Entergy

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Anthony J. Vitale
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PNP 2012-101

November 27, 2012

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

SUBJECT: Flooding Walkdown Report - Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding the Flooding Aspects of Recommendation 2.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

References:

1. NRC letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident*, dated March 12, 2012 (ADAMS Accession Number ML12053A340)
2. Entergy Nuclear Operations, Inc. letter, PNP 2012-049, *Response to NRC Request for Information (RFI) Pursuant to 10 CFR 50.54(f) Regarding the Flooding Aspects of Recommendations 2.1 and 2.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated June 8, 2012 (ADAMS Accession Number ML12163A533)

Dear Sir or Madam:

On March 12, 2012, the NRC issued Reference 1 to all power reactor licensees. Enclosure 4 of Reference 1 contains requested actions, requested information, and required responses associated with Recommendation 2.3 for flooding walkdowns. Entergy Nuclear Operations, Inc. (ENO) confirmed in Reference 2 that it would use the flooding walkdown procedure (Nuclear Energy Institute 12-07, *Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features*) as endorsed by

the NRC as the basis to conduct the walkdowns and develop the needed information at the Palisades Nuclear Plant (PNP).

Pursuant to Required Response 2 of Reference 1, Enclosure 4, ENO is providing the Flooding Walkdown Submittal Report for PNP in Attachment 2.

This letter contains a new regulatory commitment, which is identified in Attachment 1.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 27, 2012.

Sincerely,

for AJV

ajv/jse

Attachments:
1. List of Regulatory Commitments
2. Palisades Nuclear Plant Flooding Walkdown Submittal Report for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Flooding

cc: Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ATTACHMENT 1

LIST OF REGULATORY COMMITMENTS

1 page follows

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy Nuclear Operations, Inc. (ENO) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check One)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
ENO will perform walkdowns for equipment that could not be inspected as identified in Section 7.4 of the Flooding Walkdown Submittal Report.	X		June 1, 2014.

ATTACHMENT 2

PALISADES NUCLEAR PLANT

FLOODING WALKDOWN SUBMITTAL REPORT FOR

RESOLUTION OF FUKUSHIMA NEAR-TERM TASK FORCE

RECOMMENDATION 2.3: FLOODING

16 pages follow

Entergy

ENTERGY NUCLEAR
Engineering Report Cover Sheet

Engineering Report Title:
Palisades Nuclear Plant Flooding Walkdown Submittal Report for
Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Flooding

Engineering Report Type:

New ☒ Revision ☐ Cancelled ☐ Superseded ☐
Superseded by: _____

Applicable Site(s)

IP1	☐	IP2	☐	IP3	☐	JAF	☐	PNPS	☐	VY	☐	WPO	☐
ANO1	☐	ANO2	☐	ECH	☐	GGNS	☐	RBS	☐	WF3	☐	PLP	☒

EC No. 40864

Report Origin: ☐ Entergy ☒ Vendor
Vendor Document No.: PLP-RPT-12-00142

Quality-Related: ☐ Yes ☒ No

Prepared by: Enercon Services (signatures on following sheet) Date: _____
Responsible Engineer (Print Name/Sign)

Design Verified: n/a Date: _____
Design Verifier (if required) (Print Name/Sign)

Reviewed by: J. Dulmes / [signature] Date: 11-21-12
Reviewer (Print Name/Sign)

Approved by: D. MacMaster / [signature] Date: 11-21-12
Supervisor / Manager (Print Name/Sign)

ENGINEERING REPORT

PALISADES NUCLEAR PLANT

FLOODING WALKDOWN SUBMITTAL REPORT FOR RESOLUTION OF FUKUSHIMA NEAR TERM TASK FORCE RECOMMENDATION 2.3: FLOODING

Prepared By: John Mikhail (Enercon Services) Date: 11.20.2012

Reviewed By: Majid Esfahani (Enercon Services) Date: 11/20/12

Peer Reviewed By: Atwood Browning (Enercon Services) Date: 11/20/12

Approved by: Joseph Bendel (Enercon Services) Date: 11/20/12

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1.0 SCOPE AND OBJECTIVE

This report was developed to provide information requested by the United States Nuclear Regulatory Commission (NRC) pursuant to Title 10 of the Code of Federal Regulations, Section 50.54(f) on March 12, 2012 (Ref. 10.1) for Palisades Nuclear Plant (PLP). In response to the NRC request, Entergy Nuclear Operations, Inc. (ENO) performed walkdowns to verify that plant features credited in the current licensing basis (CLB) for protection and mitigation from external flood events are available, functional, and properly maintained. The walkdowns were performed to verify that structures, systems, and components (SSCs), portable flood mitigation equipment, and the procedures needed to install and or operate them during a flood are acceptable and capable of performing their design function as credited in the CLB.

This report presents the findings of the flooding walkdown inspections completed at PLP. The walkdowns were completed in accordance with the NRC endorsed guidance of NEI 12-07, Rev. 0A, *Guidelines for Performing Verification of Plant Flood Protection Features*, dated May 31, 2012 (Ref. 10.2) and ENO procedure EN-DC-170, *Fukushima Near Term Task Force Recommendation 2.3 Flooding Walkdown Procedure* (Ref. 10.4), that was developed to provide instructions for implementation of the NRC endorsed guidelines. The walkdowns completed at PLP were performed to verify that the structures, systems, and components (SSCs) credited for flood protection are capable of performing their design function as described in the current licensing basis. The walkdowns were also used to verify that plant modifications implemented since original construction, such as changes to topography, do not adversely affect flooding protection.

This report identifies the flooding hazards that comprise the CLB and the protection and mitigation features that are credited with preventing the ingress of external water into SSCs important to safety at PLP. The effectiveness of the flood protection features is evaluated against a set of acceptance criteria. Results of the walkdowns, including key findings, and any identified degraded, or nonconforming conditions are addressed, and a description of the actions taken or planned to address these conditions is provided.

2.0 DESIGN BASIS FLOOD HAZARD LEVEL

Sections 2.2 and 5.4 of the PLP Updated Final Safety Analysis Report (UFSAR) (Ref. 10.5) describe the design basis and flood protection features provided at PLP for protection against an external flood.

2.1 Flood Hazards Identified

The safety-related facilities, systems, and equipment at PLP are designed to withstand the worst flooding caused by a combination of several hypothetical events such as the probable maximum flood from Lake Michigan, a Lake Michigan seiche, and wave activity.

2.1.1 General Site Information

PLP is located in southwest Michigan in a sand dune environment on the eastern shore of Lake Michigan in Van Buren County's Covert Township on approximately 469 acres. The site topography slopes down to Lake Michigan, 582 feet above mean sea level (MSL), from a plant grade of 589 feet along Lake Michigan to 632.5 feet above MSL in the parking lot. General grading around the Auxiliary Building and Turbine Building is at elevation 590.0 feet. There are no major streams or dams that can contribute to flooding in the general vicinity of the plant.

2.1.2 Lake Michigan Seiche and Probable Maximum Storm Surge

A seiche results in short-time variations in lake levels caused by meteorological factors with a duration measured in minutes rather than hours. A seiche evaluation determined the maximum flood level to be 594.1 feet above MSL.

2.1.3 Wind Wave Activity

The maximum wave activity, which would occur during lower than maximum stillwater level, will not result in flooding of the PLP site at ground floor elevation of 590 feet above MSL.

2.1.4 Probable Maximum Precipitation (PMP)

Distribution of local intense precipitation is based on PMP data obtained from the U.S. Weather Bureau Hydrometeorological Report (HMR) Number 51 (Ref 10.6). This report indicates that the PMP was established at 25.5 inches of rainfall over a six hour period for the 13.9 acre drainage area. For the plant area the runoff water depth would be less than six inches above ground elevation and should not constitute a flood threat. All building structures were required to be designed to withstand this rainfall.

2.1.5 Ice Effect

Ice-Induced events (jams or dams) are not addressed in the CLB.

2.1.6 Roof Drainage

Roof systems which contain parapet walls were provided with overflow scuppers to drain water from the roof for depths in excess of 7.7 inches, which is likely to occur during a PMP event. Water flowing over the scuppers falls to the ground at the side of the structure and then flows across the yard surface by natural drainage. The roofs for the Screen House, Auxiliary, and Turbine Building roofs are structurally qualified considering a PMP event.

2.1.7 Maximum Water Table

Based on the recordings taken at the site, the maximum design ground water level is 589.0 feet above MSL on the east side and 625.0 feet above MSL on the west side of the plant. These hydrostatic loads on structures were evaluated and were found to be acceptable.

2.2 Assumptions

2.2.1 Probable Maximum Precipitation

Rainfall was assumed to occur in the immediate plant vicinity, including the sand dune area east of the plant, and the resulting runoff was determined to move overland toward Lake Michigan for the 13.9 acre drainage area.

The local "Probable Maximum Flood" is based upon a "probable maximum precipitation" of 25.5 inches of rain in six hours. It was assumed that one half of the peak runoff (555 ft^3/s) would pond on the east side of the Service Building to a depth of five feet. The depth of the water for remainder of the Plant area would be less than six inches.

2.3 Methodology

2.3.1 Lake Michigan Levels (Seiche)

Short-time variations in lake levels (seiches), caused by meteorological factors and measured in minutes rather than days, occur occasionally. The greatest level change of this type on record over a 105-year period involved a sudden rise of six feet at Michigan City, Indiana (8:10 AM, June 26, 1954) and a rise of eight feet at Montrose Harbor, Chicago (9:30 AM on the same date).

As part of the Systematic Evaluation Program (SEP Topic II-3.B) (Ref 10.3) the maximum probable surge elevation in original PLP CLB documentation was reevaluated by the NRC in the early 1980s. The offshore surge value was reevaluated to produce an onshore surge height of 10.9 feet.

Since a new maximum monthly mean lake level was established in 1986 for the period of 1900 to the present, a new design basis flood level was calculated to be 594.1 feet above MSL. The plant is protected against flooding to a level of 594.4 feet above MSL.

2.3.2 Wind Wave Activity

Coincident with the occurrence of maximum stillwater levels are wind-generated waves. Wave characteristics are dependent on wind speed, wind duration, wind direction, fetch length, fetch width and water depth. Since these squall line systems are fast moving systems with band widths of ten nautical miles or less, their high wind speeds are over any one stretch of water for short durations of time. The wind-generated waves are, therefore, duration limited and reach significant wave heights of one foot or less, with wave periods of 1.5 to 2.0 seconds. These waves lag far behind the faster moving storm surge generated by the squall line. Therefore, waves of one foot or less coincident with the peak surge height would be generated directly offshore of the site as the squall line system travels past the site. These waves would result in runup of one or two feet above the maximum stillwater level. Therefore, they should be insignificant with respect to the site's shoreline.

2.3.3 Probable Maximum Precipitation (PMP)

Independent flood level estimates, occurring at safety related buildings, were made with the assumption of a very intense local storm. The PMP was used as the measure of the upper level of storm severity. Rainfall was assumed to occur in the immediate plant vicinity, including the sand dune area east of the plant. The resulting runoff was determined to move overland toward Lake Michigan. Rainfall depth of 25.5 inches in six hours was used to numerically describe PMP. This depth was obtained from Hydrometeorological Report No. 51 for the 13.9 acre drainage area. The time of drainage area concentration and the resulting peak runoff discharge rate (555 cubic feet per second, cfs) were computed using methods described in "Design of Small Dams" (Ref. 10.7). Part of the resulting flood water would pond in the concrete surface water collection well east of the Service Building. In order to approximate the elevation for the Service Building, it was assumed that one-half of the 555 cfs would flow towards the Service Building. In this situation water would pond to a depth of five feet on the east side of the Service Building.

Since the Service Building is not a safety related building and the runoff water depth for the remainder of the plant area would be less than six inches above ground elevation, the runoff water will be less than storm surge level and will not constitute a flood threat to the safety related facilities.

2.4 Non Conformance

There are no non conformances, differences or contradictions in the flood hazard levels as described in the PLP CLB.

3.0 EXTERNAL FLOOD PROTECTION AND MITIGATION FEATURES

3.1 Flooding Licensing Basis

The safety-related facilities, systems, and equipment at PLP are designed to be capable of withstanding the worst flooding caused by natural causes which are a seiche (highwater level at El. 594.1 feet above MSL) and probable maximum precipitation (25.5 inches of rainfall over a six hour period).

Based on the CLB at PLP, the maximum water surface elevation level at PLP is 583.2 feet MSL. Water surface elevations near safety related facilities above elevation are 594.1 feet. There is no potential for leakage through watertight doors into structures. Incorporated or exterior passive credited features for a design basis flood are maintained to prevent flooding at all times. Incorporated or exterior active credited features for a design basis flood are "normally closed".

An existing "Acts of Nature" PLP procedure (see section 3.4) provides actions which are to be taken in the event of plant flooding caused by natural phenomena at the site.

3.2 Flood Duration

3.2.1 Lake Michigan – Seiche

The CLB does not identify the duration of the flood; however, it is expected to be only minutes in length.

3.2.2 Probable Maximum Precipitation

The probable maximum precipitation (PMP) was established at 25.5 inches of rainfall over a six hour period, with the resulting runoff flowing into Lake Michigan considering that all major surface drainage courses are within the property limits.

3.3 Flood Protection Features

Protection and mitigation features that are considered in the licensing basis evaluation against external flood are summarized below;

- Incorporated or Exterior Passive:

  Walls and floors for Auxiliary Building, Turbine Building, and Screen House.

  Concrete cement top of Fuel Oil Tank T-10A, and tank penetration caps.

- Incorporated or Exterior Active:

  Watertight doors in the Turbine Building, and Auxiliary Building

  Check Valves in the Auxiliary Building

- Temporary Passive or Active:

  None

Safety-related systems and components are flood protected either because of their location above the postulated maximum flood level, or because they are enclosed in reinforced concrete Category 1 structures. The Category 1 structures that may be affected by a design basis flood at the site are designed to withstand the postulated floods for the site using the "hardened" flood protection approach. The

hardened protection approach means structural provisions are incorporated in the plant's design that will protect safety-related structures, systems, and components from the static and dynamic effects of a flood. As part of the hardened approach, watertight doors and equipment hatches are installed below the maximum flood level and watertight piping and electrical penetrations are provided below the maximum flood level.

Local intense precipitation up to the severity of a PMP will be carried largely by the site storm sewers and drainage ditches surrounding the safety related facilities area. Flow beyond the design capacity of the ditches is carried away from the site as overland flow. The runoff on the east and northeast side of the plant is carried by overland flow into a concrete ditch discharging into Lake Michigan.

3.4 Procedures

There are no credited procedures in the CLB. However, the following procedures were used during walkdowns;

3.4.1 Administrative Control of Equipment Procedure

Administrative controls exists for watertight doors (flood doors), the scuttle hatch from Component Cooling Water (CCW) room to West Engineered Safeguards (ESG) room, the floor plugs to East and West ESG rooms from El. 590' of the Auxiliary Building and the sealed hatch to Auxiliary Feedwater (AFW) Pump Room from El. 590' of the Turbine Building. In addition, there is a plant door system checklist which specifies the required position and configuration for plant flood doors.

3.4.2 Inspection of Watertight Barriers Procedure

This procedure provides instructions of plant watertight barriers protecting safety-related equipment to function during accident conditions.

3.5 Adverse Weather

In accordance with the current licensing basis, temporary active or passive flood protection measures are not required to be installed for protection of safety-related SSCs during flooding conditions at PLP.

4.0 INTERNAL WARNING SYSTEMS

4.1 Room Water Level Warning Systems

No interior water level warning systems or alarms are credited for external flood protection in the plant's current licensing basis.

5.0 EFFECTIVENESS OF FLOOD PROTECTION SYSTEMS

5.1 Acceptance Criteria

The flood protection features credited in the current licensing basis for PLP are incorporated passive, and incorporated active features. These features include door seals, exterior structural walls, penetration seals through exterior walls, the site topography, and existing drainage. These flood protection features were visually inspected in accordance with the acceptance criteria described in Section 6 of the NEI 12-07 document and the EN-DC-170 procedure.

The existing PLP maintenance procedure for the inspection of the penetration seals, as well as the seal description provided, were used as a reference to determine the acceptance criteria necessary for the doors. Based on the procedure instructions, the seals are to be installed between the door and the frame, with the seal being slightly compressed and maintaining solid contact at all locations. Therefore, with the door closed, the seal was visually inspected to ensure no visible cracks are seen between the seal and the door. The door was then opened to inspect the seal and ensure that no visible cracks or deterioration was present. The seal was determined to be acceptable if there appeared to be contact between the seal and door at all points, no degradation or deterioration on the seal was observed, and the seals on the doors were installed to an elevation that ensures the door was protected to the maximum elevations.

Structures at PLP are protected from the effects of a design basis flood based on the hardened flood protection approach and include the following structures: the Auxiliary Building, the Screen House, and the Turbine Building. The hardened approach requires structural provisions, such as watertight doors and penetrations to be incorporated into the plant design to protect safety-related structures, systems, and components from the effects of a flood. These walls and penetrations are on the exterior of structures which act as a flood barrier around safety-related SSCs and prevent water intrusion into safety related structures.

Based on visual inspection, flood walls should meet certain acceptance criteria which are; no settling, sliding, tilting, cracks, degradation, scaling, or spalling in walls.

The site topography was visually inspected using the PMP site drawings to visually verify that the topography of the site allowed water to drain as depicted in the drawings. Any changes to the topography, including the installation/modification of structure and changes to security barriers were also reviewed to ensure that they did not prevent water from traveling along the flow paths shown in the drawings.

Ground water levels are assumed to be the same as grade levels; El. 589 feet on the east side of the plant and El. 625 feet on the west side of the plant.

5.2 Discussion

5.2.1 Results and Overall Effectiveness

Visual inspections of the external flood protection features were performed with the objective of comparing the observed condition of the feature to the acceptance criteria as defined in Section 6 of NEI 12-07 and per ENO procedures associated with condition monitoring of maintenance rule structures per 10 CFR 50.65, *Requirements for monitoring the effectiveness of maintenance at nuclear power plants.* This approach revealed which features were satisfactory and thus capable of performing their external flood protection function, and also revealed the features that had observed conditions that were entered into the corrective action program. This section describes how the features were determined to be satisfactory. Observations entered into the corrective action program are discussed in Section 7.0 of this report.

The concrete walls and floors identified as external flood barriers were inspected and found to have no signs of material degradation or cracks and the penetrations were sealed. The interior surfaces did not show signs of water intrusion or leakage such as stains or calcification. As a result, it was determined that the walls and floors are effectively performing their flood protection function. The penetration seal material did not show any signs of degradation and there were no visible gaps or holes in the seal material. There was no evidence of water leakage from the penetration. As a result, it was determined that the penetration seals are effectively performing their flood protection function.

The internal conduits were accessible and inspected and it was found that the conduit seals do not meet the requirements as flood or fire seals. As such, it was determined that these features are capable of providing a water path to watertight areas.

A one inch prybar hole in the cover of manhole MH#4 (approximately El. 624.9') located outside east of the Auxiliary Building was noted. MH#4 has four inch conduits to MH #1, 2, 3 located in Auxiliary Building room 116A. Other manholes associated with MH#4 have similar configurations. The relative elevations of the manhole covers to adjacent site topography and also to the several nearby storm drains prevent pooling of water at the manhole covers and drainage in the area is adequate. Therefore, very little water ingress will occur through the pry bar holes and inundation is not possible for these manholes, including MH#4, due to the arrangement of the site drainage features.

The watertight doors credited as flood protection features were inspected. The doors met the acceptance criteria in that door hardware was in place and in satisfactory condition, and the seals were installed and showed no signs of degradation.

Based on visual inspection of the flood walls; No settling, sliding, or tilting in walls were found. No cracks, degradation, scaling, or spalling in walls were found.

There are no pathways from storm drains or catch basins that lead into any watertight buildings.

A procedure walk-through or "Reasonable Simulation," as defined in NEI 12-07, was not required at the site because temporary flood barriers are not required at PLP to mitigate an external flooding event.

There are no significant changes to the plant topographical features that would cause external flooding. Some new buildings, located in the northeast area of the plant site, inside the protected area, were constructed after the 1994 topography map was developed. However, these buildings were built over existing asphalt and do not contribute to any external flooding drainage. Additionally, there were no ditches with interceptors to restrict water flow to the lake.

5.2.2 Other SSCs and Procedures

There are no other credited SSCs and procedures that have been credited for external flood protection.

6.0 IMPLEMENTATION OF WALKDOWNS

6.1 NEI-12-07 Guidance

The verification walkdowns were performed in accordance with the NRC endorsed guidance of NEI 12-07 and ENO procedure EN-DC-170.

The basis for establishing the walkdown scope and the flood protection features included the preparation of a walkdown list in accordance with the guidance provided in Section 4 of NEI 12-07. As part of this preparation, the current licensing basis was reviewed to determine the flood protection features and actions necessary to prevent an external flooding event at the site from adversely impacting safety-related SSCs. In addition to the identification of passive and active protection features, existing site and ENO procedures were reviewed to determine if any procedures were necessary to ensure existing flood protection features would be functional in the event of a flood at the site.

Walkdown packages were prepared in accordance with the guidance provided in Section 5.2 of NEI 12-07. Walkdown team personnel were selected based on the requirements provided in Section 5.3 of NEI 12-07.

Prior to each walkdown, a pre-job brief was conducted. All walkdown results were documented in accordance with the recommendations of Section 7 of NEI 12-07 on the Flooding Walkdown Record Form provided in Attachment 9.3 of EN-DC-170. This form is consistent with the record form template provided in Appendix B of NEI 12-07.

6.2 Team Organization

Consistent with Section 5.3 of NEI 12-07, each walkdown team consisted of two trained individuals with a complementary set of skills. The two individuals were two

degreed engineers (or equivalent) with familiarity with the site. The walkdown team was supplemented as required by plant maintenance and/or operations personnel. There were two walkdown teams at PLP that performed the flooding walkdowns.

6.3 Training Approach

Consistent with Section 5.3 of NEI 12-07 and Section 4.1 of EN-DC-170, personnel selected to perform walkdown inspection activities were experienced and knowledgeable of the PLP CLB. Personnel were also trained to perform the visual inspections and met the knowledge requirements specified in EN-DC-170 and Appendix C of NEI 12-07. Team members associated with the flooding walkdowns also satisfactorily completed an industry generated training, NANTEL Generic Verification Walkdowns of Plant Flood Protection Features lesson and were knowledgeable of the NRC 50.54(f) letter dated March 12, 2012.

Plant maintenance and/or operations personnel who supplemented the walkdown teams were not required to be qualified in accordance with the aforementioned requirements.

7.0 WALKDOWN RESULTS

A total of five walkdown packages associated with the walkdowns were completed at PLP, with several packages involving multiple flood protection features. Based on the walkdown packages a total of 36 features were walked down. The features and attributes walked down as part of this package are broken down into flood protection type (incorporated passive, temporary passive, incorporated active, and temporary active) as shown in the table below.

Summary – Features Included in the Walkdown Scope		
Flood Protection Type	**Total Number of Features**	**Total Number of Attributes**
Passive – Incorporated	28	28
Passive – Temporary	0	0
Active – Incorporated	8	8
Active – Temporary	0	0

7.1 Deficiencies

There were some observed conditions of features that did not meet the NEI 12-07 acceptance criteria. These conditions were entered into the ENO Corrective Action Program; however, none of these observations were determined to be deficiencies as defined in NEI 12-07. The operability determinations for these conditions concluded that the feature could perform its intended flood protection function when subject to its design basis flooding hazard.

7.2 Observations

Observations during the walkdowns that did not meet the NEI 12-07 acceptance criteria were documented in the Corrective Action Program (CAP). The features

were determined to be operable and none of the observations were determined to be deficiencies. All observations entered into the Corrective Action Program as a result of the flooding walkdowns have been dispositioned as of the writing of this report.

7.3 Corrective Actions

The following potential deficiencies were found during the walkdown. Potential deficiencies were issued to the ENO Corrective Action Program. As discussed earlier, these features could perform their intended function when subjected to the design basis flooding hazard. Although for some conditions, follow up actions are required to fully comply with plant design requirements. The plant CAP process is tracking these actions.

7.3.1 The T-10A diesel oil storage tank junction box J1199 on top of the concrete vault had a loose latch and pull box on conduit A631 at east end of vault was missing a screw and the cover was deformed.

7.3.2 The LT-1400 diesel oil storage tank T-10A level transmitter pipe penetrating the top of the concrete vault has some minor degradation.

7.3.3 Junction Box J14R was not protected against external flooding.

7.3.4 Junction Box J91 was not protected against external flooding

7.3.5 Service Water Pump pressure switches were not protected against external flooding

7.3.6 Junction Box J14L was not protected against external flooding

7.3.7 Conduit for card reader at Auxiliary Feedwater (AFW) Pump Room was not sealed for flooding or fire protection

7.3.8 Conduit for card reader at 1C switchgear room door was not sealed for flooding or fire protection

7.3.9 Conduit for the AFW Pump Room sump pump P-970 switch was not sealed for flooding protection.

7.3.10 Three instrument air lines penetrations through the east wall of the AFW Pump Room were not sealed for flood protection.

7.4 Flood Protection Features not inspected

The following features were restricted at the time of walkdown. The inspection of these features will be conducted at a later time.

- Two buried diesel floor drain check valves in the Auxiliary Building: "D/G 1-1 Floor Drain Backwater Valve", and, "D/G 1-2 Floor Drain Backwater Valve". These check valves are considered "restricted access" because

they are below ground and can only be inspected with a boroscope inspection tool. These valves are inspected periodically under Preventive Maintenance activity. No deficiency is expected, since the last scheduled inspection identified no deficiencies. Next inspection was planned to occur in 2016; however, it has been moved ahead to 2013 as a walkdown follow up activity.

- Conduit A026 is in MH# 3 of 1C Switchgear Room sump and feeds the motor driven auxiliary feedwater pump in the Auxiliary Feedwater Pump Room. The conduit watertight seal is considered a "restricted access" feature because the sealant is within the conduit and inspection will involve opening a junction box for the pump motor. A planned LCO entry will be required for this, as the motor will be tagged out for this inspection to eliminate electrical hazards to personnel. This inspection will occur in March 2014 during the next scheduled system window for this LCO entry. No degradation of this sealant is expected at this location, because there are no other documented cases of degraded sealant elsewhere in the plant.

8.0 AVAILABLE PHYSICAL MARGIN

As indicated in Section 3.12 of NEI 12-07, the NRC is no longer expecting the Recommendation 2.3: Flooding Walkdowns to include an evaluation of the cliff-edge effects at the site. The available physical margin (APM) has been determined and documented on the walkdown record forms. The APMs provided on the walkdown record forms will allow flood hazard reevaluations completed in response to Recommendation 2.1: Flooding to be completed.

No available physical margins documented in the record forms were considered to be small APMs at PLP.

9.0 NEW FLOOD PROTECTION SYSTEMS

No new flood protection enhancements or mitigation measures have been installed at PLP, and no additional enhancements or measures are planned.

The peer review, as described in Section 7 of NEI 12-07, was completed with station staff to ensure that the actions required for could be completed. The results of the reviews resulted in no change to the walkdown process or methodology.

10.0 REFERENCES

10.1 NRC Letter to Licensees, dated March 12, 2012, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) regarding Recommendations 2.1, 2.3, and 9.3 of the Near Term Task Force Review of Insights from the Fukushima Daiichi Accident" (ADAMS Accession Number ML12053A340).

10.2 Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features (NEI 12-07 [Rev. 0-A]), NEI, dated May 2012 (Accession Number ML12172A038).

10.3 NRC letter to licensee, dated February 19, 1982, "Palisades - SEP Topic II-3.A, Hydrologic Description, II-3.B, Flooding Potential and Protection Requirements, II-3.B.1, Capability of Operating Plants to Cope with Design Basis Flooding Conditions; and II-3.C, Safety-Related Water Supply (Ultimate Heat Sink)" (Accession Number 8202230315).

10.4 EN- DC-170, "Fukushima Near Term Task Force Recommendation 2.3 Flooding Walkdown Procedure."

10.5 Palisades Updated Final Safety Analysis Report, Revision 30.

10.6 U.S. Department of commerce, National Oceanic and Atmospheric Administration – U.S. Department of Army Corps of Engineers, Hydrometrological Report No. 51, June 1978, "Probable Maximum Precipitation Estimate; United States East of 105th. Meridian."

10.7 U.S. Department of Interior, Bureau of Reclamation (now the Water and Power Service), 1977, "Design of Small Dams."

11.0 ATTACHMENTS

None