



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

June 30, 2014

Mr. Ernest J. Harkness  
FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant  
PO Box 97, A290  
Perry, OH 44081

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT 1– 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 NO. MF0263)

Dear Mr. Harkness:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a letter requesting information per Title 10 of the *Code of Federal Regulations*, Paragraph 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 to be taken in response to lessons learned from Japan's March 11, 2011, Great Tōhoku Earthquake and subsequent tsunami. The request addressed the methods and procedures for nuclear power plant licensees to conduct 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 27, 2012, First Energy Nuclear Operating Company (FENOC) submitted a Flooding Walkdown Report as requested in Enclosure 4 of the 50.54(f) letter for Perry Nuclear Power Station, Unit 1. By letter dated January 30, 2014, FENOC provided a response to the NRC request for additional information 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 the 50.54(f) letter.

M. Pacilio

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If you have any questions, please feel free to contact me at (301) 415-2315 or by email at Eva.Brown@nrc.gov.

Sincerely,

*/RA/*

Eva A. Brown, Senior Project Manager  
Plant Licensing III-2 and  
Planning and Analysis Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure:  
Staff Assessment of Flooding Walkdown

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STAFF ASSESSMENT OF FLOODING WALKDOWN REPORT  
NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO  
THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT  
FIRSTENERGY NUCLEAR COMPANY  
PERRY NUCLEAR POWER PLANT  
DOCKET NO. 50-440

1.0 INTRODUCTION

On March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340), the U.S. Nuclear Regulatory Commission (NRC) issued a letter requesting information per Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraph 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," (ADAMS Accession No. ML12056A050), 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.

The 50.54(f) letter requested licensees to include the following:

- 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 structures, systems, and components (SSCs) 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 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 (ADAMS Accession No. ML121440522), the Nuclear Energy Institute (NEI) staff submitted NEI 12-07, Revision 0-A, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features" to the NRC staff to consider for endorsement. By letter dated May 31, 2012 (ADAMS Accession No. ML12144A142), the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012 (ADAMS Accession No. ML12335A341), FirstEnergy Nuclear Operating Co. (FENOC, licensee), provided a response to Enclosure 4 of the 50.54 (f) letter Required Response Item 2, for Perry Nuclear Power Plant (PNPP). The NRC staff issued a request for additional information (RAI) to the licensee regarding the available physical margin (APM) dated December 23, 2013 (ADAMS Accession No. ML13325A891). The licensee responded by letter dated January 30, 2014 (ADAMS Accession No. ML14030A559).

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.

## 2.0 REGULATORY EVALUATION

The structure, system, and components (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 (GDC) 2, "Design Bases for Protection Against Natural Phenomena;" and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." GDC 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, tsunamis, 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 that an SSC of a facility must perform, 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 CLB is the set of NRC requirements applicable to a specific plant, including the licensee's docketed commitments for ensuring compliance with, and operation within, applicable NRC

requirements and the plant-specific design basis, including all modifications and additions to such commitments over the life of the facility operating license.

### 3.0 TECHNICAL EVALUATION

No vertical datum is given in the flood walkdown report although features referenced are consistent with mean sea level elevations in the Updated Final Safety Analysis Report (UFSAR).

#### 3.1 Design Basis Flooding Hazard for Perry Nuclear Power Plant

The design basis flood hazard for PNPP includes: flooding from Lake Erie, intense local precipitation and flooding by two nearby streams which border the site to the east and south/west. Flooding from Lake Erie was estimated to produce a maximum flood water level elevation (including wave runup) of 607.9 ft. Site grade elevation is approximately 620.0 ft.

Flooding in two nearby (major and minor streams) streams was also evaluated in the CLB; however, no flooding elevations are provided for these analyses, and the licensee referred to the UFSAR for further information. The licensee indicated that the streamflow will be contained fully within the streambanks for the probable maximum flood (PMF) event, except for overtopping at two stream crossings which would temporarily prevent road access to the site. The licensee referred to UFSAR Figures 2.4.6 and 2.4.6 for the PMF profiles for the major and minor streams. The licensee concluded that the presence of a natural, high ridge along the right bank of the major stream will preclude flooding of the site by the PMF, allowing the plant to continue uninterrupted operations.

Evaluation of local intense precipitation in the CLB assumes that all storm drains are blocked and the terrain is fully saturated; with 100 percent runoff this results in a maximum flood elevation of 620.5 feet (ft). Local intense precipitation is the only time dependent external flooding hazard considered in the CLB. The duration of the flood is considered to be 6 hours, which is the same as the duration of the PMF event. Roof structures were designed to hold a maximum of 9 inches of accumulated rainfall, and the licensee stated that the roof downspouts are designed to retain at most 9 inches of water on the roofs during the highest rainfall intensity considered for the site (13.1 inches in one hour).

All safety-related structures, except the emergency service water pumphouse, are designed to withstand all loading from a groundwater elevation of 590 ft around the nuclear island. The emergency service water pumphouse is designed to withstand groundwater at an elevation of 618 ft. The plant underdrain system is designed to maintain a groundwater level below an elevation of 568.5 ft.

Based on the NRC staff's review, the staff concludes that the licensee has described the design basis flood hazard level(s) as indicated in Requested Information Item 2.a of the 50.54(f) letter, consistent with Appendix D, Walkdown Report, of the walkdown guidance.

## 3.2 Flood Protection and Mitigation

### 3.2.1 Flood Protection and Mitigation Description

The CLB provides flood protection to an elevation of 620.5 ft. The flood protection features were designed to function in all modes of power operations, startup, shutdown, and refueling. The flood duration of the controlling design basis PMP event is 6 hours. The licensee stated that protection against flooding from Lake Erie, surface runoff and local intense precipitation is provided for safety-related structures, exterior systems and access equipment by location, arrangement and design of these structures, systems and equipment. There are no credited actions or mitigating procedures related to external flooding events caused by a large amount of precipitation or due to other natural phenomena. No reasonable simulations were discussed by the licensee.

The licensee provided information about drainage systems that provide additional flood protection to the PNPP and are described, but not credited, in the CLB.

Adverse weather conditions of strong winds and precipitation were considered for the case of flooding from Lake Erie. The licensee stated that high wind-wave action on the two streams was of no concern for the PMF. The licensee stated that the PMP event did not consider the concurrent effects of high winds.

### 3.2.2 Incorporated and Exterior Barriers

The site has incorporated and/or exterior barriers that are permanently in-place, requiring no operator manual actions. These barriers include: site grading, exterior building walls, sealed penetrations in exterior walls, curbing around electrical manholes, a continuous waterproofing membrane on the outside surfaces of all safety structures located below finished grade and extending under the foundation mats, waterstops in the joints between the safety class foundation mats, and floor drain systems. Roof drains are all designed to drain directly to the site stormwater drainage system, and downspouts and roof scupper systems are provided for roof drainage.

### 3.2.3 Temporary Barriers and Other Manual Actions

The site has external temporary barriers that are currently installed and require operator action. The barriers include sandbags around electrical manholes 1 through 4 as a temporary mitigation for flood water intrusion from a PMP event. The licensee stated in the walkdown report that a Design Change Package was issued and is being implemented to install permanent curbing around the manholes to mitigate water intrusion into the manhole. In addition, the licensee is checking the sandbags once a shift on the Outside Operator rounds as a monitoring requirement.

The licensee stated that the flood protection features are barriers that are either passive or active mechanical systems that do not require any operation action to perform their design function, thus no operator actions are credited in the CLB.

### 3.2.4 Reasonable Simulation and Results

The licensee stated that there are no current mitigating procedures related to external flooding events due to natural phenomena. No reasonable simulations were discussed by the licensee, however, the licensee stated that instructions contained within the implementation procedures can be implemented as written and within the allowed time.

### 3.2.5 Conclusion

Based on the NRC staff's review, the staff concludes that the licensee has described protection and mitigation features as indicated in Requested Information item 2.b of the 50.54(f) letter consistent with Appendix D, Walkdown Report, of the walkdown guidance.

### 3.3 Warning Systems

The licensee stated that in the event of a condition where water external to the plant would enter the buildings, water would be carried via the floor drain system or under doors into stairwells to building sumps. Sump level alarms would alert operators in either the Main Control Room or the Radwaste Control Room of a potential issue.

A warning alarm exists in the Control Complex laundry sump at elevation 574.83 ft, however the water level at which the alarm would sound is not provided in the walkdown report. There is also a warning alarm for the floor drain sump in the Intermediate Building at elevation 574.83 ft that collects water from the fuel handling area floor drains and the Intermediate Building floor drains. The water level at which the alarm would sound is not provided in the walkdown report. The Auxiliary Building (AB) has two flood detection switches at elevations 599 ft and 568.33 ft that set off an alarm in the Control Room when the water level reaches 2 inches. Floor drains in the AB are set to drain to a sump, equipped with pumps, at elevation 568.33. The Turbine Power Complex sump collects water from the floor drains in the building and includes flood detection. There is an alarm in the Radwaste Control Room that indicates if there is a flood detected in the Turbine Power Complex sump. In addition to alarms for water levels within PNPP, there are also alarms provided in the Control Room to alert the licensee of groundwater levels exceeding the design elevation of 568 ft for the pumped underdrain discharged system. The licensee stated that instructions are provided in the plant Alarm Response Instruction and in the Radwaste Alarm Instruction, depending upon the alarm.

Based on the NRC staff's review, the staff concludes that the licensee has provided information to describe any warning systems as indicated in Requested Information Item 2.c of the 50.54(f) letter, consistent with Appendix D, Walkdown Report, of the walkdown guidance.

### 3.4 Effectiveness of Flood Protection Features

A flooding walkdown was performed by the licensee using a procedure based upon the NEI 12-07 guidance.

Minor changes to the site topography and flow paths were found during the walkdown and any potential deficiencies were captured in condition reports to be further investigated, but the

licensee did not consider any of the observations to impact the site drainage. Rattle spaces between the buildings were observed to have intact seals. Exterior walls were walked down and no evidence of major water ingress was found. Minor water leaks had previously been identified and were well within floor drainage system capabilities. Grouted piping penetrations were inspected and did not contain cracks or gaps. Pipes within pipe sleeves had link-seals near or at the exterior face of the building, except for two penetrations in the Intermediate Building, for which a condition report was filed. A minor gap was found between a pipe cover plate that was welded onto the interior piping penetration and a pipe sleeve in the AB at elevation 607 ft, and a link-seal could not be observed. The licensee did not identify this as an issue because the penetration was below the ground surface; therefore, it was not exposed to surface runoff, and was above the maximum groundwater elevation of 590 ft.

The walls below some penetrations had water stains, evidence of prior leakage or condensation from the pipe. Electrical penetrations on exterior walls, consisting of cables inside conduits filled with a sealant material, were also inspected. The conduits are embedded in a concrete duct bank that go through the concrete walls with either a seal or a waterstop installed around the duct bank. The waterstops were not inspected, as they are located inside the walls, but the penetrations were inspected and some evidence of water staining from prior leakage was evident. Penetrations leading to electrical manholes 1 through 4 were modified to have weep holes in the sealant to prevent cables from being submerged. The licensee had previously evaluated the potential for surface water flooding through the penetrations, which is limited. There were unsealed penetrations in the Intermediate Building that lead to the Dry Cask Storage Building. The licensee wrote a condition report and stated that they will likely plug these penetrations in the Dry Cask Storage Building to prevent potential leakage of water into the Intermediate Building.

Additional unsealed conduits were found at the Control Complex at elevation 599 ft that lead to the Unit 2 Offgas building, and a condition report was written to evaluate these further. Building roofs were inspected and were found to be in good condition except for the following: standing water was found on the Control Complex roof indicating potential clogging of roof drains and three visible roof leaks were identified. A condition report was filed to document these conditions and order repairs.

The licensee discussed several potential deficiencies that were captured in condition reports for the site including:

- The elevation of the floor of the Fuel Handling Building is potentially below the level of the surface ponding due to the site PMP event
- Standing water was found in the abandoned Unit 2 Auxiliary Building that was due to either rain or groundwater infiltration
- Large amounts of vegetation were found in the major and minor streams located on the west and east side of the plant, respectively
- A small area at ground level at the intersection of the Unit 2 Auxiliary Building and the Unit 2 Turbine Building did not appear to be sealed and could have allowed water to enter the space between the buildings
- Two penetrations in the Intermediate Building did not have any observable seals
- Two changes in topography associated with the railroad tracks



- Unsealed penetrations between the Intermediate Building and the Dry Cask Storage Building
- Water ponding on a roof and roof leaks
- Changes to the topography and site features at the site could have affected the site PMP analysis and in order to optimize configuration control: the changes should be evaluated using a single collective site PMP analysis instead of an analysis for each individual site change
- The UFSAR lists two different values for the maximum flood level due to the site PMP event.

Based on the NRC staff's review, the staff concludes that the licensee has discussed the effectiveness of flood protection features as indicated in Requested Information Item 2.d of the 50.54(f) letter consistent with Appendix D, Walkdown Report, of the walkdown guidance.

### 3.5 Walkdown Methodology

By letter dated June 11, 2012 (ADAMS Accession No. ML12163A318), the licensee responded to the 50.54(f) letter that they intended to utilize the NRC-endorsed walkdown guidelines contained in NEI 12-07 Rev. 0-A (ADAMS Accession No. ML12173A215). The licensee's walkdown submittal dated November 27, 2012, indicated that the licensee implemented the walkdowns consistent with the intent of the guidance provided in NEI 12-07. The licensee did not identify any exceptions from NEI 12-07.

Based on the NRC staff's review, the staff concludes that the licensee has presented information related to the implementation of the walkdown process as indicated in Requested Information Item 2.e of the 50.54(f) letter, consistent with Appendix D, Walkdown Report, of the walkdown guidance.

### 3.6 Walkdown Results

#### 3.6.1 Walkdown Scope

The licensee performed walkdowns of a number of flood protection features including site grading and potential obstructions, exterior barriers below 620.5 ft, penetrations in exterior barriers, doors and openings in exterior walls, roof hatches, temporary sandbag barriers that are installed around electrical manholes 1 through 4, drainage systems, shoreline protection features, the barge slip area, and the site Vehicle Barrier System.

In addition, the licensee assessed the preventative maintenance and inspection activities that are currently in place.

The Unit 2 AB was also walked down, even though it was not in the scope of the walkdown and not evaluated in this staff assessment. The licensee stated that flood prevention and mitigation measures are designed to function in all modes of operation.

The licensee developed acceptance criteria consistent with the intent of NEI 12-07.

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

The licensee performed an evaluation of the overall effectiveness of the plant's flood protection features. The licensee provided observations of identified features. At the time of the walkdown, none of the observations were determined to be deficiencies such that a flood protection feature would not be able to perform its intended function. Observations that did not meet the NEI 12-07 criteria were entered into the CAP. The licensee listed condition reports that were generated as a result of the walkdown.

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 did not identify deficiencies because of the flood walkdowns.

NEI 12-07 specifies that licensees identify observations in the CAP that were not yet dispositioned at the time the walkdown report was submitted. The licensee did not identify observations awaiting disposition.

### 3.6.3 Flood-Protection and Mitigation Enhancements

The licensee has implemented or planned the following enhancements that improve or increase flood protection or mitigation: permanent curbing around electrical manholes 1 through 4 as a mitigation for flood water intrusion from a PMP event was to be installed to replace the temporary measures (sandbags) currently in place.

### 3.6.4 Planned or Newly Installed Features

The licensee did not determine that changes were necessary by the flood walkdowns. Several potential changes may need to be made in response to observations made during the walkdown for which condition reports were generated to investigate observations further. Results of condition reports could trigger corrective actions and changes at the site to assure flood protection.

Potential corrective actions discussed include, if necessary, plug the penetrations in the Intermediate Building; plug the penetrations in the Dry Cask Storage Building; and reevaluate the site PMP drainage analysis considering all topography and other site changes. Condition reports were written to document conditions and enter corrections to deficiencies into the CAP.

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

The licensee did not identify deficiencies as part of the flooding walkdowns.

The licensee discussed several potential deficiencies that were captured in condition reports and would be investigated, as described in section 3.4, above.

### 3.6.6 NRC Staff Analysis of Walkdowns

NRC staff reviewed the licensee's walkdown report dated November 27, 2012 (ADAMS Accession No. ML12335A341). The licensee provided an evaluation of flood-protection procedures in the walkdown report. The licensee found that the flood-protection and mitigation features referred to in the CLB were available, functional, and properly maintained. The licensee identified no deficiencies.

Based on the NRC staff's review, the staff concludes that the licensee has provided results of the walkdown and described any other planned or newly installed flood protection systems or flood mitigation measures as indicated in Requested Information items 2.f and 2.h of the 50.54(f) letter consistent with Appendix D, Walkdown Report, of the walkdown guidance. Based on the information provided in the licensee's submittals, 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 was concerned that the licensee had not determined and documented a numerical value for available physical margin (APM) for every applicable flood protection feature (e.g., wall, penetration, berm, door, etc.). In a letter dated January 30, 2014 (ADAMS Accession No. ML14030A559), the licensee indicated that a review had been performed on the APM determination process. Any unknown APMs were entered into the CAP. The NRC staff reviewed the response, and concludes that the licensee met the intent of the APM determination per NEI 12-07.

Based on the NRC staff's review, the staff concludes that the licensee has documented the information requested for any cliff-edge effects, as indicated in Requested Information Item 2.g of the 50.54(f) letter consistent with Appendix D, Walkdown Report, of the walkdown guidance.

## 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" (ADAMS Accession No. ML12129A108). In accordance with the TI, the NRC staff independently verified that the 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 dated May 10, 2013 (ADAMS Accession No. ML13130A326) documents the results of this inspection. No findings of significance were identified.

## 4.0 SSCs Not Walked Down

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

### 4.1 Restricted Access

The licensee identified no restricted access features.

#### 4.2 Inaccessible Features

The licensee identified several inaccessible features. Penetration EAB-2036 on the north wall of the AB was covered by a junction box and could not be inspected. The licensee stated that the circuits in the penetration are configured so as not to introduce a water pathway into the AB. Further, plant records indicate the penetration had been grouted; the penetration is also located at elevation 612 feet, above the maximum groundwater elevation.

Penetrations PCC-1049 and PCC-1050 on the north wall of the Control Complex could not be inspected up close, as they were located overhead and blocked by an insulated pipe. The licensee reported that the link seal for the penetrations has significant APM based on the manufacturer's test report.

The licensee did not inspect the Diesel Generator Building as the grade elevation as the building have no elevations below grade. The licensee indicated that the Emergency Service Water pumphouse was not inspected because the building contains greater than 50 square ft open area to the pump forebay and judged it sufficient to ensure that flooding of the operation floor would not occur. In addition, the licensee did not inspected some penetrations between the Control Complex/Radwaste Building and Control Complex/ Service Building, and the interfaces/penetrations between the duct bank of the Condensate Storage Tank and the AB. The licensee indicated that these penetrations were all above the design basis ground water elevation.

The licensee could not inspect portions of the Unit 2 AB due to the presence of about 4 ft of standing water at the bottom of the building. If the water in that building were to exceed 6.5 ft, Unit 1 buildings could be impacted. However, this inspection is not part of the walkdown scope and the staff did not further evaluate this issue. The licensee entered this issue into the CAP for resolution.

The licensee provided reasonable assurance that inaccessible features are available and will perform credited functions based on plant records of sealed penetrations and available physical margins.

#### 5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of flooding walkdown methodology meets the intent of the walkdown guidance. Further, the NRC staff notes that no immediate safety concerns were identified. 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. The NRC reviewed the information provided and determined that sufficient information was provided to be responsive to Enclosure 4 of the 50.54(f) letter.

Principal Contributor: Peter Chaput, NRO

E. Harkness

- 2 -

If you have any questions, please feel free to contact me at (301) 415-2315 or by email at Eva.Brown@nrc.gov.

Sincerely,

*/RA/*

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Plant Licensing III-2 and  
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Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure:  
Staff Assessment of Flooding Walkdown

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