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

August 12, 2013

EA-11-148
EA-12-228

Mr. Vito Kaminskas
Site Vice President
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
P. O. Box 97, 10 Center Road, A-PY-A290
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT - NRC 95002 SUPPLEMENTAL INSPECTION REPORT 05000440/2013009 AND ASSESSMENT FOLLOW-UP LETTER

Dear Mr. Kaminskas:

On June 28, 2013, 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 Perry Nuclear Power Plant. The enclosed inspection report documents the inspection results, which were discussed at the exit and regulatory performance meeting on June 28, 2013, with you, Mr. Pete Sena, Mr. Sam Belcher, and members of your staff.

In accordance with the NRC Reactor Oversight Process (ROP), this follow-up supplemental inspection was performed to continue the assessment of a White inspection finding and associated Notice of Violation (White NOV) with low to moderate safety significance and an Occupational Exposure Control Effectiveness performance indicator (PI) which crossed the threshold from Green to White. Both issues became effective in the second quarter of 2011. In the third quarter of 2011, the PI crossed the threshold from White to Yellow, with substantial safety significance. The initial 95002 supplemental inspection for these issues was conducted in 2012 and documented in NRC Inspection Report 05000440/2012009 (ML12363A137), dated December 28, 2012. That inspection concluded that FirstEnergy Nuclear Operating Company (FENOC) did not provide assurance that the corrective actions for performance issues associated with the PI were sufficient to address the root and contributing causes and prevent recurrence. The NRC further concluded that your staff did not adequately address corrective actions for the White NOV. Therefore, you did not provide the assurance level required to meet that inspection objective. A parallel White PI inspection finding was subsequently initiated and the White NOV was held open.

This follow-up supplemental inspection specifically reviewed the held-open White NOV, the Yellow PI, and the parallel White PI inspection finding, all of which affected the Occupational Radiation Safety Cornerstone. The NRC informed Perry of our intent to continue the supplemental inspection in accordance with inspection procedure 95002 in the

assessment follow-up and deviation from the ROP Action Matrix letter dated January 17, 2013 (ML13018A163). During the Annual Assessment public meeting on April 10, 2013, you stated that Perry would be ready for the NRC to conduct the inspection starting June 10, 2013.

The objectives of this supplemental inspection were to: (1) to provide assurance that the root and contributing causes of the parallel White PI inspection finding are understood, (2) to independently assess and provide assurance that the extent of condition and the extent of cause of the individual and collective White and Yellow inputs are identified, (3) to independently determine if safety culture components caused or significantly contributed to the parallel White PI inspection finding, and (4) to provide assurance that the planned or taken corrective actions for all White and Yellow issues were sufficient to address the root and contributing causes and prevent recurrence.

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

Based on the results of the inspection, the NRC determined that Perry performed an acceptable evaluation of the White NOV. The evaluation identified the primary root cause of the issue was that the site organization failed to address the significant radiological hazards associated with the work on Source Range Monitor C (SRM C). To correct this issue and prevent recurrence, Perry stopped the work and implemented corrective actions, including changes to work control and work management procedures and other documents. Your subsequent long-term corrective actions to improve the planning and control of activities involving high radiological risk work activities were found to be adequate.

The NRC also determined that Perry performed an acceptable evaluation of the Yellow PI and parallel White PI inspection finding. The evaluation identified the primary root cause to be an inadequate performance improvement culture within the radiation protection department. Additionally, the plant radiation protection management staff had a less than adequate understanding of the regulatory requirements concerning accessibility to locked high radiation areas. To correct these issues and prevent recurrence, Perry immediately developed and implemented a strategic plan to establish a performance improvement culture within the radiation protection department. Additionally, there were prompt changes made to the radiation protection leadership. Your additional corrective actions taken to improve accountability and understanding of regulations regarding occupational radiation protection were found to be adequate.

After reviewing your performance in addressing the White NOV, the Yellow PI, and the parallel White PI inspection finding using Inspection Procedure 95002, the NRC concluded your actions met the inspection procedure objectives with no significant weaknesses. Therefore, in accordance with Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," the White NOV and parallel White PI inspection finding will only be considered in assessing plant performance until the end of the second quarter of 2013. Also, the Occupational Exposure Control Effectiveness PI returned from Yellow to Green in the second quarter of 2013. As a result, the NRC has determined the performance at Perry to be in the Licensee Response Column of the ROP Action Matrix as of the date of this letter.

Additionally, based on the completion date and results of this inspection, and the occurrence of no additional risk-significant issues, the deviation from the ROP Action Matrix issued with the January 17, 2013 letter is no longer in effect. However, while the NRC has concluded you have taken appropriate actions in response to the White NOV, the Yellow PI, and the parallel White PI inspection finding, the inspection identified that continued management attention and focus is needed to address lower level, less risk significant issues in the radiation protection area, such as procedure adherence and quality and radiological work coordination amongst all site departments, and continued emphasis that these issues are not restricted to the radiation protection department but are site-wide.

Although the NRC has transitioned Perry to the Licensee Response Column (Column 1) from the Degraded Cornerstone Column (Column 3), the findings and performance indicator occurrences documented in the enclosure will be considered in the upcoming mid-cycle assessment. You will be informed by a separate letter of the results of that assessment and any changes to the baseline inspection schedule that will be made to allow the NRC to evaluate the long-term effectiveness of your corrective actions for the three risk-significant issues that are the subject of this inspection report and your actions to address the lower level issues that were identified.

Based on the results of this inspection, the NRC identified five findings of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in the report. The NRC is treating these violations as non-cited violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy.

If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to: (1) the Regional Administrator, Region III; (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Perry Nuclear Power Plant.

If you disagree with the cross-cutting aspect assignments 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 Perry Nuclear Power Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to respond, 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).

Please contact Mike Kunowski at (630) 829-9618 with any questions you have regarding this letter.

Sincerely,

/RA/

Patrick L. Louden, Deputy Director
Division of Reactor Safety

Docket No. 50-440
License No. NPF-58

Enclosure: Inspection Report No. 05000440/2013009
w/ Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-440
License No:	NPF-58
Report No:	05000440/2013009
Licensee:	FirstEnergy Nuclear Operating Company
Facility:	Perry Nuclear Power Plant, Unit 1
Location:	Perry, OH
Dates:	June 10 through June 28, 2013
Inspectors:	John Jandovitz, Project Engineer (Team Lead) Martin Phalen, Senior Health Physicist Joe Furia, Senior Health Physicist, Region I Robert Ruiz, Senior Resident Inspector, LaSalle Alex Garmoe, Resident Inspector, Braidwood Gregory Hansen, Safety Culture Assessor Robert Lerch, Project Engineer Pedro Cardona, Emergency Response Specialist
Approved by:	Michael Kunowski, Chief Branch 5 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000440/2013009; 06/10/2013 – 06/28/2013; Perry Nuclear Power Plant; 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 six regional inspectors and two resident inspectors. The inspectors identified five Green non-cited violations (NCVs). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Cross-cutting aspects are 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.

A. NRC-Identified and Self-Revealed Findings

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 a White inspection finding and associated Notice of Violation (White NOV), a Yellow Performance Indicator (PI), and a parallel White PI inspection finding that affected the Occupational Radiation Safety Cornerstone. The NRC previously characterized these issues in an inspection report dated December 28, 2012 (ML12363A137) for the previous 95002 inspection conducted in 2012.

During the current supplemental inspection, five findings of very low safety significance (Green) were self-revealed or identified by the inspectors. No findings greater-than-Green, i.e., White, Yellow, or Red, were identified. The inspectors determined that the licensee performed adequate evaluations of, and took or planned to take appropriate corrective actions for, the three risk-significant issues. Overall, within the areas, the inspectors did not identify any substantive issues that the licensee had not already identified in its corrective action program, and concluded that the licensee’s review and actions in the areas inspected were of sufficient breadth and depth to meet the four inspection objectives.

Specifically, the inspectors 1) concluded that the licensee understood the root and contributing causes of the parallel White PI inspection finding; 2) independently assessed and provided assurance that the extent of condition and extent of cause of the individual and collective three risk-significant issues were identified by the licensee. The NRC’s assessment (and the licensee’s assessment) concluded that causes of the risk-significant issues were found in many of the site organizations; 3) independently determined that the licensee appropriately identified whether any safety culture components caused or significantly contributed to the parallel White PI inspection finding; and 4) concluded that the planned or taken corrective actions for the three risk-significant issues were sufficient to address the root and contributing causes and prevent recurrence of those issues.

The inspectors determined through a broad assessment of site organizations that Perry's safety culture was adequate; however, the inspectors verified that Perry identified that there were safety culture components that contributed to the parallel White PI finding and established corrective actions to address them.

Given the licensee's acceptable performance in addressing the risk-significant issues, the White NOV and the parallel White PI inspection finding will only be considered in assessing plant performance until the end of the second quarter of 2013. The Yellow PI returned to Green at the start of the second quarter of 2013. The Perry Nuclear Power Plant will return to the Licensee Response Column (Column 1) of the Reactor Oversight Process (ROP) Action Matrix as of the date of this report's cover letter.

Cornerstone: Occupational Radiation Safety

Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of Technical Specification (TS) 5.4, "Procedures." Specifically, TS 5.4 "Procedures", Step 5.4.1 states, in part, that the licensee shall establish, implement, and maintain applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. Section 7 of Appendix A of RG 1.33 specifies radiation protection procedures for control of radioactivity for limiting personnel exposures. Licensee procedure NOP-OP-4107, "Radiation Work Permit," requires that radiological controls identify "critical steps or critical instructions for positive radiological control of the work to ensure no change on unexpected change in radiological conditions, and prevent unplanned exposure." Contrary to this, on six occasions during the spring 2013 refueling outage, the licensee failed to implement operational and radiological controls necessary to prevent plant manipulations from adversely impacting ambient radiological dose rates or airborne radioactivity levels in the plant when workers were in the areas. The licensee documented this issue in it's corrective action program as condition report 2013-09891. As an immediate corrective action, the licensee instituted the appropriate operational and radiological controls to ensure personnel safety.

The inspectors reviewed Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening" and determined that the issue was more than minor because, if left uncorrected, the performance deficiency could have led to a more significant safety concern. Specifically, not implementing the operational and radiological controls necessary to prevent plant manipulations from adversely impacting ambient radiological conditions in the plant could result in unnecessary and unplanned radiation exposures. The inspectors determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix C, "Occupation Radiation Safety Significance Determination Process." This finding has a cross-cutting aspect in the area of human performance, work-control, because the licensee did not appropriately plan work activities when developing the work packages and authorizing the work (H.3(a)). (Section 4OA4.02.03.f(1))

Green. A finding of very low safety significance and an associated non-cited violation of Technical Specification 5.7, "High Radiation Area," was self-revealed when the access point to the locked high radiation area of the auxiliary steam tunnel on the 620'-elevation of the turbine building was left unattended on May 1, 2013, for about 8 minutes. This issue was entered into the licensee's corrective action program as

condition report 2013-06892. As immediate corrective actions, access to the area was guarded and appropriate controls were instituted.

The inspectors reviewed Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues," and determined that the issue was more than minor because it was similar to Example 6(g). The inspectors also determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." This finding has a cross-cutting aspect in the area of human performance, work practices, because the licensee did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported (H.4(c)). (Section 4OA4.02.03.f(2))

Green. The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specification 5.7. "High Radiation Area," when the inspectors identified an unposted, unbarricaded high radiation area under the condenser in turbine building cubicles 13 and 14 that was accessible to personnel by scaffold. This issue was entered into the licensee's corrective action program as condition report 2013-06139. As an immediate corrective action, the scaffold was removed and appropriate controls were instituted.

The inspectors reviewed Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues," and determined that the issue was more than minor because it was similar to Example 6(g). The inspectors also determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." This finding has a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because the licensee did not thoroughly evaluate and address this issue when initially identified by the NRC in 2011 or during the licensee's extent of condition evaluations (P.1(c)). (Section 4OA4.02.04.1.b(1))

Cornerstone: Barrier Integrity

Green. A finding of very low safety significance and associated non-cited violation of Technical Specification 5.4, "Procedures," was self-revealed when the licensee failed to adhere to procedural requirements during the filling and venting of the reactor water cleanup (RWCU) system. Specifically, on April 26, 2013, valves 1G33-F008A and F556A were left in the open position, contrary to the requirements of step 7.16.9 of procedure SOI-G33, revision 36, and resulted in the RWCU system being aligned to the condensate transfer and storage system. This valve misposition event also resulted in the TS 3.6.1.3 inoperability of the containment isolation valve 1P11F0545. Upon discovery of the condition, the licensee promptly corrected the error and the entered the condition into its corrective action program as condition report 2013-07483, and performed an apparent cause evaluation.

The inspectors reviewed Inspection Manual Chapter (MC) 0612, Appendix B, "Issue Screening," and determined that the issue was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of configuration control and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors

determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix A, “Significance Determination Process.” This finding has a cross-cutting aspect in the area of human performance, work practices, for the licensee’s failure to successfully incorporate human error prevention techniques, such as self and peer checks (H.4(a)). (Section 4OA4.02.04.2.b(1))

Cornerstone: Initiating Events

Green. A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed when the licensee failed to perform a procedure that was appropriate to the circumstances. Specifically, on May 12, 2013, work instruction PTI-N27-P0012, Revision 5, was performed when the condition of the plant, i.e., the specific configuration of the feedwater system and the relatively low reactor pressure, was incapable of supporting the test and resulted in a reactor overfill event. The issue was entered into the corrective action program as condition report 2013-07473. The licensee performed an apparent cause evaluation to identify the most likely causal factors, citing the inadequacy of the procedure and the lack of proper planning as contributing causes.

The inspectors reviewed Inspection Manual Chapter (MC) 0612, Appendix B, “Issue Screening,” and determined that the issue was more than minor because it was associated with the Initiating Events Cornerstone attribute of procedure quality and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix A, “Significance Determination Process.” This finding has a cross-cutting aspect in the area of human performance, work control, for the licensee’s failure to plan work activities such that they could be performed while the plant was in an appropriate operational condition. Specifically, the licensee rescheduled the activity without performing an adequate impact review of the different plant conditions on the activity (H.3(a)).
(Section 4OA4.02.04.2.b(2))

B. Licensee-Identified Violation

Cornerstone: Occupational Radiation Safety

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and its corrective action program tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

4. OTHER ACTIVITIES

Cornerstones: Occupational Radiation Safety, Barrier Integrity, and Initiating Events

4OA4 Supplemental Inspection (95002)

.01 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 continue to assess the licensee's evaluation of a White inspection finding and associated Notice of Violation (White NOV), a Yellow Performance Indicator (PI), and a parallel White PI inspection finding, all of which affected the Occupational Radiation Safety Cornerstone. Collectively, these three issues are referenced in this report as the risk-significant issues.

The licensee entered Column 3 (Degraded Cornerstone) of the NRC's Action Matrix in the second quarter of 2011 as a result of the White NOV, involving a significant potential exposure to workers during withdrawal and reinsertion of nuclear instrumentation Source Range Monitor " C" (SRM C) from the reactor vessel in April 2011, and a White PI with four Occupational Exposure Control Effectiveness PI occurrences in the second quarter of 2011. Additional PI occurrences subsequently resulted in the PI crossing the Yellow threshold in the third quarter of 2012.

The initial supplemental inspection was performed in accordance with IP 95002 in 2012 and documented in an inspection report dated December 28, 2012 (ML12363A137). That inspection concluded that the licensee did not provide assurance that the corrective actions for performance issues associated with the Occupational Exposure Control Effectiveness PI were sufficient to address the root and contributing causes and prevent recurrence. The NRC further concluded that the licensee did not adequately address corrective actions for the White NOV. Therefore, the licensee did not provide the assurance level required to meet that inspection objective. A parallel White PI inspection finding was subsequently initiated and assigned the same safety significance as the initiating PI. The White NOV for SRM C was held open. The 2012 inspection concluded that the inspection objective to assure that the licensee fully understood the root and contributing causes of the White NOV and White PI was met.

The licensee was informed of the NRC's intent to continue performance of the supplemental 95002 inspection in the assessment follow-up and deviation from the Reactor Oversight Process (ROP) Action Matrix letter dated January 17, 2013 (ML13018A163). During the Annual Assessment public meeting on April 10, 2013, the licensee indicated it would be ready for the NRC to conduct the inspection starting June 10, 2013. In preparation for the inspection, the licensee performed a number of root cause evaluations (RCEs) and completed numerous corrective actions. Since all of these issues adversely affected the Occupational Radiation Safety Cornerstone, the licensee's RCEs were closely related and cross-referenced each other, i.e., the root causes, contributing causes, and corrective actions.

The inspectors reviewed the RCEs, in addition to other assessments, evaluations, and corrective action program (CAP) 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.

Additionally, the inspectors performed in-field observations of radiation workers, radiation protection (RP) technicians, and RP supervisors during the outage in order to evaluate field implementation of corrective actions. Particular focus was placed on refuel floor activities and other radiologically risk-significant work activities. The inspectors also interviewed a cross-section of plant staff, including contractor and in-house craft personnel and supervisors, contractor and in-house RP technicians and supervisors, and the RP leadership team, including the radiation protection manager (RPM).

The inspection objectives were to:

1. Provide assurance that the root and contributing causes of the parallel White PI inspection finding were understood;
2. To independently assess and provide assurance that the extent of condition and extent of cause of the individual and multiple risk-significant issues were identified;
3. Perform a broad safety culture assessment and independently determine if safety culture components caused or significantly contributed to the parallel White PI inspection finding; and
4. Provide assurance that the corrective actions for the risk-significant issues were or will be sufficient to address the root and contributing causes and to preclude repetition.

Documents reviewed during this inspection are listed in the Attachment.

Inspection Results

Five findings of very low safety significance (Green) were self-revealed or identified by the inspectors. No findings greater-than-Green, i.e., White, Yellow, or Red, were identified. The inspectors determined that the licensee performed adequate evaluations of, and took or planned to take appropriate corrective actions for, the three risk-significant issues. Overall, within the areas, the inspectors did not identify any substantive issues that the licensee had not already identified in its corrective action program, and concluded that the licensee's review and actions in the areas inspected were of sufficient breadth and depth to meet the four inspection objectives.

Specifically, the inspectors 1) concluded that the licensee understood the root and contributing causes of the parallel White PI inspection finding; 2) independently assessed and provided assurance that the extent of condition and extent of cause of the individual and collective three risk-significant issues were identified by the licensee. The NRC's assessment (and the licensee's assessment) concluded that causes of the risk-

significant issues were found in many of the site organizations; 3) independently determined that the licensee appropriately identified whether any safety culture components caused or significantly contributed to the parallel White PI inspection finding; and 4) concluded that the planned or taken corrective actions for the three risk-significant issues were sufficient to address the root and contributing causes and prevent recurrence of those issues.

The inspectors determined through a broad assessment of site organizations that Perry's safety culture was adequate; however, the inspectors verified that Perry identified that there were safety culture components that contributed to the parallel White PI finding and established corrective actions to address them.

.02 Evaluation of the Inspection Requirements

02.01 Problem Identification

The inspectors reviewed the licensee's RCEs and other documents related to the parallel White PI inspection finding. Specifically, CR 2012-18695 and the associated analysis, dated March 22, 2013, were reviewed.

The previous 95002 inspection in 2012 reviewed and found that the following inspection requirements were adequately addressed for the White NOV for the SRM C issue and for the Yellow PI, as documented in NRC Inspection Report 2012009, dated December 28, 2012. Therefore, these issues were not in the scope of this section.

a. *As directed by IP 95002, the inspectors reviewed FENOC's evaluation of the issues to determine that it documented who identified the issues (i.e., licensee-identified, self-revealing, or NRC-identified) and the conditions under which the issues were identified.*

The inspectors determined that the licensee's analysis appropriately documented the parallel White PI inspection finding as an NRC-identified issue as a result of the previous 95002 inspection in 2012.

b. *As directed by IP 95002, the inspectors reviewed FENOC's evaluation of the issues to document how long the issues existed and prior opportunities for identification.*
The inspectors determined that the licensee's RCE was adequate with respect to identifying how long the parallel White PI inspection finding existed and prior opportunities for identification.

The licensee's evaluation documented that the parallel White PI inspection finding resulted from the NRC's conclusion during the previous 95002 inspection in 2012 that FENOC did not provide assurance that the corrective actions for performance issues associated with the White (then Yellow) PI were sufficient to address the root and contributing causes and prevent recurrence.

The inspectors reviewed the RCEs associated with each separate occupational exposure control effectiveness PI occurrence that occurred at the station from December 2010 to June 2013. Specifically, (1) an operator involved in tag-out activities entered an unsurveyed area of a high radiation area (HRA) in the fuel pool cooling heat exchanger room; (2) a worker rebuilding a safety relief valve traversed an HRA without being knowledgeable of the radiological conditions in the area; (3) inappropriate HRA radiological controls on the initial withdrawal of SRM C; (4) inappropriate HRA

radiological controls on the re-insertion of SRM C; (5) less than adequate HRA controls associated with the turbine building catacombs; (6) three PI occurrences associated with a resin spill that occurred on the 574'-elevation of the radioactive waste facility; and (7) the failure to control a locked high radiation area (LHRA) associated with dry fuel storage.

The RCE for the parallel White PI inspection finding included these events, how the prior events were evaluated, and were those evaluations adequate. The licensee developed a timeline since December of 2010 noting each event, the corrective action documents associated with it, and root cause identified.

c. *As directed by IP 95002, the inspectors reviewed the licensee's evaluation documents of plant-specific risk consequences, as applicable, and compliance concerns associated with the issues both individually and collectively.*

The inspectors confirmed that the licensee's evaluation of the consequences of the failure to control LHRAs was adequate. Specifically, section 2.2, "Consequences," of the licensee's analysis documents stated that that the less-than-adequate response to radiological events involved a significant reduction in the margin to worker safety in the area of radiation safety. Some of the PI occurrences did result in dose rate alarms when the worker strayed from the planned route and with the SRM C event. However, the additional dose received by each individual was well below the regulatory limits and below that station's administrative limits, and thus the actual doses to workers were not considered significant.

d. Findings

No findings were identified.

02.02 Root Cause

The inspectors reviewed the licensee's root cause evaluation and documents related to the parallel White PI inspection finding. Specifically, CR 2012-18695 and associated analysis, dated March 22, 2013, were reviewed.

The previous 95002 inspection in 2012 found that the following inspection requirements were adequately addressed for the White NOV for the SRM C issue and the Yellow PI. Therefore, these issues were not in the scope of this section.

a. *As directed by IP 95002, the inspectors reviewed the licensee's evaluations to determine whether the licensee used a systematic methodology to identify the root and contributing causes of the issues.*

The licensee used the following systematic methods:

- data gathering through interviews and document review;
- timeline construction;
- events and causal factor charting;
- barrier analysis;
- causal factors tree; and
- fault tree analysis.

The licensee used both a failure modes analysis and barrier analysis to evaluate human performance issues. The inspectors determined that the licensee evaluated the issues using a systematic methodology to identify root and contributing causes.

During the initial review of an event that occurred after May 2012 (resin spill event), the inspectors identified that a major contributor to this event was the licensee's failure to implement existing plant procedures. A further review of the events associated with the White NOV and Yellow PI revealed that the failure of the licensee to implement existing plant procedure was also a significant contributor of the cause of these events.

The licensee's re-evaluation of this issue was determined to be adequate in this inspection.

b. *As directed by IP 95002, the inspectors reviewed the licensee's RCE to determine whether it was conducted to a level of detail commensurate with the significance of the issue.*

The inspectors determined that the RCE was conducted to a level of detail commensurate with the significance of the issue. The RCE included extensive timelines of events and event and causal factor trees as discussed in the previous section. Additionally, the RCE included details of each event supported by empirical data, e.g., computer print-outs, timelines, personnel interview notes, radiation work permit (RWP) records, individual dose histories, radiological survey data, and instrument calibration data. The primary root cause was determined to be that a performance improvement culture within the RP department was not assured to the extent necessary to ensure acceptable performance. This included shortfalls in self-assessments, benchmarking, and field observations by RP supervision. Additionally, the licensee identified that the RP management staff had a less than adequate understanding of the regulatory requirements concerning LHRA accessibility. The licensee also identified procedure compliance weaknesses in the initial and follow-up actions to radiological events.

c. *As directed by IP 95002, the inspectors reviewed FENOC's RCE to determine whether it included consideration of prior occurrences of the issues and knowledge of prior operating experience (OE).*

The inspectors determine that the licensee's RCE included a consideration of prior occurrences of the issues and knowledge of industry OE. The licensee's RCE included evaluations of internal and external OE.

The licensee began its investigation by performing an OE search into the regulatory requirements for the control of LHRAs and industry conformance with NRC Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants." The investigation compared the regulatory requirements and expectations with FENOC's requirements that were listed in procedure NOP-OP-4101, "Access Controls For Radiologically Controlled Areas," (CR 2012-18277). The industry OE review resulted in a better understanding of the regulatory expectations for LHRA access control. The OE review indicated that Perry's procedural requirements and management expectations for LHRA access differed from industry expectations. Specifically, the licensee concluded that it had conducted an inadequate OE review of a San Onofre issue for inadequate physical barrier of the reactor cavity LHRA when that issue was first put out to the industry as OE.

d. *As directed by IP 95002, the inspectors reviewed FENOC's RCE to determine whether it addressed the extent of condition and extent of cause of the issues.*

The inspectors determined that the licensee's RCE addressed the extent of condition and extent of cause of the parallel White inspection finding. Specifically, during the extent of condition and extent of cause reviews, the licensee reviewed radiological CRs written in the last five years. The licensee's analysis of the causes of these CRs were identified to be in the following areas:

- less than adequate procedure adherence;
- program deficiencies;
- less than adequate radiological standards;
- less than adequate management oversight;
- less than adequate implementation of the corrective action program (CAP);
- inadequate work planning; and
- inadequate hazard/risk determination.

Additionally, the licensee's extent of cause reviews was broadly directed to additional areas outside of the RP program. Specific corrective actions were identified to address other potential error types that could impact the degraded Occupational Radiation Safety Cornerstone. Ultimately, the licensee concluded that the extent of cause impacted all site organizations, including operations, work control, work planning, maintenance, chemistry and radwaste operations.

In its review process, the licensee characterized the condition to be procedure compliance weaknesses that had the potential for unintended dose to workers. As part of the extent of condition, the licensee also performed field walkdowns to identify areas in the plant that could be vulnerable to the radiological performance issues. The inspectors determined that although the licensee missed an HRA access point under the turbine condenser, there were several improvements made in LHRA access controls in the turbine and radioactive waste buildings.

e. Findings

No findings were identified.

02.03 Corrective Actions

The inspectors assessed of the licensee's evaluation and corrective actions associated with the risk-significant issues.

While selecting inspection samples for the corrective actions, the inspectors placed additional focus on those activities related to radiological hazard assessment, ALARA (As-Low-As-Is-Reasonably-Achievable) planning, and work controls. Specifically, during the outage the inspectors focused on understanding whether there have been changes to plant operations that may result in a significant new radiological hazard for onsite workers.

To verify some of the RCE corrective actions, the inspectors performed independent field walkdowns, with radiological survey meters, of the radiologically controlled area of the plant. Specific areas included the radioactive waste processing, storage, and handling areas; the turbine building; the intermediate building; the auxiliary building; containment; and the refueling floor. The walkdowns evaluated the material condition of the plant and potential for changing radiological conditions that could be created by

ongoing work activities. The inspectors also evaluated compliance with TS HRA requirements and conformance with Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants." The inspectors independently verified radiological field conditions and radiological field controls, posting, and access control. The inspectors also observed radiation worker and RP technician and supervisor field performance during the outage.

The inspectors reviewed radiological controls for risk-significant work activities including under-vessel work, and performed inspections on the refueling floor.

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three-year rolling average collective exposure. The inspectors reviewed the site-specific trends in collective exposures and source term measurements. The inspectors also reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures for specific work activities. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

The inspectors assessed how the ALARA planning committee meetings were conducted in terms of effective work-in-progress reviews relative to maintenance and operation organizations involvement.

a. *As directed by IP 95002, the inspectors reviewed FENOC's RCEs to determine whether: (1) FENOC specified appropriate corrective actions for each root and/or contributing cause, or (2) an evaluation that states no actions are necessary was adequate*

Assessment of this criterion is discussed below for each of the risk-significant issues. In summary, the inspectors concluded that the corrective actions reviewed were appropriate for the root and contributing causes relative to the radiological risk significance of each event.

White NOV

The inspectors reviewed RCE 2011-93247, Unexpected Radiation Levels Encountered during Removal of SRM C Detector, Revision 2, dated 4-21-2011. Specifically, during startup operations on May 17, 2010, SRM C failed to withdraw from the reactor core and was declared inoperable. The detector was left inserted in the core during the remainder of the operating cycle. The work order to remove and replace the SRM C detector was included in the work scope for the 2011 refueling outage (1RFO13).

The RCE stated that during the removal evolution, the individuals used a flawed method of measuring the detector cable length and withdrew an excessive amount of cable. This action resulted in the detector being unexpectedly withdrawn to the point where dose rate alarms were received and the RWP activity stop criteria were met. Remote dose rate monitoring instrumentation attached to the SRM detector drive tube also rapidly rose to 500 millirem/hour and then into overflow at >1000 R/hour at the same time as the individual dose rate alarms were received.

The licensee identified several root and contributing causes including, but not limited to:

- site organization failed to address the significant radiological hazards associated with SRM C removal;
- less than adequate management of the refuel outage under-vessel project, specifically in the preparation, review, approval, and implementation of the under-vessel project plan;
- less than adequate technical rigor was applied to the preparation, review, and approval of the ALARA plan, RWP, and work order resulting from an inaccurate assessment of the potential radiological hazards involved; and
- less than adequate radiological controls established by RP personnel to protect the under-vessel workers during the retraction of SRM C.

In response to the RCE, the licensee initiated numerous corrective actions. The inspectors selected the following corrective actions as the inspection samples.

- Procedure changes that identify and evaluate work of high radiological risk with specificity and senior station management oversight;
- Procedure changes to institute appropriate radiological controls for work of high radiological risk in work control and work management procedures and other documents;
- Revise procedure NOP-OP-4107, “Radiation Work Permit (RWP),” to require that the following actions are taken when removing an incore nuclear instrumentation detector:
    - Request a dose rate assessment, via calculations or decay curve, for estimation of potential dose rates;
    - Until actual dose rates are determined for incore detectors, require that engineering or administrative controls be established to prevent unplanned overexposures or unexpected dose rate conditions; and
    - Incore probes shall not be removed within 48 hours of insertion in a neutron field;
- Revise procedure NOP-WM-1001, "Order Planning Process," to provide guidance on performing a dose rate assessment, via calculation or decay curve, and establishing engineering or administrative controls when the work activity involves removal of a nuclear instrument detector (incore and excore);
- Revise procedure IMI-E2-0028 to address a detector stuck in the core. Include the following in that revision: perform a dose rate estimate; ensure the disposal cask is sufficient for the potential dose rate; perform the evolution from the carousel location; and establish conservative controls on withdrawal rate and set appropriate stopping points to check for dose rate changes.
    - Establish the locations and equipment to be used to measure for any dose rate changes. Consider workers egress paths when setting up work locations. Discuss immediate actions needed to place the equipment in a

safe condition, e.g., when removing the cable by hand, reinsert the detector cable if higher than expected dose rates are seen.

- Clarify the directions for installing the take-up reel cartridge in the disposal cask to ensure proper orientation.

- Clarify the directions for cutting the 9 feet of cable and provide a recommended method for measuring the cable length to be cut.

- Include cautions or radiological hold points immediately prior to steps that could cause a significant increase in work area dose rates;

- Institute a change management plan for the changes in plant process and procedures for radiologically significant work;
- Training station staff (house and contractor) on this event in accordance with procedure NOP-OP-4107, "Radiation Work Permit (RWP)"; and
- Reinforce human performance error reduction strategies and tools.

The inspectors verified that the licensee's planning identified appropriate dose mitigation features that were commensurate with the risk of the work activity. The inspectors confirmed that the licensee considered alternate exposure mitigation features and defined reasonable dose goals for the station.

The inspectors verified that appropriate pre-work surveys were performed (i.e., type of survey, accuracy and sensitivity of survey instruments, and radiological survey, assessment, and analyses techniques). The inspectors confirmed that the radiological assessments and analyses were appropriate to identify and quantify the radiological hazards and to establish adequate protective measures for the workers. Referencing the 2011 SRM C event, the inspectors verified that the corrective actions developed following this event resulted in improvement in the licensee's radiological survey program such that radiological hazards were properly identified and addressed.

The inspectors independently verified that the appropriate procedures were revised to include the changes as stated in the corrective actions.

The inspectors determined that the licensee's corrective actions taken for radiologically risk-significant work have been effective, to date. However, the inspectors identified that lower level radiological events continue to occur at the station. The licensee has documented this issue in CAP 2013-09891, initiated interim corrective actions, and initiated an RCE to perform a complete evaluation of the issue in order to develop and implement long-term corrective actions.

Yellow PI

The inspectors reviewed the licensee's corrective actions for each root and contributing cause associated with each occupational exposure control effectiveness PI occurrence that resulted in the Yellow PI. The inspectors reviewed each RCE associated with each separate PI occurrence that occurred from December 2010 through June 2013. The PI occurrences included: (1) an operator involved in tag out activities entered an un-surveyed area of an HRA in the fuel pool cooling heat exchanger room; (2) a worker

rebuilding a safety relief valve traversed an HRA without being knowledgeable of the radiological conditions in the area; (3) inappropriate HRA radiological controls on the initial withdrawal of SRM C; (4) inappropriate HRA radiological controls on the re-insertion of SRM C; (5) less than adequate HRA controls associated with the turbine building catacombs; (6) the three PI occurrences associated with a resin spill that occurred on the 574'-elevation of the radioactive waste facility; and (7) the failure to control an LHRA associated with dry fuel storage. The inspectors concluded that the corrective actions in general appeared to be effective and appropriate relative to radiological risk of each event.

The inspectors selected samples and independently verified that each corrective action identified as an action to prevent recurrence was implemented as stated in the CAP. However, the licensee's root cause for the Yellow PI concluded that the evaluations for the previous events were inadequate. Specifically, the licensee's previous evaluations evaluated each issue as a discrete event. Consequently, the licensee's evaluation of the organizational causes to each event and the events in the aggregate was limited. The licensee developed a timeline since December of 2010 noting each event, the corrective action documents associated with it, and root cause identified. The inspectors determined that the last RCE performed by the licensee adequately addressed the organizational issues that contributed to the ongoing performance indicator occurrences at the station.

The multiple RCEs resulted in the licensee identifying multiple root and contributing causes that the inspectors determined applied to four general categories:

- personal / individual performance issues;
- radiological planning and work controls;
- lack of organizational responsiveness to radiologically significant issues; and
- procedural adequacy and compliance.

Consequently, the inspectors focused their field observations on the above categories. No new risk-significant issues were identified by the inspectors.

Parallel White PI Inspection Finding

The inspectors assessed of the licensee's corrective actions associated with the root and contributing cause for the parallel White PI inspection finding. Specifically, the inspectors reviewed RCEs 2012-18695 and 2012-18277. The inspectors reviewed the corrective actions in these reports and concluded that the, were appropriate for each root and contributing cause. However, the inspectors noted continuing challenges in the area of LHRA access control guards. Specific corrective actions included requiring revisions to procedure NOP-OP-4101, "Access Controls for Radiologically Controlled Areas," to include access information for LHRA access control guards. However, the licensee continued to struggle with this issue as evidenced by an unguarded and open LHRA access control point at the steam tunnel (CR 2012-08692). Also, an LHRA access control guard at the drywell incorrectly turned over HRA access control duties and left the area because the guard's electronic dosimeter alarmed on low battery. These actions were not in accordance with station procedures (CR 2013-03971).

In addition to verifications of the RCE corrective actions, the inspectors performed field walkdowns of the radiologically controlled area and conducted independent dose rate

surveys. This allowed for the inspectors to independently verify radiological field conditions and radiological field controls, posting, and access control. The inspectors also observed radiation worker and RP technician and supervisor field performance during the outage.

The inspectors determined that the licensee's corrective actions were appropriate for each root and/or contributing cause.

b. *As directed by IP 95002, the inspectors reviewed FENOC's RCEs to determine whether it prioritized corrective actions with consideration of risk significance and regulatory compliance.*

The licensee's corrective actions to address the root and contributing causes were prioritized in accordance with NOBP-LP-2001, "Corrective Action Program," which included consideration of licensing and regulatory performance and nuclear safety. Based on this, the inspectors determined that the corrective actions were prioritized with consideration of the risk significance and regulatory compliance.

White NOV

The inspectors reviewed the corrective actions associated with RCE 2011-93247 for the SRM C withdrawal event, and determined that the station's corrective actions were prioritized relative to the radiological risk associated with working on irradiated incore nuclear instrumentation. Specifically, the station placed a moratorium on these work activities until such time that work could resume in a radiologically safe manner. This included completing corrective actions to ensure that work plans, procedures, RWPs, and ALARA plans contained sufficient work instructions for the tasks to be completed successfully. Additionally, work did not resume until senior station management support was identified and in place to provide appropriate supervision to the craft and radiation protection department work force. The inspectors determined that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

Yellow PI

The inspectors reviewed the corrective actions associated with the RCEs completed for this issue. The inspectors concluded that station's corrective actions were appropriate prioritized relative to the radiological risk associated with LHRA access and controls. The inspectors selected a sample of the corrective actions involving access control to LHRAs and radiological controls for radiologically risk-significant work (e.g., procedure changes, staff training, and work package development and detail) and verified that committed actions were performed as-written and as scheduled. The inspectors also reviewed objective evidence (e.g., plant logs, electronic dosimeter histograms, and area radiation monitor computer traces) of plant radiation data for insights into the licensee's response to radiation alarms and changing radiological field conditions to ensure that the RCE corrective actions were implemented in the field on a priority bases.

Examples of the priority of implementing the corrective actions include the immediate changes to the following procedures.

- Revise NOP-WM-1001, "Order Planning Process," to provide guidance on performing a dose rate assessment, via calculation or decay curve, and establishing engineering or administrative controls when the work activity involves removal of a nuclear instrument detector (incore and excore).

- Revise the procedural guidance in procedure IMI-E2-0028 to address a detector stuck in the core. The revision should include the following issues: perform a dose rate estimate; ensure the disposal cask is sufficient for the potential dose rate; perform the evolution from the carousel location; and establish conservative controls on withdrawal rate and set appropriate stopping points to check for dose rate changes.

Based upon the guidance in NOBP-LP-2001 and the prioritization of the licensee's corrective actions, the inspectors determined that the corrective actions were prioritized with consideration of the risk significance and regulatory compliance.

Parallel White PI Inspection Finding

The inspectors assessed of the licensee's corrective actions associated with the root and contributing cause for the parallel White PI inspection finding. Specifically, the inspectors reviewed RCE 2012-18695 and the associated corrective actions. The licensee determined that the primary root cause was a performance improvement culture within the radiation protection section was not assured to the extent necessary to ensure acceptable performance. This included shortfalls in self-assessments, benchmarking, and field observations by RP supervision. Additionally, the licensee identified that RP management had a less than adequate understanding of the regulatory requirements concerning LHRA accessibility. The licensee also identified procedure compliance weaknesses in the initial and follow-up actions to radiological events. Corrective actions to these issues included immediate development and implementation of a strategic plan to establish a performance improvement culture within the RP department. Additionally, there were immediate changes to the RP leadership. This included changes to FENOC corporate and station RP leadership with individuals that had extensive industry experience in establishing radiological radiation safety cultures at troubled programs. The inspectors determined that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

c. *As directed by IP 95002, the inspectors reviewed FENOC's RCEs to determine whether it had established a schedule for implementing and completing the corrective actions.*

The inspectors determined that the licensee established a schedule for implementing and completing corrective actions associated with radiologically risk-significant activities. Specifically, the licensee established due dates for the corrective actions in accordance with procedure NOBP-LP-2001 for timeliness. The licensee developed a spreadsheet to capture the corrective actions developed in the RCEs.

White NOV

The inspectors reviewed the corrective actions associated with RCE 2011-93247 on the SRM C withdrawal issue and determined that the station had established a schedule for implementing and completing their corrective actions. The inspectors determined that substantive corrective actions were complete at the time of inspection (June 2013).

Yellow PI

The inspectors reviewed a sample of the corrective actions associated with the RCEs for this issue.

The inspectors determined that the station had established a schedule for implementing and completing the corrective actions and that substantive corrective actions were complete at the time of inspection (June 2013).

Parallel White PI Inspection Finding

The inspectors assessed the corrective actions associated with the root and contributing cause for the parallel White PI inspection finding relative to establishing a schedule for implementing and completing the corrective actions associated with RCE 2012-18695. In addition to the spreadsheet, the licensee documented the completion of the corrective actions. Specifically, the documentation consisted of:

- the initiating RCE and each individual associated corrective action;
- the individual owner responsible to implement the corrective action;
- the senior manager sponsor responsible for ensuring that the individual complete the assigned task;
- the corrective action due date;
- the corrective action completion date;
- empirical data to demonstrate that the correction action was completed as stated (e.g., procedure prior to revision, procedure after revision, annotated changes to the procedure, and copies of lesson plans, training material, work orders, and work schedules); and
- an evaluation or reason, that was approved by senior station management, for any corrective action was not able to be completed by its original due date.

The inspectors validated completion of selected corrective actions as scheduled. The inspectors placed particular focus on any corrective actions that were not implemented on their original due dates to ensure that there was appropriate technical reasoning supporting the delayed implementation. The inspectors concluded that the corrective actions to the RCEs were implemented and completed as scheduled. As a result, finding FIN 05000440/2012009-01, Parallel White Finding, opened asn part of the previous 95002 inspection in 2012, is closed.

d. *As directed by IP 95002, the inspectors reviewed FENOC's RCEs to determine whether it had developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to preclude repetition.*

The inspectors determined that the licensee had developed adequate quantitative and qualitative measures to measure the effectiveness of the corrective actions for all of the risk-significant issues.

White NOV

The inspectors assessed the effectiveness reviews associated with RCE 2011-93247 on the SRM C withdrawal issue. For example, the inspectors reviewed the following completed or planned corrective actions (CAs):

- CA-2011-95969-02 (For a self-assessment that stated outage management was rated marginally effective) required an effectiveness review. In addition, there was an action to conduct an interactive learning experience to improve worker ownership, accountability and engagement across the FENOC fleet that had two effectiveness reviews performed in June 2012 and June 2013.

- CA 2011-96672-06 performed an organization assessment using a tool such as an organizational effectiveness survey to first establish "baseline" data against which future organizational assessments could be compared to determine if change had occurred within the Perry organization.

- CA 2011-96672-07 was to perform an organization assessment using a survey tool or other assessment technique(s) to evaluate progress compared to the results of the baseline inventory.

Yellow PI

The inspectors assessed the effectiveness reviews for the corrective actions that resulted from the RCEs for this issue.

As an example:

- RCE 2012-09447 for the resin spill on the 574'-elevation of the radioactive waste facility and the resultant LHRA control issue. The effectiveness review plan included actions that upon completion of the RP fundamentals performance intervention in corrective action 2012-09447-01, each RP supervisor and technician shall successfully demonstrate understanding of the elements discussed through the oral board.

- CA-2011-01593-78, Degraded radiation safety cornerstone. Establish direction within an appropriate procedure or business practice to perform an annual focused self-assessment on the effectiveness of conservative decision-making at Perry. Self-assessment to include the use of each of the following human performance event-free tools (as they relate to conservative decision-making):

    - Self-checking;
    - Pre-job brief (including job preview and SAFER);
    - Procedure use and adherence (including place-keeping);
    - Observation and coaching;
    - Effective communication;
    - Questioning attitude;
    - Situation awareness (including 2-Minute Drill); and
    - Conservative decision-making protocol (CA-80).

    Note: The assessment will use the FENOC Human Performance Handbook as the standard. The scope of the assessment will include major work groups and the report will identify strengths and opportunities for improvements and will use the Corrective Action Program to document opportunities for improvements.

The above examples represent a small sampling of the types of effectiveness reviews that Perry put in place following a series of radiological events. The inspectors ensured that the licensee had actions in place to evaluate the corrective actions and adjust the corrective actions if/when necessary.

Additionally, the inspectors selected a sample of completed effectiveness reviews to ensure that the licensee's conclusions were technically grounded. No issues were identified by the inspectors.

Parallel White PI Inspection Finding

The inspectors assessed the effectiveness review associated with the root and contributing cause for the parallel White PI inspection finding relative to establishing a schedule for implementing and completing the corrective actions. Specifically, the inspectors reviewed RCE 2012-18695. This RCE had an effectiveness plan that included, but was not limited to:

- Address the recommended actions from the Performance Gap Analysis; conduct a review of the observation database of the RP procedural compliance observations in six months. Additionally, review any post-event critiques conducted during the six month monitoring period and interview at least two RP supervisors and four RP technicians regarding changes to the RP culture regarding procedural compliance. The RPM shall decide whether the results meet the desired outcome.

- Six months after implementation of the changes to procedure NOBP-LP-4014, "Managing Regulatory Interface," review any Perry root cause investigations to ensure compliance with the added procedure guidance. Guidance to ensure that all aspects of the program(s) affected by the (NRC 95002) inspection are evaluated for potential vulnerabilities using self-assessments and/or condition report investigations. Self-assessments and/or condition report investigations should not be limited to those specific events that have occurred at the station, but rather, include an evaluation of the station's vulnerabilities to the program/process areas associated with the inspection, e.g., all elements of a Degraded Cornerstone. Development of a strategic inspection preparation plan including required station and fleet review and approval.

- One year after implementation of the changes to procedure NOBP-LP-4014, "Managing Regulatory Interface," review any additional cause investigations to ensure compliance. Revise procedure NOBP-LP-2011, "FENOC Cause Analysis," to provide additional guidance during the performance of root cause investigations to include that the investigation scope and extent of condition strategies must address all elements of the specific program being investigated and not just the known deficient areas, e.g., all elements of a Degraded Cornerstone in support of an NRC Supplemental Inspection.

- During the root cause Safety Culture evaluations, include a review of applicable safety culture condition reports written to address red or yellow safety culture aspects for the organizations being evaluated.

e. *As directed by IP 95002, the inspectors reviewed the RCEs to determine whether FENOC's corrective actions, planned or taken, adequately addressed the NOV that was the basis for the supplemental inspection, if applicable.*

This event was associated with EA-11-148, "Subject: Significance Determination of White Finding with Assessment Follow Up and Notice of Violation: NRC Inspection Report No. 05000440/2011014 Perry Nuclear Power Plant," issued by the NRC on August 25, 2011. The previous 95002 inspection in 2012 determined that the radiological events that occurred after May 2012 shared similar causes as the event that resulted in the White NOV, indicating that the previous corrective action were not adequate. This follow-up 95002 inspection in 2013 determined that no radiologically risk-significant incidents occurred after November 2012. Additionally, the inspectors determined that the objectives of IP 95002 had been met. Consequently, the inspectors determined that the White NOV could be closed (VIO 05000440/2011013, The Licensee Failed to Appropriately Identify and Assess the Radiological Hazards when Retracting a Source Range Monitor; this violation was originally discussed in NRC Inspection Report 05000440/2011013 and subsequently discussed in NRC Inspection Report 05000440/2011014).

f. Findings

Failure to implement the operational and radiological controls necessary to prevent plant manipulations from adversely impacting dose rates or airborne radioactivity levels

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Technical Specification (TS) 5.4.1 for the licensee's failure to implement the operational and radiological controls necessary to prevent plant manipulations from adversely impacting ambient radiological dose rates or airborne radioactivity levels. Workers were either present in or had unencumbered access to areas with elevated dose rate areas or airborne radioactivity. Specifically, the inspectors identified that the licensee failed to follow procedure NOP-OP-4107, "Radiation Work Permit (RWP)," that requires radiological controls identify "critical steps or critical instructions for positive radiological control of the work to ensure no change or unexpected change in radiological conditions, and prevent unplanned exposure."

Description: The inspectors identified six plant operational manipulations that occurred during the spring 2013 refueling outage 14 (RFO14) that affected the ambient radiological dose rates or airborne radioactivity levels in the plant. These changes in radiological dose rates occurred when plant personnel were either present in or had unencumbered access to the elevated dose rate areas or airborne radioactivity areas. Some of the issues occurred as a result of incomplete planning, while other issues occurred as a result of planned activities not being implemented. The licensee had undocumented radiological histories on some of the issues. However, the radiological and operational controls of system operations were not always institutionalized or readily available to station personnel. The following are specific examples and the associated condition reports (CRs).

Venting the Residual Heat Removal System "C" Train Through the Low Pressure Coolant Injection Header

The refuel floor experienced elevated dose rates after the filling and venting of the "C" train of the residual heat removal (RHR) system on April 26, 2013. Specifically, dose rates went from a nominal 10 millirem/hour at 30 centimeters from the cavity water surface to a nominal 200 millirem/hour. When the "C" train was vented through the low pressure coolant injection header, the flow path was into the reactor vessel, under the moisture separator, under the steam dryer, and then up to the surface of the reactor cavity. There was approximately 90 linear feet of air-filled "C" train piping through which contamination from the vessel internals was relocated up to the surface of the reactor cavity water. This resulted in elevated ambient dose rates to workers near the reactor cavity on the refuel floor. (CR 2013-06781,
CR 2013-06630, and CR 2013-06668)

RHR "A" Train Placed in Service In Shutdown Cooling Mode

The refuel floor experienced elevated dose rates after the RHR "A" train was placed inservice in shutdown cooling mode on April 27, 2013. General area dose rates at the reactor cavity wall increased from a nominal 20 millirem/hour to a nominal 250 millirem/hour.

In this event, radioactive corrosion products from the annulus area of the reactor vessel were initially drawn into the RHR "A" train and then discharged back into the vessel through the feedwater injection nozzles. During the first few moments of operation, some of the initial turbulent flow was deflected off of the outside of the steam separator and up into the upper pool, either around the outside of the steam dryer or up through the dryer. As the shutdown cooling flow in the vessel annulus area stabilized, the turbulent flow into the upper pool decreased. However, the high velocity flow in the annulus continued to stir up settled corrosion products in this area. The natural circulation flow within the core drew the suspended corrosion products from the annulus region through the jet pump suction openings. The natural circulation carried the corrosion products up through the core, through the separator and dryer, and into the upper pool. This elevated the ambient dose rates to workers near the reactor cavity on the refuel floor. (CR 2013-06781)

Reactor Cavity Bellows Drain Down

On April 30, 2013, the draining of the reactor cavity bellows elevated ambient reactor cavity radiological dose rates with workers present. General area dose rates increased from a nominal 200 millirem/hour to a nominal 750 millirem/hour by the unshielded reactor cavity bellows. During this work activity, workers inside the reactor cavity near the bellows received dose rate alarms up to 1.98 R/hour. According to the licensee, the electronic dosimeter dose rate alarm setpoint for these workers was 1.43 R/hr. Following this event, dose rates up to 2 R/hour at 30 cm were measured over the inner bellows. This event occurred because a decision was made by the outage control center to drain and decontaminate the bellows after setting the reactor head rather than before setting the reactor head as originally planned. This change in schedule resulted in the water in the bellows being level with the reactor pressure vessel flange and not allowing the flange to dry prior to setting the head. Provisions had not been made to lower the bellows water level to dry the flange and still maintain some level for shielding. Procedures were not followed to allow for ALARA evaluation and planning relative to the change in schedule. (CR 2013-06755)

Reactor Cavity Decontamination Plan Not Followed

On March 19, 2013, radioactive airborne concentrations increased and the local air monitor alarmed on the refuel floor during cavity decontamination activities. The inspectors determined that the primary cause of the elevated airborne conditions on the refuel floor was attributed to less than effective radiological work planning and field execution. (CR 2013-03991)

Radiological controls were embedded in a reactor cavity decontamination plan but were not a part of specific work orders or procedures that would have required step-by-step sign-offs when performed. Based on the flexibility of the approach used the following differences were noted.

- It was intended that the sparger ring be used to keep the reactor cavity walls wet. This activity was not performed;
- It was intended that the sparger ring rinse the reactor cavity walls for approximately 90 minutes. This was not performed;
- An underwater filter unit was to have 0.2 micron filters installed, but had 0.3 micron filters installed instead;
- Containment ventilation was to be in-service but it was not; and
- The control room was not notified that the decontamination group was placing excessive water down the floor drains in containment during hydrolazing.

Mitigating Radiological Controls Not Fully Implemented During Reactor Pressure Vessel Steam Separator Removal

On March 25, 2013, radioactive airborne concentrations increased from a nominal less than 0.3 derived air concentration to a nominal 1.0 derived air concentration in containment during reactor pressure vessel steam separator removal. The airborne condition was created when the separator was transferred from the reactor vessel to the storage stand in the refueling pool. Previous licensee lessons-learned and corrective actions were not adequately implemented to mitigate the effects of moving the separator. Previous airborne events during the separator move resulted in corrective actions to maintain the separator wet while out of the water and to minimize the amount of time the separator was out of the water. The previously created actions were placed into two procedures with less than adequate clarity in the step-by-step procedure used to move the steam separator. There were also unplanned internal dose assessments performed as a result of this event. (CR 2013-04447 and CR 2013-06510)

Reactor Water Cleanup Unavailability During RFO14

The reactor water cleanup (RWCU) system was unavailable for a significant portion of RFO14 (approximately 29 of the 62 days). The industry norm is a nominal eighty percent system availability during refueling outages. In addition, the RWCU out-of-service windows occurred during critical outage times relative to reactor cavity water clarity and radiological contamination (crud burst) clean-up and control. This inhibited the licensee's ability to maintain reactor cavity water quality during important operational conditions. (CR 2013-09641)

Procedure NOP-OP-4107, “Radiation Work Permit (RWP),” step 4.8.4.j, for radiological controls, required the licensee to establish critical steps or critical instructions for positive radiological control of the work to ensure no change or unexpected change in radiological conditions, and prevent unplanned exposure. Changes in field dose rates occurred and were uncontrolled and unexpected by the radiation protection staff and workers in the field. However, plant staff responded appropriately to station radiation monitor alarms and personnel electronic dosimeter alarms when received, and there were no significant internal or external radiological exposures as a result of these events.

Analysis: The inspectors determined that the failure to implement the operational and radiological controls necessary to prevent plant manipulations from adversely impacting ambient radiological dose rates or airborne radioactivity levels in the plant was a performance deficiency of more than minor significance in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012. Specifically, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern, in that, not implementing the operational and radiological controls necessary to prevent plant manipulations from adversely impacting ambient radiological dose rates or airborne radioactivity levels in the plant resulted in unnecessary and unplanned radiation exposures. The inspectors also concluded that this activity was within the licensee’s ability to foresee and should have been prevented. Since the finding involved occupational radiation safety, the inspectors utilized IMC 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” dated August 19, 2008, to assess its significance. The inspectors determined that the finding did not involve an overexposure; a substantial potential for an overexposure; a compromised ability to assess dose; or unplanned, unintended occupational collective dose. Consequently, the inspectors determined that the finding was of very low safety significance (Green).

The inspectors determined that the finding has a cross-cutting aspect in the area of human performance, work control, because the licensee did not appropriately plan work activities when developing the work package and authorizing the work (H.3(a)).

Enforcement: Technical Specification 5.4.1 requires, in part, that the licensee establish, implement, and maintain applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. Section 7 of Appendix A specifies radiation protection procedures for control of radioactivity for limiting personnel exposures. Licensee procedure NOP-OP-4107, “Radiation Work Permit (RWP),” requires radiological controls to identify “critical steps or critical instructions for positive radiological control of the work to ensure no change on unexpected change in radiological conditions, and prevent unplanned exposure.” Contrary to this, on six occasions during the spring 2013 refueling outage 14, the licensee did not implement steps in procedure NOP-OP-4107 that required radiological controls to identify critical steps or critical instructions for positive radiological control of the work to ensure no change or unexpected change in radiological conditions, and prevent unplanned exposure. Corrective actions included instituting appropriate radiological controls and initiating apparent cause evaluations. Because this violation is of very low safety significance and it was entered into the licensee’s CAP, as CR 2013-09891, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000440/2013009-01, Failure to Implement the Operational and

Radiological Controls Necessary to Prevent Plant Manipulations from Adversely Impacting Dose Rates or Airborne Radioactivity Levels).

(1) Failure to Lock or Continuously Guard Doors to Prevent Unauthorized Entry to an LHRA

Introduction: A finding of very low safety significance (Green) and an associated NCV of TS 5.7.2 was self-revealed for the failure of the licensee to maintain positive control to ensure no unauthorized entry into an LHRA.

Description: On May 1, 2013, during the refueling outage, an individual was assigned as the access control guard to control radiological entries to the auxiliary steam tunnel on the 620'-elevation of the turbine building. The entrance to the tunnel was posted and controlled as an LHRA, defined as an area with radiation levels such that a major portion of the whole body could receive in 1 hour, a dose greater than or equal to 1000 millirem, and needed to be locked unless access was controlled by a guard.

Licensee records indicated that the individual was appropriately briefed to perform LHRA access control duties and that the individual completed the appropriate sections of procedure NOP-OP-4101, "Access Controls for Radiologically Controlled Areas," and the appropriate briefing form (NOP-OP-4101-07) for accepting the duties and responsibilities to perform as an access control guard. The individual was assigned three duty tours of two hours each throughout the day. The last of these duty tours began at 4:00 p.m. and was scheduled to end at 6:00 p.m. However, the guard was not relieved at 6:00 p.m. and she called a nearby turbine building control point at 6:05 p.m. to request a relief. She was informed that relief would be forthcoming and to stay on post until relieved. She made several other attempts to contact an RP supervision between 6:05 and about 6:30 p.m. At approximately 6:32 p.m., the guard left the assigned post. At approximately 6:40 p.m., the relief access control guard arrived but did not enter the area until an RP technician arrived at the post at 6:41 p.m. Consequently, the auxiliary steam tunnel LHRA post was left unguarded for approximately eight minutes. The licensee had video records of the control point to confirm the timeline. The inspectors confirmed licensee information that no personnel attempted entry into the area during the time the access point was unguarded.

Analysis: The inspectors determined that the failure to maintain positive control to ensure no unauthorized entry into a LHRA in accordance with TS 5.7.2, was a performance deficiency. The performance deficiency was reasonably within the licensee's ability to foresee and correct in that the station had precursor indications of issues with LHRA access control guards in the CAP earlier in the outage. The NRC determined the guard's leaving the LHRA post was not willful, but rather the result of licensee mismanagement of the LHRA guard turnover process.

The inspectors reviewed IMC 0612, Appendix E, "Examples of Minor Issues," dated September 7, 2012, and found a similar performance deficiency described in Example 6(g). Consequently, the inspectors determined that the performance deficiency was a finding of more than minor safety significance. The finding was not subject to traditional enforcement since the incident did not have a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful. In accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined that the

finding had very low safety significance (Green) because the finding was not an ALARA planning issue, there was no overexposure or potential for overexposure, and the licensee's ability to assess dose was not compromised. The licensee documented this issue in the CAP as CR 2013-06892. Corrective actions included immediately guarding the access to the auxiliary steam tunnel.

The inspectors determined that the finding has a cross-cutting aspect in the area of human performance, work practices, because the licensee did not ensure supervisory and management oversight of work activities, including those involving contractors, such as the LHRA guard turnover process (H.4(c)).

Enforcement: Technical Specification 5.7.2 states, in part, that areas accessible to personnel with radiation levels such that a major portion of the whole body could receive in 1 hour a dose greater than or equal to 1000 millirem shall be provided with locked or continuously guarded doors to prevent unauthorized entry. Contrary to this, on May 1, 2013, the turbine building 620'-elevation auxiliary steam tunnel LHRA access point was left unattended, for about 8 minutes. Because this violation is of very low safety significance and it was entered into the licensee's CAP, as CR 2013-06892, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000440/2013009-02, Failure to Lock or Continuously Guard Doors to Prevent Unauthorized Entry to an LHRA).

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 of the condition and on the degree that these RCEs 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 SRM C issue, (2) the Yellow PI, and (3) the parallel White PI inspection finding. The inspectors' review focused on the conditions identified in the primary root causes associated with the above issues.

In conducting this review, the inspectors interviewed station management and personnel, reviewed program and process documentation, and reviewed existing station program monitoring and improvement efforts, including review of corrective action documents. In addition, the inspectors conducted field walkdowns with radiation meters to independently verify Perry properly classified radiation environs in different areas of the plant. Specifically, radioactive waste processing, storage, and handling areas; the

turbine building; the intermediate building; the auxiliary building; containment; and the refueling floor were walked down.

The inspectors used activities selected by the NRC resident inspectors office and the regional health physics staff to focus on radiologically risk-significant activities at the station that addressed identified weaknesses in the management oversight of supplemental workers, decision-making, work practices, and the CAP. During the outage, the inspectors focused on the refueling floor work activities, including reactor vessel disassembly/reassembly, under-vessel work activities, and radioactive waste processing and handling. Additionally, the inspectors observed contractor oversight and contractor field performance. The inspectors also independently assessed extent of condition(s) with respect to human performance such that human performance identified problems were evaluated for potential impacts on other plant equipment, programs or processes. The inspectors assessed the use of human error prevention techniques, such as pre-job review of tasks, pre-job briefings, contingency planning, and peer verifications, as appropriate to the work being performed. The inspectors assessed in-plant use of peer-to-peer coaching and reinforcement and validated that the workers understood the risk impact of planned work as discussed in pre-job briefs.

b. Assessment and Findings

The inspectors validated the licensee's extent of condition evaluation through their own independent extent of condition review. The "condition" was defined as less than adequate control in areas that have the potential to expose plant workers to significant unexpected hazards.

The licensee's extent of condition review included ensuring that scaffolds in the plant do not provide a means for unencumbered access to an LHRA. While performing their in plant walk downs, the inspectors focused on scaffolds, ladders, and other means by which LHRA access controls could be easily circumvented by plant workers. The inspectors identified one issue, discussed below, where the licensee did not identify an area in the plant that had a deficiency to allow access to an LHRA. Although the area was later determined not to be an LHRA, the licensee should have identified this area during its extent of condition review. This specific area had been identified to the licensee in 2011 by NRC inspectors. However, the current inspectors did not identify any other substantive issues that the licensee was not aware of and had not already identified with corrective action plans in place. The inspectors' review did identify lower level issues at the station that could have been prevented had more comprehensive reviews been completed by the licensee. Based on the weaknesses identified by the inspectors, the scope of the inspectors' independent review was expanded. Specifically, the inspectors spent additional time in the plant observing field activities on the refuel floor during the outage and expanded their in-plant walk downs during the 95002 inspection to include access into LHRA areas in the radioactive waste building.

(1) Failure to Post and Barricade an HRA in the Under-Condenser Area

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of NRC requirements for the failure to post and barricade all access points in the turbine building to the under-condenser hotwell cubicles 13 and 14 with dose rates greater than 100 millirem/hour.

Description: There is an area in the plant, under the main condenser hotwell, that is broken into separate cubicles defined by concrete walls. This area is under the condenser hotwell and under the high pressure, intermediate pressure, and low pressure turbines. Personnel access into the area is controlled by doorways in the concrete wall. These doorways are locked and posted as LHRAs. The RP department controls the locks and access to the area.

Radiological conditions in the area are impacted by plant operations, such as discharges and suction of plant water from the reactor water cleanup system, into the overhead condenser hotwell. The area is an infrequently accessed area. Worker access into the area is highest during plant outages and minimal during normal plant operations. Radiation protection personnel survey the area on as-needed bases. Prior to allowing plant personnel into the area, the area is surveyed and station personnel briefed on the radiological conditions prior to entry.

On April 18, 2013, the inspectors identified a scaffold configuration in the main condenser bay that allowed the locked doorway to cubicles 13 and 14 of under-condenser hotwell area to be bypassed. The inspectors determined that this scaffold configuration created an unposted and unbarricaded entry point into the cubicles 13 and 14 HRA. The area was posted as an LHRA; however, the inspectors determined that dose rates in the area did not meet the conditions of an LHRA. Rather, the inspectors concluded that at times, HRA dose rates existed in the area. The inspectors determined that the scaffold access to the area existed since March 18, 2013.

The inspectors reviewed historical radiological surveys of the area and determined that, at times, the area had general area dose rates exceeding 100 millirem/hour, but less than 1000 millirem/hour measured 30 centimeters from the source. The historical radiological conditions in the room were known to the licensee. Specifically, in 2009, a radiation hot spot was identified on piping in the room that exceeded 100 millirem/hour measured 30 centimeters from the source. Additionally, previous plant condition reports stated that plant operations allow for the blowdown/dump of unfiltered reactor water clean up to the main condenser hotwell and that this evolution could create HRA conditions in the cubicles under the condenser hotwell.

Consequently, the inspectors concluded that at times, plant workers had unencumbered scaffold access to cubicles 13 and 14 when HRA dose rates existed. This constituted access to an unposted and unbarricaded HRA.

The NRC identified to the licensee that there was scaffold in this area during an inspection in the previous refueling outage in June 2011. The licensee's evaluation of the issue at that time was less than complete, in that, the licensee did not consider the scaffold as accessible to personnel and did not perform a historical or operational review of the radiological dose rates in the area.

The NRC also identified HRA accessibility concerns in the turbine building 577'-elevation catacomb area in May 2012 (NCV 05000440/2012003-02). The inspectors concluded that the licensee had the opportunity to identify this HRA scaffold access point as a part of its extent of condition review of the turbine building 577' - catacomb area at that time.

Analysis: Procedure NOP-OP-4101, “Access Controls for Radiologically Controlled Areas,” step 4.5.2, states that “High Radiation Area entry points shall be secured and require a barricade with positive access controls such as locks…to prevent inadvertent access…” The inspectors determined that the failure to meet this procedure was a performance deficiency that was reasonably within the licensee’s ability to foresee and correct, and therefore should have been prevented. Additionally, the inspectors reviewed IMC 0612, Appendix E, "Examples of Minor Issues," dated August 11, 2009, and determined that the issue was more than minor because the performance deficiency was similar to Example 6(g).

Since the finding involved occupational exposure control effectiveness, the inspectors utilized IMC 0609, Appendix C, “Occupational Radiation Safety Significance Determination Process,” dated August 19, 2008, to assess its significance. The inspectors determined that the finding did not involve an overexposure; a substantial potential for an overexposure; a compromised ability to assess dose; or unplanned, unintended occupational collective dose. Consequently, the inspectors determined that the finding was of very low safety significance (Green).

The inspectors determined that the finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, i.e., the licensee’s response when the NRC initially identified questionable access to the under-condenser area and the licensee’s response to a finding associated with LHRA postings and controls in the turbine building catacombs (P.1(c)).

Enforcement: Technical Specification 5.7, “High Radiation Area,” states, in part, in Section 5.7.1, that the licensee shall post and barricade all access points to an area with dose rates greater than 100 millirem/hour. Contrary to this, between March 18 and April 18, 2013, there was an unposted and unbarricaded HRA under the condenser in turbine building cubicles 13 and 14 that was accessible to personnel. Immediate corrective actions included removing the scaffold configuration that allowed an alternate access point to cubicles 13 and 14. Because this violation is of very low safety significance and it was entered into the licensee’s CAP, as CR 2013-06139, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000440/2013009-03, Failure to Post and Barricade an HRA in the Under-Condenser Area of Turbine Building Cubicles 13 and 14).

.2 Extent of Cause

a. Inspection Scope

The licensee performed a common cause evaluation of the individual RCEs for the issues that resulted in the White PI and White NOV and Yellow PI, which categorized the identified root causes into five common causes. Additionally, the licensee performed a root cause evaluation for the parallel White PI inspection finding that was issued in NRC Inspection Report 05000440/2012009 for the previous 95002 supplemental inspection in 2012, which identified three root causes. Each of the common causes and parallel White PI inspection finding root causes were evaluated independently by the inspectors for extent of cause. In addition, 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 walkdowns 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 CAP. Based on the root and contributing causes identified by the licensee, the inspectors also performed focused reviews in the areas of procedure compliance, maintenance implementation, and human performance. The method of analysis included the use of IP 71841, "Human Performance," IP 62700, "Maintenance Implementation," IP 61726, "Surveillance Observation," and IP 90700, "Feedback of Operational Experience Information at Operating Power Reactors."

b. Assessment and Findings

The inspectors determined that the extent of cause evaluations conducted by the licensee for the issues resulting in a White NOV, Yellow PI, and parallel White PI inspection finding were generally of sufficient breadth and depth to identify other similar issues. The extent of each cause as independently identified by the inspectors was bounded by the licensee's extent of cause evaluations. The inspectors also determined that identified weaknesses in the review of program areas were generally identified in the licensee's extent of cause evaluations. Overall, the inspectors concluded that Extent of Cause objectives of the 95002 inspection procedure were satisfactorily met. Specific results of the inspectors' review of the causes and program areas are discussed below.

Corrective Actions Program

While identified as a common root cause in the licensee's root cause evaluation documented in CR 2011-01593, evaluation of this area will be conducted as part of the NRC's routine Problem Identification and Resolution team inspection currently scheduled for November 2013. Any issues identified in that inspection will not impact the results and conclusions of this inspection.

Risk Assessment and Work Planning

This area of review included the areas of risk assessment of work activities, which was identified as a common root cause in the evaluation contained in CR 2011-01593, and work planning, which was not a common root cause in and of itself but was a significant contributor. The licensee's evaluation concluded that "risk management weaknesses extend across the organization and affect many areas beyond the Radiation Protection organization." The inspectors' review noted the licensee has continued to identify weaknesses in the areas of work planning and risk assessment. Specific areas included clearance orders being appropriately marked as exceptional and issues with the implementation of changes to the clearance and tagging program as identified in the 2013 Fleet Oversight Escalation of Maintenance and two Apparent Cause Evaluations. An additional example of planning and risk assessment weaknesses was the reactor overfeed event discussed in Section 4OA4.02.04.2.b(2), later in this inspection report. During this inspection, the licensee planned and executed a maintenance outage which involved the planning and risk screening of emergent work activities. The inspectors questioned the risk screening of an activity to manually withdraw SRM C from the core. Per procedure NOP-OP-4107, when personnel are under the vessel at a time when detectors can be moved, the risk of the activity should be classified as orange. In this case, the other detectors were caution-tagged, rather than danger-tagged, specifically to allow detector movement for other outage activities, yet the activity was screened as

yellow risk. When questioned, the licensee stated the caution tag included direction to not move the detectors when personnel were under the vessel. However, the inspectors noted the work order for SRM C did not include a specific step to notify the control room when going under the vessel. The licensee indicated that it was a standard practice to notify the control room when personnel enter the under-vessel area and, ultimately, detectors were not moved with personnel under the vessel. The inspectors concluded that since a clearance order was relying on control room awareness of the location of personnel, the work order should include a specific place-kept step to ensure the control room had that awareness. This was entered into the CAP as CR 2013-09835.

Overall, within this review area, the inspectors did not identify any substantive extent of cause issues that the licensee had not already identified within the CAP, and concluded that the licensee's review in this area was of sufficient breadth and depth to meet the objectives of IP 95002.

Oversight

This area of review included the licensee's oversight of supplemental personnel as well as licensee management oversight of work activities. While not identified as root causes in and of themselves, these areas of review were significant contributors to the root cause of risk assessment. This review also included the understanding of regulatory requirements, which was identified as a root cause in the evaluations contained in CRs 2012-18277 and 2012-18695. The inspectors determined that the licensee's oversight of supplemental workers was adequately reviewed in the risk assessment extent of cause.

While the extent of cause evaluation for less than adequate management understanding of regulatory requirements identified other instances where regulatory requirements appeared to not be understood or implemented, the evaluation did not include a collective assessment of the identified instances but rather credited individual corrective actions for each instance. As a result, it is not known whether there is a common factor among these instances that warrants attention. The licensee has entered this issue into the CAP as CR 2013-09807.

The inspectors observed several work activities that involved an interface between the licensee and supplemental workforce. In each case, the system engineer was the defined point of interface between supplemental workers and the licensee's organization and this was known by all involved personnel. The inspectors' review of the CAP revealed that licensee staff has continued to find occasional weaknesses with the oversight and performance of supplemental workers, such as the an incorrect installation of the 'B' recirculation pump seal during the spring 2013 refueling outage. However, the inspectors did not identify any concerns with the oversight or performance of supplemental workers during this inspection.

Overall, within this review area, the inspectors did not identify any substantive extent of cause issues that the licensee had not already identified within the CAP, and concluded that the licensee's review in this area was of sufficient breadth and depth to meet the objectives of IP 95002.

Procedure Use and Adherence, and Procedure Quality

The inspectors determined that the licensee conducted a comprehensive extent of cause review that sufficiently identified the relevant areas. Overall, the inspectors' independent assessment results were consistent with those reached by the licensee. The licensee concluded that the causes extended broadly across the site. Specifically, the issues of procedure use and adherence, and procedure quality, have consistently been identified as root or contributing causes for the majority of the recent performance issues associated with this inspection, as documented in numerous causal analysis reports, i.e., CCA 2011-01593, RCE 2012-18695, RCE 2011-01593C, RCE 2011-93247, and RCE 2011-01593A. The inspectors' independent review of past and current performance events with procedural aspects supported that conclusion and showed that gaps in performance in this area continue at Perry.

Overall, within this review area, the inspectors did not identify any substantive extent of cause issues that the licensee had not already identified within the CAP, and concluded that the licensee's review in this area was of sufficient breadth and depth to meet the objectives of IP 95002.

(1) Failure to Follow Procedure for RWCU System Fill and Vent

Introduction: A finding of very low safety significance (Green) and associated NCV of TS 5.4, "Procedures," was self-revealed when the licensee failed to follow a procedure during the filling and venting of the reactor water cleanup (RWCU) system.

Description: On May 13, 2013, while operators were placing the RWCU 'A' pump in service, a thermal transient was experienced on the condensate transfer system as evidenced by reports from the field of banging, visible steam, and abnormally high temperatures on piping coming from associated RWCU and condensate transfer areas of the plant. The licensee's investigation identified that valves 1G33-F008A and 1G33-F556A were both open and resulted in the RWCU system being aligned to the condensate transfer and storage system. This condition also resulted in the inoperability of the 1P11-F0545 containment isolation valve per TS 3.6.1.3, "Primary Containment Isolation Valves." The unintended pathways for the RWCU process fluid also caused portions of the plant to experience higher than normal radiation levels, such as the turbine building 593' - elevation where an operator received an unexpected dose rate alarm while in proximity to the east condensate storage tank heat exchanger.

A historical work order search showed that the valves were last manipulated on April 26, 2013, during the performance of a fill and vent evolution on the RWCU system using the system operating instruction (SOI)-G33, revision 36. The 1G33-F008A and 1G33-F556A valves were inadvertently left in the open position contrary to the requirements of step 7.16.29 of the procedure. This condition existed until the issue was self-revealed to the licensee as described above on May 13, 2013. This was promptly corrected and entered into the CAP as CR 2013-07483.

Additionally, an apparent cause evaluation (ACE), 2013-07483, was performed to identify the most likely causal factors and cited a less than adequate pre-job brief as a contributing cause. The inspectors independently concluded that human error prevention techniques, such as pre-job briefs and self/peer checks, were not rigorously

employed and contributed to the occurrence. For example, during the performance of this task on April 26, the operator was forced to exit the area due to high dose rates that necessitated the resetting of his personal electronic dosimetry to avoid a dose alarm. Upon returning to the area after the normal flow of work had been interrupted, human error prevention techniques could have been effectively utilized prior to the resumption of the activity, during the performance, and after its completion, to prevent, avoid, or correct mistakes prior to an event of consequence.

Analysis: The inspectors determined that the failure to perform procedural requirements for an activity affecting quality is contrary to TS 5.4, "Procedures," requirements, and is a performance deficiency. The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Barrier Integrity Cornerstone attribute of configuration control and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events.

The inspectors the issue evaluated in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 3, dated June 19, 2012. It was determined to be of very low safety significance (Green) because all applicable screening questions were answered "No." This finding has a cross-cutting aspect in the area of human performance, work practices, for failing to successfully incorporate human error prevention techniques. Specifically, a more rigorous application of human error prevention techniques such as thorough pre-job briefs and self/peer checking, would have likely prevented the misposition event from occurring (H.4(a)).

Enforcement: Technical Specification 5.4.1 requires, in part, that the licensee establish, implement, and maintain applicable procedures recommended in RG 1.33, Revision 2, Appendix A. Section 4.c of Appendix A specifies that instructions for the filling and venting of RCWU system be prepared as appropriate. System Operating Instruction SOI-G33, Revision 35, "Reactor Water Cleanup System," step 7.16.29, states "Verify the following valves are closed: RWCU Pump A Casing Drain First Isol Vlv 1G33-F008A; RWCU Pump Casing Fill Valve 1G33-F556A…"

Contrary to this, on April 26, 2013, the licensee failed to implement the requirements of the SOI-G33 procedure when the aforementioned valves were left in the open position. This condition existed until May 13, 2013, when the error was self-revealed to the licensee. The issue was promptly corrected and additional corrective actions taken by the licensee included the removal from shift of the personnel involved, pending remediation, and a revision to the SOI-G33 procedure to require the subject valves to be locked closed. Because this violation was of very low safety significance and it was entered into the CAP, as CR 2013-07483, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000440/2013009-04, Failure to Follow Procedural Requirements for RWCU Fill and Vent).

(2) Failure to Implement a Procedure Appropriate to the Circumstances Leads to Reactor Overfeed Event

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to perform a procedure that was appropriate to the circumstances for an activity affecting quality.

Description: On May 12, 2013, with the unit starting up in Mode 2 at 2.5% power, procedure PTI-N27-P0012, "Feedwater System Pump Discharge Check Valve Operability," was being performed to test newly installed reactor feedwater pump (RFP) discharge check valves. During this evolution, an unexpected reactor pressure vessel level transient occurred. Ultimately, level reached approximately 220 inches in the vessel and initiated a high reactor water Level 8 actuation, which caused various isolations and actuations such as a feedwater trip. No reactor scram occurred since the plant was in Mode 2, so the Level 8 trips that would cause a reactor scram, such as main turbine trip, were not yet active. The rapid influx of cool water into the reactor also caused a temporary rise in reactor power of 1.6%. The control room operating crew entered off-normal operating instructions to respond to the high reactor water level and unplanned change in power.

The licensee's immediate investigation determined that when the RFP turbine 'A' discharge valve was taken to the open position in accordance with the test instruction to provide back-pressure to seat the check valve, feedwater actually flowed through the RFP 'A' to the vessel due to the discharge pressure of the reactor feed booster pump being greater than reactor pressure. At the time, the feedwater booster pump was at approximately 320 pounds per square inch guage (psig) with the vessel at only 244 psig, creating a differential in pressure that made the vessel the path of least resistance for feedwater to flow, thereby causing the reactor overfeed event.

This issue was self-revealed to the licensee as described above on May 12, 2013, and was promptly corrected and entered into the CAP as CR 2013-07473. Additionally, an ACE was performed to identify the most likely causal factors, citing the inadequacy of the procedure and the lack of proper planning as contributing causes. The inspectors independently concluded that procedure quality and work planning aspects were critical causal factors for the event.

Specifically, with respect to the procedure quality aspect, the PTI-N27-P0012 procedure could not have been performed successfully as written because it incorrectly directed the use of the motor-driven RFP discharge pressure to calculate the differential pressure across the check valve. The motor-driven RFP pressure indicator called out by the procedure, 1N27-R191, was upstream of a pressure control valve that was in the throttle position. This meant that the downstream back-pressure that the F541A check valve would have experienced was not the 1400 psig discharge pressure of the motor-driven feed pump, but instead the throttled down pressure of 244 psig. Further, with the 'C' reactor feed booster pump in operation at 320 psig, pressurizing the upstream side of the check valve, when the procedure was initiated as written, the overfeed event resulted. Therefore, the inspectors concluded that the procedure was inappropriate for the circumstances.

Additionally, with respect to the work planning aspect, the licensee chose to perform the work activity at an earlier time than what was originally scheduled, without performing an adequate impact review to identify that plant conditions were incapable of supporting the activity. Had an appropriate impact review been performed, it would have identified the difference in plant conditions. If the activity been performed when it was originally intended, the reactor would have been at a high enough pressure to seat the check valve, and the test would have been performed under appropriate circumstances. Therefore, the inspectors concluded that a work planning aspect played an important causal role.

Analysis: The inspectors determined that the failure to perform an activity affecting quality in accordance with a procedure of a type appropriate to the circumstances is contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and is a performance deficiency. The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Initiating Events Cornerstone attribute of procedure quality and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At Power," Exhibit 1, dated June 19, 2012. The finding was determined to be of very low safety significance (Green) because all applicable screening questions were answered "No." This finding has a cross-cutting aspect in the area of human performance, work control, because the licensee chose to perform the work activity at an earlier time than what was originally scheduled, without performing an adequate impact review to identify that plant conditions were incapable of supporting the activity (H.3(a)).

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings. Contrary to this, at approximately 1:50 p.m. on May 12, 2013, the licensee performed procedure PTI-N27-P0012, Revision 5, an activity affecting quality as defined by the licensee, when the circumstances, i.e., the specific configuration of the feedwater system and the relatively low reactor pressure, were incapable of supporting the test as written. Given that the physical plant parameters were incapable of supporting the activity when it was attempted to be performed, it was evident that the documented procedure was not of a type appropriate to the circumstances. Corrective actions performed by the licensee included the removal from shift of the individuals involved, pending remediation; issuance of a night order to inform other crews of this event and to require additional oversight and attention to future operational activities; and to revise the PTI-N27-P0012 procedure to ensure the correct plant conditions were established before using the procedure. Because this violation was of very low safety significance and it was entered into the licensee's CAP, as CR 2013-07473, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000440/2013009-05, Failure to Implement a Procedure Appropriate to the Circumstances Leads to Reactor Overfeed Event).

Human Performance and Accountability

The inspectors determined that the licensee conducted a comprehensive extent of cause review that sufficiently identified the relevant areas. Overall, the inspectors' independent assessment results were consistent with those reached by the licensee. As documented in CCA 2011-01593, "Common Cause Analysis of NRC Occupational Radiation Safety Degraded Cornerstone Events," Revision 2, dated September 13, 2012, the licensee concluded that the causes extended broadly across the site. Specifically, the CCA stated that "human performance shortfalls extend across all plant organizations and vertically from plant employees to plant management." The inspectors' independent review of past and current performance events with human performance aspects supported this conclusion and showed that gaps in performance continue to be exhibited by the station in this area. However, the inspectors determined that the scope of the problems in the human performance area were well understood by the licensee and that steps were being taken through the CAP to drive future improvement.

Similarly, within the area of accountability, the inspectors' independent assessment results were also consistent with those reached by the licensee. As documented in CCA 2011-01593, the licensee concluded that the causes extended broadly across the site. Specifically, the CCA stated that "Without effective accountability and a commitment to excellence, the effectiveness of management controls and supervisory practices drifted to the point that allowed people to lose sight of safety as the overriding priority." Further stating, "Collectively, the Perry management team along with its programs, processes, and business practices did not promote full ownership necessary to achieve desired results." The inspectors determined that the scope of the problems in the area of accountability was well understood by the licensee and that steps were being taken through the CAP to drive future improvement.

Overall, within this review area, the inspectors did not identify any substantive extent of cause issues that the licensee had not already identified within the CAP, and concluded that the licensee's review in this area was of sufficient breadth and depth to meet the objectives of IP 95002.

Operating Experience

This area of review covered the root cause of use and implementation of operating experience (OE), which was identified as a common root cause in the evaluation contained in CR 2011-01593. The inspectors determined that the licensee's extent of cause evaluation was of sufficient breadth and depth to identify other instances of deficiencies in the use of OE. The licensee's evaluation concluded that "weakness in the use of OE have been identified as affecting plant performance beyond Radiological Control work processes."

The inspectors' review revealed that the licensee continues to identify occasional weaknesses in the implementation of OE, particularly with the incorporation of OE in work packages and pre-job briefs and ensuring sufficient external OE was used. The inspectors observed several pre-job briefs and noted that OE was discussed at each briefing. However, three recently issued NCVs in IR 2012-005 and 2012-009 were associated with a cross-cutting aspect related to the use of OE, which is indicative of the continued need for improvement in the use of relevant OE.

Overall, within this review area, the inspectors did not identify any substantive extent of cause issues that the licensee had not already identified within the CAP, and concluded that the licensee's review in this area was of sufficient breadth and depth to meet the objectives of IP 95002.

02.05 Safety Culture Consideration

As part of the current 95002 inspection, the inspectors independently confirmed that a number of safety culture components that contributed to the three risk significant issues that were the subject of this inspection were identified in the licensee's RCEs. These safety culture components included weaknesses in the CAP, work control practices, management oversight of the RPM decision-making and RP program activities, and Safety Conscious Work Environment (SCWE) issues in the RP department, in that RP staff were not willing to challenge decisions of the RPM. For each of the identified prevalent and contributing safety culture components, the inspectors confirmed that the licensee established corrective actions to address the issues.

As part of the previous 95002 inspection in 2012, the inspectors reviewed safety culture. However, because the review was limited to the RP department, a wier review, of other departments, was conducted during the current 95002 inspection. In addition, the inspectors reviewed safety culture attributes related to the parallel White PI inspection finding, which was identified after completion of the previous 95002 inspection in 2012.

a. Inspection Scope

As directed by IP 95002, the inspectors independently determine that the licensee's RCEs appropriately considered whether any safety culture component caused or significantly contributed to the parallel White PI inspection finding.

The inspectors reviewed CRs and procedures to determine if the licensee properly considered whether any safety culture component caused or contributed to the issue. During the inspection period from June 10 to June 24, 2013, the inspectors conducted interviews with licensee staff to independently evaluate the organization's safety culture. A random sample of 84 non-supervisory and 16 supervisory personnel from various departments, including Engineering, Maintenance (Maintenance Services/Mechanical Maintenance/Fix-it-Now (FIN)/Work Planning and Support), Operations, Radiation Protection, and contractor organizations were assembled in ten groups, called focus groups. The inspectors interviewed each focus group.

b. Assessment

As part of its root and contributing cause analyses, the licensee evaluated the identified root and contributing causes against the safety culture components that could have contributed to the issues. The licensee determined that weaknesses in the CAP, work control practices, management oversight of the RPM decision-making and RP program activities, and SCWE issues in the RP department were the most prevalent safety culture attributes.

The inspectors independently confirmed that a number of the safety culture components that contributed to the issues were identified in the licensee's analyses. For each of the

identified prevalent and contributing safety culture components, the inspectors confirmed that the licensee established corrective actions to address the issues. During the the interviews with licensee personnel, the inspectors asked questions related to SCWE to determine if the licensee's staff were reluctant to raise safety concerns or if retaliation existed for raising safety concerns. The inspectors did not identify concerns related to SCWE during these interviews.

During the conduct of the focus groups, participants expressed a common theme that they were satisfied with the site management's current focus on safety. Participants stated recent personnel changes in senior management positions and the licensee's implementation of changes in programs and processes demonstrated a commitment to prioritizing safety over production.

Focus group participants provided the following examples of management practices that reflect the site's current safety focus, including tools that have been implemented to improve the site's radiological safety performance:

Corrective Action Program

- Participants across all departments stated they were comfortable raising concerns through the use of the CAP, they were encouraged to submit CRs, and they were familiar with the process for submitting CRs. The new CAP database system, DevonWay, was easy to use for submitting CRs and provided the initiator of the CR direct feedback on the closure of the CR.

- Contractor personnel in the area of maintenance expressed a reluctance to write a CR due to a lack of familiarity with the DevonWay program and how to personally complete a CR. However, these individuals stated that they were able to provide their supervisors the information needed to initiate a CR and that the supervisors provided the support and assistance needed to ensure concerns were documented through the CAP process. Similaryly, the security supervisors identified that security officers were reluctant to right CRs because they were not very familiar with the DevonWay program. The supervisors encouraged their staff to bring issues to them and either assisted the officers in writing the CR or input the CR themselves.
- Focus group participants across all departments that relied on their supervisors support and assistance to document concerns in the CAP acknowledged the fact that they did not receive the automated email that provided them notification of when the CR was closed. The supervisor received this email since they initiated the CR on behalf of the individual. The licensee can enhance communication of the closure of concerns to the individual who identified the concern by ensuring supervisors identify them as a secondary initiator in the CR which would result in the individual receiving the automated notifications and enhance the feedback process.

Environment for Raising Concerns

Employee Concerns Program (ECP)

- All the Focus group participants were aware of the purpose of the ECP and could identify the ECP Manager. Participants recognized the Manager for being highly visible and available out in the plant. Additionally, full time employees identified the fact that they had a better understanding of the ECP as a result of the formal presentations by the ECP Manager as part of the site's Continuing Training program. Several contractor employees could not recall receiving ECP training since it was incorporated in the computer-based nuclear general employee training. However, after some further focus group discussion, they did recall the training but validated the group's feedback on the enhanced quality of the presentation-based ECP training (continuing training presentation) over the computer-based training.

- Focus group participants stated they would be comfortable raising concerns by using the ECP and believed their anonymity would be maintained.

Raising Concerns through Management

- Participants conveyed a general theme that they would be comfortable raising concerns through the management chain without fear of retaliation. This theme was common across all departments.

- Members of the RP department stated that since July of 2012, under the direction of the new RPM, the safety conscious work environment the department had changed. The new RPM promoted identification of issues and concerns and had improved communication by providing his staff opportunities to informally provide feedback and interact with him through his daily attendance at the morning RP briefs and by his conducting monthly meetings with his staff.

Resources

Department Staffing

- All departments identified the need to increase staffing levels in the maintenance and RP departments to meet site production demands. Individuals demonstrated a "pride in ownership" for the plant and a desire to improve the plant's operational performance and physical condition. However, all department focus group participants identified the need to increase staffing levels in the maintenance (specifically Mechanical Maintenance and Maintenance Services) and RP departments to enable the site to sustain the focus on and completion of improvements similar to those that were achieved during the recent outage. Participants stated the site's ability to make these improvements was the direct result of the increase in staffing levels during the outage due to the hiring of temporary workers in both Maintenance and RP.

- Individuals expressed a desire for Perry to become a "high" performing plant but believed that, with the current staffing levels, they could not achieve that goal. Their perception was there needed to be an increase in temporary staffing levels to facilitate this performance improvement, and that once the site achieved the higher performance through physical and operational improvements, the present approved staffing levels would be adequate to sustain the higher performance standards.

- The site's Nuclear Safety Culture Monitoring Review Board identified staffing concerns during the 3rd Quarter 2102 board meeting that evaluated the results of the Site Wide Safety Conscious Work Environment Survey completed in August 2012. However, the present authorized site staffing levels of the maintenance department and RP department were still perceived by all department focus group participants as inadequate to meet existing production demands and improve the performance and physical condition of the plant.

Training

- Focus group participants from the maintenance department and RP department identified the need for succession planning that incorporated the implementation of a knowledge transfer program and the identification of specialty skills training requirements. This succession plan was perceived by maintenance department participants as a critical need due to the anticipated loss of personnel as a result of a mature work population and increasing number of retirements over the next three to five years. The lack of specialty training being provided or completed was perceived to be directly linked to the need for increased staffing. Specifically, the lack of adequate staffing to perform production requirements limited the site's ability to free up personnel to attend training or completed associated on-the-job training requirements.

- The site's Nuclear Safety Culture Monitoring Review Board identified the above training issue during the 3rd Quarter 2102 board meeting that evaluated the results of the Site Wide Safety Conscious Work Environment Survey completed in August 2012. The licensee is in the process of developing a succession plan to identify and prioritize training requirements to be used in scheduling future training activities.

Work Practices

- Site management promoted supervisory and management staff presence in the field, conducting site walkdowns to identify risks, and conducting field observations of work performance.
- Site management incorporated OE in work planning and daily department briefs. All focus group participants identified the site's use of OE, both site specific and industry samples, as a positive element of the site's continuous learning environment.
- Site management encouraged industry benchmarking; however, focus group participants stated the site does not do as much benchmarking as it should. Individuals stated that most opportunities to visit other sites were limited to

supporting other FENOC sites (Beaver Valley and Davis-Besse) to augment staffing needs. Participants in all departments expressed a desire to have opportunities to participate in benchmarking at other sites in the nuclear power industry. Perceived limiting factors to performing benchmarking were the lack of funding and the adverse impact these activities would have on staffing levels at Perry.

- Participants emphasized the organization's focus was on safety over production and all individuals stated they would stop work to resolve any safety issues or concerns they may potentially identify. Additionally, they would not proceed or restart their work activity until the issue or concern was properly resolved. If necessary, they would raise the concern up the management chain prior to proceeding with any work or condition that they felt was unsafe.

- All part focus group participants had positive comments about the "Reverse Brief" process implemented for RP. The requirement for individuals to provide an RP technician the RP briefing required for entry into radiological controlled areas was recognized as a process that enhanced their knowledge of the radiological conditions in their planned work locations and routes of travel to these locations.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. P. Sena, Mr. S. Belcher, Mr. V. Kaminskas, and other members of licensee management on June 28, 2013. The licensee representatives acknowledged the findings presented. The inspectors asked licensee management whether any materials examined during the inspection should be considered proprietary. They did identify several documents provided to the NRC inspectors that contained proprietary information. These documents were returned or destroyed. None of this proprietary information is included in this inspection report.

.2 Regulatory Performance Meeting

On June 28, 2013, the NRC met with the licensee to discuss its performance in accordance with IMC 0305, Section 10.02.b.4. During this meeting, the NRC and licensee discussed the risk-significant issues that resulted in Perry being placed in the Degraded Cornerstone (Column 3) of the NRC's ROP Action Matrix. This discussion included the causes, corrective actions, extent of condition, extent of cause, and other planned licensee actions.

4OA7 Licensee-Identified Violation

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a non-cited violation.

Technical Specification 5.7.2 states, in part, that areas accessible to personnel with radiation levels such that a major portion of the whole body could receive in 1 hour a dose greater than or equal to 1000 millirem shall be provided with locked or continuously guarded doors to prevent unauthorized entry and the keys shall be maintained under the

administrative control of the shift supervisor on duty or the radiation protection supervisor. Contrary to this, on April 4, 2012, the licensee inappropriately down-posted the reactor water clean-up backwash receiving tank room from a locked high radiation area to a high radiation area. This issue was documented in the licensee's CAP in CR 2012-18277. Immediate corrective actions included restoring the required locked high radiation area posting and instituting the appropriate associated access controls.

The finding was determined to be of very low safety significance because it was not an ALARA planning issue, there was no overexposure nor potential for overexposure, and the licensee's ability to assess dose was not compromised.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

V. Kaminskas, Site Vice President
S. Baker, Radiation Protection Manager
T. Brown, Fleet Radiation Protection and Chemistry Manager
M. Destefano, Fleet Employee Concerns Manager
J. Grabnar, Plant General Manager
H. Hanson, Jr., Performance Improvement Director
D. Reeves, Engineering Director
P. Roney, Nuclear Supply System Engineer Supervisor
J. Tufts, Operations Manager
J. Veglia, Maintenance Director
T. Veitch, Regulatory Compliance Manager
S. Wender, Radiation Protection Specialist
J. Wilson, Radiation Protection Technician
L. Zerr, Nuclear Compliance Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000440/2013009-01	NCV	Failure to Implement the Operational and Radiological Controls Necessary to Prevent Plant Manipulations from Adversely Impacting Dose Rates or Airborne Radioactivity Levels (Section 4OA4.02.03.f(1))
05000440/2013009-02	NCV	Failure to Lock or Continuously Guard Doors to Prevent Unauthorized Entry to an LHRA (Section 4OA4.02.03.f(2))
05000440/2013009-03	NCV	Failure to Post and Barricade a HRA in the Under-Condenser Area Turbine Building Cubicles 13 and 14 (Section 4OA4.02.04.1.b(1))
05000440/2013009-04	NCV	Failure to Follow Procedural Requirements for RWCU System Fill and Vent (Section 4OA4.02.04.2.b(1))
05000440/2013009-05	NCV	Failure to Implement a Procedure Appropriate to the Circumstances Leads to Reactor Overfeed Event (Section 4OA4.02.04.2.b(2)))

Closed

05000440/2011013-02	VIO	The Licensee Failed to Appropriately Identify and Assess the Radiological Hazards when Retracting a Source Range Monitor (Section 4OA4.02.03.e))
05000440/2012009-01	FIN	Parallel White PI Inspection Finding (Section 4OA4.02.03.b)

LIST OF DOCUMENTS REVIEWED

The following is a 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 of 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 PROGRAM DOCUMENTS

Number	Description or Title	Date or Revision
CR 2010-70321	Improper Storage of Cylinders in Emergency Service Water Pump House	
CR 2010-72017	Transporting Tools Thru Containment	
CR 2010-73255	Worker Receives Dose Alarm	
CR 2010-74699	Emerging Trend for Rigor of Procedural Compliance Within Operations	
CR 2010-77728	Work Risk Assignment Discrepancy	
CR 2010-86072	Dose Rate Alarm-Operations	
CR 2011-01064	NRC Performance Indicator, Occupational Exposure Control Effectiveness, Occurrence for SRM-C C Reinsert	
CR 2011-01593	Common Cause Analysis of NRC Occupational exposure control effectiveness Degraded Cornerstone Events; Revision 2; Report Date: September 13, 2012	
CR 2011-01593A	Dose Rate Alarm – Operator	
CR 2011-01593A-CC1	Perry Does Not Hold Personnel Accountable to High Radiological Standards	
CR 2011-01593A-CC2	Inconsistent Application of Procedural Requirements in Preparation, Review and Approval of Radiological Survey Maps	
CR 2011-01593A-CC3	Less Than Adequate Worker Supervisor, and Oversight Accountability Resulted in Worker Entering Non-Briefed Area and Receiving Dose Rate Alarm	
CR 2011-01593A-RC1	Perry Radiological Control Program Implementation Does Not Accurately Reflect Industry Best Practices	
CR 2011-01593B	Unexpected Dose Rate Alarm During Re-insertion of SRM-C C Detector	
CR 2011-01593C	Dose Rate Alarm – SRV Pipefitter	
CR 2011-04349	Training Needs Analysis for the ALARA Planner Job Position	
CR 2011-93247	Unexpected Radiation Levels Encountered During Removal of SRM-C Detector	
CR 2011-93247-CC1	LTA FENOC Oversight of Supplemental Workers and Supervisors in UV Project	

CORRECTIVE ACTION PROGRAM DOCUMENTS

Number	Description or Title	Date or Revision
CR 2011-93247-RC2	LTA Management of Under Vessel Project Specifically in Preparation and Implementation of Under Vessel Project Plan	
CR 2011-93247-RC4	LTA Radiological Controls Established by RP Personnel to Protect Under vessel Workers During Retraction of SRM-C Detector	
CR 2011-93300	Dose Rate Alarm Received While Re-Inserting SRM-C C	
CR 2011-94156	PY-PA-11-02: Work Order And Procedure Place Keeping Deficiencies	
CR 2011-94195	PY-PA-11-02: Work Order Place Keeping Deficiencies	
CR 2011-95813	Potential Inadvertent Access Provided to a Posted Locked High Radiation Area	
CR 2011-97092	Gap Between Human Performance 'Attitudes' and 'Values'	
CR 2012-01575	Clearances Should Have Been Marked Exceptional Clearances and Were Not	
CR 2012-01666	High Dose Rates in RW 574 RW Floor Drain Sump Room	
CR 2012-02424	Forced Outage Clearance Not Marked as Exceptional	
CR 2012-03917	Work Order Risk Changed to Orange at T+1 for P3W13	
CR 2012-04495	Lessons Learned for Cleaning the Condensate Storage Tank Under WO 200268158	
CR 2012-04669	Orange Risk Activity Not Effectively Managed	
CR 2012-05907	Results of First Quarter Clearance Preparation Observations Review	
CR 2012-06164	XCAP Precursor Issues For Cross-Cutting Aspect H.4(a)	
CR 2012-06327	Inadequate Reviews Performed for Industry Operating Experience on Substantive Cross-Cutting Issues	
CR 2012-06546	Evaluate Risk Assigned to SRV and Low-Low Set SVIs	
CR 2012-06820	Radiological Stop Work Criteria Met	
CR 2012-07583	Challenges Identified for Inadvertent Climbing and Access to Locked High Radiation Areas	
CR 2012-09092	Resin in Rad Waste Floor Drain Sump	
CR 2012-09447	Pre-Job Survey of Rad Waste 574' (Unposted Locked High Radiation Area	
CR 2012-09447	RW 574' Resin Spill Response	
CR 2012-09455	Multiple Failures of Rad Waste Pump Seals Needs Investigating	

CORRECTIVE ACTION PROGRAM DOCUMENTS

Number	Description or Title	Date or Revision
CR 2012-10526	Clearance EPY-R42-0007 Was Marked Exceptional But Did Not Identify the Hazard	
CR 2012-11079	Order Assigned Incorrect Risk Level	
CR 2012-11902	Work Not Released and Scheduled Based on Risk Assessment	
CR 2012-13079	Condensate Backwash Settling Tank Sludge Mixing Pump A Suction Spool Piece Leaks	
CR 2012-13255	RWP 120113 Not Written, Prepared or Activated in Time for Scheduled Work Activities	
CR 2012-13408	FO-SA-2012-0013 Activities Are Being Inappropriately Designated a Different Color of Risk Than What is Assessed per NOP-OP-1007	
CR 2012-14183	GMI-0213 Steps Were Not Followed Completely Through Prior To The Installation Of The Automatic Welding Machine Onto The Loaded MPC	
CR 2012-14414	Work Group Clearance Not Stated as an Exceptional Clearance	
CR 2012-14884	Dry Cask Project LHRA Controls Challenge	
CR 2012-15947	SN-SA-2012-0220 Perry Nuclear Safety Culture Review Assessment – Principle 1.f	
CR 2012-15948	SN-SA-2012-0220 Perry Nuclear Safety Culture Review Assessment – Principle 2.a and 2.b	
CR 2012-15949	SN-SA-2012-0220 Perry Nuclear Safety Culture Review Assessment – Principle 6.a and 6.b	
CR 2012-15950	SN-SA-2012-0220 Perry Nuclear Safety Culture Review Assessment – Principle 7	
CR 2012-16671	The 3rd Quarter Safety Culture Monitoring Meeting held on 10/19/12 Determined That Safety Culture Attribute 1f Needs Further Review and Attention	
CR 2012-16672	The 3rd Quarter Safety Culture Monitoring Meeting Held On 10/19/12 Determined That Safety Culture Attribute 1f Needs Further Review and Attention	
CR 2012-16828	Work Group Unprepared to Start Task for Hot Short Modification Causes Un-necessary Unavailability Time of the Division 1 Diesel	
CR 2012-17184	Normal Supply To MCC F1C08 (Order 200391729) Not Released For Work Per Schedule	
CR 2012-17185	LHRA Controls for FHB During MPC Transfer to Hi-Storm Improvement Opportunities	
CR 2012-18277	Issues Identified with Control of LHRA in TB 577 Catacombs	
CR 2012-18521	Unclear When a Clearance Is Considered Exceptional	
CR 2012-18695	Actions from the 95002 Root Cause Investigation Failed to Prevent Further Radiological Events	

CORRECTIVE ACTION PROGRAM DOCUMENTS

Number	Description or Title	Date or Revision
CR 2012-18950	Locked HRA Controls Issue: Reactor Water Cleanup Backwash Receiving Tank Room Radiological Controls During April and May of 2102.	
CR 2012-19375	Six Month Design Engineering Human Performance Binning	
CR 2012-19535	XCAP Precursor Issues In Cross-Cutting Aspect H.4(A)	
CR 2013-00058	Worker Unable to Clear Portal Monitors at RCA Exit	
CR 2013-00137	Three Corrective Actions from Root Cause Evaluations Are Not Being Implemented As Stated	
CR 2013-00350	NRC-FIN Parallel White Performance Indicator Finding Associated with the 95002 Inspection	
CR 2013-00753	Clearance Not Adequate for Work to be Performed	
CR 2013-00825	Deficiency: Shortfalls in Management Oversight and Direction of Maintenance and Technical Training Programs	
CR 2013-01107	PY-C-13-01-01: Plant Status Control and Clearance Event Review Committee Did Not Meet Within 4 Business Days of an Event	
CR 2013-01383	Maintenance Rated Marginally Effective for 3rd Trimester 2012	
CR 2013-01737	PA-PY-2013- Procedure Requirements For Processing Meteorological Tower Data Has Not Been Completed Since June Of 2011	
CR 2013-01774	Prejob Brief Weakness Identified – Less Than Adequate Usage of Relevant External Operating Experience	
CR 2013-01902	Adverse Trend Related to Clearance Program Procedural Compliance Issues	
CR 2013-01902	PY-C-13-01-01: Adverse Trend Related to Clearance Program Procedural Compliance Issues	
CR 2013-02793	PA-PY-13-01 Instances of Industry Operational Experience (OE) Missing for Mechanical 1R14 RDEX Status Orders	
CR 2013-03971	Locked High Radiation Area Control Not as per Procedure at the Drywell Personnel Airlock	
CR 2013-03991	Elevated Airborne Levels on the Refuel Floor During Cavity Decon	
CR 2013-04067	Action not Fully Effective in Resolving Electrical & Mechanical Work Preparation Issues	
CR 2013-04082	Procedure Deficiency Causes Delay in Reactor Disassembly	
CR 2013-04164	High Radiation Area Access Controls Not Met on Refuel Floor	
CR 2013-04233	Resources and Schedule for LHRA Access Control Guards Is Unsatisfactory	

CORRECTIVE ACTION PROGRAM DOCUMENTS

Number	Description or Title	Date or Revision
CR 2013-04386	Dose Alarm: Crane Operator Reached Dose Alarm While Moving the Reactor Separator	
CR 2013-04447	Elevated Airborne Activity in Containment Following RPV Steam Separator Removal	
CR 2013-04455	Auxiliary Building Steam Tunnel Pit Floor Drain Failed to Drain	
CR 2013-04605	PY-PA-13-01 Refuel Floor Locked High Radiation Area Job Coverage Is Not Being Conducted IAW the Requirements of NOP-OP-4104	
CR 2013-04640	PA-PY-13-01 Containment LHRA ACG Instructions Regarding Evacuation	
CR 2013-04781	Leaking Valve in Radwaste 602’	
CR 2013-04791	RWP 136015 with 8.3 Rem Dose Estimate Had No ALARA Review	
CR 2013-04867	Locked High Radiation Area Barricade Located on Turbine Building 620’ East Needs Enhancement	
CR 2013-05178	Focused Self-Assessment FO-SA-2013-009 Deficiency VHRA/LHRA/HRA Weekly Barricade Verifications	
CR 2013-05235	Upper Pool Level Not Sufficiently Covering the 360 Platform Weir Wall Support	
CR 2013-05312	Weekly High Radiation Area Surveillances for Containment Not Performed as Required	
CR 2013-05558	Personnel Contamination; DW 630 2 Pipefitters on SRV Replacement Have Face Contaminations	
CR 2013-05608	Incorrect Air Regulators Installed in the Plant	
CR 2013-05919	Water Found on the Rad Waste Sample Pump Room Floor, Radwaste 574’	
CR 2013-06139	Potential Concern Identified with Scaffold Access for TB 577 Catacomb Hotwell Suction Cubicle	
CR 2013-06202	Focused Self-Assessment FO-SA-2013-0009 Deficiency - Response to CR 2013-05279 Not Adequate	
CR 2013-06226	LHRA Guard Challenged on Radio Usage	
CR 2013-06630	Elevated Dose Rates on the Refuel Floor After the RHR-C Fill and Vent	
CR 2013-06668	Work Stopped on Refuel X690 Due to Changing Radiological Conditions	
CR 2013-06755	Four Individual Dose Rate Alarms Received	
CR 2013-06781	Unexpected Radiological Conditions in Reactor Cavity Following Initiation of RHR-A in SDC Mode	
CR 2013-06884	RFF Worker Had Positive WBC After Vacuuming and Installing the Cattle Chute Studs	
CR 2013-06888	RFF Worker Has Potential Intake Contrary to TEDE ALARA Review	
CR 2013-06892	LHRA Guard Left the Area, Auxiliary Steam Tunnel	

CORRECTIVE ACTION PROGRAM DOCUMENTS

Number	Description or Title	Date or Revision
CR 2013-07307	Human Performance Standards Lowered for High Radiological Risk Activity	
CR 2013-07422	PA-PY-13-01 SRM-C Lessons Learned Not Fully Implemented for Supplemental RFO-14 ALARA Planners	
CR 2013-07473	Yellow News Flash; RPV High Water Level During System Testing	
CR 2013-07473	Level Transient During Performance Of PTI-N27-P0012	
CR 2013-07483	Elevated Temperatures In P11 Condensate Transfer Piping Due To Misposition	
CR 2013-07862	Incorrect Risk Identified on Work Order and Schedule Is Not Correct for the Week of 5/20/13	
CR 2013-08067	Inadequate Risk Assessment of SVI-G41-T2001	
CR 2013-08388	Isotopic Profile Re-evaluation Requirements	
CR 2013-08490	SVI-P11-T2002 Incorrect Risk Assessment	
CR 2013-08736	FO-SA-2012-0031: 50.59 Screen Not Performed For SVI Procedure Change	
CR 2013-08772	Supplemental Personnel Not Meeting PM Guidelines in NOBP-WM-2501	
CR 2013-08794	The Nuclear Safety Culture Monitoring Panel Did Not Meet at the End of the 1st Quarter 2013	
CR 2013-09101	NRC ID 2013-95002: Three IMIs Are Not Aligned with NOP-OP-4107, Radiation Work Permit	
CR 2013-09265	Initial Drywell Delay Due to RWP 2013-05208 Revision	
CR 2013-09283	RP Brief Not Aligned with Desired Work from OCC	
CR 2013-09626	SRM 'C' Reading Pegged High	
CR 2013-09641	Reactor Water Clean Up Availability During Outage Was Below Industry Standard	
CR 2013-09807	NRC ID 95002: Opportunities Exist to Improve Extent of Cause write-up in Root Cause Report CR 2012-18277	
CR 2013-09835	NRC ID 2013 95002: Improvement Opportunity for Orders Directing Work Under the Reactor Vessel	
CR 2013-09891	NRC De-Briefed a Finding with Multiple Examples of Radiological Work Control / Work Planning Issues	
CR 2013-09930	NRC ID 2013 95002: Improvement Oopportunity for Supplemental Worker Awareness of the Employee Concerns Program	
CR 2013-18639	Maintenance Performance is Rated as Marginally Effective (Yellow) for the 1st Trimester of 2013	

DRAWINGS, MAPS, AND SURVEYS

Number	Description or Title	Date or Revision
302-0081-00000	Feedwater	Revision EEE
302-0082-00000	Feedwater System	Revision XX
302-0102-00000	Condensate Transfer And Storage System	Revision NN
302-0672-00000	Reactor Water Cleanup System	Revision KK

MISCELLANEOUS

Number	Description or Title	Date or Revision
	2012 ECP New Hire PowerPoint Presentation	
	2013 ECP and SWERT PowerPoint Presentation	Revision 1
	2012 Employee Concerns Program New Hire PowerPoint Presentation	
	2013 Employee Concerns Program and Safety Conscious Work Environment Review Team PowerPoint Presentation	Revision 4
	2011-2013 Employee Concerns Program Training Schedule	
	Perry 2011SCWE Survey Results	August 2011
	Perry 2012SCWE Survey Results	August 2012
	Perry Radiological Performance Timeline	February 22, 2013
	Selected Sample of Employee Concerns Program Files (10)	
	FENOC Supervisory Briefing; Workforce Replenishment Strategy (PowerPoint presentation)	February 11, 2013
	FirstEnergy Nuclear Operating Company Engineering Organization 2012 Staffing Plan (PowerPoint Presentation)	
	Perry Operations/Operations Training Joint Staffing Plan 2013-2017	January 25, 2013
	Perry Nuclear Power Plant Maintenance and technical training Programs Recovery Plan	June 25, 2013
	FENOC Radiation Worker Training	03
	95002 Radiation Protection Improvement Initiatives	February 10, 2013
	FENOC Radiation Worker Training	03
	95002 Radiation Protection Improvement Initiatives	February 10, 2013
	FENOC Radiation Worker Training	03
	95002 Radiation Protection Improvement Initiatives	Febtuary 10, 2013
	Fenoc Perry Nuclear Power Plant Fleet Oversight Trimester Report	1/1/2013 – 4/30/2013
	2013 Fleet Oversight 1st Trimester Assessment	May 29, 2013
	2012 Fleet Oversight 3rd Trimester Assessment	January 21, 2013

Attached

DRAWINGS, MAPS, AND SURVEYS

Number	Description or Title	Date or Revision
	Operations Excellence Pre-Job Briefing Checklist for Div 3 EDG Run and Engine Analysis	June 10, 2013
	FENOC Operating Experience Performance Indicators for January 2013 and May 2013	
	Perry Observation News & Views Newsletter	February 27, 2013
	Perry ALARA Subcommittee Meeting Minutes	Various
	Management Alignment and Ownership Meeting	Various
	Radiation Protection Staffing Charts; Normal Operations and RFO-14	May 2013
	Radiological Internal Dose Assessments (RFO-14) for Selected Individuals	RFO-14
	RFO-14 Logs for the Radiation Protection Department and the Outage Control Center	Various
	Perry ALARA Subcommittee Meeting Minutes	Various
	Management Alignment and Ownership Meeting	Various
	Radiation Protection Staffing Charts; Normal Operations and RFO-14	May 2013
	Radiological Internal Dose Assessments (RFO-14) for Selected Individuals	RFO-14
	RFO-14 Logs for the Radiation Protection Department and the Outage Control Center	Various
	Perry ALARA Subcommittee Meeting Minutes	Various
	Management Alignment and Ownership Meeting	Various
	Radiation Protection Staffing Charts; Normal Operations and RFO-14	May 2013
	Radiological Internal Dose Assessments (RFO-14) for Selected Individuals	RFO-14
	RFO-14 Logs for the Radiation Protection Department and the Outage Control Center	Various
ALARA Plan 13-5209	Forced Outage – Undervessel Activities	Revision 2
ALARA Plan 13-5209	Forced Outage – Undervessel Activities	Revision 1
ALARA Plan 13-5211	SRM ‘C’ Shuttle Tube Repair	Revision 0
CA-SA-PY-2013-0001	Corporate Assessment Team Report; Perry Radiation Protection Safety Culture Assessment; Conducted February 5-20, 2013	March 13, 2013
FTI-A00001	TIP Operation	10
GMI-0067	Installation and Removal; of Control Rod Drives and Thermal Sleeves	13
GMI-0185	Reactor Vessel Disassembly and Assembly	20
GMI-0185B	Reactor Vessel Disassembly	02
GMI-0211	RPV Bottom Head Drain Line Plug Installation and Removal	01

DRAWINGS, MAPS, AND SURVEYS

Number	Description or Title	Date or Revision
HPI-D0001	Health Physics Instruction; Radiation and Contamination Survey Techniques	22
HPI-D0005	Health Physics Instruction; RP Monitoring Requirements for Dry Fuel Storage Loading Operations	01
HPI-F0006	Health Physics Instruction; Radionuclide Source Term Distribution	03
ICI-C-C51-5	System Calibration Instruction; Traversing In-Core Probe (TIP) System Mechanical Drive System Calibration	02
IMI-E2-28	Instrument Maintenance Instruction; Source Range Monitor/Intermediate Range Monitor Detector Installation and Removal	13/14
IMI-E2-4	Instrument Maintenance Instruction; IRM/SRM-C Detector Drives	06
IMI-E3-21	Instrument Maintenance Instruction; Traversing In-Core Probe (TIP) Drive Mechanism Proximity Switch Check / Adjustment	03
ISP 2013 PNPP	2013 Integrated Staffing Plan (ISP)	
NOBP-LP-2013	Safety Conscious Work Environment Review Team (SCWERT)	
NOBP-LP-2501	Safety Culture Assessment	Revision 15
NOBP-LP-2502	Safety Culture Monitoring	Revision 10
NOBP-OP-0005	Nuclear Operating Business Practice FENOC Operator Fundamentals Program	June 13, 2012
NOBP-SS-4209	Integrated Staffing Plan	Revision 1
ONI-D17	High Radiation Levels Within Plant	17
PYBP-SITE-0071	Closure Review Board Process	Revision 4
PYBP-SITE-0073	Enhanced Corrective Action Program Oversight Process	Revision 1
RPS-2013-01	Radiological Engineering Assessment; Source Term Determination per HPI-F0006; Cycle 14	---
RWP-130146	Tip D Replacement	00
RWP-130162	Install Weldolet / Ball Valve / Blind Flange RHR-A Pump Room	00
RWP 136002	Radiation Work Permit Summary	2/1/2013 – 6/1/2013
RWP-136021	Reactor Reassembly Activities	04
SN-SA-2011-0149	Self Assessment	--
SN-SA-2012-0147	1st Quarter 2012 Safety Culture Monitoring Panel Meeting	August 6, 2012
SN-SA-2012-0206	2nd Quarter 2012 Safety Culture Monitoring Panel Meeting	August 27, 2012
SN-SA-2012-0220	Perry Nuclear Safety Culture Review Assessment	
SN-SA-2012-0220	Semi-Annual Safety Culture Meeting	October 17, 2012
SN-SA-2012-0272	3rd Quarter 2012 Safety Culture Monitoring Panel Meeting	December 7, 2012

DRAWINGS, MAPS, AND SURVEYS

Number	Description or Title	Date or Revision
SN-SA-2013-0031	Semi-Annual Safety Culture Report for End of 2012	April 2, 2013
SN-SA-2013-0036	4th Quarter 2012 Safety Culture Monitoring Panel Meeting	April 2, 2013
SOI-E12	Residual Heat Removal System	59
SSC-201203_PY01	Site Supervisor Continuing Training; SOER10-2/2-04 Case Studies	Revision 2
DRSFTYCLTR_FEN	The Leader's Role in Safety Culture PowerPoint Presentation	February 5, 2013
SS-SCWELA_FEN	Safety Conscious Work Environment Presenter PowerPoint Presentation	Revision 0

PROCEDURES

Number	Description or Title	Date or Revision
NOBP-LP-2001	FENOC Self-Assessment and Benchmarking	19
NOBP-LP-2003	Employee Concerns Program	Revision 4
NOBP-LP-2008	FENOC Corrective Action Review Board	Revision 12
NOBP-LP-2011	FENOC Cause Analysis	Revision 14
NOBP-LP-2011	FENOC Cause Analysis	15
NOBP-LP-2014	Differing Professional Opinion Disposition Process	Revision 0
NOBP-LP-2607	Observation and Coaching Program – June 20, 2012	5
NOBP-LP-4015	Under Vessel Orientation; Cross-Cutting Aspects of Inspection Findings	05
NOBP-OP-4005	Site ALARA Committees	00/01
NOBP-OP-4008	Response to Radiological Events	04
NOBP-OP-4012	NRC Performance Indicators	04
NOBP-OP-4114	Radiological Controls for Highly Radioactive and Irradiated Components or Materials	01
NOBP-OP-4707	Visual Survey Data System	03
NOBP-RPS-0016	Radiation Protection Response to Changing Plant Conditions	12
NOBP-WM-2501	Project Management	15
NOP-ER-3001	Problem Solving and Decision Making	05
NOP-LP-2001	Corrective Action Program	Revision 31
NOP-OP-1001	Clearance/Tagging Program	Revision 20
NOP-OP-1007	Risk Management	16
NOP-OP-1009	Operability Determinations and Functionality Assessments	03
NOP-OP-1010	Operational Decision Making	O4
NOP-OP-4001	Radiation Protection Program	03
NOP-OP-4002	Conduct of Radiation Protection	05
NOP-OP-4005	ALARA Program	January 2, 2003

DRAWINGS, MAPS, AND SURVEYS

Number	Description or Title	Date or Revision
NOP-OP-4010	Determination of Radiological Risk	06
NOP-OP-4101	Access Controls for Radiologically Controlled Ars	09
NOP-OP-4101-07	Access Control Guard (ACG) Responsibilities	---
NOP-OP-4102	Radiological Postings, Labeling, and Markings	09
NOP-OP-4104	Job Coverage	February 3, 2004
NOP-OP-4106	Control of Radiography	03
NOP-OP-4107	Radiation Work Permit (RWP)	10/11
NOP-OP-4502	Control of Radioactive Material Area	02
NOP-OP-4701	Radiological Survey Documentation	01
NOP-OP-4705	Response to Contaminated Leaks / Spills	06
NOP-WM-0001	Work Management Process	08
NOP-WM-1003	Nuclear Maintenance Notification Initiation, Screening, and Minor Deficiency Monitoring Processes	05
NORM-OP-4002	Conduct of Radiation Protection Handbook	01
ONI-C51	Off Normal Instruction, Unplanned Power Changes In Reactor Power Or Reactivity	Revision J
PTI-N27-P0012	Feedwater System Pump Discharge Check Valve Operability, May 7, 2013	Performed on May 12, 2013
PYBP-RPS-0016	Radiation Protection Response to Changing Plant Conditions	12
PYBP-RPS-0046	Radiation Protection Procedure Use and Ownership	00
PYOV-12-00007	Continuing Shortfalls in Maintenance Work Execution and Training (Escalation Letter)	June 11, 2012
PY-SVI-E22T1319	Diesel Generator Start and Load Division 3	Revision 19
RPI-0506	Response to Area Radiation Monitor Alarms, Airborne Radiation Monitor Alarms, and Radioactive Spills	04/05
SOI-G33, Section 7.16	Reactor Water Cleanup System, Fill And Vent	

WORK ORDERS (WOs)

Number	Description or Title	Date or Revision
Clearance Order EPY-C51-0004	SRM ‘C’ Detector & Drive Mechanism	
Clearance Order PYF-C51-0002	Ops Control of SRM/IRM Movement During Outage Undervessel Operations	
WO 200481013	Division 3 Diesel Generator Engine Analysis	June 11, 2013
WO 200564993	Tip D Replacement	---
WO 200567162	Manually Withdraw SRM ‘C’ Detector to its Full Out Position	June 17, 2013
WO 200567290	IRM ‘A’ Troubleshooting	June 19, 2013

ROOT CAUSE AND APPARENT CAUSES

Number	Description or Title	Date or Revision
2011-01593	Root Cause Analysis Report; Common Cause Analysis of NRC Occupational Radiation Safety Degraded Cornerstone Events	September 13, 2012
2011-01593A	Root Cause Analysis Report; Dose Rate Alarm - Operator CR 10-86072	April 19, 2012
2011-01593B	Root Cause Analysis Report; Dose Rate Alarm During Re-Insertion of SRM C Detector CR 2011-93300	March 4, 2012
2011-01593C	Root Cause Analysis Report; Dose Rate Alarm – SRV Pipefitter CR 11-93976	March 4, 2012
2011-93247	Root Cause Analysis Report; Unexpected Radiation Levels Encountered During Removal of SRM C Detector	April 21, 2011
2012-09447	Root Cause Analysis Report; Pre-Job Survey of Radwaste 574' Elevation (Unposted Locked High Radiation Area)	September 21, 2012
2012-14884	Root Cause Analysis Report; Dry Cask Project LHRA Controls Challenge	October 30, 2012
2012-18277	Root Cause Analysis Report; Turbine Building 577' & RBRT LHRA Control Challenges	December 17, 2012
2012-18695	Root Cause Analysis Report; Actions from the 95002 Root Cause Investigations Failed to Prevent Further Radiological Events	November 29, 2012

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
CAP	Corrective Action Program
CCA	Common Cause Analysis
CR	Condition Report
ECP	Employee Concerns Program
FENOC	FirstEnergy Operating Company
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LHRA	Locked High Radiation Area
NCV	Non-Cited Violation
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
OE	Operating Experience
PI	Performance Indicator
PNPP	Perry Nuclear Power Plant
RFP	Reactor Feedwater Pump
RCE	Root Cause Evaluation
RG	Regulatory Guide
ROP	Reactor Oversight Process
RP	Radiation Protection
RPM	Radiation Protection Manger
RHR	Residual Heat Removal
RWCU	Reactor Water Cleanup
RWP	Radiation Work Permit
SCWE	Safety Conscious Work Environment
SRM C	Source Range Monitor “C”
SDP	Significance Determination Process
SRV	Safety Relief Valve
TS	Technical Specification

Please contact Mike Kunowski at (630) 829-9618 with any questions you have regarding this letter.

Sincerely,

/RA/

Patrick L. Louden, Deputy Director
Division of Reactor Safety

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Letter to .V. Kaminskas from P. Louden dated August 12, 2013

SUBJECT: PERRY NUCLEAR POWER PLANT - NRC 95002 SUPPLEMENTAL INSPECTION REPORT 05000440/2013009 AND ASSESSMENT FOLLOW-UP LETTER

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