UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, IL 60532-4352

March 28, 2014

EA-12-009
EA-13-125

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

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
NRC 95002 SUPPLEMENTAL INSPECTION REPORT
05000266/2014007; 05000301/2014007

Dear Mr. McCartney:

On March 6, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a follow-up supplemental inspection pursuant to Inspection Procedure 95002, "Supplemental Inspection for One Degraded Cornerstone or any Three White Inputs in a Strategic Performance Area," at your Point Beach Nuclear Plant, Units 1 and 2. The enclosed report documents the results of this inspection, which were discussed at the exit on March 6, 2014, with you and other members of your staff.

In accordance with the NRC Reactor Oversight Process (ROP), this follow-up supplemental inspection was performed to assess the White inspection finding for the failure of the Unit 1 Turbine Driven Auxiliary Feedwater Pump (TDAFWP) and the White inspection finding for external wave run-up flooding. These two White findings both in the Mitigating Systems Cornerstone placed Point Beach Unit 1 in a degraded cornerstone as of the first quarter of 2013. In addition to these two White findings we requested that you also include in your assessment the White finding in the Emergency Preparedness (EP) Cornerstone that had been issued on July 24, 2012. A 95001, Supplemental Inspection for One or Two Inputs in a Strategic Performance Area, had previously been performed for the White EP finding and the White TDAFWP finding.

The NRC staff was informed on October 29, 2013, of your readiness, as of that date for us to conduct this supplemental inspection.

The objectives of this supplemental inspection were to: (1) provide assurance that the root causes and the contributing causes for the risk significant issues were understood; (2) independently assess and provide assurance that the extent of condition and extent of cause of the individual and collective issues were identified; (3) determine if safety culture components caused or significantly contributed to the individual or collective issues; and (4) provide assurance that the corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes.

The inspection consisted of an examination of activities conducted under your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your operating license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of the inspection, the NRC determined that Point Beach had performed an acceptable evaluation of the White EP finding and the White TDAFWP finding but had not performed an acceptable evaluation of the White flooding finding and had not performed an acceptable evaluation of the collective White inputs. Taken collectively the issues associated with the White flooding finding represented a significant weakness, as discussed in Inspection Procedure (IP) 95002, and your actions to date have not provided the assurance level required to meet the inspection objectives. The inspection determined that your staff failed to adequately evaluate the root causes, contributing causes, extent-of-condition, or extent-of-cause of the safety-significant finding, and take or plan adequate corrective actions to address the root causes, contributing causes, extent-of-condition, or extent-of-cause and to prevent recurrence of the safety-significant finding. The White finding associated with Notice of Violation (NOV) 05000266/2013002-10 and 05000301/2013002-10 will be held open. Specific items are discussed in additional detail in each section of the attached inspection report.

When informed of your readiness, a future inspection will be conducted to verify the corrective actions that your staff has put in place to address and preclude a repetition of the White flooding finding.

Based on the results of this inspection, three NRC-identified findings of very low safety significance (Green) that involved violations of NRC requirements were identified. The NRC identified an additional Green finding that was associated with a Severity Level IV violation of NRC requirements evaluated through the traditional enforcement process. However, because of their very low safety significance, and because these issues were entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Point Beach Nuclear Plant. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Point Beach Nuclear Plant.

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last six months of 2013 using the

previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC-0305 starting with the CY 2014 mid-cycle assessment review.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Anne T. Boland, Director
Division of Reactor Projects

Docket Nos. 50-266; 50-301
License Nos. DPR-24; DPR-27

Enclosure:
IR 05000266/2014007; 05000301/2014007
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ™

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	05000266; 05000301
License Nos:	DPR-24; DPR-27
Report No:	05000266/2014007; 05000301/2014007
Licensee:	NextEra Energy Point Beach, LLC
Facility:	Point Beach Nuclear Plant, Units 1 and 2
Location:	Two Rivers, WI
Dates:	February 3, 2014, through March 6, 2014
Inspectors:	B. Bartlett, Project Engineer J. Beavers, Emergency Preparedness Inspector R. Elliott, Acting Resident Inspector, Point Beach J. Jandovitz, Project Engineer K. Miller, Resident Inspector, Watts Bar P. Voss, Resident Inspector, Monticello
Approved by:	J. Cameron, Chief Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05000266/2014007, 05000301/2014007; 02/03/2014 – 03/06/2014; Point Beach Nuclear Plant, Units 1 and 2; Supplemental Inspection – Inspection Procedure (IP) 95002, Supplemental Inspection for One Degraded Cornerstone or any Three White Inputs in a Strategic Performance Area.

This inspection was conducted by three regional inspectors and three resident inspectors. The inspectors identified three NRC-identified findings of very low safety significance (Green) that involved violations of NRC requirements. The NRC identified an additional Green finding that was associated with a Severity Level IV violation of NRC requirements evaluated through the traditional enforcement process. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Assigned cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Cornerstone: Mitigating Systems

The NRC staff performed this follow-up supplemental inspection in accordance with Inspection Procedure 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to continue to assess the licensee's evaluation of two White inspection findings that affected the Mitigating Systems Cornerstone.

The inspection team determined that the licensee performed an adequate evaluation of some of the issues, but failed to perform an adequate evaluation of some issues. The inspection team determined that the root cause evaluation for the Turbine Driven Auxiliary Feedwater Pump (TDAFWP) appropriately evaluated the root and contributing causes, adequately addressed the extent of condition and cause, assessed safety culture, and established corrective actions for the risk significant performance issues. However, the inspection team determined that for the flooding White finding that the licensee failed to appropriately evaluate the root and contributing causes, failed to adequately address the extent of condition and cause, failed to adequately assess safety culture, and failed to establish adequate corrective actions. In addition to assessing the licensee's evaluations, the inspection team independently performed an extent of condition and extent of cause review of the two findings and a review of the site safety culture as it related to the root cause evaluations. The team concluded that the licensee's root cause evaluations and corrective actions, both completed and planned, were sufficient to address the causes and prevent recurrence for the TDAFWP White finding but had significant weaknesses resulting in failure for the flooding White finding. The licensee's implementation of corrective actions for the TDAFWP will be reviewed during future inspections.

A. NRC-Identified and Self-Revealed Findings

- Green. The inspectors identified a finding of very low safety significance and associated non-citied violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," in that from March 13, 2013 until February 14, 2014, the licensee failed to assure that for a significant condition adverse to quality (SQAC), the cause of the condition was determined and corrective actions were taken to preclude repetition. Specifically, the licensee's corrective actions failed to preclude repetition of an SQAC where Procedure PC 80 Part 7, "Lake Water Level Determination," as implemented, would not protect safety-related equipment in the turbine building or Circulating Water Pump House (CWPH). After the licensee had taken corrective actions to improve the wave barrier procedure in response to an NRC-identified NOV, PC 80 Part 7 and other flood protection implementing procedures specified inadequate timelines to ensure wave run-up flood barriers would be installed prior to the lake level at which wave run-up could impact the site. Corrective actions for this issue included changing the affected procedures to install the wave barriers at a lower lake level, changing the lake level determination surveillance from monthly to weekly, and reducing the allowed installation time for the barriers from 3 weeks to 1 week.

  The performance deficiency was screened against the Reactor Oversight Process per the guidance of lMC 0612, Appendix B, and determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors (Flood Hazard) and Procedure Quality, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the licensee's failure to correct procedural deficiencies associated with flood barrier construction timelines, could challenge the timely installation of the barriers, which could impact the ability of mitigating systems to respond during an external flooding event. The inspectors evaluated the finding using IMC 0609, Attachment 0609.04, Tables 2 and 3, and Appendix A. Based on a review of Appendix A, Exhibit 2, Item 4.B, the inspectors determined that this issue screened as having very low safety significance (Green). This finding has a cross-cutting aspect in the area of problem identification and resolution, because the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. (P.2)

- Green. The inspectors identified a finding of very low safety significance and associated non-citied violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that from January 19, 1996 until November 25, 2013, the licensee failed to ensure that activities affecting quality were prescribed by documented procedures of a type appropriate to the circumstances to address external flooding as described in the Final Safety Analysis Report (FSAR). Specifically, PC 80 Part 7, "Lake Water Level Determination" directed advanced installation of concrete barriers to protect against deep wave action from the lake, which introduced significant unrecognized blockages in the natural drainage path credited in the FSAR to protect against the probable maximum precipitation and Turbine Building internal flooding events. Corrective actions for this issue included changing the procedure and FSAR to include actions to provide an additional flood relief path through the CWPH building and reliance on internal flood relief dampers for the affected flooding events.

The performance deficiency was screened against the Reactor Oversight Process per the guidance of IMC 0612, Appendix B, and determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors (Flood Hazard) and Procedure Quality, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the licensee's failure to procedurally control external flooding design features to ensure they would not adversely affect the strategy for other flooding events, could negatively impact mitigating systems' ability to respond during external and internal flooding events. The inspectors evaluated the finding using IMC 0609, Attachment 0609.04, Tables 2 and 3, and Appendix A, and determined a detailed risk evaluation was required. Following a detailed risk evaluation, Region III SRAs determined that the finding had very low safety significance (Green). This finding has a cross-cutting aspect in the area of problem identification and resolution, because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. (P.3)

- Severity Level IV: The inspectors identified a finding of very low safety significance and associated Severity Level IV, non-citied violation of 10 CFR 50.59(d)(1), "Changes, tests and experiments," when, on November 25, 2013, the licensee failed to perform an evaluation against the criteria in 10 CFR 50.59(c)(2) for a change to procedure PC 80 Part 7 to include actions to maintain functionality of drainage paths during probable maximum precipitation and turbine building flooding events. Specifically, PC 80 Part 7, "Lake Water Level Determination" was changed to include actions to open the CWPH rollup doors to provide an additional drainage path while wave barriers were in place, without fully evaluating the viability of reliance on additional flood features not credited for external flooding in the Current License Basis (CLB). Corrective actions for this issue included to updating the FSAR to describe the new flood paths, performing a 10 CFR 50.59 screening and 10 CFR 50.59 evaluation for the new drainage path which had put the site outside of the CLB, revising a related functionality assessment, controlling external flooding areas to ensure they are clear of debris, and creating a procedure to install curtains on the CWPH rollup doors during periods when they were required to be open.

  The inspectors determined that the licensee's failure to fully evaluate the viability of newly created flooding drainage paths as required by 10 CFR 50.59(d)(1) was a performance deficiency. The inspectors evaluated the performance deficiency using traditional enforcement in conjunction with the SDP because the performance deficiency had the potential to impact the regulatory process. The performance deficiency was screened per the guidance of IMC 0612, Appendix B, and determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors (Flood Hazard) and Design Control, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the licensee did not fully demonstrate that the availability, reliability, and capability of mitigating systems would be maintained during flooding events due to the site's failure to evaluate the viability of alternate flood drainage paths through the CWPH. The inspectors evaluated the finding using IMC 0609, Attachment 0609.04, Tables 2 and 3, and Appendix A. Based on a review of Appendix A, Exhibit 2, Item 4.B, the inspectors determined that this issue screened as

having very low safety significance (Green). Additionally, in accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as a Severity Level IV because the resulting conditions were evaluated as having very low safety significance (Green) by the SDP. This finding has a cross-cutting aspect in the area of problem identification and resolution, because the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. (P.2)

- Green. The inspectors identified a finding of very low safety significance (Green) and associated non-citied violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to ensure the effectiveness review attributes for a significant condition adverse to quality would ensure the corrective actions would eliminate or reduce the recurrence rate.

  The inspectors determined that the licensee's failure to establish effectiveness review criteria that would have identified whether the corrective action to prevent recurrence (CAPRs) had effectively resolved the conditions was a performance deficiency warranting further review. The inspectors determined that this finding was more than minor in accordance with IMC 0612, Appendix B, because it was affected the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. If left uncorrected, would the performance deficiency have the potential to lead to a more significant safety concern? The inspectors evaluated the finding using IMC 0609, Appendix A. The inspectors determined the finding was of very low safety significance (Green) because the finding was not a deficiency affecting the design or qualification of a mitigating structure, system or component and did not result in a loss of operability or functionality. In addition, the finding did not represent a loss of system or function, did not represent an actual loss of function of a least a single train for longer than its technical specification allowed outage time, and did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance.

  The finding had a cross cutting aspect in the area of problem identification and resolution, specifically resolution, because licensee personnel failed to ensure the corrective actions to prevent recurrence had effective attributes. (P.2)

REPORT DETAILS

4. OTHER ACTIVITIES

Cornerstone: Mitigating Systems

4OA4 Supplemental Inspection (95002)

a. Inspection Scope

The NRC staff performed this follow-up supplemental inspection in accordance with inspection procedure (IP) 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess the White inspection finding for the failure of the Unit 1 Turbine Driven Auxiliary Feedwater Pump (TDAFWP) and the White inspection finding for external wave run-up flooding. In addition to these two White findings the licensee was requested to also include in their assessment the White finding in the Emergency Preparedness (EP) Cornerstone that had been issued on July 24, 2012. A 95001, Supplemental Inspection for One or Two Inputs in a Strategic Performance Area," had previously been performed for the White EP finding and the White TDAFWP finding.

The objectives of the supplemental inspection included:

- To provide assurance that the root and contributing causes for the White findings are understood.
- To determine if the licensee's corrective actions for risk-significant performance issues are sufficient to address the root and contributing causes and prevent recurrence.
- To independently assess the extent of condition and the extent of cause for individual and collective risk-significant performance issues.
- To assess the safety culture as a possible contributor.

The inspectors reviewed the Root Cause Evaluations (RCE), in addition to other assessments, evaluations, and corrective action program documentation completed in support of and, as a result of, the RCEs. The inspectors reviewed corrective actions that were taken or planned to address the identified causes. The inspectors interviewed selected station, corporate, and contractor personnel, and held discussions with these individuals to verify that the root and contributing causes and the contribution of safety culture components were understood and that corrective actions taken or planned were appropriate to address the causes and preclude repetition.

For clarity, documentation of each inspection requirement contains subsections for each of the two White mitigating systems findings. The White EP finding was assessed by the inspection team only as it related to commonalities to the other White findings and this is not individually discussed in this report.

Documents reviewed during this inspection are listed in the Attachment.

Inspection Results

The four attributes of IP 95002 were reviewed for each of the three White findings plus the common cause analysis performed by the licensee. Thus there were a total of 16 attributes that were reviewed. The inspectors concluded that for the White EP finding and the White TDAFWP finding that the licensee understood the root and contributing causes. In addition, the inspectors performed the independent extent of condition and extent of causes and assessed the licensee's corrective actions for these two White findings and concluded that the licensee's actions were sufficient. Finally, the inspectors determined that the safety culture aspects for these two White findings were adequate although there were safety culture components that contributed to the common cause analysis conclusions and that corrective actions had been taken to address these conclusions. Thus of the total of 16 attributes, eight were closed. The inspectors determined that the root causes, extent of condition, extent of cause, corrective actions and safety culture aspects for the White flooding finding and the common cause analysis (CCA) were not sufficient and remain open.

.02 Evaluation of the Inspection Requirements

02.01 Problem Identification

a. Determine that the Evaluation Documented Who Identified the Issue (i.e., Licensee-Identified, Self-Revealing, or NRC-Identified) and Under What Conditions the Issue was Identified

The inspectors determined that neither of the RCEs for the two White findings nor the CCA specifically addressed who identified the issues. The RCE for the TDAFWP White finding had enough information to infer that the finding was self-revealed but the RCE for the flooding White finding contained only a minimal inference that a NRC finding had been issued. The CCA had remarks similar to the flooding RCE that stated that NRC had issued White findings but again the inspectors had to infer how the findings were identified. There were no statements in any licensee documentation or as a result of interviews with licensee management indicating the licensee disagreed with the findings. The licensee clearly stated the conditions under which the issues were identified. The inspectors considered the failure to clearly state who identified the issue to be a weakness for the TDAFWP White finding but not significant enough to leave this item open. For the TDAFWP White finding, this aspect of IP 95002 is closed. The inspectors concluded that the licensee failed to clearly document who identified the issue for the White flooding finding and the CCA and this aspect of IP 95002 was not met.

b. Determine that the Evaluation Documented How Long the Issues Existed and Prior Opportunities for Identification

The licensee's evaluation for the TDAFWP White finding documented that pump to turbine alignment issues had existed for many years and that each time the pump was determined to be out of alignment it had been restored to within allowable limits. The inspectors determined that the licensee's evaluation was adequate with respect to identifying how long the issue existed and prior opportunities for identification.

The licensee's evaluation for the flooding White finding documented that the change to the methodology of protecting the site from external lake flooding had been done in January of 1996. The licensee's evaluation also documented some prior missed opportunities to identify; however, the evaluation failed to address other significant prior opportunities. As discussed further in various sections of the report, the inspectors observed that licensee personnel implemented corrective actions that significantly impacted other license basis events but failed to recognize these impacts. Thus, there were additional opportunities to identify which were not listed or discussed in the licensee's RCE. The inspectors determined that the licensee's evaluation was not adequate with respect to identifying how long the issue existed and prior opportunities for identification. This aspect of IP 95002 remains open for the flooding White finding.

c. Determine that the Evaluation Documented the Plant Specific Risk Consequences, As Applicable, and Compliance Concerns with the Issues Both Individually and Collectively

The risk evaluation performed by the licensee in discussions with the NRC Senior Reactor Analyst (SRA) prior to issuance of the TDAFWP White finding was not the one utilized by the licensee for the subsequent RCE. The licensee's RCE, stated, in part, "In order to quickly evaluate the safety significance of this issue, the Safety Monitor program was used by the probabilistic risk assessment (PRA) group." The NRC team did not understand the need to quickly perform a risk assessment since one had previously been performed and discussed with an NRC SRA. Nevertheless, the licensee chose to perform one, but selected a program that did not align with standard NRC significance determination techniques. The licensee's Safety Monitor program is used to monitor on line risk in a moment to moment manner and use of the program to calculate the risk consequence for the TDAFWP failure was neither accurate nor appropriate. The team discussed the licensee's risk significance with the NRC SRA who performed the original assessment and the SRA verified that the licensee had understood and agreed with the original NRC conclusions. The purpose of this reassessment and write-up was not understood either by the SRA nor the team. The inspectors also determined that the licensee had issued a Licensee Event Report for the failure of the TDAFWP and appropriately entered the failure in the Maintenance Rule database and the Performance Indicators. Based upon the licensee's previous demonstrated knowledge and understanding of the risk significance of this item, the inspectors concluded that the risk and compliance portion was weak, but that this fundamental aspect of IP95002 had been met.

The risk evaluation performed by the licensee for the flooding White finding enforcement conference was not accepted by the NRC although portions of the licensee's assessment was recognized as acceptable and used to ensure the NRC position was accurate. Nevertheless, the licensee chose to repeat the previously determined unsatisfactory risk assessment in the flooding White RCE. In the NRC Final Significance Determination of a White Finding, dated August 9, 2013, Enclosure 2 provided an analysis of the licensee risk information. In this analysis the NRC disagreed with the licensee's risk assessment in a number of significant ways, yet these disagreements appeared to not be factored into the licensee's subsequent risk assessment documented in the associated RCE. The inspectors' review of the flooding RCE determined that the licensee did not address possible compliance concerns or reportability.

During interviews, individuals directly involved in responding to the finding cited internal supplemental calculations, and stated that they believed there would not have been any consequences to the plant as a result of the finding. Interviewees stated that the finding's risk significance came only from significant conservatisms used in the individual plant examination external events (IPEEE) evaluation, and not from potential plant consequences. Interviews with individuals not directly involved in addressing the flooding finding revealed that working level plant personnel were familiar with the flooding finding, but their awareness was focused more on the regulatory impacts, with minimal awareness of potential equipment impacts.

The inspectors concluded that the licensee failed to adequately address the plant specific risk consequences or compliance concerns related to the flooding White finding and this aspect of IP 95002 was not met.

d. Findings

No findings were identified.

02.02 Root Cause

a. Determine that the Problem was Evaluated Using a Systematic Methodology to Identify the Root and Contributing Causes

The inspectors reviewed the licensee's RCEs, CCA, and other documents related to the White findings. The licensee identified a total of four root causes and seven contributing causes using a systematic methodology. In addition, the licensee's CCA identified two common causes and two contributing causes. The licensee utilized support-refute matrix, change analysis, barrier analysis, a cause and effects diagram, an event and causal factor chart, and a "why" staircase during the two root cause assessments and the CCA. The inspectors determined that the RCE and CCA were conducted to a level of detail commensurate with the significance of the issues. The licensee's evaluations included details of each item along with supporting data and other information.

The licensee's use of systematic methodology to identify the root and contributing causes was determined to be adequate for the TDAFWP White finding. Due to the significant weaknesses identified in the licensee's corrective actions, extent of condition, extent of cause, and root cause, the team concluded that this aspect for the flooding White finding was negatively impacted. This aspect of IP 95002 will remain open for the flooding White finding.

b. Determine that the Root Cause Evaluation was Conducted to a Level of Detail Commensurate with the Significance of the Problem

The licensee utilized the systematic methodologies for the CCA discussed above and determined that the primary root causes were:

- Less than adequate understanding of the design and licensing basis;
- Corrective Action Program items with incorrect priorities;
- Original construction stress riser introduced to the TDAFWP;

- Emergency Preparedness group did not perform reviews of federal guidance;
- A lack of or inadequate leadership; and
- Poor technical procedure quality.

The inspectors noted that while the licensee had poor procedure quality as a root cause for the TDAFWP issue, the knowledge, skills, and abilities (KSA) of the workers was not considered as a possible root cause. For example, the TDAFWP alignment procedure did not require the taking of as-found data nor did the procedure require that if the data was taken that it be reviewed by engineering personnel. Yet, a qualified maintenance mechanic would have experience with the need to take such data and would know to pass it along to their supervisor. The inspectors performed a search of the licensee's CAP database to see if a trend of issues with a cause of KSA existed and did not identify any trends. The licensee's RCEs should have discussed this aspect in sufficient detail so as to demonstrate that this was not a root cause.

Despite the weakness noted above, the inspectors determined that the RCE for the TDAFWP White finding was conducted to a level of detail commensurate with the significance of the issues.

For the flooding White finding and the CCA root cause the inspectors observed that problems with the quality of condition report evaluations and with Functionality Assessments (FA) were identified but not included as either a root cause or a contributing cause. The inspectors also noted that an assessment of the licensee's CCA performed prior to the team arriving on site (Quick Hit PBSA-PBNP-13-03) had a similar observation and a recommendation to clearly articulate this theme. The inspectors determined that neither a root cause nor a contributing cause was assigned to either corrective action program quality or CR evaluations. One CAPR was assigned to improve the quality of FAs. This is discussed in more detail in Section 02.04, below. While corrective action program evaluation quality was a part of the issues identified, the failure of the licensee to either include it as a root cause or to justify why it was not a root cause was a significant weakness.

The inspectors determined that this aspect of the IP 95002 criteria was not met for the flooding White finding and the CCA.

c. <u>Determine that the Root Cause Evaluation Included a Consideration of Prior Occurrences of the Problem and Knowledge of Prior Operating Experience</u>

The inspectors determined that the licensee's evaluation included a consideration of prior occurrences of the issues and industry operating experience. The RCE for the TDAFWP determined that a prior opportunity was missed in early 2011 during the Unit 2 refueling outage when pipe stresses were identified on the opposite unit TDAFWP. The licensee determined that even though the pipe stresses were identified and corrected that a CR was not issued and thus the opportunity to apply this information to the next Unit 1 refueling outage and TDAFWP maintenance activity was missed.

The inspectors concluded that the root cause evaluation included a review of prior and precursor problems and properly evaluated internal and industry operating experience. This aspect of the IP 95002 criteria was met for the TDAFWP finding.

The RCE for the White flooding finding determined that prior opportunities were missed to properly correct the deficiency. This included opportunities in 2004, when condition reports were generated questioning the adequacy of the wave run-up barriers, given the 1996 procedure change. This also included opportunities in 2012 where a functionality assessment inappropriately contained conclusions regarding the functionality of the wave barriers on perceived risk. The inspectors noted that these opportunities were factored into the determination of one of the root causes. The inspectors also noted the RCE discussion on industry OE and noted several instances where the causes of industry deficiencies were similar to the causal factors identified for the White flooding issue

As discussed later in this inspection report unintended consequences were introduced during the corrective actions to the White flooding finding. The failure to recognize these consequences represented additional occurrences of the problem. The inspectors determined that this aspect of the IP 95002 criteria was not met for the flooding White finding and the CCA.

d. Determine that the Root Cause Evaluation Addresses the Extent of Condition and the Extent of Cause of the Problem

The licensee's RCE included an evaluation of the extent of condition and extent of cause of the issues. The inspectors determined that the RCE for the TDAFWP issue was adequate with comments. These comments are discussed in section 02.04 of this report. The inspectors also noted that during an assessment of the licensee's RCE that was performed prior to the team arriving on site (Quick Hit PBSA-PBNP-13-03) that deficiencies with the TDAFWP had been identified. For example, the extent of condition prior to the Quick Hit was limited to rotating couplings of the same make and model as that which had failed on the Unit 1 TDAFWP. Following a recommendation of the Quick Hit team, the licensee had expanded the extent of condition to include other make and model couplings as well as all rotating connections. Based on a review of the RCE and CCA and discussions with licensee management and staff personnel, the inspectors concluded that the evaluations for the TDAFWP White finding adequately addressed the extent of condition and the extent of cause. This aspect of the IP 95002 was not for the TDAFWP finding.

The inspectors determined that the RCE for the flooding White finding also included an evaluation of the extent of condition and extent of cause but based on the NRC findings documented in Section 02.04 of this report the inspectors concluded that this item was not acceptable. For example, the RCE did not consider possible bypass paths around the external flooding barrier. During field walk downs, the inspectors identified two different drain pipes in the concrete near the CWPH which directly communicated with the lake shore and should have been evaluated as possible bypass paths. The inspectors concluded that the evaluations for the flooding White finding did not satisfy this aspect of the IP 95002 criteria.

e. Findings

No findings were identified.

02.03 Corrective Actions

a. Determine that Appropriate Corrective Actions are Specified for Each Root and Contributing Cause or that the Licensee has an Adequate Evaluation for Why No Corrective Actions are Necessary

The inspectors assessed the corrective actions for the RCEs and the CCA. The inspectors verified that all root causes had associated CAPRs and that all contributing causes had associated corrective actions. The inspectors then performed a more detailed assessment of selected CAPRs and corrective actions. The detailed assessment included a sample of corrective action program documents, field walk downs, interviews with selected licensee individuals, and reviews of the design and licensing basis.

The inspectors concluded that the corrective actions for the TDAFWP finding were vague and needed additional clarification. As previously noted, the scope of the root cause was narrowly focused but this had previously been identified by an internal licensee review. As a result, the scope of the corrective actions had been expanded to include other rotating equipment connections. Additional corrective actions were reviewed by the inspectors with no further substantive observations. The inspectors concluded that the CAPRs and corrective actions for the TDAFWP met the requirements of IP 95002.

During the reviews of the corrective action program documents, the inspectors noted that the licensee questioned whether the installation of the flood protection barriers had introduced unintended consequences. Specifically, the corrective action to install a more robust wave barrier in lieu of sandbagging efforts failed to restore compliance with the CLB. While the improved wave barriers provided necessary protection against wave action, they introduced unrecognized hazards during the probable maximum precipitation and turbine building internal flooding events. These barriers blocked natural drainage paths credited for flood relief and rendered these paths nonfunctional as a result of wave barrier installation. The inspectors noted that this issue was not recognized by the licensee until November 2013 for one of the flooding events, and January 2014 for the other event, and thus, the licensee's interim corrective actions for the flooding finding were deficient between March and November 2013 due to procedure call-up PC 80 Part 7, which remained inadequate during this time. As a result, the licensee was required to add compensatory actions during wave barrier installation to provide additional flow paths by opening the CWPH roll-up doors.

When developing the compensatory action to address the deficiency associated with the new wave barriers, the licensee failed to recognize that the new compensatory measures required actions outside of the CLB. Specifically, Section 2.5 "Hydrology" in the FSAR for the Maximum precipitation flood states, in part, that "…the topography of the site results in adequate natural drainage to remove this amount of water and limit ponding depth to prevent adversely affecting safety related equipment." The nonfunctional drainage paths following wave barrier installation resulted in the licensee having to identify an alternate path for flood water drainage flow. As a compensatory action, the licensee chose to open the CWPH roll-up doors, route flood waters through the CWPH, and relying on internal flood relief dampers to open and drain the water. The licensee viewed those compensatory actions as still with its CLB. As a result, the

inspectors determined that the licensee failed to properly screen the actions as compensatory measures under the requirements of 10 CFR 50.59.

The inspectors noted that as a result of the failure to evaluate these actions under 10 CFR 50.59, the licensee did not properly consider several factors associated with the compensatory actions that should have been evaluated. Some of these factors included flood water flow rates through the open doors, the impact of debris and slush from outside being carried into the CWPH and clogging the flood relief dampers, the impact of the cold temperatures on the equipment in the rooms during the potentially extended periods of time during which the doors could be open, and security impacts.

In addition, the inspectors noted the licensee failed to recognize that procedure PC 80 Part 7, failed to account for the time necessary to ensure that the barriers would be constructed before the lake reached conditions where deep wave action could impact the site. Specifically, the licensee's calculation specified that 8.2 weeks would be available after Procedure PC 80 Part 7, initiated actions to install the wave barriers based on lake level.

The inspectors reviewed EC 279455, "Time Available to Respond to Threat From Rising Water," and the licensee's lake level determination monthly surveillance, PBF-2124, "PPCS Forebay and Pump Bay Level Alarm Setpoints," and identified several deficiencies. These deficiencies included non-conservative assumptions when using the maximum monthly rate of lake level rise, non-conservative assumptions for the lake level at which the site could be impacted by the waves, a non-conservative allowance to rely on the previous month's data if no lake level data was immediately available, and an error in an assumption that wave barriers would be installed earlier than PC 80 Part 7, actually required. When the licensee corrected these inputs, the inspectors noted that the time available for action was significantly reduced to less than three weeks.

The inspectors observed that PC 80 Part 7, granted three weeks allowance for activities to be scheduled and performed to install the wave barriers. The inspectors concluded that the deficiencies in the licensee's timelines left them vulnerable in that actions may not have been initiated soon enough to protect the site from the wave run-up design basis event. The inspectors determined that this aspect of IP 95002 was not met for the flooding White finding.

b. Determine that the Corrective Actions Have Been Prioritized with Consideration of Risk-Significance and Regulatory Compliance

The inspectors assessed the licensee's timeliness of corrective actions for the RCEs and CCA associated with the risk significant issues. The inspectors noted that there were no formal tracking mechanisms or documentation for several of the corrective actions that had been previously taken prior to the completion of the RCEs and CCA. Formalized tracking measures would assure the actions are satisfactorily completed and allow for documentation of the basis for closure.

The inspectors concluded that an appropriate schedule had been established for implementing and completing the corrective actions for the TDAFWP White finding. This aspect for the flooding White finding will remain open pending the inspectors' review of the additional corrective actions the licensee will need to perform.

c. Determine that a Schedule has been Established for Implementing and Completing the Corrective Actions

As discussed in Section 02.03.b, above, the inspectors determined that the licensee had established an appropriate schedule for implementing the corrective actions for the TDAFWP White finding. The aspect for the flooding White finding will remain open pending the inspectors' review of the additional corrective actions that the licensee will need to perform.

d. Determine that Quantitative or Qualitative Measures of Success Have Been Developed for Determining the Effectiveness of the Corrective Actions to Prevent Recurrence

The inspectors' review of the effectiveness review (EFR) plan identified a number of weaknesses. The inspectors determined that these weaknesses rose to the level of a finding and that the weaknesses were broad and deep enough to conclude that this section did not meet the requirements of IP 95002. As the TDAFWP finding occurred first and there had been additional time the EFR had already been substantially performed for this issue. The interim assessments, combined with the general quality of the RCE led the inspectors to conclude that this section is complete for the TDAFWP finding but remains open for the flooding White finding and the CCA.

e. Determine that the Corrective Actions Planned or Taken Adequately Address a Notice of Violation that was the Basis for the Supplemental Inspection, if Applicable

For the TDAFWP White finding, the licensee did not respond to the initial NOV because the corrective actions taken and planned to be taken to correct the violation, and the date when full compliance was achieved was already addressed on the docket in NRC Inspection Report 05000266/2012009. As part of the 95002 inspection, the team members performed a sampling of the immediate corrective actions and determined the full compliance had been restored. The team considered that the IP 95002 requirements were met for the TDAFWP White finding.

For the flooding White finding, the licensee did not respond to the initial NOV because the corrective actions taken and planned to be taken to correct the violation, and the date when full compliance was achieved was already addressed on the docket in NRC Inspection Report 05000266/2013002 and 05000301/2013002 and in the licensee's submittals dated July 10, 15, and 29, 2013. As part of the 95002 inspection, the team members performed a sampling of the immediate corrective actions and determined the full compliance had been restored. However, as stated above, the inspectors noted that the corrective actions resulted in unintended consequences. In addition, as noted previously, the inspectors identified a deficiency where insufficient corrective action was taken to correct PC 80 Part 7, in order to preclude repetition of the original significant condition adverse to quality. Thus the team concluded that the requirements of IP 95002 were not met for the flooding White finding.

f. Findings

(1) Failure to Take Corrective Actions to Address External Flooding Procedure Deficiencies

Introduction: The inspectors identified a finding of very low safety significance and an associated non-citied violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective

Actions," in that from March 13, 2013 until February 14, 2014, the licensee failed to assure that for a significant condition adverse to quality (SCAQ), the cause of the condition was determined and corrective actions were taken to preclude repetition. Specifically, the licensee's corrective actions failed to preclude repetition of an SCAQ where Procedure PC 80 Part 7, "Lake Water Level Determination," as implemented, would not protect safety-related equipment in the turbine building or CWPH. After the licensee had taken corrective actions to improve the wave barrier procedure in response to an NRC-identified NOV, PC 80 Part 7, and other flood protection implementing procedures specified inadequate timelines to ensure wave run-up flood barriers would be installed prior to the lake level at which wave run-up could impact the site.

Description: The inspectors reviewed procedures associated with flooding as part of their independent extent of condition and extent of cause, and review of corrective actions to prevent recurrence. The inspectors noted the licensee failed to recognize that procedure, PC 80 Part 7, did not grant adequate timelines to ensure that the barriers would be constructed before the lake reached conditions where deep wave action could impact the site. Specifically, the licensee's calculation specified that 8.2 weeks would be available after Procedure PC 80 Part 7, initiated actions to install the wave barriers based on lake level. The inspectors observed that based on these timelines, PC 80 Part 7 granted three weeks allowance for activities to be scheduled and performed to install the wave barriers. Specifically, PC 80 Part 7, stated, in part, "IF corrected mean level is greater than or equal to +0.5 ft., THEN PERFORM the following: NOTIFY maintenance to generate on demand PM (PMRQ 00059608-02) to INSTALL barriers and sandbags as required to be completed within three weeks."

The inspectors reviewed EC 279455, "Time Available to Respond to Threat From Rising Water," and the licensee's lake level determination monthly surveillance, PBF-2124, "PPCS Forebay and Pump Bay Level Alarm Setpoints," and found several deficiencies. These deficiencies included non-conservative assumptions when using the maximum monthly rate of lake level rise, non-conservative assumptions for the lake level at which the site could be impacted by the waves, non-conservative allowances to rely on the previous month's data if no lake level data was immediately available, and an error in an assumption that wave barriers would be installed earlier than PC 80 Part 7 actually dictated. Inspectors noted that the procedure had no barriers to prevent the previous month's data from being used during multiple subsequent months. When the licensee corrected these inputs, the inspectors noted that the time available to fully implement the provisions of PC 80 Part 7 significantly reduced to less than the three weeks called for in the procedure.

The inspectors concluded that these deficiencies in the licensee's timelines left them vulnerable in that actions may not be initiated soon enough to protect the site from the wave run-up design basis event. The inspectors noted that these deficiencies represented a failure of the licensee's corrective action to preclude repetition of an SQAC where Procedure PC 80 Part 7, "Lake Water Level Determination," as implemented, would not protect safety-related equipment in the turbine building or CWPH.

In addition, to the PC 80 Part 7 issues associated with the timelines for barrier installation, the inspectors found additional procedural deficiencies that should have been identified and corrected as part of the corrective actions taken to address the flooding NOV. PC 80 Part 7 procedural deficiencies included error traps where steps

could be performed out of sequence (i.e. barriers installed before CWPH doors open), and a failure to include CWPH doors in robust tag-out process to ensure their 'open' position was controlled. PBF-2124 procedural inadequacies included direction to install jersey barriers rather than the more robust barriers associated with the licensee's RCE corrective actions. Inspectors noted that this reference to the jersey barriers referred to the previous wave run-up flooding response strategy. The inspectors identified that the same +0.5ft. installation threshold error was made in PBF-2124, as well as the licensee's external flooding abnormal procedure, AOP 13C.

Licensee procedure PI-AA-204, Condition Identification and Screening Process, Section 2.45 defines a Significant Condition Adverse to Quality (SCAQ) as, "Failures, malfunctions, deficiencies, deviations, defective items, abnormal occurrences, non-conformances, or out-of control processes that significantly threatens or has compromised nuclear safety or radiological safety, as well as any significant reportable industrial safety or environmental (e.g., OSHA, State, etc.) issues. SCAQ issues require corrective actions to prevent recurrence." Condition Report 01883633 identified the White flooding finding and associated performance deficiency as an SQAC.

The inspectors also noted that the licensee completed an interim action to improve the wave barrier and associated procedure on March 13, 2013, and a final corrective action CAPR 01883633-22 on November 30, 2013 to implement a plant modification to strengthen the physical external flood protection measures associated with a high lake level wave run-up and associated procedure guidance and design documentation. The inspectors observed that this action was credited in the licensee's RCE as an action to prevent recurrence of the original SQAC. As a result, the inspectors determined that the licensee failed to take corrective actions to preclude repetition of an SCAQ where Procedure PC 80 Part 7, as implemented, would not protect safety-related equipment in the turbine building or CWPH.

Analysis: The inspectors determined that the licensee's failure to take corrective actions to address the inadequate flooding procedure was a performance deficiency, because it was the result of the failure to meet the requirements of 10 CFR Part 50, Appendix B, Criterion XVI; the cause was reasonably within the licensee's ability to foresee and correct; and it should have been prevented. The inspectors determined that the finding had a cross-cutting aspect in the area of problem identification and resolution, because the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extents of condition commensurate with their safety significance (P.2). Specifically, the licensee failed to fully evaluate issues with the flooding procedure to ensure the corrective actions they took would assure that robust protection from wave run-up would be installed prior to reaching a lake level where deep wave action could present a threat to the site.

The inspectors screened the performance deficiency in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because the finding was associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors (Flood Hazard) and Procedure Quality, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the licensee's failure to procedurally control external flooding design features, to ensure they would not adversely affect the strategy for other flooding events, could negatively impact mitigating

systems' ability to respond during an external flooding event. The inspectors evaluated the finding using IMC 0609, Attachment 0609.04, Tables 2 and 3, and Appendix A. Based on a review of Appendix A, Exhibit 2, Item 4.B, the inspectors determined that this issue screened as having Very low safety significance (Green).

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition." Contrary to this requirement, from March 13, 2013 until February 14, 2014, the licensee failed to assure that for a significant condition adverse to quality, the cause of the condition was determined and corrective actions were taken to preclude repetition. Specifically, the licensee's corrective actions failed to preclude repetition of an SCAQ where Procedure PC 80 Part 7, "Lake Water Level Determination," as implemented, would not protect safety-related equipment in the turbine building or CWPH. After the licensee had taken corrective actions to improve the wave barrier procedure in response to an NRC-identified NOV, PC 80 Part 7 and other flood protection implementing procedures specified inadequate timelines to ensure wave run-up flood barriers would be installed prior to the lake level at which wave run-up could impact the site. Specifically, the licensee completed an interim action to improve the wave barrier and associated procedure on March 13, 2013, and a final corrective action CAPR 01883633-22 on November 30, 2013, to implement a plant modification to strengthen the physical external flood protection measures associated with a high lake level wave run-up and associated procedure guidance and design documentation. These actions failed to preclude repetition of the original SCAQ. Corrective actions for this issue included changing the affected procedures to install the wave barriers at a lower lake level, changing the lake level determination surveillance from monthly to weekly, and reducing the allowed installation time for the barriers from 3 weeks to 1 week. Because the violation was of very low safety significance and was entered into the licensee's corrective action program (CR 01940739), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.
(NCV 05000266/2014007-01; 05000301/2014007-01; Failure to Take Corrective Actions to Address External Flooding Procedure Deficiencies)

(2) Failure to Maintain External Flooding Procedure to Address All Possible CLB Floods

Introduction: The inspectors identified a finding of very low safety significance and associated non-citied violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," in that from January 19, 1996 until November 25, 2013, the licensee failed to ensure that activities affecting quality were prescribed by documented procedures of a type appropriate to the circumstances to address external flooding as described in the Final Safety Analysis Report (FSAR). Specifically, PC 80 Part 7, "Lake Water Level Determination" directed advanced installation of concrete barriers to protect against deep wave action from the lake, which introduced significant unrecognized blockages in the natural drainage path credited in the FSAR to protect against the probable maximum precipitation and Turbine Building internal flooding events.

Description*:* The inspectors reviewed the licensee's procedures and corrective action documents and noted an important deficiency associated with procedure PC 80 Part 7. Specifically, CR 01932698, "95002 Wave run-up protection may conflict with other floods," was generated a few days prior to the 95002 inspection team's arrival onsite. This condition report described the concern that while wave barriers were installed near the CWPH, the probable maximum precipitation and turbine building flooding events could result in several feet of water at the CWPH and turbine building rollup doors due to the wave barriers blocking natural site drainage paths. The inspectors noted that this deficiency traced back to the original inappropriate action cited in the White Flooding finding, where in 1996, the licensee inappropriately deleted an AOP directing use of sandbags at plant doorways and substituted a wave barrier installation strategy without recognizing the adverse impacts of the change.

The inspectors noted that the immediate corrective actions for the Flooding Apparent Violation that were taken in March 2013 to improve the wave barrier described in PC 80 Part 7, failed to address all deficiencies that were created when sand bagging actions were changed to wave barrier installation in 1996. While the improved wave barriers provided necessary protection against wave action, they failed to address unrecognized hazards during the probable maximum precipitation and turbine building internal flooding events. These barriers blocked natural drainage paths credited for flood relief and rendered these paths nonfunctional as a result of wave barrier installation. The Inspectors determined that procedure PC 80 Part 7 was inadequate until actions were taken to modify it to provide additional flow paths for flood relief. The inspectors noted that this issue was not recognized by the licensee until November 2013 for the turbine building flooding event, and late January 2014 for the PMP event.

The inspectors concluded that the licensee did not adequately address the flooding finding barrier deficiencies described in the original white flooding finding. This was evident in the licensee's interim corrective actions taken in March 2013, when the licensee failed to restore full compliance, and did not recognize the need for providing an additional drainage path. However, the inspectors noted that the licensee had not implemented final corrective actions for wave barrier modification and flooding procedure changes until November 2013, at which point steps were added to PC 80 Part 7 that created a compensatory drainage path. As a result, the inspectors concluded that the issue was most appropriately characterized as a failure to ensure that activities affecting quality were prescribed by documented procedures of a type appropriate to the circumstances to address external flooding in accordance with 10 CFR 50 Appendix B, Criterion V. The inspectors also noted that this issue should have been readily identified as a direct outcome of reviewing the NRC-identified finding, and it was not the result of a thorough RCE which resulted in hidden issues surfacing.

Analysis: The inspectors determined that the licensee's failure to maintain an external flooding procedure appropriate to the circumstances to ensure the site was not adversely impacted during CLB flooding events was a performance deficiency, because it was the result of the failure to meet the requirements of 10 CFR Part 50, Appendix B, Criterion V; the cause was reasonably within the licensee's ability to foresee and correct; and it should have been prevented. The inspectors determined that the finding has a cross-cutting aspect in the area of problem identification and resolution, because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance (P.3). Specifically, licensee personnel failed to take appropriate interim corrective actions in March of 2013 when correcting a SCAQ

in that the interim action plan posed additional hazards to the site during design basis floods.

The inspectors screened the performance deficiency in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because the finding was associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors (Flood Hazard) and Procedure Quality, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the licensee's failure to procedurally control external flooding design features to ensure they would not adversely affect the strategy for other flooding events, could negatively impact mitigating systems' ability to respond during external and internal flooding events.

The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." The inspectors determined that the finding affected the Mitigating Systems Cornerstone and evaluated the finding using Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, for the Mitigating Systems Cornerstone. In the Mitigating Systems Cornerstone, the inspectors answered "Yes" to the screening question "Does the finding represent a loss of system and/or function?" because an assumed turbine building (TB) internal flooding event in a condition with the jersey barriers installed due to high lake water level could ultimately result in the loss of emergency diesel generators and other safety-related equipment. Therefore, the finding required a detailed risk evaluation.

The probability of the jersey barriers being installed was evaluated based on the fact that the jersey barriers have not been installed during the 18 years (since 1996) that the jersey barriers were available for installation if high lake water level was encountered. Using a statistical Bayesian update with a Jeffrey's non-informative prior, the probability that the jersey barriers could have been installed was determined to be 2.63E-2.

The risk evaluation was performed by Region III Senior Reactor Analysts (SRAs). The increase in core damage frequency (ΔCDF) was calculated assuming scenarios involving internal turbine building flooding events. The exposure time assumed was one year which is the maximum allowed by the significance determination process.

For the evaluation of the risk significance, the SRAs considered TB flooding events with three plant systems that have basically an unlimited system volume if the flooding event is not terminated. These systems are the fire protection (FP) system, the circulating water (CW) system, and the service water (SW) system.

To evaluate this finding, the Senior Reactor Analysts (SRAs) determined the frequency of a pipe break (or expansion joint failure) using Electric Power Research Institute (EPRI) Report 302000079, "Pipe Rupture Frequencies for Internal Flooding Probabilistic Risk Assessments," Revision 3. The pipe breaks of interest were determined to be those between approximately 20,000 gpm and 36,000 gpm. The lower value of 20,000 gpm is based on the drainage capacity at the eight foot level (which is the ground floor elevation in the TB) provided by a combination of gaps in the metal siding of the circulating water pump house (CWPH) walkway and the storm drains still available even with the jersey barriers installed. Pipe breaks of less than 20,000 gpm would not result

in water accumulation on the lowest level of the TB and thus would not imperil risk significant equipment. The upper value of 36,000 gpm is based on calculation 2008-0024, Auxiliary Feedwater Pump Room Flood, which determined that for a 36,000 gpm TB flood rate, the TB rollup door(s) would fail at a level of 18 inches and allow a flow of up to 36,000 gpm while maintaining the TB flood level at less than 18 inches. For the risk evaluation, a maximum TB flood rate of 36,000 gpm was thus used to represent the delta risk associated with the finding, since this is the maximum drainage flow through the failed TB rollup door(s). Any TB flood rate greater than 36,000 gpm would cause the TB water level to exceed 18 inches if the break flow was not immediately terminated regardless of whether the jersey barriers were installed or not. It was conservatively assumed that exceeding 18 inches level in the TB would result in a core damage event (i.e., a conditional core damage probability (CCDP) of 1.0) due to the loss of risk significant plant equipment.

Fire Protection System

The FP system was screened because of the relatively low maximum flood rates that can occur with a break in the FP system. The capacity of the two fire water pumps together is approximately 6,800 gpm, which is well below the drainage capacity of approximately 20,000 gpm at the eight foot level.

Circulating Water System

The SRAs evaluated the delta risk associated with a break in the Circulating Water (CW) system with the jersey barriers installed. Two different failure causes were available on the CW system which could result in a break of greater than 20,000 gpm: (1) a CW system expansion joint (EJ) failure, or (2) a CW system piping break. Each of these failures was evaluated separately.

Circulating Water System Expansion Joints

In the EPRI report, the failure rate of an EJ per year was given for flood rates greater than 10,000 gpm. This value was conservatively used to represent the failure rate of an EJ for a flood greater than 20,000 gpm (i.e., a flood rate that would exceed the drainage capacity at the eight foot level). There are eight EJs on the CW system in the TB. From the EPRI report, the frequency of a major flood with from a CW system EJ with a flood rate of greater than 10,000 gpm is 6.08E-6/yr/EJ. With eight EJs per Unit, the frequency of an EJ failure is 4.86E-5/yr.

Without the jersey barriers installed, the flood water would drain out toward the CWPH and down towards the lake with an essentially open path (i.e., essentially an unlimited drainage rate outside the TB). With the jersey barriers installed, the drainage capacity would be approximately 20,000 gpm at the eight foot level provided by a combination of gaps in the metal siding of the CWPH walkway and the storm drains near the CWPH. The drainage capacity provided by the gaps in the metal siding of the CWPH walkway would increase as the height of the water level outside the Turbine Building increased and would represent the majority of the drainage flow above the eight foot level. Using the TB floor volume, the outside volume up to the jersey barriers, and the drainage rate outside the TB (as a function of height), the licensee estimated that there was approximately 31 minutes available to secure the CW pumps to terminate the break flow

before exceeding a level of 18 inches in the TB. A CW system flooding event would require the operators to enter AOP-13A, "Circulating Water System Malfunction." Securing the CW pumps on a CW system flood event is Step 1 of the AOP. The SRAs used the SPAR-H method (per NUREG/CR-6883) to calculate a human error probability (HEP) for the failure of the operators to terminate a CW flood event. Using SPAR-H an HEP for the failure of the operators to secure the CW pumps before exceeding 18 inches level in the TB was calculated to be 0.2. This calculation assumed high stress for both diagnosis and action and poor ergonomics for diagnosis (since a local operator would be required to identify the flood location).

Using an HEP value of 0.2 for the probability that the operators would secure the CW pumps before exceeding 18 inches in the TB, and the probability of 2.63E-2 that the jersey barriers would be installed, the result was a delta core damage frequency (ΔCDF) of 2.56E-7/yr for an event involving a CW expansion joint failure in the turbine building.

Circulating Water System Pipe Breaks

To evaluate the ΔCDF for CW system piping breaks, the length of large diameter CW piping in the TB (obtained from the Point Beach PRA 7.1, Internal Flooding Notebook) was used. For the CW piping random failure event, the frequency of a major flooding event was conservatively estimated to be 7.95E-7/yr/ft, from the EPRI report. This is the failure rate based on a flood rate of greater than 2000 gpm and was conservatively used to represent the failure rate of a flood greater than 20,000 gpm. Based on this piping failure rate per unit length and the lengths of CW piping obtained from the Point Beach PRA 7.1, Internal Flooding Notebook, the frequency of a major flood event in the TB due to a random CW pipe failure was evaluated to be 2.39E-5/yr. Using an HEP of 0.2 (as described above) for the failure of the operators to secure the CW pumps before exceeding 18 inches level in the TB, and the probability of 2.63E-2 that the jersey barriers would be installed, the result was a ΔCDF of 1.25E-7/yr. for an event involving a random CW system piping failure in the turbine building.

Service Water System Pipe Breaks

To evaluate the ΔCDF for SW system piping breaks, the length of large diameter (greater than 4 inches) SW piping in the TB was obtained from the Point Beach PRA 7.1, Internal Flooding Notebook. From the EPRI report, a failure rate of 3.57E-7/yr/ft. was obtained for SW piping with a diameter between 4 and 10 inches, and a failure rate of 6.44E-8/yr/ft. was obtained for SW piping with a diameter greater than 10 inches. The length of SW piping in the TB with a diameter between 4 and 10 inches, and the length of SW piping in the TB with a diameter of greater than 10 inches was obtained from the Point Beach PRA 7.1, Internal Flooding Notebook. The piping failure rate for a major flood event in the EPRI report is based on a flood rate of greater than 2000 gpm. This failure rate was conservatively used to represent the failure rate of a flood greater than 20,000 gpm. Based on these piping failure rates per unit length and the lengths of SW piping obtained from the Point Beach PRA 7.1, Internal Flooding Notebook, the frequency of a flood event in the TB due to a random SW pipe failure was evaluated to be 4.40E-4/yr.

The pipe breaks of interest for the SW system were determined to be those between approximately 20,000 gpm and 27,000 gpm. The lower value of 20,000 gpm is based as stated before on the drainage capacity at the eight foot level. The upper value of 27,000 gpm is based on the flow rate for three SW pumps at run-out flow per the Point Beach PRA 7.1, Internal Flooding Notebook. Based on a maximum SW break of 27,000 gpm, the maximum TB flood level would be approximately 14 inches. This level would correspond to the steady-state level at which the drainage capacity outside provided by the gaps in the metal siding of the CWPH walkway and the storm drains near the CWPH would equal the assumed 27,000 gpm flood rate.

The Point Beach Standardized Plant Analysis Risk (SPAR) model version 8.22 and Systems Analysis Programs for Hands on Integrated Reliability Evaluations version 8.0.9.0 software was used to obtain a delta Conditional Core Damage Probability (ΔCCDP) for the event. A loss of service water (LOSW) initiating event was assumed. Using the licensee's evaluation of equipment that is lost as a function of level, all equipment in the TB that would be submerged at or below 17 inches was assumed to fail to bound failure of equipment at 14 inches. The 1P53 Auxiliary Feedwater Pump was also assumed to fail as a surrogate to represent the loss of the power supply for the Unit 2 motor-driven AFW pump 2P53 during a Unit 2 flooding event because the SPAR model replicates Unit 1. The result was a ΔCCDP of 1.68E-2.

Based on the probability of 2.63E-2 that the jersey barriers would be installed, and the ΔCCDP of 1.68E-2 for an event if the jersey barriers were installed, the result was a ΔCDF of 1.94E-7/yr. for an event involving a random SW system piping failure in the turbine building.

Total ΔCDF for Internal Events

The total ΔCDF for internal events caused by random failures of piping and CW expansion joints is the sum of the individual delta risk values or 5.76E-7/yr.

External Event Risk Contribution

Since the resultant internal event ΔCDF is greater than 1.0E-7/yr., an evaluation of external event contributions was obtained. Due to the nature of the performance deficiency, no fire-induced floods were credible. However, a seismic-induced flooding event was considered. Using guidance from NRC's Risk Assessment Standardization Project (RASP) handbook, only the "Bin 2" seismic events were assumed to represent a ΔCDF. "Bin 2" was defined in the RASP handbook as seismic events with intensities greater than 0.3g, but less than 0.5g. Earthquakes of lesser severity are unlikely to result in large pipe failures and earthquakes of a larger magnitude could result in major structural damage throughout the plant, which would not be representative of a differential risk. The initiating event frequency of an earthquake in "Bin 2" for Point Beach was estimated to be 1.3E-5/yr. using Table 4A 1 of Section 4 of the RASP handbook.

To estimate the seismic capacity of the CW piping and the CW EJs, an evaluation of the seismic capacity for a similar Westinghouse plant was referenced. For this plant, it stated that the CW piping and the CW EJs had high seismic capacity, and a flooding assessment due to seismic concerns was screened from the assessment.

For the SW piping in the TB, making the conservative assumption that the high confidence of low probability of failure (HCLPF) capacity for the SW piping is 0.3g, a failure probability of 3.9E-2 was obtained for the SW system. It was conservatively assumed that every SW system piping failure resulted in the maximum flooding rate of 27,000 gpm. Similar to the earlier evaluation of random SW piping failure due to internal events, the licensee's evaluation of equipment that is lost as a function of level was used. All equipment in the TB with a flood level of less than or equal to 17 inches was assumed to fail. The 1P53 Auxiliary Feedwater Pump was also assumed to fail as discussed earlier. A dual unit loss of offsite power (LOOP) initiating event was assumed to occur as a result of the seismic event, and it was conservatively assumed that the operators would fail to recover off-site power for at least 24 hours. Also, the SW pumps were assumed to fail-to-run. The result was a ΔCCDP of 0.37. The ΔCDF for a seismic event was estimated to be 1.84E-7/yr.

Total ΔCDF For This Issue

The total ΔCDF associated with the finding was obtained as the sum of the ΔCDF for the internal events random failures of piping and CW expansion joints, and the ΔCDF for a seismic event or 7.6E-7/yr. The dominant sequence was associated with a random CW system expansion joint failure in the TB that results in flooding that renders risk significant equipment unavailable.

Large Early Release Frequency Risk Contribution

Since the total estimated change in core damage frequency was greater than 1.0E-7/yr., IMC 0609 Appendix H, "Containment Integrity Significance Determination Process" was used to determine the potential risk contribution due to large early release frequency (LERF). Point Beach is a 2-loop Westinghouse Pressurized Water Reactor (PWR) with a large dry containment. Sequences important to LERF include steam generator tube rupture events and inter-system loss-of-coolant-accident (LOCA) events. These were not the dominant core damage sequences for this finding.

Therefore, based on the detailed risk evaluation, the SRAs determined that the finding was of very low safety significance (Green).

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to this requirement, from January 19, 1996 until November 25, 2013, the licensee failed to ensure that activities affecting quality were prescribed by documented procedures of a type appropriate to the circumstances to address external flooding as described in the FSAR. Specifically, PC 80 Part 7, "Lake Water Level Determination" directed advanced installation of concrete barriers to protect against deep wave action from the lake, which introduced significant unrecognized blockages in the natural drainage path credited in the FSAR to protect against the probable maximum precipitation and Turbine Building internal flooding event. Corrective actions for this issue included changing the procedure and FSAR to include actions to provide an additional flood relief path through the CWPH building and reliance on internal flood relief dampers for the affected flooding events. Because the violation was

of very low safety significance and was entered into the licensee's corrective action program (CR 01932698), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000266/2014007-02; 05000301/2014007-02; Failure to Maintain External Flooding Procedure to Address All Possible CLB Floods)**

(3) Failure to Perform a Required 10 CFR 50.59 Evaluation

Introduction: The inspectors identified a finding of very low safety significance and associated Severity Level IV, non-citied violation, of 10 CFR 50.59(d)(1), "Changes, tests and experiments," when, on November 25, 2013, the licensee failed to perform an evaluation against the criteria in 10 CFR 50.59(c)(2) for a change to procedure PC 80 Part 7 to include actions to maintain functionality of drainage paths during probable maximum precipitation and turbine building flooding events. Specifically, PC 80 Part 7, "Lake Water Level Determination" was changed to include actions to open the CWPH rollup doors to provide an additional drainage path while wave barriers were in place, without evaluating the viability of reliance on additional flood features not credited for external flooding in the CLB.

Description: When developing the procedural actions to address the deficiency associated with the new wave barriers, the licensee failed to recognize that these actions were outside the CLB. Specifically, procedure PC 80 Part 7 was revised on November 25, 2013 to include direction to "ENSURE Maintenance has raised the North and South CWPH Roll-up doors approximately two feet to provide flooding relief." These actions were directed to be performed in advance of the installation of the wave run-up barriers, to ensure that while the barriers were installed, an additional flow path would be created because the credited flow paths for the PMP external and turbine building internal flooding events would be blocked during this time.

Final Safety Analysis Report Section 2.5 "Hydrology" regarding for the maximum precipitation flood event states, in part, that "the topography of the site results in adequate natural drainage to remove this amount of water and limit ponding depth to prevent adversely affecting safety related equipment." Contrary to these statements, the newly created actions which were developed to compensate for the nonfunctional natural drainage paths during wave barrier installation required use of additional features not credited for external flooding events. Specifically, the actions included opening the CWPH roll-up doors and routing flood waters through the CWPH and relying on internal flood relief dampers to open and drain the water. The inspectors noted that the 10 CFR 50.59 screening documentation for Revision 6 of PC 80 Part 7, the revision which added CWPH door actions to the procedure, did not include any discussion of the actions to open the CWPH doors to provide a flood water flow path. The inspectors observed that due to the licensee's position that this action was in accordance with the CLB, licensee personnel failed to screen or evaluate these actions under the requirements of 10 CFR 50.59.

The inspectors noted that as a result of the failure to evaluate these actions under 10 CFR 50.59, the licensee failed to properly consider several factors associated with the newly created drainage path that should have been evaluated. Some of these factors included flood water flow rates through the open doors, the impact of debris and slush from the outdoors being carried into the CWPH room and clogging the flood relief dampers, the potential for substitution of unintended manual actions in place of passively

credited actions in the CLB, the impact of the cold temperatures on the equipment in the rooms during the potentially extended periods of time during which the doors could be open, and security impacts.

Analysis: The inspectors determined that the licensee's failure to fully evaluate the viability of newly created flooding drainage paths as required by 10 CFR 50.59(d)(1) was a performance deficiency, because it was the result of the failure to meet the requirements of 10 CFR 50.59; the cause was reasonably within the licensee's ability to foresee and correct; and it should have been prevented. The inspectors determined that this finding has a cross-cutting aspect in the area of problem identification and resolution, because the licensee failed to thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance (P.2). Specifically, the licensee failed to fully evaluate a deficiency found in PC 80 Part 7 associated with wave barriers blocking natural drainage paths, to ensure that the corrective actions adequately addressed the problem.

The performance deficiency was screened in accordance with the guidance of IMC 0612, Appendix B, and determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attributes of Protection Against External Factors (Flood Hazard) and Design Control, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the licensee did not fully demonstrate that the availability, reliability, and capability of mitigating systems would be maintained during flooding events due to the site's failure to evaluate the viability of alternate flood drainage paths through the CWPH. The inspectors evaluated the finding using IMC 0609, Attachment 0609.04, Tables 2 and 3, and Appendix A. Based on a review of Appendix A, Exhibit 2, Item 4.B, the inspectors determined that this issue screened as having very low safety significance (Green).

Because this issue involved the failure to perform a written evaluation pursuant to 10 CFR 50.59, "Changes, Tests, and Experiments," it, by definition, impacted the regulatory process. As a result, the traditional enforcement process was determined to be applicable. In determining the severity level of the traditional enforcement aspect of the issue, the inspectors identified that Subsection d.2 of Section 6.1, "Reactor Operations," of the NRC Enforcement Policy lists a 10 CFR 50.59 violation that results in conditions evaluated by the SDP as having very low safety significance as an example of a Severity Level IV violation. Because the associated finding was determined to be of very low safety significance, this issue was determined to represent a Severity Level IV violation under the traditional enforcement process.

Enforcement: Title 10 CFR 50.59(d)(1) requires, in part, that "the licensee shall maintain records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section." Title 10 CFR 50.59(c)(2) lists several examples and states, in part, that a licensee shall obtain a license amendment pursuant to 10 CFR 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would meet the description of any of the listed examples.

Contrary to the above, on November 25, 2013, the licensee failed to perform an evaluation against the criteria in 10 CFR 50.59(c)(2) for a change to procedure PC 80 Part 7 to include actions to maintain functionality of drainage paths during probable maximum precipitation and turbine building flooding events. Specifically, PC 80 Part 7, "Lake Water Level Determination" was changed to include actions to open the CWPH rollup doors to provide an additional drainage path while wave barriers were in place, without evaluating the viability of reliance on additional flood features not credited for external flooding in the CLB. Corrective actions for this issue included actions to update the FSAR to describe the new flood paths, performing a 10 CFR 50.59 screening and 10 CFR 50.59 evaluation for the new drainage path which had put the site outside of the CLB, revising a related functionality assessment, controlling external flooding areas to ensure they are clear of debris, and creating a procedure to install curtains on the CWPH rollup doors during periods when they were required to be open.

Because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (CR 01946330), this violation is being treated as a Severity Level IV NCV, consistent with Section 2.3.2 of the NRC's Enforcement Policy. **(NCV 05000266/2014007-03; 05000301/2014007-03; Failure to Perform a Required 10 CFR 50.59 Evaluation)**

The associated finding for this issue was evaluated separately from the traditional enforcement violation; and therefore, the finding is being assigned a separate Tracking Number. **(FIN 05000266/2014007-04; 05000301/2014007-04; Failure to Perform a Required 10 CFR 50.59 Evaluation)**

(4) Failure to Establish EFR Attributes to Assess the Effectiveness of Corrective Actions

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated non-citied violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to ensure the effectiveness review attributes for a significant condition adverse to quality would ensure the corrective actions would eliminate or reduce the recurrence rate.

Description: The licensee performed a common cause analysis (CCA) of the two White findings documented in NRC Inspection Reports 05000266/2012-009 and 2013-012. The CCA was documented in CR 01896156. Each of the two white findings had a root cause analysis (RCA) performed and the CCA determined whether common causes from the RCAs existed. The licensee identified two CCAs. CCA 1 was "Leadership has not consistently driven the organization to identify risk significant conditions and evaluate those conditions to ensure timely resolution." CCA 2 was "Several examples of technical procedure quality issues have led to workers applying knowledge based decision making during activities resulting in additional risk to the station."

The CCA and the RCAs were performed in accordance with licensee procedure PI-AA-100-1005 and as required by this procedure the licensee also established an EFR plan. The purpose of the EFR was to outline the attributes needed to assess the effectiveness of the corrective actions to prevent recurrence (CAPRs). The EFRs were not limited to just CAPRs but could also apply to corrective actions when necessary.

The inspectors reviewed the EFRs established by the licensee for the two CCAs identified in CR 01896156. The EFRs were to be performed six months following CAPR implementation. The inspectors noted that of the five success criteria established by the licensee three of them relied entirely upon NRC feedback. Common Cause Analysis 1, criteria 1, required positive NRC Resident Inspector feedback regarding issue resolution and timeliness. Common Cause Analysis 1, criteria 2, required zero findings with a crosscutting aspect of H.1(a) [Decision Making – Systematic Process], and CCA 2, criteria 1, required zero findings with a H.2(b) crosscutting aspect [training]. Discussions with licensee personnel and a review of the CCA determined that use of H.2(b) was a typographical error and that H.2(c) [Procedure Quality] was intended to be used.

The inspectors challenged the licensee regarding the use of NRC inspector findings as one of the few measures of how effective their corrective actions had been implemented. The inspectors were concerned with the use of performance measures that were not under the licensee's control, were informal, and had a zero tolerance.

The main focus of the inspectors' concerns was that the licensee had originally failed to identify the weakness and violations noted above and had not recognized the need to correct them until the NRC observations. The inspector noted that this approach was not proactive and that waiting to see if the NRC found any new items in the next six months would neither demonstrate the problems had been corrected nor identify that they had not been corrected. The inspectors concluded that the EFRs were not effective.

Analysis: The inspectors determined that the licensee's failure to establish EFR criteria that would have identified whether the CAPRs had effectively resolved the conditions was a performance deficiency warranting further review.

The inspectors determined that this finding was more than minor in accordance with IMC 0612, Appendix B, because it was affected the Mitigating Systems Cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

The inspectors evaluated the finding using IMC 0609, Appendix A. The inspectors determined the finding was of very low safety significance (Green) because the finding was not a deficiency affecting the design or qualification of a mitigating structure, system or component and did not result in a loss of operability or functionality. In addition, the finding did not represent a loss of system or function, did not represent an actual loss of function of a least a single train for longer than its technical specification allowed outage time, and did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance.

The finding had a cross cutting aspect in the area of problem identification and resolution, specifically resolution, because licensee personnel failed to ensure the corrective actions to prevent recurrence had effective attributes. (P.2)

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. Licensee procedure PI-AA-100-1005, Revision 8,

"Root Cause Analysis," had been written and established in accordance with 10 CFR Part 50, Appendix B, Criterion V.

Step 4.11.2.B, of PI-AA-100-1005, required, in part, "The effectiveness review plan outlines attributes to verify, responsibility and due dates. The attributes of effectiveness are the critical elements from those improvements that will guarantee success."

Contrary to the above, on February 7, 2014, the NRC inspectors identified that some of the EFR attributes for CCA 1 and CCA 2, of CR 01896156 would not have assessed the critical elements of the CAPRs and thus the verification that the corrective actions were effective would not have been performed as required by PI-AA-100-1005.

This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy, because it was of very low safety significance (Green) and was entered into the CAP as CR 01938326. **(NCV 05000266/2014007-05; 05000301/2014007-05, Failure to Establish EFR Attributes to Assess the Effectiveness of Corrective Actions).**

02.04 Independent Assessment of Extent of Condition and Extent of Cause

As directed by IP 95002, the inspectors independently assessed the validity of the licensee's conclusions regarding the extent of condition and extent of cause of the issues. The objective of this requirement was to independently sample performance, as necessary, within the key attributes of the cornerstones that were related to the subject issues and to provide assurance that the licensee's evaluations regarding the extent of condition and extent of cause were sufficiently comprehensive. The extent of condition review differs from the extent of cause review in that the extent of condition review focuses on the actual condition and its existence in other places. The extent of cause review should focus more on the actual root causes (RC) of the condition and on the degree that these RCs have resulted in additional weaknesses.

.1 Extent of Condition

a. Inspection Scope

The inspectors conducted an independent extent of condition review of the (1) White NOV for the Turbine Driven Auxiliary Feedwater Pump (TDAFWP) issue; (2) the White Flooding issue; and (3) and the Common Cause Evaluation of both issues. The inspectors' review focused on the conditions identified in the primary root causes associated with the above issues.

The inspectors interviewed station personnel, and reviewed program and process documentation, maintenance procedures, and corrective action documents. In addition, the inspectors conducted field walk downs of safety related equipment that involved possible alignment requirements such as pumps and motor-operated valves (MOVs). The inspectors looked for installation conditions that may challenge alignment of rotating equipment, as was the case with the TDAFWP. The inspectors also performed walk downs of plant areas that could be impacted by the wave run-up design basis flooding event. Walk down activities included evaluation of the locations where the wave run-up barriers would be constructed, and assessment of the physical flood barriers and sand bags that would be utilized to respond to a wave run-up event.

b. Assessment

The inspectors assessed the licensee's extent of condition evaluation through their own independent extent of condition review. However, this assessment was only possible due to changes the licensee made to the initial extent of condition evaluation. Additionally, significant actions still remained to be defined by the licensee to determine with high confidence their corrective actions would be effective.

TDAFWP White Finding

The licensee defined the "condition" in RCE 10768931, TDAFWP Coupling Degradation During IT 08 Run, as the 1 P-29 TDAFWP coupling degraded due to misalignment. The setup condition was the misalignment exceeded the coupling vendor's specification. The "same-same" condition would be any other identical couplings on the 1P-29 TDAFWP, which there are none, and the coupling on the 2P-29 TDAFWP being misaligned. The "same-similar" condition would be other pumps with the same model coupling and have alignment problems. No other pumps at Point Beach used the Thomas 54 Size 262 flexible disc coupling. The "similar-similar" condition would be other pumps that use Thomas flexible disc couplings and have alignment problems which identified seven other sets of pumps, the only safety related pumps being the containment spray pumps.

The licensee's CCA 1896156; Degraded Cornerstone – Mitigating Systems, Two White Findings, conducted an in-depth review of the AFW degraded coupling root cause analysis report and identified that the extent of condition performed under RCE 01768931 only considered what other equipment used Thomas Flexible disc couplings to ensure alignment criteria was specified in alignment procedures. The CCA concluded a more appropriate extent of condition would have considered all rotating equipment that has alignment criteria specified.

As a result, the CCA initiated actions 26 through 29 to have the system engineers for all mitigating system pumps, review and revise assembly procedures to incorporate TDAFWP pump lessons learned. However, CCA action 15 was to expand the extent of condition assessment to include all rotating equipment that has alignment criteria specified. This action was not yet defined or started and therefore its scope or effectiveness could not be assessed.

The inspector's independent extent of condition review considered all safety related rotating equipment where alignment may be needed to ensure expected operation and reliability. Therefore, the inspectors selected a sample of pumps and MOVs. The inspectors verified installation procedures for the pumps included in the action items mentioned above were changed appropriately.

The inspectors performed a walk down of one set of Emergency Core Cooling Pumps and a variety of plant configurations of MOVs with system engineers and maintenance personnel. The inspectors did not identify any conditions that would challenge alignment of these components during installation. The inspectors found that alignment of MOV's was not required by vendor or licensee procedures as the MOVs should be inherently aligned through the valve yoke. If alignment issues were to result from installation, they were expected to be discovered through the as-left MOV testing. A small number of MOVs had attached supports. Condition Report 01938749 was initiated to evaluate the

need to do MOV testing after installation of supports on MOVs to ensure installation of the supports did not affect valve performance.

The inspectors reviewed a sample of the CAP and found the following condition reports that contained concerns with equipment alignment. Condition Report 01216019 discussed cracking of a valve yoke in 1999 due to actions taken to alleviate a yoke alignment issue. Condition Report 01660763 discussed a large amount of pipe strain when installing pump 2P-73B in 2011 (similar to the issue with the TDAFWP). Condition Report 01202954 discussed alignment issues with 2P-11B where the base has to be cut. Condition Report 01879455 discussed alignment issues due to bearing housing fit-up. Condition Report 01808901 discussed an alignment issue with the Emergency Diesel Generator, G-01, circulation oil pump due to excessive pipe strain.

As discussed above, the licensee's expanded extent of condition evaluation, CCA action item 15, to include "all rotating equipment that requires alignment" had not been further defined, but based on the inspectors review of previous CAP issues and walk downs, the scope should include pumps, valves, fans, and diesels as a minimum. The evaluation may conclude the condition does not exist in these components or that existing processes adequately address alignment of the components.

The inspectors concluded the extent of condition was initially too narrowly defined, which would not have been acceptable, but was subsequently expanded in the CCE. Based on the walk downs, which did not identify challenges to alignment during installation, the actions taken to revise the installation procedures for the mitigating system pumps and expanded action to evaluate additional rotating equipment, the inspectors assessed this aspect of IP 95002 was met for the TDAFWP White finding.

White Flooding Finding

The licensee described the condition for the White flooding finding as procedure "PC 80 Part 7, did not prescribe adequate barriers to implement external flooding wave run-up protection features…." The licensee's extent of condition addressed other external flood protection measures as well as additional external hazard protection measures and commitments. The inspectors performed an independent extent of condition by performing plant walk downs, interviewing personnel, reviewing corrective action programs generated for site identified external flooding issues, and assessing selected plant procedures.

During walk downs of the plant areas where flood barriers would be built, the inspectors questioned plant personnel regarding possible bypass mechanisms around the flood protection features. Specifically, the inspectors questioned whether storm drains outside the CWPH that communicated directly with the lakeshore could present a wave barrier bypass hazard. Licensee personnel stated they had only briefly considered these drains but had rejected them as a possible bypass path without performing an analysis or any follow-up. Following a request from the NRC inspectors for information regarding these drain lines and the potential wave barrier bypass paths, the licensee performed an engineering calculation to review the impacts. The calculation determined that the drain paths did not in fact represent a significant threat to having high lake water bypass the flood protection features. The inspectors determined that the calculation was neither simple nor straightforward and should have been performed as part of the licensee's extent of condition.

During a review of the licensee's corrective action program the inspectors observed that licensee personnel had identified that the installation of the more robust flood protection barriers would introduce an unintended consequence of blocking the natural flow path of rain water and snow melt. The licensee had identified this unintended consequence while performing Fukushima external threat calculations and not due to the extent of condition review for the White flooding finding. This issue represented a flaw in the licensees' initial corrective action which was first put in place in March 2013 as an immediate action to restore compliance. Inspectors noted that this issue should have been identified prior to installation and represented another missed opportunity to identify for their extent of condition. Instead, the inspectors noted that this left the site in a position where they were still in discovery when the IP 95002 inspection team arrived onsite.

Inspectors also noted a corrective action document generated several months after completion of the RCE, and approximately one week prior to the inspection team's arrival onsite, regarding conflicting AOP procedures. Specifically, the inspectors noted a CR that stated the High Winds AOP was in conflict with the External Flooding AOP, in that the former required CWPH roll up doors to be open and the latter required them to be closed. The inspectors observed that invoking both procedures at the same time could easily be required depending on weather conditions. The inspectors noted that this was another example of late discovery, which represented an additional missed opportunity for the licensee to have identified the issue during their RCE extent of condition.

The inspectors' review of external flooding procedures to ensure that the procedure was adequately corrected to ensure protection of equipment during a design basis flood yielded several deficiencies. These deficiencies are described in more detail in the findings section of the report. Specifically, during the inspectors' review of PC 80 Part 7 and PBF-2124 the inspectors identified a number of issues resulting in the determination that both procedures were flawed and would not have accomplished their intended function.

PC 80 Part 7 procedural deficiencies included error traps where steps can be performed out of sequence (i.e. barriers installed before CWPH doors open); failure to include CWPH doors in robust tag-out process to ensure their 'open' position was controlled; and direction to install barriers at +0.5 ft. plant elevation, which was not early enough in accordance with the licensee's timeline calculation. PBF-2124 procedural inadequacies included a note that allowed them to rely on last month's data for lake level if the current month's data was not readily available, direction to install barriers at the incorrect threshold of +0.5 ft. plant elevation, and direction to install jersey barriers rather than the more robust barriers associated with the licensee's RCE corrective actions (reference to the jersey barriers referred to the previous flooding strategy). The inspectors identified that the same +0.5 ft. installation threshold error was made in the licensee's external flooding abnormal procedure, AOP 13C.

The licensee's extent of condition did not extend to non-external event design basis items because as stated in the RCE "…separate and rigorous processes already in place to ensure site documentation is up to date and accurate…for instance, AOPs are reviewed (and validated) on a regular basis to ensure quality and accuracy of the procedure." Yet during the inspectors' review it was observed that procedure technical quality was determined by the licensee to be a root cause for the TDAFWP White finding. The inspectors also noted that it would have been appropriate for the licensee to more thoroughly evaluate the modification 10 CFR 50.59 process during their extent

of condition review, due to the integral role that the inadequate 10 CFR 50.59 review played in the original performance deficiency. This may have also been appropriate in light of the licensee's failure to properly utilize the 10 CFR 50.59 process during development of the modification to correct the performance deficiency, as discussed in the findings section of this report.

The team concluded that the requirements of IP 95002 for the extent of condition were not met for the flooding White finding.

c. Findings

No findings were identified.

.2 Extent of Cause

a. Inspection Scope

TDAFWP

The inspectors conducted an independent extent of cause reviewed based on the root and contributing causes identified by the licensee in RCE 10768931, TDAFWP Coupling Degradation During IT 08 Run. Licensee personnel identified the Root Cause as the TDAFWP exhaust steam piping was not installed properly during original construction to eliminate stresses on the turbine per vendor recommendations resulting in cold piping spring and coupling misalignment. Contributing Cause 2 (CC2) was determined to be that as-found alignment data was classified as information-only, resulting in no evaluation of out-of-tolerance conditions and the procedures lacked acceptance criteria. Contributing Cause 3 (CC3) was determined to be that the TDAFWP and turbine were not aligned during original construction using vendor recommended dowels allowing subsequent movement of equipment.

The inspectors determined that the root cause was narrowly focused and not a good candidate to perform an independent extent of cause. In fact, most aspects of the root cause were included in the extent of condition discussed above. Instead the inspectors selected CC2 and CC3 to perform the independent extent of cause.

The inspectors reviewed the licensee's extent of cause evaluations to assess whether they were of sufficient breadth and depth to accurately capture the extent of the causes. The inspectors' independent extent of cause evaluation involved in-plant walk downs and observation of work activities, interviews with station management and staff, reviews of program implementing procedures, reviews of program monitoring and station improvement efforts, and comprehensive searches of the corrective action program.

White Flooding Finding

The inspectors performed an independent extent of cause based on the root and contributing causes in the licensee's RCE. The inspectors focused their review on the licensee's two identified root causes, as well as the two contributing causes identified in the RCE. The root causes identified by the licensee included inadequate identification and understanding of the external flooding CLB (RC1), and inappropriate prioritization of flood protection deficiencies in the corrective action program based on conditional/immediate station risk perceptions (RC2). The contributing causes the licensee identified included a lack of clear supporting detail in station documents for

external events combined with a lack of use and understanding of license basis (CC1), and a lack of formality and rigor regarding the station's follow-up and resolution of NRC concerns (CC2).

The inspectors reviewed the licensee's extent of cause evaluations to assess whether they were of sufficient breadth and depth to accurately capture the extent of the causes. The inspectors interviewed licensee management and personnel, reviewed program and process documentation, performed plant walk downs, reviewed licensee program monitoring and improvement efforts, and reviewed corrective action documents.

b. Assessment

TDAFWP

The inspectors determined that the extent of cause evaluations conducted by the licensee for the TDAFW issues were narrowly focused. The extent of each cause evaluations conducted by the inspectors broadly considered other programs and components that may be affected by similar causes. The limited sampled performed by the inspectors did not identify significant issues to concluded the cause would be applicable in those areas. Therefore, based on the actions taken so far, and with the additional actions entered into the licensee's corrective action program, overall, the inspectors concluded that Extent of Cause objectives of the 95002 inspection procedure were met for the TDAFWP finding. The inspectors noted a number of licensee actions are yet to be defined or completed as discussed below. Specific results of the inspectors' review of the causes and program areas are discussed below.

CC2: RMP 9044-1 Identified As-Found Alignment Data as Information Only Resulting In No Evaluation of Out-of-Tolerance Conditions and Lacked Acceptance Criteria

The inspectors determined that the vibration monitoring and In-service Test (IST) procedures require reviews by appropriate departments, including operations and engineering. The procedures do not discuss information only data. Personnel involved with these programs stated all data taken was reviewed by engineering. The review of the corrective action program only identified the following issues.

Condition Report 019118667 described a condition found during review of the 1P-11A coupling setting. It was identified that the as found coupling gap was recorded as 0.046 inch. The procedural requirement in RMP 9006-2A, required the gap to be 0.125 inches per the OEM installation requirements for the Falk Model 1080T20 coupling. A review of the last performed pump work on 1P-11A in 2010 under WO 392829, which included procedure RMP 9006-2A, recorded the coupling back of hub to back of hub dimension as 7.035 inches and did not record the actual gap, as the coupling was not removed. The as found coupling back of hub to back of hub dimension under the current work was 7.034 inches with a gap of 0.046. Based on this information and that the coupling hubs have not been replaced, the as found coupling appears to have been set incorrectly since the coupling was last removed in 2007 under WO 188114.

Another CR 01895229 stated that during the previous TDAFW Pump 95001, the NRC identified that routine maintenance procedures lack acceptance criteria.

During this review, some instances were found where as-found alignment data is now being evaluated. The inspectors did not identify instances where vibration or IST data was not evaluated.

The licensee's extent of cause evaluation for CC2 considered as-found Thomas Series 54 Size 262 coupling alignment data that was being treated as information-only. It found this cause only applied to procedure RMP 9044-1 because the P-29 turbine-pump combination is the only equipment that utilizes the Thomas Series 54 Size 262 coupling. The licensee determined RMP 9044-1 needed to be revised to include acceptance criteria for the critical parameters of the Thomas Series 54 Size 262 coupling that could affect operability, and included formal evaluation by engineering if any of these criteria are exceeded. No other corrective actions were required.

The licensee evaluation also included other Thomas flexible disc pack coupling alignment data and determined as-found data that is not evaluated applied to procedures or work orders associated with the following equipment:

- P-028 Main Feedwater Pumps (Series 51 Size 450)
- P-007 Monitor Tank Pumps (Series DBZ-A Size 101)
- P-014 Containment Spray Pumps (Series DBZ-A Size 101)
- P-099 SGFP Seal Water Injection Pumps (Series DBZ-C Size 126)
- P-004 Boric Acid Transfer Pumps (Series DBZ-C Size 126)
- W-001 Containment Accident Recirculation Fans (375SN)
- W-004 Containment Reactor Cavity Cooling Fans (Series AMR)

The licensee action was to review the procedures or work orders for the above equipment and revise them as necessary to include acceptance criteria for the critical parameters.

The inspectors found the licensee extent of condition to be narrowly focused on either the specific Thomas Series 54 Size 262 coupling or other Thomas flexible disc pack couplings and did not consider other alignment procedures or procedures and programs where as-found or information-only date may be taken and not evaluated. However, the inspectors only found a few instances in the CAP where this weakness existed and therefore could not conclude the cause identified extended into other equipment and programs and therefore concluded this aspect requirements of IP 95002 was adequately met for CC2.

<u>CC3: 1 P-29 Pump and Turbine Were Not Aligned During Original Installation Using Vendor Recommended Dowels Allowing Subsequent Movement of Equipment</u>

Through review of a sample of vendor manuals, the inspectors did not identify any vendor guidance concerning alignment that should have been incorporated into licensee procedures. However, there were some issues identified in the corrective action program that the inspectors considered representative of CC3.

For instance, CR 01920659, dated November 14, 2013, found that the 1P-029 as-found alignment checks were outside the acceptance criteria of RMP 9044-1, Auxiliary Feedwater Pump Terry Turbine Overhaul. The acceptance criteria for horizontal alignment (offset) is -0.002 to 0.002 and, the as-found results were -0.0037 for horizontal alignment. The as-found vertical alignment was satisfactory. The 1P-029-T was realigned per RMP 9044-1 as part of the contingency work plan. Although the 2P-029 was doweled in accordance with vendor manual instructions, there was no mention of doweling in this procedure.

Condition Report 01217509 dated June 8, 2000, states the post maintenance test (PMT) for WO 9925677 indicated a probable alignment problem with P-132. Work Order 9927144 was created to perform a "hot" alignment on P-132. The term "hot" alignment is more commonly referred to in vendor manuals as a "final" alignment. The vendor manual for all Goulds 3196 pumps calls for an initial alignment to be performed when a pump is installed or reinstalled. The manual then calls for a final alignment to be performed "after the unit has been run under actual operating conditions for a sufficient length of time to bring the unit up to operating temperature." The manual goes on to say that the final alignment should be checked after approximately one week of operation. The manual also states that "the final alignment procedure.....must be followed". Based on the inspector's review, final alignments described in the Goulds pumps' manual are not performed at Point Beach Nuclear Plant. These final alignments should be performed as they are specifically called for by the pump manufacturer. Pump misalignment could cause premature failure of critical pump parts such as bearings and seals.

Another CR 01195885, dated April 17, 2001, stated that oil analysis shows evidence of bearing wear for a safety injection pump motor. During alignment, the motor shaft was apparently not at the mechanical center as recommended by the manufacturer. It was mis-positioned such that contact was made at the inboard bearing thrust face with the coupling compressed.

The inspectors also identified current observations by oversight organizations that are indicative of conflicts with vendor manual instructions. Point Beach Daily Quality Summary, dated October 16, 2012, discussed an observed activity for AF-00109, P-38A Auxiliary Feed Pump Discharge Check Valve Inspection. It noted that the work instructions were minimal and lacked warnings to avoid cocking the bonnet during disassembly and reassembly that were stated in the vendor technical manual (VTM). The scope in the WO instructions was written from the lift check valve's vendor technical manual and is different from what is listed in the Engineering technical basis. This observation also indicates possible alignment issues with this check valve that supports the need to consider valves during evaluation of the extent of cause for CC2.

Another observation, Point Beach Daily Quality Summary for 2P-29 TDAFW Pump Assembly, dated November 19, 2012, noted that CR 01824455, Functional Criteria Not Met, was initiated by Maintenance for the failure of the inboard bearing clearance to meet the functional criteria. The System Engineer provided additional information to CR 01824455 on November 17, 2012 stating that the functional criteria from preceding Step 5.23.17 should have replaced the current criteria. The system engineer initiated PCR 01825115 to put the correct criteria into the procedure. In light of the alignment

issues with this pump, the inspectors were concerned the licensee process did not account for the latest vendor guidance to be entered into the applicable procedures.

After completion of the independent extent of cause for CC3, the inspectors reviewed the licensee's extent of cause for CC3. The licensee justified not doing an extent of cause on CC3 base on it being unique to the TDAFWPs. Justification was based on the following:

> "Since the piping misalignment issue has been resolved on 2P-29 and it is not experiencing the governor valve chugging problem, no extent of cause is required for this maintenance activity. The Terry turbine and pump are unique in design compared to other driven pumps or components. Most pumps and other pieces of equipment are driven with an electric motor. In the normal configuration, the pump is considered the fixed point due to being hard piped with suction and discharge pipe and is doweled once set. The motor is moved as needed to obtain the required alignment tolerances and is not doweled. Moving the motor to obtain proper alignment is being restrained by hold down bolts. Slight movement of the motor to accomplish proper alignment is permitted since only the connection to the motor is the flexible power source conduit. For the AFW turbine and the pump, both are hard piped, which is a significant challenge during alignment. In addition, both the turbine and pump are to be doweled per their respective vendor manuals, which is unique compared to other rotating pieces of equipment. This condition of no dowels has existed since startup and is considered an original which included procedure RMP 9006-2A construction deficiency of which the cause will not be determined. Therefore no extent of cause is justified for this."

With a relatively small sample the inspectors found issues that had been identified previously by the licensee that indicated CC3 may extend to other equipment with vendor manual information. Therefore, the inspectors concluded the licensee's extent of cause evaluation for CC3 was narrowly focused and may not capture other vendor guidance into licensee procedures. Condition Report 1939217 was initiated for this observation. The recommended corrective action was to review a sample of vendor recommendations contained in VTMs for safety related equipment to determine whether there are broader issues associated with implementation of vendor recommendations.

While the inspectors determined the licensee's extent of cause evaluation was narrowly focused, other than the doweling guidance, no instances were identified where vendor guidance was not appropriately incorporated into licensee procedures. Based on this and the licensee action referenced above, the inspectors concluded the 95002 procedure requirements were satisfied.

White Flooding Finding

The inspectors determined that the extent of cause evaluations conducted by the licensee for the External Flooding deficiencies were narrowly focused. Each of the inspectors' independent extent of cause evaluations broadly considered other programs, procedures, functional areas that may be affected by similar causes. The limited sample performed by the inspectors identified a few notable issues which are documented in

detail in the findings section of this report and the section below. Based on the actions taken so far, the inspectors concluded that Extent of Cause objectives of the 95002 inspection procedure were not met for the Flooding finding. Areas of concern will be reviewed as part of a future inspection. Specific results of the inspectors' review of the causes are discussed below.

RC1: Inadequate Identification and Understanding of the External Flooding CLB

The inspectors reviewed the licensee's extent of cause evaluation for the first root cause identified, RC1. Specifically, RC1 was identified as "less than adequate identification and understanding of the external flood protection design and licensing basis resulted in loss of high lake level protection measures in 1996 when AOP 13B was cancelled." Inspectors reviewed corrective action programs from the preceding 2-year period, external events program controls, and general procedures in the areas of High winds, Tornados, High Energy Line Breaks, Internal Flooding, and External Flooding, and walked down related plant areas to independently assess whether the licensee had appropriately identified deficiencies in understanding and identification of the design and license basis.

No significant issues were identified. However, inspectors noted examples described in the findings section of the report, where the licensee had failed to fully recognize impacts of the wave run up barriers during the probable maximum precipitation (PMP) and turbine building flooding event until the 95002 inspection team arrived onsite. The inspectors noted that given the topography of the site and associated drainage characteristics, this issue should have been more readily identified as part of the extent of condition and extent of cause evaluations.

In addition, as noted in the findings section of this report, the licensee failed to recognize that the conflict with the barriers resulted in a failure to comply with the CLB and the need to open the CWPH roll-up doors constituted a compensatory action that needed to be reviewed in accordance with 10 CFR 50.59. The inspectors noted that this issue was served as an example where licensee personnel still demonstrated a lack of understanding of the CLB, which served as evidence that the extent of cause for this root cause have not been fully probed and deficiencies corrected.

RC2: Inappropriate Prioritization of Flood Protection Deficiencies in the Corrective Action Program Based on Conditional/Immediate Station Risk Perceptions

The inspectors reviewed the licensee's extent of cause evaluation for the second root cause identified, RC2. Specifically, RC2 was identified as "the degraded function of high lake level protection measures for wave run-up identified in the corrective action program were inappropriately prioritized based on conditional/immediate station risk perceptions rather than compliance with license commitments resulting in untimely resolution of the issues."

During review of RC2, inspectors interviewed plant personnel to evaluate general understanding of the flooding deficiencies, recognition of associated risks, and effectiveness of site communication campaigns. As previously noted, inspectors observed that broader issues with risk recognition may still exist, based on discussion with site personnel.

The inspectors assessed the extent of cause relative to the licensee's failure to characterize the wave barrier as nonfunctional and thus failed to properly prioritize fixing the deficient strategy due to the lack of risk recognition. The inspectors noted that of the 11 functionality assessments (FA) that the licensee sampled as part of their extent of cause, and including an additional FA, excluded from the licensee's sample because the NRC had already found it deficient, half were found to be deficient in their conclusions or logic. The inspectors observed that no action was taken to correct these deficiencies, as the CR written on the results of the review was closed to no action. In addition, no action was taken to learn from the results of the review, or probe these results more deeply due to reliance on some procedural changes being made to the FA process.

The inspectors noted that the site's focus on the perception that these deficient FA conclusions were non-consequential had parallels to the White flooding finding root cause. Specifically, the licensee had drawn the wrong FA conclusion, but plant personnel had determined that it did not matter as long as the correct action was ultimately taken. The inspectors observed that in the case of the original White Flooding finding, site personnel had not properly addressed the deficiency even though there was a belief that the correct action had been taken. The inspectors noted that the licensee would have been driven to correct the deficiency more promptly if the FA conclusion had been correctly classified as non-functional. This highlights the importance of drawing the correct functionality conclusion. The inspectors concluded that to ensure correction of the deficiencies associated with these FAs, and as an extension, the root cause that drove them to perform the functionality assessment sample, it may have been appropriate to enact more robust corrective actions to arrest the trend.

The inspectors learned during the functionality assessment review, as documented in CR 01924763, "FA errors & less than adequate corrective action program threshold," an individual had discovered deficiencies in the conclusions of several FAs, and chose not to write a CR because they felt that initiation of a new CR would constitute low value work. The inspectors noted that this example served as a data point of an individual that may still be focused on what they believe is or is not significant, without looking at the bigger picture, and failing to write a CR to ensure that risks could be evaluated. Inadequate corrective action program threshold and risk recognition were common to the flooding root cause and common cause evaluations. The inspectors questioned whether this might be an indication that the workforce has not been fully reached by licensee communications focused on fixing licensee personnel's lack of risk recognition, and instilling them with the objective to prove that something is safe.

The inspectors noted that in response to the CR 01924763, "less than adequate corrective action program threshold" this CR was closed to no action, with a note that stated that coaching was provided. Inspectors noted that without any review of the behavior documented in the CR, it would be difficult for the licensee to determine whether this behavior was a single isolated incident, or more of a wide spread problem. Inspectors noted that it may have been appropriate for the licensee to take action to make this determination so that more robust corrective actions than coaching could be taken, if necessary.

The inspectors also noted that because the extent of cause was not extended from the FA process to a similar process, the Operability Determination process, the licensee missed an opportunity to implement robust corrective actions to address deficiencies in the operability determination process. The inspectors noted that within the previous 2 years, there had been approximately five NRC findings associated with inadequate operability determinations. The licensee noted that they had adopted a new operability determination process procedure in August of 2013, and had taken actions as a result of an April 2013 Condition Evaluation to perform one-time trainings for Operations and Engineering to improve operability determination process knowledge. The inspectors noted that Condition Evaluations serve as lower level evaluations that do not generally probe deeply into issues, and may not reveal all aspects of a complex issue. Inspectors also noted that actions to perform one-time trainings may not be robust enough to ensure sustainable improvement. The inspectors concluded that given the critically important function that operability evaluations serve, it may have been appropriate to enact more robust corrective actions to ensure improvement in this area.

CC1: Lack of Clear Supporting Detail in Station Documents for External Events Combined with a Lack of Use and Understanding of License Basis

The inspectors reviewed the licensee's extent of cause evaluation for the first contributing cause identified, CC1. Specifically, CC1 was identified as "deficiency in having clear supporting detail in station documents for external events combined with a lack of use and understanding of license basis resulted in the FSAR requirements remaining unmet."

Inspectors reviewed corrective action programs from the preceding 2-year period, external events program controls, and general procedures in the areas of High winds, Tornados, High Energy Line Breaks, Internal Flooding, and External Flooding, and walked down related plant areas to independently assess whether the licensee had appropriately identified deficiencies in clear supporting detail in station documents associated with the license basis.

No significant issues were identified. However, inspectors identified several deficiencies with the licensee's failure to ensure clear supporting detail existed in station documents associated with internal flooding. Specifically, inspectors noted that although during a design basis turbine building flooding event, the site was crediting tripping the circulating water pumps to mitigate the flood with a short specified amount of time, i.e. 34 minutes or less, the site failed to evaluate and control this action under the time critical operator action procedure. In addition, inspectors noted that the site had chosen to credit failure of the turbine building roll up door during the same internal flooding event. Inspectors identified that the site had failed to upgrade this door to an augmented quality classification, despite the fact that they had taken action to credit the door in the design basis to perform the safety related function of flood relief.

The inspectors also noted that reliance on the failure of the turbine building door for the internal turbine building flooding event was not clearly articulated in changes the licensee made to the FSAR, in that the TDAFW pump rooms noted that the door was credited for flood relief, but the EDGs did not contain the same statement despite a similar reliance on the same door. These issues were entered into the licensee's corrective action program. The inspectors determined that these issues could be related

to CC1, in that station documents did not clearly define and control features that were credited to mitigate internal flooding scenarios.

CC2: Lack of Formality and Rigor Regarding the Station's Follow-Up and Resolution of NRC Concerns

The inspectors reviewed the licensee's extent of cause evaluation for the second contributing cause identified, CC2. Specifically, CC2 was identified as "station's rigor for follow up on NRC concerns lacks formality and as a result the CR written for the 1Q2012 URI was not validated for accuracy, nor contained the necessary action, thus contributing to the untimely resolution of potentially degraded flood protection measures."

During review of CC2, inspectors identified that the licensee's extent of cause was narrow, and should have focused more broadly. Specifically, the licensee's evaluations focused only on improvements and deficiencies associated with the tracking and resolution of NRC concerns. The inspectors questioned whether the site should have looked across the organizations at similar processes and interactions with other external stakeholders. Specifically, the inspectors noted that tracking and resolution of nuclear oversight, corporate nuclear review boards, management review board, and independent site evaluations may have similarities to the NRC issue tracking and resolution processes. The inspectors noted that the site missed an opportunity to identify improvements in these processes. The inspectors did not identify any instances where the site had not appropriately tracked or resolved issues associated with these groups, but inspectors also recognized that deficiencies in these areas may not be readily identifiable due to the nature of these interactions.

The inspectors concluded the 95002 procedure requirements for the flooding White finding were not satisfied.

c. Findings

No findings were identified

02.05 Safety Culture Consideration

a. Inspection Scope

As part of the current 95002 inspection, the inspectors independently confirmed that a number of safety culture components that contributed to the risk significant issues that were the subject of this inspection were identified in the licensee's RCEs. The licensee's root cause evaluations included a discussion of the applicable safety culture components described in Regulatory Issue Summary 2006-013, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture," (ADAMS Accession No. ML061880341) as they applied to the violations and findings. The licensee determined that weaknesses in decision making (conservative assumptions and systematic process), resources (procedures/work instructions), work practices (oversight), work control (planning), and the corrective action process (low threshold and evaluations) were the most prevalent safety culture attributes. The licensee also included the results of a 2013 station nuclear safety culture self-assessment and employees concern program site "pulsing" surveys. For each of the

identified prevalent and contributing safety culture components, the inspectors confirmed that the licensee established corrective actions to address the issues.

Assessment

The inspection team independently confirmed a sample of other safety culture components which contributed to the issue(s) that were also identified in the root cause analysis. These additional safety culture components included weaknesses in the CAP and resources. For each of the identified prevalent and contributing safety culture components, the inspection team confirmed that the licensee established appropriate corrective actions to address the issues. Some corrective actions are complete, but pending corrective actions and effectiveness of those actions has not been confirmed to a point where the NRC has confidence that the licensee's actions are sufficient to address and correct the causes and issues. During the course of interviews with licensee personnel, the inspection team asked interviewees questions related to safety conscience work environment (SCWE) to determine if the licensee's staff were reluctant to raise safety concerns or if fear of retaliation existed for raising safety concerns. The inspection team did not identify concerns related to SCWE.

The inspection team confirmed that the licensee's root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in IMC 0305, Operating Reactor Assessment Program.

The inspectors observed that the previously cited example of a failure to initiate a CR, as described in CR 01924763, "FA errors & less than adequate CAP threshold," was an important data point from a safety culture and CR initiation standpoint. This CR documented an individual's failure to write a CR to document deficiencies in the conclusions of several functionality assessments. The inspectors noted that while the issue itself was just one data point, the licensee's failure to act to determine the extent to which those behaviors were prevalent onsite was an additional data point in the area of safety culture. The inspectors noted that the licensee had instead closed the CR to no action, and noted that coaching had been provided. The inspectors determined that investigative actions may have been appropriate to assist in the licensee's assessment of whether their RCE corrective actions to improve CR initiation and risk recognition had adequately reached the working level staff. This may have especially been appropriate given the fact that similar inappropriate CAP threshold issues played a role in the common cause for the greater than green findings being evaluated during the 95002 inspection.

Inspectors noted that the O.2a safety culture component may not have been adequately considered during the licensee's safety culture evaluation. Specifically, O.2a is focused on ensuring that appropriate training and knowledge transfer was in place to ensure technical competency of staff. The inspectors noted that the licensee marked this aspect as not applicable. The inspectors observed that this safety culture aspect may have played a role in the licensee's root cause associated with licensee staff's failure to understand the CLB. Mainly, the inspectors noted that training and knowledge transfer could have increased licensee personnel's understanding of the CLB. The inspectors observed that at the least, this training and knowledge transfer could have prompted the identification of vague requirements in the design basis or licensee staff's lack of full understanding of the CLB. The inspectors noted that this could have driven resolution of questions on requirements.

The inspectors noted that subject matter experts at the site who were charged with ownership and knowledge of the external flooding program and other functional areas, did not have any qualification cards or required subject matter trainings to ensure their competency. This remained unchanged after the finding. The inspectors noted that corrective actions to provide general external events training and to develop a formal external events program may have appropriately addressed concerns about subject matter experts training adequacy, as the procedure consolidated requirements into controlling program procedures. However, the inspectors concluded that more specialized training could have increased defense in depth in the training and knowledge transfer areas.

The inspectors concluded the 95002 procedure requirements were satisfied for the TDAFWP finding but not for the White flooding finding.

b. Findings

No findings were identified

02.06 Evaluation of IMC 0305 Criteria for Treatment of Old Design Issues

The licensee did not request credit for self-identification of an old design issue. Consequently, the subject risk significant issues were not evaluated against the IMC 0305 criteria for treatment of an old design issue.

4OA5 Other Activities

The inspectors utilized other inspection procedures as part of the assessment of the licensee's performance. The following inspection samples were completed as part of this inspection.

- 71111.01 – External Flooding – 1 sample
- 71111.06 – Internal Flooding – 1 sample
- 71111.15 – Operability Evaluations – 1 sample
- 71152 – Problem Identification and Reporting – Annual Follow-Up of Selected Samples – 1 sample

4OA6 Management Meeting

Exit Meeting Summary

On March 6, 2014, the inspectors presented the inspection results to Mr. E. McCartney, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

E. McCartney, Site Vice President
R. Wright, Plant General Manager
R. Weber, Operations Director
M. Millen, Licensing Manager
K. Longston, Acting EP Manager
J. Atkins, Systems Engineering Manager
B. Beltz, Assistant Operations Manager
F. Hennessy, Performance Improvement Manager
J. Pruitt, Site Quality Manager
R. Welty, Radiation Protection Manager
R. Harrsch, Engineering Director
D. Lauterbur, Training Manger
P. Wild, Design Engineering Manager
L. Christensen, Licensing Project Manager
B. Scherwinski, Engineering Analyst II
T. Schneider, Licensing
F. Huber, Projects Manager
S. Cassidy, Communications Manager
C. Trezise, Director Special Projects
M. Ley, Civil/Mechanical Engineering Supervisor
T. Lesniak, Mechanical Maintenance Department Head
M. Maertens, Business Operations Manager
R. Clark, Licensing
S. Ruesch, Employee Concerns Program Manager
J. Petro, Licensing Director
A. Gustafson, Training
K. Locke, Licensing

Nuclear Regulatory Commission

A. Boland, Director, Division of Reactor Projects
J. Cameron, Chief, Branch 4, Division of Reactor Projects
K. Barclay, Acting Senior Resident Inspector Point Beach
R. Elliott, Acting Resident Inspector Point Beach

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000266/2014007-01 05000301/2014007-01	NCV	Failure to Take Corrective Actions to Address External Flooding Procedure Deficiencies
05000266/2014007-02 05000301/2014007-02	NCV	Failure to Maintain External Flooding Procedure to Address All Possible CLB Floods
05000266/2014007-03 05000301/2014007-03	NOV	Failure to Perform a Required 10 CFR Part 50.59 Evaluation
05000266/2014007-04 05000301/2014007-04	FIN	Failure to Perform a Required 10 CFR Part 50.59 Evaluation
05000266/2014007-05 05000301/2014007-05	NCV	Failure to Establish EFR Attributes to Assess the Effectiveness of Corrective Actions

Closed

05000266/2014007-01 05000301/2014007-01	NCV	Failure to Take Corrective Actions to Address External Flooding Procedure Deficiencies
05000266/2014007-02 05000301/2014007-02	NCV	Failure to Maintain External Flooding Procedure to Address All Possible CLB Floods
05000266/2014007-03 05000301/2014007-03	NOV	Failure to Perform a Required 10 CFR Part 50.59 Evaluation
05000266/2014007-04 05000301/2014007-04	FIN	Failure to Perform a Required 10 CFR Part 50.59 Evaluation
05000266/2014007-05 05000301/2014007-05	NCV	Failure to Establish EFR Attributes to Assess the Effectiveness of Corrective Actions

LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Corrective Action Documents

CR 01195739, CCW Pump Vibration
CR 01195885, Oil Analysis Shows Evidence of Bearing Wear on Safety Injection Pump Motor
CR 01196175, G-02 Exhibited High Axial Impact-Type Acceleration
CR 01200210, RMP For Reactor Coolant Pump Uncoupling Questioned
CR 01200598, Refueling Water Storage Tank Throttle Valve Difficult To Operate
CR 01202954, 2P-11B Alignment Problems
CR 01208186, G-01 EDG Bearing Vibration
CR 01208318, RCS Piping Stress
CR 01212030, Service Water Pump Gland Follower Improperly Aligned
CR 01215799, Inadequacies Identified In SI Pump Routine Maintenance Procedure
CR 01216019, Potential for Cracking In MSB Lift Yoke
CR 01217509, P-132 BDE Distillate Pump Alignment
CR 01390003, License Renewal Exam of STP-00014 has Minor Indication
CR 01610365, P-032C SW Pump Shaft Vibration Trending High
CR 01633548, NOS Identified IER1 11-1, Flood Barrier Door Inspection
CR 01639502, Jacking Bolt Broken For Motor Alignment
CR 01655812, 2P-10B Bearing Housing Bracket Jack Bolt Holding Alignment
CR 01660763, P-73A/B Suction And Discharge Pump Piping Misalignment
CR 01678709, NRC Issues Position on Missile Protection For G-01/02 Exhaust
CR 01691196, Operability Determination Issues Across Fleet
CR 01723755, Safe Shutdown Fire Dampers No Inspected
CR 01726015, FSAR Questions Regarding Cross Over Steam Dump Testing
CR 01727221, Plant Safe Shutdown Equipment Exposed To Tornados
CR 01736062, High Energy Line Break Door Issues
CR 01748940, Tornado Hazard
CR 01757131, Potential Violation RSPS Degraded Function
CR 01760171, G-01 and G-02 EDG's Declared Inoperable
CR 01762122, Design Basis Docs On Tornado Missiles
CR 01768931, 1P-29 Turbine Driven Auxiliary Feedwater Pump Degraded Coupling
CR 01771762, Green Finding – Weld Design Deficiency in the EDG Missile Protection Barriers
CR 01779635, Green Finding – Failure to Incorporate WOG ERG, Revision 2 into the EOPs
CR 01780474, G05 Control System Does Not Control Well
CR 01799222, 1P-28B, MFW Pump, High Vibration As-Found Alignment Data
CR 01801696, Quarterly DQS of a Licensing Topic
CR 01804588, Inadequate Scoping of Non-Safety Related System into Maintenance Rule
CR 01805402, Procedure PC 80 Part 7 Lake Water Level Determination Issues
CR 01806402, Procedure PC 80 Part 7 Lake Water Determination Issues
CR 01806545, Inconsistent Application of IPEEE Information in CLB
CR 01807841, Sand Bags Erroneously Eliminated From PB Flood Contingencies
CR 01807866, WR - Obtain Hot and Cold Pump And Motor Growth Readings
CR 01808661, Failure to Implement Risk Management Actions During Emergent Work Activities

CR 01808901, Coupling Misalignment On 0P-217A G-01 Circulation Oil Pump
CR 01809095, Deficiencies In PC 80 Part 7, Lake Level Determination
CR 01816327, Missing Appendix R Calculations
CR 01824582, PC 80 Part 7 CA 01809095 Due July 31, 2013
CR 01826212, Generator to Engine Coupling Is Degraded
CR 01826753, Coupling on Turbine Has Minor Damage
CR 01833683, Green Finding – Failure to Update the Fire Emergency Plan
CR 01845168, CMP for EN-AA-203-1001 Revision 10 (OD/FA) Implementation
CR 01847140, G-05 Functionality During Severe Weather
CR 01849522, G01/G02 Missile Shield Impact on External Flooding
CR 01850776, 2P-028A High Vibration At Drive End Bearing
CR 01851639, Green Finding – Failure to Submit LER Within 60 Days
CR 01853775, Basis for Flood Barriers Not Referenced In FSAR
CR 01853779, Current Licensing Basis for External Flooding Not Changed
CR 01855615, Resident NRC Inspector Roof Inspection Questions
CR 01856318, FSAR Not Updated for External Flooding Features
CR 01856322, Failure to Establish Adequate Procedures to Respond to PMP Event
CR 01856327, Failure to Maintain Features to Address Max Wave Run Up
CR 01860140, Prior to Starting Work Problems Found With TDAFWP Work Package
CR 01861967, Recent Issues Related to Operability/Functionality, April 1, 2013
CR 01863557, FSAR Errors Identified in Self-Assessment
CR 01863560, High Energy Line Break Door Issue Trending
CR 01875052, Electrical Short Circuit Protection Issues
CR 01875056, Electrical Short Circuit Protection Issues
CR 01877254, G-05 Excessive “Hunting” at Peak Load
CR 01879455, 2P-011B Pump OB Bearing Doweling Issue
CR 01878130, 2013 CAP FSA – CR Initiation Sensitivity
CR 01880011, Calculation 2005-0053, Revision 1 Presents Appendix R Issues
CR 01883633, Flooding Root Cause Evaluation; Revision 3
CR 01886923, Determine If An Issue Was a Missed Opportunity – Flooding
CR 01889400, Condition Evaluation Did Not Evaluate Scope Identified in Parent CR 01763937
CR 01889518, Final Effectiveness Review — Prompt Operability Determinations and Functionality Assessments
CR 01892543, Interim Actions Were Not Fully Effective (EFR 1889518)
CR 01894831, 95001 Inspection AR Screened as CAQ
CR 01894925, NRC 95001 RCE 01768931 Enhancement
CR 01895229, Routine Maintenance Procedures Lack a Specific Standard for Alignment Data
CR 01896156, Degraded Cornerstone – Mitigating Systems Two White Findings
CR 01900061, Functionality Assessment CA1806402-01 Conclusion Questioned
CR 01901996, ACE for Green Finding for Probable Maximum Precipitation Event Controls
CR 01902111, Validate That AOP-13C Will Meet Station Blackout Requirements
CR 01907036, 95002 VSGR Door Gaps Documentation Potential Deficiency
CR 01907864, 95002 Preps: Difference in Annual Snowfall Levels in FSAR
CR 01912749, Subsoil Drainage System is Blocked
CR 01914914, 2-P11A Pump Alignment Challenges
CR 01917384, Unable To Obtain Acceptable Alignment On G-03 Lube Oil Circulation Pump
CR 01918667, 1P-11A As-found Coupling Gap Below RMP Requirements
CR 01919077, Adverse Trend – Engineering CAP Backlog
CR 01920608, Adverse Trend – Engineering CAP Backlog
CR 01920659, 1P-029 As-found Alignment Checks Were Outside the Acceptance Criteria of RMP 9044-1

CR 01920783, During Performance of WO# 40241255 Checking Alignment on the Terry turbine
CR 01921089, Recent Decline In Operations Performance
CR 01922342, Increase In Initiation Rate of Anonymous and NSC ARs
CR 01924763, FA Errors & Less Than Adequate CAP Threshold
CR 01927436, 2P-11B Loose Hold Down Bolts And As-Found Alignment
CR 01932698, 95002 Wave Run-Up Protection May Conflict With Other Floods
CR 01936250, Employee Behavior Not Aligning With Expectations
CR 01936497, Conflict Between AOP-13C High Winds And PC 80 Part 7 Barrier
CR 01937027, 95002 Revise NP 7.5.2 and Form PBF-9178 to Address Flooding
CR 01937424, PBSA-ENG-15-01 External Events Program Quick Hit Assessment
CR 01938711, NRC 95002 Inspection – RCE 1883633 EOCA for CC2

NRC Identified CRs

CR 01938106, Incomplete Disposition of AR 01860140 On Unit 1 TDAFWP
CR 01938122, During NRC Walk Down Black Putty and Dry Boric Acid Was Noted on the Base Plate of the Unit 2 Train B Containment Spray Pump
CR 01938271, Snow Was on the Barrier Installation Pads As Well As A Power Cable
CR 01938314, Visible Dimple Noted Near Jacking Bolt
CR 01938317, During Walk Down Dried Boric Acid Noted on The Unit 2 Train B RHR Pump Seal
CR 01938326, Final Effectiveness Reviews for Common Cause 1 and 2 Were Inappropriately Reliant Upon NRC Input
CR 01938384, Alignment Issue With Valve 2RH-823B Reach Rod
CR 01938501, Maximum Precipitation and Wave Run Up Not Assessed Simultaneously
CR 01938670, Root Cause Reports Were Not Aligned with the 95002 Procedure
CR 01938711, Scope for the Extent of Cause of Contributing Cause 2 From the Flooding RCE Is Limited to NRC Concerns Only
CR 01938749, Attachment of Spring Cans to the MOVs After All As Left Testing Completed
CR 01938706, Formal Aggregate Review of all Flooding Related CRs
CR 01938825, Potential Storm Drain Bypass of Wave Run Up Barriers Not Assessed
CR 01938861, Risk Analysis Sections in Root and Common Causes Narrowly Focused
CR 01939011, Expand FSAR Section on Probable Maximum Precipitation Event
CR 01939095, VTM Dowling Recommendation Not Incorporated Into Procedures
CR 01939217, TDAFWP Root Cause Did Not Implement a Vendor Recommendation
CR 01939345, No Corrective Actions Initiated for Flooding Barriers During Cold Weather
CR 01939362, Functionality Assessments Found Issues But No Corrective Actions Taken
CR 01939389, Needed Enhancement to FSAR Appendix A.7, Internal Flooding
CR 01939838, Remove Door 349 When Wave Run Up Barriers Are Installed
CR 01940082, Procedure PC 80 Part 7, Revision 6 50.59 Screen Error
CR 01940118, Procedure PC 80 Part 7, Revision 4 50.59 Screen Error
CR 01940511, Errors Identified in Surveillance PBF-2124
CR 01940562, Poor CAP Product Quality
CR 01940606, Errors Identified in Procedure PC 80, Part 7
CR 01940621, FSAR Revision Required
CR 01940739, Unintentional Change to PC 80 Part 7 Identified
CR 01941022, Additional Errors Found in PBF-2124
CR 01941085, Potential Licensing Basis Questions Identified
CR 01941262, Quality Level of Flood Related Doors in Error
CR 01941902, Readiness for Inspection Letter Sent the Same Day as it Was Identified That the Site was Not Ready for the Inspection

CR 01942059, Another Error Found In PBF-2124
CR 01942315, Several Drawing Errors Identified
CR 01942317, Error Identified On ARB C01 B1-1
CR 01942343, Error Identified In AOP-13C
CR 01943803, Use of Wrong NRC Cross Cutting Code in Effectiveness Review Criteria
CR 01946330, Severity Level IV Violation for 50.59 – Use of Roll-Up Doors

Drawings

M-1, Equipment Location Plan Containment Operating Floor Unit 1, Revision 19
M-3, Water Intake Facility General Arrangement Plan B-B, Revision, November 17, 1967
M-4, Water Intake Facility General Arrangement Plan C-C and D-D, November 17, 1967
M-15, Water Intake Facility Piping Section F-F, November 4, 1969
M-16, Circulating Water Pump House Piping, Revision 13
M-2007, Equipment Location Plan Ground Floor North, Revision 22
M-2009, Equipment Location Plan Sections H-H and K-K, Revision 9
M-2010, Equipment Location Miscellaneous Section, Revision 5
C-1, Site Plan, Revision 19
6704-E-121001, Plant Key Plan, Drawing, Index and Specification Numbers, Revision 4
6704-E-121102, Diesel Generator Building Floor and Roof Plan, Revision 5
6704-E-151001, Diesel Generator Building Yard Area Grading Plan, Revision 3
M-165, Turbine Building Floor & Equipment Drainage Area No 3 – Plan at EL. 8.0, Revision 6

Licensee Procedures

AD-AA-103, Nuclear Safety Culture Program, Revision 5
EN-AA-203-1001, Operability Determinations/Functionality Assessments, Revision 7
EN-AA-203-1001, Operability Determinations/Functionality Assessments, Revision 11
EN-AA-203-1001, Operability Determinations/Functionality Assessments, Revision 12
EN-AA-203-1001, Operability Determinations/Functionality Assessments, Revision 15
RMP 9044-1, Auxiliary Feedwater Pump Terry Turbine Overhaul, Revision 35
RMP 9376-1, Limitorque MOV Removal, Installation, SWAP, and Testing for Gate and Globe Valves
RMP 9376-2, Limitorque MOV Static/DP Testing for Gate and Globe Valves
RMP 9376-3, Limitorque MOV Removal, Installation, and Adjustment for Butterfly Valves
RMP 9376-4, Limitorque Motor Operator Model SMB-000 Disassembly, Inspection Repair, and Re-Assembly
RMP 9376-5, Limitorque Motor Operator Model SMB-0 Through SMB-4 Disassembly, Inspection, Repair, and Re-Assembly
RMP 9376-6, Limitorque Motor Operator Model SMB-00 Disassembly, Inspection, Repair, and Re-Assembly
RMP 9008-1, RHR Pump Removal and Installation
RMP 9005-2, SI Pump Overhaul
Vendor Manual 0501, Pacific Pumps, Inc.
AOP-13C; Abnormal Operating Procedure—Severe Weather Conditions, Revision 32
NP 7.5.2; PBNP Owner Controlled Area Temporary Structure Limitations, Revision 12
NA-AA-200, Employees Concern Program Process Description, Revision 5
PI-AA-01, Corrective Action Program and Condition Reporting, Revision 3
PI-AA-204, Condition Identification and Screening Process, Revision 22
PI-AA-205, Condition Evaluation and Corrective Action, Revision 23
PI-AA-100-1005, Root Cause Analysis, Revision 8

PI-AA-100-1006, Common Cause Evaluation, Revision 6
PI-AA-100-1007, Apparent Cause Analysis, Revision 7
PI-AA-100-1008, Condition Evaluation, Revision 5
PI-AA-101-1001, Quick Hit Assessments, Revision 5
MA-AA-203-1001, Work Order Planning, Revision 1
PDM 1.0, Vibration Monitoring Program
Procedure IT 02, High Head Safety Injection Pumps and Valves Train B, Unit 2
Procedure IT 03, Low Head Safety Injection Pumps and Valves Train A, Unit 1
Procedure IT 06, Containment Spray Pump and Valves
Procedure IT 12, 1P-11B, Component Cooling Water Pumps and Valves Unit 1
Procedure IT-07D, Service Water Pump (Quarterly) Surveillance
PC 80 Part 7, Lake Water Level Determination, Revision 3
PC 80 Part 7, Lake Water Level Determination, Revision 4
PC 80 Part 7, Lake Water Level Determination, Revision 5
PC 80 Part 7, Lake Water Level Determination, Revision 6
PC 80 Part 7, Lake Water Level Determination, Revision 7
PC 80 Part 7, Lake Water Level Determination, Revision 8
PC 80 Part 7, Lake Water Level Determination, Revision 9
PC 80 Part 7, Lake Water Level Determination, Revision 10
CL 11A G-02, G-02 Diesel Generator Checklist, Revision 29
NP 7.2.29; External Events Program, Revision 0

Root Cause Reports

RCE 01757131, Potential Violation Due to a Degraded Emergency Planning Risk Significant Planning Standard Function, Revision 4
RCE 01768931, Unit 1 Turbine Driven Auxiliary Feedwater Pump 1P-29 Coupling Degraded During IT-08A Run, Revision 5
RCE 01883633, Potential Greater Than Green Finding Flooding, Revision 3
RCE 01896156, Degraded Cornerstone – Mitigating Systems Two White Findings, Revision 1

Calculations

FPL-076-CALC-017, Maximum Precipitation Analysis for Past Reportability, Revision 0
CALC 2008-0024, AFWP Room Flood Basis Calculation—January 23, 2014, Revision 1
CALC 2009-0008, Circulating Water Pump House Internal Flooding, Revision 1
FPL-076-CALC-016, Flow Depth Sensitivity to Openings with Wave Barriers—February 6, 2014, Revision 0
FPL-076-CALC-003, Point Beach DELFT3D Surge and Wave Model, Revision 0
EC 279455, Time Available to Respond to Threat From Rising Water, June 24, 2013
FPL-076-CALC-014, PBNP Precipitation and Snow Intensity Determination and Roof Drainage Evaluation – December 18, 2013, Revision 0
FPL-076-CALC-015, Maximum Precipitation Flood Effects – January 7, 2014, Revision 0
CALC 2014-0002, Effects on Safety Equipment of Bypassing the Installed Wave Run-Up Barriers Through The Storm Drains – February 11, 2014, Revision 0

Miscellaneous Documents

List of Technical Procedure Revisions for 2013
Presentation for Outage Review Board Team Meeting, February 4, 2014
Corrective Action Review Board Package for February 4, 2014

PBSA-PBNP-13-013, Quick Hit Assessment Report for the 95002 Mock Inspection for Degraded Cornerstone, October 29, 2013
PBSA-ENG-07-13, 2008 Component Design Basis Inspection Preparations, March 10-20, 2008
PBSA-ENG-10-20, Focused Self-Assessment of Flooding Program, September 20-23, 2010
PBSA-ENG-11-01, Component Design Basis Inspection Preparations, January 17-27, 2011
PBSA-ENG-06-02, SA Preparation for Design Basis Inspection Based on 71111.21, January 16 - February 2, 2006
PBSA-ENG-12-20, Quick Hit Assessment Report—Flooding Program, April 15 - May 24, 2013
PBSA-PBNP-13-02, CR 01908740, Quick Hit Assessment Report Station Nuclear Safety Culture, September 23 through October 4, 2013
PBSA-PBNP-12-02, Quick Hit Assessment Report Station Nuclear Safety Culture September 17 through 20, 2012
MOR 2013-23, Missed Opportunity Review—Potential Greater Than Green Finding—Flooding, July 9, 2013
NOS Daily Quality Summary Related to Flooding MOR—Gas Accumulation Management Program, April 24, 2013
CEI Independent Evaluation, Point Beach Root Cause Evaluation for NRC White Performance Indicator—Flooding, September 20, 2013
EC 280223, Review of Flooding Vulnerability Report for Possible CLB Encroachment, October 22, 2013
NEE 05-PR-003, Flooding Vulnerability Report, Revision 0
EN-AA-203-1001 Operations Training—Operability Determinations/Functionality Assessment Training Materials, August 28, 2013
EN-AA-203-1001 Engineering Lesson Plan—Operability Determinations/Functionality Assessments, July 3, 2013
SCR 2013-0213, 50.59 Screening Form FSAR Sect 2.5 PMP Flood—January 28, 2014, Revision 1
Monthly Weather Review—The Prediction of Surges in the Southern Basin of Lake Michigan; May 1965
NPC98-00509, Harza Preliminary Hydrologic and Hydraulic Studies for Nuclear Power Plant Site Selection, March 18, 1966
NOS Observations, October 30, 2008, November 20, 2009, August 16, 2010, April 23, 2011, November 19, 2011
Point Beach Daily Quality Summary - 1P-29 Turbine Driven Auxiliary Feedwater Pump, January 27, 2012
Point Beach Daily Quality Summary - Initial Auxiliary Feedwater Pump and Terry Turbine Alignment, June 22, 2012
Point Beach Daily Quality Summary - Terry Turbine Oil Change and Sampling, July 02, 2012
PBN 12-010, Nuclear Oversight Report: Maintenance-Corrective and Preventative, July 12, 2012
Point Beach Daily Quality Summary - 1/2 P-38 AFW Pump October 16, 2012
PBN-12-014, Nuclear Oversight Report: System Engineering, November 19, 2012
Point Beach Daily Quality Summary - 2P-29 TDAFW Pump Assembly, November 19, 2012
PBN-13-003 Nuclear Oversight Report: Engineering Design, March 8, 2013
Point Beach Daily Quality Summary - Fire Protection Walkdown P-53 Motor Driven Auxiliary Feed Pump Rooms, October 2, 2013
MOR 2013-09 Missed Opportunity Review, 1-29-T, Auxiliary Feed Water Pump Turbine Coupling Failure, CR 1846183, February 7, 2014
WO 383111-01, STP-00014; Inspect for License Renewal per LR-TR-519, May 17, 2010
WO 40188994-09, Simulate PC 50 Part 7 Draft with New Barriers (PMT), November 21, 2013
WO 40188994-04, Verify Ability to Place and Secure Jersey Barriers (PMT), July 10, 2013

Fleet Daily Quality Summary Report—Fukushima, November 22, 2011
Point Beach Daily Quality Summary Report—Flooding Related, April 4, 2012
Point Beach Nuclear Oversight Report—Fire Protection and Flood Doors, October 7, 2010
Point Beach Nuclear Oversight Report—ISFSI Environmental Impacts Audit, July 14, 2011
Point Beach Nuclear Oversight Report—Review of OE Related to Flooding and Actions Taken, March 8, 2013
Point Beach Nuclear Oversight Report—Review of Commitments—Flooding Walk Downs, March 30, 2013
Fleet Daily Quality Summary Report—Flooding Underground Cables, January 21, 2008
WO 40220319-01, PC 80 Part 7 Install CWPH Concrete Block Barriers, February 4, 2014
Pictures of Wave Barriers Constructed, November 26, 2013

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
AR	Action Request
CAPR	Corrective Action to Prevent Recurrence
CC	Contributing Cause
CCA	Common Cause Analysis
CCDP	Conditional Core Damage Probability
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CLB	Current License Basis
CR	Condition Report
CW	Circulating Water
CWPH	Circulating Water Pump House
CY	Calendar Year
DRP	Division of Reactor Projects
EFR	Effectiveness Review
EJ	Expansion Joint
EP	Emergency Preparedness
EPRI	Electric Power Research Institute
FA	Functionality Assessment
FP	Fire Protection
FSAR	Final Safety Analysis Report
gpm	Gallons per Minute
HCLPF	High Consequence of Low Probability of Failure
HEP	Human Error Probability
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IPEEE	Individual Plant Examination External Events
IR	Inspection Report
IST	In-service Test
KSA	Knowledge Skills and Abilities
LERF	Large Early Release Frequency
LOCA	Loss of Coolant Accident
LOOP	Loss of Off-Site Power
MOV	Motor Operated Valve
N/A	Not Applicable
NCV	Non-Cited Violation
NOV	Notice of Violation
NRC	U.S. Nuclear Regulatory Commission
OEM	Original Equipment Manufacturer
OSHA	Occupational Safety Health and Safety
PARS	Publicly Available Records
PC	Procedure Call-Up
PMP	Probable Maximum Precipitation
PMT	Post Maintenance Test
PRA	Probabilistic Risk Assessment
PWR	Pressurized Water Reactor
RASP	Risk Assessment Standardization Project

RC	Root Cause
RCE	Root Cause Evaluation
ROP	Reactor Oversight Process
SCWE	Safety Conscience Work Environment
SDP	Significance Determination Process
SME	Subject Matter Expert
SPAR	Standardized Plant Analysis Risk
SQAC	Significant Condition Adverse to Quality
SRA	Senior Reactor Analyst
SW	Service Water
TDAFWP	Turbine Driven Auxiliary Feedwater Pump
TB	Turbine Building
TS	Technical Specification
URI	Unresolved Item
VTM	Vendor Technical Manual
Yr	Year
WO	Work Order

previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC-0305 starting with the CY 2014 mid-cycle assessment review.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Anne T. Boland, Director
Division of Reactor Projects

Docket Nos. 50-266; 50-301
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Letter to Eric McCartney from Ann Boland dated March 28, 2014

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
NRC 95002 SUPPLEMENTAL INSPECTION REPORT
05000266/2014007; 05000301/2014007

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