4 of the 50.54(f) letter requested licensees to respond with the following information:

- a. Describe the design basis flood hazard level(s) for all flood-causing mechanisms, including groundwater ingress.
- b. Describe protection and migration features that are considered in the licensing basis evaluation to protect against external ingress of water into SSCs [systems, structures, and components] important to safety.
- c. Describe any warning systems to detect the presence of water in rooms important to safety.
- d. Discuss the effectiveness of flood protection systems and exterior, incorporated, and temporary flood barriers. Discuss how these systems and barriers were evaluated using the acceptance criteria developed as part of Requested Information item 1.h.
- e. Present information related to the implementation of the walkdown process (e.g., details of selection of the walkdown team and procedures) using the

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<sup>1</sup> Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340.

<sup>2</sup> ADAMS Accession No. ML12056A050.

documentation template discussed in Requested Information item 1.j, including actions taken in response to the peer review.

- f. Results of the walkdown including key findings and identified degraded, nonconforming, or unanalyzed conditions. Include a detailed description of the actions taken or planned to address these conditions using guidance in Regulatory Issues Summary 2005-20, Revision 1, Revision to the NRC Inspection Manual Part 9900 Technical Guidance, "Operability Conditions Adverse to Quality or Safety," including entering the condition in the corrective action program.
- g. Document any cliff-edge effects identified and the associated basis. Indicate those that were entered into the corrective action program. Also include a detailed description of the actions taken or planned to address these effects.
- h. Describe any other planned or newly installed flood protection systems or flood mitigation measures including flood barriers that further enhance the flood protection. Identify results and any subsequent actions taken in response to the peer review.

In accordance with the 50.54(f) letter, Enclosure 4, Required Response Item 2, licensees were required to submit a response within 180 days of the NRC's endorsement of the flooding walkdown guidance. By letter dated May 21, 2012,<sup>3</sup> the Nuclear Energy Institute (NEI) staff submitted NEI 12-07, Revision 0, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features," to the NRC staff to consider for endorsement. NEI 12-07 describes a methodology for performing walkdowns in a manner that will address requested information items 1.a through 1.j of Enclosure 4 to the 50.54(f) letter. By letter dated May 31, 2012,<sup>4</sup> the NRC staff endorsed the walkdown guidance.

By letter dated November 21, 2012,<sup>5</sup> PPL Susquehanna, LLC (PPL, the licensee), provided a response to Enclosure 4 of the 50.54(f) letter Required Response Item 2, for the Susquehanna Steam Electric Station, Units 1 and 2 (SSES). The NRC staff issued a request for additional information (RAI) to the licensee regarding the available physical margin (APM) dated December 23, 2013.<sup>6</sup> The licensee responded by letter dated January 29, 2014.<sup>7</sup>

The NRC staff evaluated the licensee's submittals to determine if the information provided in the walkdown report met the intent of the walkdown guidance and if the licensee responded appropriately to Enclosure 4 of the 50.54(f) letter.

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3 ADAMS Package Accession No. ML121440522.

4 ADAMS Accession No. ML12144A142.

5 ADAMS Accession No. ML12332A071.

6 ADAMS Accession No. ML13325A891.

7 ADAMS Accession No. ML14029A640.

## 2.0 REGULATORY EVALUATION

The SSCs important to safety in operating nuclear power plants are designed either in accordance with, or meet the intent of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," Criterion 2: "Design Bases for Protection Against Natural Phenomena;" and Appendix A to 10 CFR Part 100, "Seismic and Geological Siting Criteria for Nuclear Plants." Criterion 2 states that SSCs important to safety at nuclear power plants shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions.

For initial licensing, each licensee was required to develop and maintain design bases that, as defined by 10 CFR 50.2, identify the specific functions to be performed by an SSC, and the specific values or ranges of values chosen for controlling parameters as reference bounds for the design.

The design bases for the SSCs reflect appropriate consideration of the most severe natural phenomena that have been historically reported for the site and surrounding area. The design bases also reflect sufficient margin to account for the limited accuracy, quantity, and period of time in which the historical data have been accumulated.

The current licensing basis (CLB), as defined in 10 CFR 54.3(a), is the set of NRC requirements applicable to a specific plant, and a licensee's written commitments for ensuring compliance with, and operation within, applicable NRC requirements and the plant-specific design basis that are in effect.

## 3.0 TECHNICAL EVALUATION

### 3.1 Design Basis Flooding Hazard for Susquehanna Steam Electric Station, Units 1 and 2

The licensee reported that the design basis flood hazard for the SSES site is based on Section 2.4 of the Final Safety Analysis Report (FSAR), and includes hazards from locally intense precipitation, probable maximum flood (PMF) of streams and rivers, ice effects, rupture of the Unit 1 and 2 Cooling Tower Basins, or Unit 1 condensate storage tank and refueling water storage tank, or Unit 2 condensate storage tank, and seismically induced dam failures.

The FSAR for SSES, Units 1 and 2, included an evaluation of the effects of local intense precipitation to determine if flooding could occur at the site, as a result of a probable maximum precipitation (PMP) event. The PMP is based on an all season 24-hr event using procedures suggest by the National Weather Service. The postulated PMP event produces approximately 30 inches of rainfall at the site during a 24-hour period. The CLB includes consideration of the buildup of storm water from the PMP and the subsequent PMP runoff as surface flow across the site. The FSAR concluded adequate drainage exists to prevent damage from this local intense precipitation event to safety-related facilities.

The licensee included the PMF from the nearby Susquehanna River and local intense precipitation. The PMF event, combined with wind-induced waves, produces a flood level of 548 ft above mean seal level (MSL) in the river. The plant grade elevation at SSES is 670 ft MSL.

The FSAR indicated that portions of the Susquehanna River are prone to freezing from late fall to early spring and flooding, as a result of ice jams, sometimes occur in the late winter months. Flooding elevations, as a result of ice jams, are comparable to precipitation-related flood stages, but well below the PMF as a result of PMP in combination with wind-induced waves.

The licensee reported that the controlling flood hazard event results from the ultimate heat sink for the engineered safeguard service water (ESSW) system. The design basis flood level was determined in accordance with Regulatory Guide 1.59, Rev. 1, "Design Basis Floods for Nuclear Power Plants."<sup>8</sup> The ESSW ultimate heat sink is an 8-acre concrete-lined spray pond containing 25 million gallons of water. The design basis flood for the spray pond includes the combined effects of the PMP and wind-generated wave activity. The maximum effects of the design basis flooding would produce a water level of 684.8 ft MSL in the spray pond.

The FSAR indicates that the maximum elevation of the water table at the SSES site is 660 ft. The FSAR also describes another external flooding event that could result in the rupture of the cooling tower basin, or the simultaneous rupture of the Unit 1 condensate storage tanks and refueling water storage tank, or the rupture of the Unit 2 condensate storage tank. Structures that have the potential to be affected by this event include control structures at an elevation 676 ft and the west side of the reactor building at an elevation of 676 ft.

Based on the NRC staff's review, the licensee appears to have sufficiently described the design basis flood hazard level(s) requested in the 50.54(f) letter and consistent with the walkdown guidance.

### 3.2 Flood Protection and Mitigation

#### 3.2.1 Flood Protection and Mitigation Description

The licensee stated that the PMP flooding event is assumed to produce 30 inches of rainfall over the site during a 24-hour period. The PMP event can occur during all modes of reactor operation. This event would produce localized ponding around safety-related buildings or structures; however, no significant depths of water would accumulate around any safety-related buildings. Therefore, the licensee concluded no special flood-protection features or measures are required to mitigate the effects of the PMP event. However, the licensee stated in its walkdown report that ponding could occur around underground electrical manholes on site during a PMP flooding event.

The PMF of the Susquehanna River requires no flood-protection features or measures at the Susquehanna site, since the plant grade elevation is approximately 120 ft above the maximum flood stage of the river. SSES safety-related structures were designed assuming hydrostatic loads from the groundwater table at an elevation of 665 ft. The maximum water table elevation is limited to 660 ft in the vicinity of safety-related structures as a result of modified site topography and reduced infiltration caused by the impermeable surfaces of the SSES structures and paved areas.

The CLB at the SSES site calls for flood protection to an elevation of 684.8 ft for the ESSW spray pond design basis flood event. The design basis flood event was determined by superimposing the effects of wind generated wave activity on the PMF for the spray pond. The licensee indicated that there are no credited time dependent actions associated with external flooding events at SSES, and there are no specific mitigation actions required to protect safety-related buildings and structures.

The postulated short-term flooding events at the site involve two separate cooling tower basin rupture events. One such event would involve a complete rupture of the basins with the water spilled toward and against the western wall of the Unit 1 and Unit 2 Turbine Building. Water would also flow toward the Reactor Buildings during this event. The other event would involve the postulated rupture of the Unit 1 basin with the water directed toward the ESSW pumphouse. Either of these two events can occur during all modes of reactor operation. Either of these two events would be over in a few minutes, and no operator actions are therefore credited for mitigating these postulated short-term flooding events.

### 3.2.2 Incorporated and Exterior Barriers

The licensee reported that the site has incorporated and exterior barriers that are permanently in-place, requiring no operator manual actions. The walkdown report indicates that flood barrier drawings were created to document the external flood barriers and facilitate inspections. Credited flood protection barriers include: plant grading, flood doors, exterior wall penetrations, and openings within the exterior walls of safety-related structures. Flood doors are designed to remain closed and therefore are considered flood passive components.

The licensee stated that no exterior flood barriers or maximum flood levels are included in the CLB for the PMP at the Susquehanna site. However, the licensee credits SSES site grading and the natural topography. Additionally, the majority of underground electrical manholes are raised 8 inches above grade to prevent water intrusion into vaults. The SSES licensing basis does not address the need for underground conduit seals to prevent water intrusion. Safety-related structures with underground conduits are above the maximum groundwater levels and the site grade slopes away from safety-related buildings.

The ESSW spray pond is protected by concrete lining up to an elevation of 685.5 ft. SSES SSCs are located at an elevation of at least 685.5 ft MSL and are protected from the splash and wave effects of a design basis flood by walls and a concrete slab during a design basis flood event in the spray ponds. As a result, the licensee stated there would be no potential flooding threat to any safety-related equipment during this event.

For the postulated rupture of the cooling tower basin, normally-closed external flood doors and sealed penetrations are credited with protecting SSCs. Diesel Generator Rooms 'A-D' and the Reactor Buildings are protected by the slope of the terrain around them. For the simultaneous rupture of the Unit 1 condensate storage tanks and the refueling water storage tank, the CLB states that these tanks are surrounded by walls and bermed areas that have been designed to contain the total volume of water stored in these tanks.

### 3.2.3 Temporary Barriers and Other Manual Actions

The licensee reported that the site has no temporary barriers or other manual actions that require operator action in the event of flooding; however, in the CLB, normally-closed external flood doors at the Control Structure and at the Reactor Buildings (both at 676 ft MSL) are credited with protecting SSCs during a rupture of the cooling tower basin.

The walkdown report describes how “procedures are in place to prepare the station for adverse weather conditions” and the report also states that there were no credited time-dependent actions associated with external flooding events” and “no specific mitigating actions required to protect against the ingress of water into SSCs.” Procedure enhancements were recommended as a result of the walkdown to improve preparations for adverse weather conditions at the Susquehanna site.

### 3.2.4 Reasonable Simulation and Results

The licensee determined that no reasonable simulations were required to complete the walkdown and the response to NRC Recommendation 2.3.

### 3.2.5 Conclusion

Based on the NRC staff’s review, the licensee appears to have described protection and mitigation features as requested in the 50.54(f) letter and is consistent with the walkdown guidance.

## 3.3 Warning Systems

The licensee report that it has procedures in place to prepare the station for adverse weather conditions, but no specific actions are required to protect against any PMP flooding event. Hence, no specific warning methodology or procedure exists in regard to the prediction of adverse weather.

SSES uses flood detectors—in the form of water elevation monitors—to identify potential flooding events; however, these detectors were developed for use in detecting internal flooding events. These detectors would, nevertheless, also be useful in providing an alarm function during external flooding events.

Based on the NRC staff’s review, the licensee appears to have provided information to describe any warning systems as requested in the 50.54(f) letter and consistent with the walkdown guidance.

## 3.4 Effectiveness of Flood Protection Features

The licensee stated that the effectiveness of flood protection features were visually inspected consistent with NEI 12-07 guidance related to performing verification walkdowns. The licensee inspected the exterior passive features that were credited for external flood protection. These features include normally-closed external flood doors, exterior wall penetrations, and openings within the exterior walls of safety-related structures. The licensee determined that most of the



flood protection features would perform as intended; however, as discussed in detail in Section 3.6.2, below, some deficiencies in the flood protection features were identified.

The licensee used acceptance criteria consistent with the walkdown guidance. Based on the NRC staff's review, the licensee appears to have discussed the effectiveness of flood protection features as requested in the 50.54(f) letter and is consistent with the walkdown guidance.

### 3.5 Walkdown Methodology

By letter dated June 11, 2012,<sup>9</sup> the licensee responded to the 50.54(f) letter indicating that it intended to utilize the NRC-endorsed walkdown guidance contained in NEI 12-07, Rev. 0-A, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features."<sup>10</sup>

Based on the NRC staff's review, the licensee appears to have presented information related to the implementation of the walkdown process as requested in the 50.54(f) letter, and is consistent with the walkdown guidance.

### 3.6 Walkdown Results

#### 3.6.1 Walkdown Scope

The licensee performed walkdowns of flood protection features Diesel Generator A-D Building, the Diesel Generator E Building, the ESSW pumphouse, the ESSW Valve Vaults, and the Unit 1 and Unit 2 Reactor Buildings. The licensee did not perform any reasonable simulations of manual actions or procedures. No specific modes of operation or concurrent environmental conditions were considered for the walkdowns.

The licensee used/developed acceptance criteria consistent with the intent of NEI 12-07. In addition, the licensee developed and implemented its own site-specific training, "Walkdown of External Flood Protection Features," EG-316. The training guidance was developed to be consistent with Appendix C, "Sample Training Content," in NEI 12-07.

#### 3.6.2 Licensee Evaluation of Flood Protection Effectiveness, Key Findings, and Identified Deficiencies

The licensee reported that the CLB for the Susquehanna site does not specifically identify any external flood protection barriers. However, the licensee performed an evaluation of the overall effectiveness of the plant's flood protection features, including those identified in the newly created "station flood barrier" drawings.

NEI 12-07 defines a deficiency as follows: "a deficiency exists when a flood protection feature is unable to perform its intended function when subject to a design basis flooding hazard." The licensee identified deficiencies because of the flooding walkdowns.

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<sup>9</sup> ADAMS Accession No. ML12164A433.  
<sup>10</sup> ADAMS Accession No. ML12173A215.

- Degraded Penetrations/Door Seals. These items were found not to meet the acceptance criteria provided in NEI 12-07. Further engineering evaluation is needed to either recommend rework of penetration/door or to except the degraded seal as-is.
- Conduit Penetrations with No Internal Seals. These items are located within the exterior flood boundaries and are typically spare conduits.
- Penetrations with No Labels. During the walkdown, approximately 40 percent of the station external flood penetrations were found not to be labeled.
- Inadequate Seal Pressure Ratings. During the walkdowns, the actual penetration seal ratings (or door pressure rating) were evaluated to determine if the seal/door can withstand the exterior flood levels shown on the new station flood barrier drawings. It was recognized that some of the below-grade penetrations may not support the flood levels shown on the station flood barrier drawings.
- Configuration Control Issues. During the walkdowns, the licensee identified configuration control issues as related to incorrect drawings or to the lack of drawings showing details of external wall penetrations.
- Diesel Oil Unloading Pad Drain Issue. The current plant design allows rain water to enter the Diesel Generator B Building sump room during external flooding events through the diesel oil unloading pad drain.
- Underground Electrical Manhole Flood Protection Enhancements. A history of inleakage was observed for the station's safety-related manholes. The licensee noted that the CLB does not require internal conduit seals in these electrical manholes.
- ESSW Valve Vaults Flood Protection Enhancements. The licensee found that two of the ESSW valve vaults had manholes that were not elevated above the plant grade.
- Off Normal/NDAP Procedure Enhancements. Recommendations were made to improve actions required in response to adverse weather conditions.
- Flood Barrier Inspection Procedure Enhancements. The licensee identified needed enhancements to inspection procedures.

Additional deficiencies were identified by the licensee during the Institute of Nuclear Power Operations (INPO) Evaluation Report (IER) 11-1 flooding walkdowns and were also entered in the site's CAP. The following major items were identified during the INPO IER 11-1 walkdowns, and each item has been entered into the site's CAP:

- Doors in Flood Boundary with Large Gaps under the Door. Gaps were found at the bottom of the entrance doors to the Diesel Generator A-D Building.
- Leakage Path into Diesel Generator E Building. Gaps were found in the removable steel panels on the north side of the Diesel Generator E Building, thereby representing a water leakage pathway into the building.

- Blowout Panel Steam Vents Located below Maximum Flood Levels. The vacuum relief holes for the Unit 1/Unit 2 residual heat removal/reactor core isolation coolant blowout panel steam vents were found to be near grade level and below the maximum flood levels that could occur during a postulated cooling tower basin rupture flooding event.

NEI 12-07 requires licensees to identify observations in the CAP that were not yet dispositioned at the time the walkdown report was submitted. As noted in the list immediately above, PPL Susquehanna, LLC, identified several items for which correction action requests were generated.

### 3.6.3 Flood Protection and Mitigation Enhancements

The licensee determined that enhancements were necessitated by the flood walkdowns. The actions and enhancements include: installation of conduit seals for ESSW valve vaults, Off Normal/NDAP procedure enhancements to improve station readiness for adverse weather conditions, and updated procedures for identifying exterior flood doors and penetrations inspections and inspection frequency. The licensee also indicated modifications will be installed to raise relief holes above maximum external flood levels. A time frame for completing these enhancements was not provided in the walkdown report.

### 3.6.4 Planned or Newly Installed Features

The licensee determined that no changes were necessary by the walkdown.

### 3.6.5 Deficiencies Noted and Actions Taken or Planned to Address

The licensee entered the following deficiencies into the CAP: degraded penetrations/door seals; conduit penetrations with no internal seals; penetrations with no labels; inadequate seal pressure ratings; configuration control issues; and diesel oil unloading pad drain Issue. A time frame for completing these actions was not provided in the walkdown report.

Actions were taken by the licensee to correct issues identified during the walkdown. Thresholds were installed for doors in flood boundary with large gaps under the door to minimize leakage into the Diesel Generator Building. Actions were taken to seal the gaps discovered in the removable steel panels of the 'E' Diesel Generator Building. Sandbags have been temporarily installed around vacuum relief holes at the blowout steam vents.

### 3.6.6 Staff Analysis of Walkdowns

The NRC staff reviewed the licensee walkdown report dated November 21, 2012. The walkdowns were conducted by team members with the necessary qualifications and training, and the licensee developed additional site-specific training prior to performing the walkdown inspections. The walkdown record forms included in Appendix B of the NEI guidance were used as a template for the licensee's inspections, and the licensee used a spreadsheet in conjunction with the forms to record the inspection results.

The licensee evaluated the capability of flood protection features during a variety of site conditions, including surface water flows associated with the PMP event and the simultaneous

rupture of the cooling tower basin and other on-site tanks. The licensee's walkdown inspections yielded several issues, as documented in the walkdown report and as discussed in detail above. A corrective action request was generated for each of the issues identified or correction actions were taken. When completed and/or implemented, the actions and enhancements would appear to be capable of improving station readiness for a flooding event in regard to augmenting the existing flood protection or mitigation features of the plant.

No reasonable simulations were deemed necessary for the walkdowns, since no flood protection features at the Susquehanna site are dependent on manual actions or implementation of procedures.

Based on the NRC staff's review, the licensee appears to have provided results of the walkdown and described any other planned or newly installed flood protection systems or flood mitigation measures as requested in the 50.54(f) letter and consistent with the walkdown guidance. Based on the information provided in the licensee's submittal, the NRC staff concludes that the licensee's implementation of the walkdown process meets the intent of the walkdown guidance.

### 3.6.7 Available Physical Margin

The NRC staff issued an RAI to the licensee regarding the available physical margin (APM) dated December 23, 2013.<sup>11</sup> The licensee responded with a letter dated January 29, 2014.<sup>12</sup> The licensee has reviewed their APM determination process, and entered any unknown APMs into their CAP. Staff reviewed the response, and concluded that the licensee met the intent of the APM determination per NEI 12-07.

Based on the NRC staff's review, the licensee appears to have documented the information requested for any cliff-edge effects, as requested in the 50.54(f) letter and consistent with the walkdown guidance. Further, the NRC staff reviewed the response, and concluded that the licensee met the intent of the APM determination per NEI 12-07.

## 3.7 NRC Oversight

### 3.7.1 Independent Verification by Resident Inspectors

On June 27, 2012, the NRC issued Temporary Instruction (TI) 2515/187, "Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns."<sup>13</sup> In accordance with the TI, NRC inspectors independently verified that the Susquehanna Steam Electric Station licensee implemented the flooding walkdowns consistent with the intent of the walkdown guidance. Additionally, the inspectors independently performed walkdowns of a sample of flood protection features. The inspection report (05000387/2012005 and 05000388/2012005) dated February 13, 2013,<sup>14</sup> documents the results of this inspection. No findings of significance were identified.

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11 ADAMS Accession No. ML13325A891.

12 ADAMS Accession No. ML14029A640.

13 ADAMS Accession No. ML12129A108.

14 ADAMS Accession No. ML13044A599.

#### 4.0 WALKDOWNS NOT PERFORMED FOR FLOOD PROTECTION FEATURES

The licensee identified two inaccessible access features but no restricted access features.

##### 4.1 Restricted Access

No flood protection features at the Susquehanna site are located in restricted access areas.

##### 4.2 Inaccessible Features

Two internal conduit seals for penetrations—each located in a normally energized 4.16 kV junction box—were identified by the licensee at the Susquehanna site as being inaccessible due to practical and safety concerns. The licensee provided a basis for reasonable assurance that inaccessible access features are available and will perform credited functions. Quality control records available documented the installation of these seals and penetrations and similar seals were inspected and found to be acceptable. There is reasonable assurance that these two items will perform their intended flood protection function. The licensee indicated that there were no adverse aggregate effects on SSES flood protection features related to these two items.

#### 5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of the flooding walkdown methodology meets the intent of the walkdown guidance. The staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified the plant configuration with the current flooding licensing basis; addressed degraded, nonconforming, or unanalyzed flooding conditions; and verified the adequacy of monitoring and maintenance programs for protective features. Furthermore, the staff notes that no immediate safety concerns were identified. The NRC staff reviewed the information provided and determined that sufficient information was provided by the licensee to be responsive to Enclosure 4 of the 50.54(f) letter, dated March 12, 2012.

T. Rausch

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If you have any questions, please contact me at (301) 415-4090 or by e-mail at [Jeffrey.Whited@nrc.gov](mailto:Jeffrey.Whited@nrc.gov).

Sincerely,

*/RA/*

Jeffrey Whited, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure:  
Staff Assessment of Flooding Walkdown  
Report

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ADAMS Accession Number: **ML14156A234**

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