



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

June 20, 2014

Mr. Eric McCartney  
Site Vice President  
NextEra Energy Point Beach, LLC  
Point Beach Nuclear Plant  
6610 Nuclear Road  
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, 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. MF0266 AND MF0267)

Dear Mr. McCartney:

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*, Subpart 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 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 20, 2012, NextEra Energy Point Beach, LLC (NextEra) submitted its Flooding Walkdown Report as requested in Enclosure 4 of the 50.54(f) letter for the Point Beach Nuclear Plant, Units 1 and 2. In a letter dated January 31, 2014, NextEra provided a response to the NRC staff's requests for additional information which allowed the staff to complete its assessments.

The NRC staff reviewed the information provided and, as documented in the enclosed staff assessment, determined that sufficient information was provided to be responsive to Enclosure 4 of the 50.54(f) letter.

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If you have any questions, please contact me at 301-415-3049 or by e-mail at [Terry.Beltz@nrc.gov](mailto:Terry.Beltz@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Terry A. Beltz", with a long horizontal line extending to the right.

Terry A. Beltz, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-266 and 50-301

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  
NEXTERA ENERGY POINT BEACH, LLC  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-266 AND 50-301

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*, Subpart 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.

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

- a. Describe the design basis flood hazard level(s) for all flood-causing mechanism, 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 walkdown team selection and procedures) using the documentation template discussed in Request Information item 1.j, including actions taken in response to the peer review.

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

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

- 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 Issue Summary 2005-20, "Revision 1, Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Conditions Adverse to Quality or Safety," including entering the condition the CAP.
- g. Document any identified cliff-edge effects and the associated basis. Indicate those that were entered into the CAP. 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 floor 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 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,<sup>4</sup> the NRC staff endorsed the walkdown guidance.

By letter dated November 20, 2012,<sup>5</sup> NextEra Energy Point Beach, LLC (NextEra, the licensee) provided a response to Enclosure 4 of the 50.54(f) letter Required Response Item 2, for the Point Beach Nuclear Plant (Point Beach), Units 1 and 2. In a letter dated December 23, 2013<sup>6</sup>, the NRC staff requested additional information regarding the licensee's available physical margin (APM). The licensee responded to the NRC staff request by letter dated January 31, 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 3 of the 50.54(f) letter.

## 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 Criterion 2, "Design bases for protection against natural phenomena," of Appendix A to 10 CFR Part 50; and Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," to 10 CFR Part 100. 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, tsunamis, and seiches without loss of capability to perform their safety functions.

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<sup>3</sup> ADAMS Package Accession No. ML121440522

<sup>4</sup> ADAMS Accession No. ML12144A142

<sup>5</sup> ADAMS Accession No. ML12326A713

<sup>6</sup> ADAMS Accession No. ML13325A891

<sup>7</sup> ADAMS Accession No. ML14031A246

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 current licensing basis (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

#### 3.1 Design Basis Flooding Hazard for Point Beach, Units 1 and 2

The licensee stated that there are two design basis external flooding hazards considered at Point Beach. The first hazard is flood level resulting from probable maximum wave run-up from adjacent Lake Michigan, and the other is a combination of probable maximum snowmelt with probable maximum precipitation (PMP). Design basis flood elevations are reported in the walkdown report as those elevations above the Point Beach reference zero elevation of 580.2 feet International Great Lakes Datum 1955 (IGLD).

The probable maximum wave run-up value is comprised of a historical high lake level of +1.7 feet, a maximum deep water wave run-up on a vertical surface of +6.55 feet, and a wind tide setup of +0.17 feet, for a total wave run-up of +8.42 feet.

The licensee reported the second hazard as a flood resulting from a large snowmelt in the spring, combined with sustained heavy rainfalls, to produce a total of 1400 acre-feet of runoff. This amount is made up of 360 acre-feet at each of two drainage areas on site resulting from the once-in-50 years snowmelt potential (defined as the water content of snow in late March), as well as an additional 317 acre-feet of water in each drainage site resulting from the once-in-50 year six-hour rainfall expected on site. An associated flood height for this design basis flood is not mentioned.

The licensee considered other flooding mechanisms, such as storm surges, but they were not determined to be a threat because the storm surge maximum water rise of +5.24 feet is bounded by the water rise of +6.72 feet resulting from wave action.

Seiches were also determined by the licensee to not be a threat. A record seiche occurred in Chicago in 1954 and produced a rise of 2-4 feet, but the licensee stated that this event is not representative of the conditions at the Point Beach site. The licensee stated that the Point Beach site is located on an open shoreline, and not susceptible to the reflection that produced the seiche in Chicago in 1954.

The design basis flooding events did not consider groundwater ingress due to soil conditions that inhibits percolation and drainage into Lake Michigan.

Based on its review, the NRC staff concludes that the licensee 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 at the Point Beach site provides for the mitigation of design basis floods that prevents external ingress of water from occurring in rooms housing SSCs that are important to safety, with the exception of the service and fire water pumps in the Circulating Water Pump House (CWPH).

The licensee reports that the maximum probable wave run-up from Lake Michigan is +8.42 feet, and the CLB flood protection for the wave run-up scenario are temporary concrete jersey barriers installed on the north and south sides of the CWPH which would protect equipment up to approximately 9 feet. It is assumed that inclement weather will not prevent installation of barriers within the required time. Storm drains surrounding the CWPH allow any water that spills over the barriers to drain into the lake. In addition, the CLB states that all essential equipment is elevated to a minimum of +9 feet. The licensee indicated that the CWPH is also protected from direct impact of wave-run up by a 3-foot thick reinforced concrete wall of the forebay structure. The CLB does not define a duration for this design basis flood.

The licensee reports that Point Beach is protected from 1400 acre-feet of runoff, created by a combined probable maximum rainfall and snowmelt flood event, by the plant's natural site drainage, its storm drain system, and drainage interceptor ditches. The CLB does not define a duration for this second design basis flood and only provides that the amount of runoff from rain was calculated based on the once-in-50 year, six-hour rainfall. The licensee indicated only the runoff volume was given and a flood elevation was not provided.

#### 3.2.2 Incorporated and Exterior Barriers

The site has incorporated exterior barriers that are permanently in-place, requiring no operator manual actions. These barriers include concrete barriers, storm drains, and equipment placement to protect against the maximum probable wave run-up of +8.42 feet. They also include interceptor ditches to protect against a rain and snowmelt flood.

The CWPH is protected from direct wave run-up impact by 3-feet thick reinforced concrete walls which rise to heights of +15.4 feet parallel to the shore, and +12 feet perpendicular to the shore. In addition, the licensee reports that storm drains located around the CWPH will catch any water that spills over the barriers. If any water passes both the barriers and drains, the CLB requires that critical equipment in the CWPH be mounted at least +9 feet off the ground.

The general site topography of Point Beach is credited with diverting surface runoff away from the plant. This is accomplished by the area around the site, which either slopes from west to east towards the lake or to the north and south to divert runoff away from the plant. In addition to

natural drainage, a storm drain system is installed to protect against rain and snowmelt flooding. The system within the plant consists of a main drain line on both the north and south sides of the plant, and two smaller drain lines that drain to the north and south of the CWPH. The drain lines consist of open catch basins and underground piping that empty out at the beach. There are also drainage ditches on the site that divert water away from the plant. Interceptor ditches located on the north, south, and west sides of the plant drain water into the lake. There are other smaller drainage ditches present in the following places: to the north of the switchyard, running along the north plant access road, and along the service roads on the west side of the plant protected area. These drain either to the storm drain system or to one of the main drainage ditches.

### 3.2.3 Temporary Barriers and Manual Actions

The site has temporary barriers and manual actions requiring operator involvement. The temporary barriers include jersey barriers on the north and south sides of the CWPH that provide protection up to +9 feet, designed to protect equipment in the CWPH, the turbine buildings, and the control building. Installation of these barriers requires manual action prompted by site procedure. Construction of the barriers commences if a monthly check of Lake Michigan water level reveals a value of 580.7 feet IGLD or higher. The licensee reports that the barriers will protect the plant from up to +9 feet of water. Construction of the barriers requires an undisturbed lake level, but because lake levels do not change quickly the licensee is confident that inclement weather could not prevent installation of barriers within the required time. The barriers can be installed within three weeks, and are taken down only when the monthly check reveals a water level below 580.7 feet

### 3.2.4 Reasonable Simulation and Results

The licensee performed a reasonable simulation for the installation of the jersey barriers. The simulation did not indicate any problems or issues related to the time required for installation. However, it did reveal that the installation and staging requirements will require revision. The procedural issues associated with the installation and staging requirements were entered into the Point Beach CAP.

### 3.2.5 Conclusion

Based on its review, the NRC 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 primary flood warning system for external flood protection is the monthly check of Lake Michigan water level. Installation of temporary jersey barriers is prompted when Lake Michigan water level reaches 580.7 feet or higher. There are high water level switches in the pump cubicles that initiate an alarm response procedure for draining; however, this is not credited for mitigation of an external flood.

Based on its review, the NRC staff concludes that the licensee 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

It was determined by the licensee that the jersey barriers are able to be installed on time; however, during simulations, the licensee discovered staging issues that require the installation procedure to be revised. In addition, the barriers, once constructed, did not extend far enough to the north and south. The barriers also had gaps underneath them as a result of uneven ground. Because of these issues, the barriers were deemed ineffective and are currently pending corrective actions.

The forebay wall protecting the CWPH was deemed an effective barrier. The licensee found no problems regarding height, surface cracking, or structural degradation. In addition, all pump motors housed within the CWPH met the +9 feet height requirement. The control panel and battery for the diesel fire pump, however, was below the height requirement and did not meet the licensee's acceptance criteria. It should be noted that fire pumps are not considered safety-related, but corrective actions are outlined.

The storm drain system is credited for mitigating both the probable maximum wave run-up and the probable maximum combined rainfall and snowmelt. All drains are maintained by a credited preventative maintenance program every six months and were determined to be installed per design, cleaned, and unobstructed, with one exception. One drain was found to be covered by a metal plate. The metal plate was removed, and corrective actions were noted. Pipe segments were generally in good condition with small amounts of gravel or dirt on the bottom of the pipes, which was determined not to significantly restrict the capacity of the pipe.

The natural drainage of the topography designed to provide flow paths in the event of the PMP and snowmelt was found to be unchanged except for where newer buildings had been constructed. The changes in these areas are supplemented with a drain system and were deemed to be acceptable.

The Point Beach CLB credits interceptor ditches on the north, south, and west sides of the plant that drain excess water to lake. In order for these ditches to be effective, they must be present and free from obstructions. The south interceptor ditch met these requirements; however, the west ditch was found obstructed by new plant equipment and the north ditch was not located. Instead, a storm drain system was in place to handle drainage on the north side. Several other drainage ditches were found to be improperly maintained. Three drainage culverts on the south side were found to be obstructed or submerged by ponding; another culvert near the north security gate was found to be obstructed; and other drainage ditches exhibited dirt and sand buildup that indicate poor drainage flow. Corrective actions for all issues were noted.

The licensee inspected subgrade walls for water seepage and surface cracking, even though they are not credited features in the Point Beach CLB. The subgrade walls and floors in the Facades for Units 1 and 2 indicated signs of seepage in three areas where seals covering duct banks were partially or fully degraded. Several areas of water seepage were also found in Units 1 and 2, but it was determined that the leakage rate was not enough to challenge any safety-related

equipment. A small amount of groundwater intrusion was found in the Unit 1 residual heat removal pipeway, and a buildup of efflorescence was found underneath penetrations to the Unit 2 Tendon Gallery. Except for these instances, which will be handled and tracked in the future through the licensee's CAP, the subgrade walls were generally considered to be effective in preventing groundwater intrusion into the plant.

In an inspection report dated May 13, 2013<sup>8</sup>, the NRC staff noted several noncompliances with licensing requirements, issues that could challenge risk-significant equipment, and observations regarding the licensee's ability to mitigate consequences.

In three inspection reports, the NRC staff identified failures to comply with the requirements to periodically update the Final Safety Analysis Report (FSAR) with flooding design descriptions and credited mitigation features resulting from modifications to the plant; failure to establish procedures for control and maintenance for external flooding design features; and failure to establish adequate procedures to implement external flooding wave run-up protection design features. These items were closed in the May 13, 2013, inspection report.

The NRC inspectors noted that the interceptor ditch, which is listed in the FSAR, no longer existed following the installation of the G-03/G-04 building. The FSAR was never updated. This Temporary Instruction (TI) item is designated a Severity Level IV violation, and processed in accordance with the NRC Enforcement Policy.

Based on its review, the NRC staff concludes that the licensee 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 8, 2012,<sup>9</sup> the licensee responded to the 50.54(f) letter that they intended to utilize the NRC endorsed walkdown guidelines contained in NEI 12-07, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features."<sup>10</sup> The licensee's walkdown submittal dated November 20, 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 its review, the NRC 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 six flood protection features including the temporary

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<sup>8</sup> ADAMS Accession No. ML13133A356

<sup>9</sup> ADAMS Accession No. ML12163A250

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

concrete jersey barriers, the CWPH structure and equipment, the storm drain system, site topography, drainage ditches, and subgrade walls. In addition, the licensee performed reasonable simulation of manual actions, including the installation of the temporary concrete jersey barriers. The licensee inspected exterior walls that were subject to groundwater intrusion, even though they are not credited external flood features within the Point Beach CLB.

The licensee stated that the flood mitigation systems are independent of the plant configuration because the height of the critical equipment does not vary with respect to its operating mode.

The licensee used 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 reported some deficiencies that would prevent the flood protection features from performing their intended function. These include the staging issues associated with installing the jersey barriers, as well as the functionality issues associated with the uneven ground. In addition, some deficiencies were associated with missing or obstructed drainage ditches, as well as non-functioning storm drains.

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 entered all observations made during the walkdowns that were not immediately judged as acceptable into its CAP. The licensee evaluated the observations and provided planned corrective actions for the observations determined to be deficiencies. All deficiencies are being tracked in the Point Beach CAP.

The first deficiency pertains to the configuration of the temporary concrete jersey barriers. The lengths of the barriers were deemed inadequate and will be fixed with the addition of more barriers. A level concrete pad will be built for the jersey barriers to sit on, which will fix the unacceptable gaps in the barriers. In addition, a procedure change is being made to address the inadequacies associated with the staging procedure.

The second deficiency pertains to the height of the control panel for the diesel fire pump housed in the CWPH. The licensee indicated the addition of flood dampers in the CWPH for external and internal flooding would reduce the potential flood height from +8.42 feet to +7.75 feet, eliminating the previous +9 feet height requirement.

Another deficiency pertains to a drain being covered by a metal plate. The plate has been removed, and model work orders are being updated to include a step to remove the ground support plates after dry fuel storage activities are completed.

The deficiencies pertaining to missing or obstructed ditches are being fixed with updates to the FSAR, to include the drain system on the north side and to perform a re-evaluation of the ditch drainage with the equipment obstructions.

Finally, deficiencies related to poor maintenance of the drainage ditches and culverts are being addressed with updates to the preventative maintenance program.

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

### 3.6.3 Flood Protection and Mitigation Enhancements

The licensee has not implemented or planned any enhancements that improve or increase flood protection or mitigation. Some procedural changes are planned to improve the effectiveness of some flood features, such as the temporary concrete barriers and the preventative maintenance program for the site drainage (see Section 3.6.5).

### 3.6.4 Planned or Newly-Installed Features

The licensee did not determine that changes were necessary by the flood walkdowns.

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

The licensee noted deficiencies and actions taken or planned to address the deficiencies. The licensee indicated the configuration of the jersey barriers was found to be inadequate. The barriers did not extend far enough north and south to provide flood protection up to the design flood height of +8.42 feet. In addition, gaps existed between the barrier and the ground that were determined to be unacceptable. Also, metal loops used to anchor the barriers together created 3-inch gaps between the barriers. These deficiencies were entered into the CAP, and the following corrective actions are planned: (1) adding four more jersey barriers to the three current ones to achieve the needed flood protection height, and (2) pouring a new concrete pad to eliminate gaps between the barriers and uneven ground.

The licensee identified that procedures were inadequately written for barrier installation. The licensee plans to revise the procedures to eliminate the inadequacies.

The licensee noted the heights of two components of the diesel fire pump located in the CWPH were not elevated to meet the credited height for flood protection. The planned corrective action to resolve this deficiency is to credit the CWPH floor dampers for external, as well as internal, flooding to reduce the flood height from +8.42 feet to +7.75 feet, thus assuring that all equipment is well above the maximum probable flood height.

The licensee stated that a metal plate was found to be covering a catch basin in the plant yard near the northwest corner of the Unit 2 façade, preventing it from accomplishing its flood protection function. The metal plate has since been removed, and steps are being taken to prevent recurrence. A corrective action was created to update the model work orders for dry fuel storage to include a step to remove ground support plates after completion of the campaign.

The licensee stated that the west-side interceptor ditch running between the plant yard and switchyard on either side of the 13.8 kV Building was deemed inadequate. It is obstructed by new equipment, including a propane tank, a capacitor bank, and transformers, and is not

well-defined in some places. The north-side interceptor ditch was found to not exist, and a storm drain line was found in its place. The licensee outlined the following corrective actions associated with these interceptor ditches: (1) updating FSAR to replace the north interceptor ditch with the storm drain system on the north side, and (2) performing a re-evaluation of the drainage on the west side of the plant yard around the ditch, taking into consideration the added equipment that has obstructed the ditch.

The licensee stated that maintenance of ditches and culverts was found to be inadequate after several drainage paths were found to be partially obstructed. Three drainage ditches on the south side of the site were either obstructed or submerged in ponding. Another drainage culvert near the north security gate was also obstructed. Other drainage ditches had a buildup of dirt and silt that indicated poor drainage flow and required clearing or possible regrading. The corrective action for these maintenance issues includes updating the drainage ditch maintenance to address the shortcomings in the current prevent maintenance (PM) program. In addition, a plant drawing used to guide the PMs will be updated to more accurately reflect the configuration of the surface drainage features.

### 3.6.6 Staff Analysis of Walkdowns

The NRC staff reviewed the licensee's walkdown report dated November 20, 2012. The licensee evaluated the flood features for effectiveness and performed reasonable simulation that revealed issues critical to flood protection. All deficiencies were adequately listed and explained, in addition to the corresponding corrective actions. The licensee identified where the PM program for some flood features could be improved. The only issue of concern is crediting of the drain system on the north side due to absence of a ditch for runoff in that area. The licensee provided no discussion or justification that this drain system will operate effectively as a flood protection feature in the manner necessary. This issue will be processed in accordance with the NRC Enforcement Policy.

Based on its review, the NRC staff concludes that the licensee 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 issued a request for additional information to the licensee regarding the APM dated December 23, 2013<sup>11</sup>. The licensee responded by letter dated January 31, 2014<sup>12</sup>. The licensee reviewed its APM determination process and entered any unknown APMs 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 its review, the NRC staff concludes that the licensee documented the information

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<sup>11</sup> ADAMS Accession No. ML13325A891

<sup>12</sup> ADAMS Accession No. ML14031A246

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. Further, the staff reviewed the response, and concludes 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 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 NextEra implemented its flooding walkdowns consistent with the intent of the walkdown guidance. The May 13, 2013,<sup>14</sup> inspection report documents the results of this inspection. The inspection report findings are discussed in Section 3.4, above.

#### 4.0 INACCESSIBLE AND RESTRICTED ACCESS FEATURES

The licensee did not identify any inaccessible or restricted access features.

### 5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of its flooding walkdown methodology meets the intent of the walkdown guidance. The staff also concludes, through the implementation of the walkdown guidance activities and in accordance with plant processes and procedures, that the licensee 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 staff notes that inspection findings, as detailed in the May 13, 2013, inspection report, will be processed in accordance with the NRC Enforcement Policy.

Overall, the NRC staff reviewed the information provided by the licensee and concludes that sufficient information was provided in its response to Enclosure 4 of the 50.54(f) letter.

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<sup>13</sup> ADAMS Accession No. ML12129A108

<sup>14</sup> ADAMS Accession No. ML13133A356

If you have any questions, please contact me at 301-415-3049 or by e-mail at [Terry.Beltz@nrc.gov](mailto:Terry.Beltz@nrc.gov).

Sincerely,

*/RA/*

Terry A. Beltz, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-266 and 50-301

Enclosure:  
Staff Assessment of Flooding Walkdown Report

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**ADAMS Accession Number: ML14147A011**

\* concurrence by e-mail

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NAME	TBeltz	RKuntz	MHenderson	RKaras *	RCarlson	TBeltz
DATE	05/27/14	06/11/14	06/03/14	05/12/14	06/17/14	06/20 /14

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