



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

July 31, 2012

Mr. Vito Kaminskis
Site Vice President, Nuclear
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 INTEGRATED INSPECTION
REPORT 05000440/2012003

Dear Mr. Kaminskis:

On June 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed a baseline inspection at your Perry Nuclear Power Plant Unit 1. The enclosed inspection report documents the inspection results which were discussed on July 12, 2012, with you and other members of your staff.

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.

Two NRC-identified findings and one self-revealed finding of very low safety significance (Green) were identified during this inspection. One of these findings was determined to involve a violation of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating the issue which involved a violation of NRC requirements as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of any NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Perry Nuclear Power Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III; and the NRC Resident Inspector at the 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 any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

John B. Giessner, Chief
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000440/2012003
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: 05000440/2012003

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant, Unit 1

Location: Perry, Ohio

Dates: April 1, 2012, through June 30, 2012

Inspectors: M. Marshfield, Senior Resident Inspector
J. Nance, Resident Inspector
J. Cassidy, Senior Health Physicist
D. Jones, Reactor Inspector
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Approved by: John B. Giessner, Chief
Branch 4
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000440/2012003; 04/01/2012 – 06/30/2012; Perry Nuclear Power Plant; Operability Determinations and Functionality Assessments; Radiological Hazard Assessment and Exposure Controls; Problem Identification and Resolution.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. The inspectors identified three green findings: one self-revealed finding, one finding with no violation and one finding with an associated violation. Additionally, one licensee identified finding is documented. The finding with an associated violation was considered a Non-Cited Violation (NCV) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP); the cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a finding of very low safety significance when the licensee failed to identify logged readings on the Daily Surveillance Requirements Sheets which were above Operational Decision Making Issue (ODMI) trigger points and subsequently failed to take actions in accordance with the ODMI. Specifically, from April 16 through April 26, 2012, the logged leak rate on the 5A feedwater heater drain valve line exceeded an ODMI trigger point and no action was taken by several different operating crews which were on watch over that time span. The issue was entered into the licensee's corrective action program as Condition Report 2012-06660.

The inspectors determined that the finding was more than minor because it is similar to example 4.h of Appendix E to IMC 0612 and it impacted the Human Performance attribute of the Initiating Events Cornerstone, adversely affecting the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. In addition, if left uncorrected, this issue could lead to a more significant safety concern. In accordance with IMC 0609, Attachment 4, Phase 1, "Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) by answering 'no' to the questions in the Initiating Events column of Table 4a, since the finding does not contribute to both a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding was associated with a cross-cutting aspect in the Work Planning (H.4(c)) component of the Human Performance cross-cutting area because licensee supervisory personnel failed to make risk-significant decisions when faced with uncertain or unexpected plant conditions to ensure safety was maintained. Specifically, the licensee's supervisory oversight of the daily surveillance logs did not recognize readings above the ODMI trigger points and as a result, took no actions to correct an out-of-specification condition as logged for more than 10 days. (1R15)

- Green. A self-revealed finding of very low safety significance was identified when a rigging evolution in the fuel handling building resulted in suspension of an approximately 10,000 pound support column by only part of the planned lift rig. Specifically, on April 19, 2012, the licensee failed to develop an adequate lift plan in accordance with the licensee procedure. While lifting an approximately 10,000 pound column to the vertical position, the load developed a rolling motion and caused a lifting strap to part. Subsequently, as the load settled, the flat side of the baseplate impacted the fuel handling building floor. The licensee entered the issue into the corrective action program as Condition Report 2012-06153.

The finding was evaluated using IMC 0612, Appendix E and was not similar to any of the examples, but was determined to be more than minor because if left uncorrected the safety concern would become more significant. Additionally, the performance deficiency impacted the Human Performance attribute of the Initiating Events Cornerstone, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In accordance with IMC 0609, Attachment 4, Phase 1, "Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) by answering 'no' to the questions in the Initiating Events column of Table 4a, since the finding does not contribute to both a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding was associated with a cross-cutting aspect in the Work Practices (H.4(a)) component of the Human Performance cross-cutting area because licensee personnel proceeded in the face of uncertainty or unexpected consequences. Specifically, the licensee continued the attempted lift of the column despite indications that the load was not reacting as would be expected for a properly designed lifting rig attached to the column. (4OA2.3)

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of Technical Specification 5.7.2 for the failure to appropriately barricade and conspicuously post an area that was 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. Specifically, on May 7, 2012, NRC inspectors identified unposted and unbarricaded access points in the turbine building 557' catacomb area that permitted unencumbered access to locked high radiation areas in the steam affected areas under and on the turbine deck. This issue was entered into the licensee's corrective action program as Condition Report 2012-07583.

The inspectors reviewed the guidance in IMC 0612, Appendix E, "Examples of Minor Issues," and determined that the issue was more than minor because the performance deficiency was similar to Example 6(g) in the guidance document. Using IMC 0609, Attachment C for the Occupational Radiation Safety Significance Determination Process (SDP), the inspectors determined that the finding was of very low safety significance because the finding did not involve: (1) As-Low-As-Reasonably Achievable (ALARA) planning and controls; (2) a radiological overexposure; (3) a substantial potential for an overexposure; and (4) a compromised ability to assess dose. Because this finding was of very low safety significance, was not repetitive or willful, and was entered into the Perry Nuclear Power Plant corrective action program, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. Additionally, the primary cause of this finding was related to the cross-cutting aspect of problem

identification and resolution in operating experience. Specifically, the licensee failed to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs (P.2 (b)). (2RS1)

B. Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period at 100 percent power. On April 27, 2012, reactor power was reduced to 60 percent to allow removal of the 5A feedwater (FW) heater for repairs to stop a steam leak. The plant returned to full power on April 29, 2012. On June 6, 2012, reactor power was reduced to 60 percent for fuel suppression testing on indication of minor fuel pin leakage. On June 8, 2012, the plant conducted a rod pattern adjustment to suppress a single identified fuel pin leak. On June 9, 2012, the plant commenced raising power using rods to reach maximum attainable power. During this evolution reactor recirculation system flow control valve 'B' was locked up because of unexpected oscillations exhibited during fuel pin suppression testing and thus limiting maximum power. Power reached 76 percent on June 10, 2012. The plant commenced a shutdown on June 14, 2012 and shutdown was achieved on June 15, 2012. The shutdown was conducted to support a drywell entry to facilitate repairs to the 'B' recirculation flow control valve. On June 17, 2012, the plant was placed in start up and achieved criticality on June 18, 2012, at 1:30 a.m. The plant synchronized to the grid on June 18, 2012, at 10:28 p.m.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Evaluate Summer Readiness of Offsite and Alternate AC Power Systems

a. Inspection Scope

The inspectors performed a review of preparations for summer weather for offsite and alternate AC (alternating current) power systems, including the transmission switchyard system, and for conditions that could lead to loss-of-offsite power resulting from the types of weather-related risks identified by the licensee, including high winds, high temperatures, and tornado activity. The inspectors reviewed the procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could affect the offsite power system.

Aspects considered in the inspectors' review included:

- Verifying licensee procedures address measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system.
- Review and verification of licensee procedures affecting the above areas and the communication protocols between the TSO and the licensee to verify that the appropriate information is exchanged when issues arise that could impact the offsite power system, including coordination between the TSO and the licensee during off-normal or emergency events affecting the licensee, including an explanation of events, estimates of when the offsite power system will be

restored to a normal state; and notification to the licensee when the offsite power system is returned to normal.

- Ensure licensee procedures address actions to be taken when the licensee is notified by the TSO that the post-trip voltage of the offsite power system at the plant will not be acceptable to assure the continued operation of the safety related loads without transferring to the on-site power supply; ensure compensatory actions identified to be performed if it is not possible to predict the post-trip voltage at the licensee's plant for current grid conditions; required re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and required communications between the licensee and the TSO when changes at the power plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power is challenged.

During the inspection, the inspectors focused on plant-specific design features and procedures used by plant personnel to mitigate or respond to adverse weather.

These activities constitute one sample of the readiness review for summer weather affect on offsite and alternate AC power as defined in Inspection Procedure (IP) 71111.01, Sections -02 and -05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- Division 2 emergency diesel generator and support systems;
- 'B' emergency service water system; and
- low-pressure core spray.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were

no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three samples for partial system walkdowns as defined in IP 71111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On April 25, 2012, the inspectors performed a complete system alignment inspection of the emergency closed cooling system trains 'A' and 'B' to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fire Zones 1CC-3a and 1DG-1a (Unit 1 – Division 2 Emergency Diesel Generator Room and Division 2 4160V and 480V Switchgear Room);
- Fire Zones 0IB-2 (Intermediate Building 599' Elevation);
- Fire Zones 0FH-3 (Fuel Handling Building 620'-6" Elevation);
- Fire Zone 1AB-2; Auxiliary Building 599' corridors; and

- Fire Zone OCC-1A, OCC-1B, OCC-1C; (Control Complex 574'-10" Elevation).

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan.

The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event.

Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP.

Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures – Underground Vaults (71111.06)

a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as a sump pump, the device was operable and level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the Division 2 cabling manhole 1 vault on June 12, 2012.

This inspection constituted one underground vault sample as defined in IP 71111.06-05.

b. Findings

No findings of were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On April 30, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly sample for the licensed operator regualification program simulator as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On April 27 and 29, 2012, the inspectors observed a scheduled down-power to 60 percent and up-power to 100 percent to support FW 5A heater removal from service and subsequent restoration following repairs to an instrument line weld. The evolution was treated as an Infrequently Planned Test or Evolution. The inspectors observed the control room reactivity control actions and the FW 5A heater removal from service procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of procedures;
- control board manipulations;

- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly sample for licensed operator heightened activity/risk as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- review of the impact on safety-related systems (emergency closed cooling and emergency service water) due to installation of non-safety related signal resistor units; and
- reactor core isolation cooling (RCIC) system.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted or could have resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two samples for quarterly maintenance effectiveness as defined in IP 71111.12-05.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- FW heater 5A leak;
- main steam line 'C' failure of calibration check box;
- FW heater 5A leak repair and FW heater 2A relief valve replacement;
- low-pressure core injection pump 'B' discharge low flow channel calibration; and
- remote shutdown panel 1C61-P001 control operability test.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- leak near instrument tree tap on the bottom of the 5A intermediate pressure FW heater;
- cable tray flooding issue functionality assessment;
- RCIC steam flow instrument indication reading higher than normal; and
- fuel defect identified by chemistry sampling process.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that Technical Specification (TS) operability was

properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and USAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted four samples as defined in IP 71111.15-05.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) when the licensee failed to identify log readings on the Daily Surveillance Requirements Sheets which were above Operational Decision Making Issue (ODMI) trigger points and subsequently failed to take actions in accordance with the ODMI. Specifically, from April 16 through April 26, 2012, the logged leak rate on the 5A FW heater drain valve line exceeded an ODMI trigger point and no action was taken by several different operating crews which were on watch over that time span.

Description: Beginning on April 16, 2012, at 8:00 p.m. until identified on April 26, 2012, by the inspectors, operations personnel recorded leak rates every 4 hours on a known 5A FW heater leak at a logged rate of 0.5 gallons per minute (gpm). The licensee actions for response to this logged reading were being directed by an ODMI Summary Sheet, "Leak at the bottom of the 5A Intermediate Pressure FW Heater (1N27B0001A) near instrument tree line tap." The ODMI contained a trigger point that stated, "Remove the 5A FW Htr from service if leak degrades to an estimated 3200 drops per minutes (dpm) (~0.2 gpm) or the leak degrades such that it causes a radiological impact by rising trend on the heater bay vent radiation monitor."

The licensed operators, including shift operating supervisory personnel, did not recognize nor take corrective actions for the logged readings which exceeded the ODMI trigger point. Specifically, the shift managers did not review the open ODMI once per shift to ensure assumptions were still valid and trigger point actions were implemented and met as required by Nuclear Operating Procedure (NOP) – OP - 1010; "Operational Decision Making." When the inspectors questioned the licensee as to why no action had been taken over the 10-day period of log readings which exceeded the trigger point, the licensee performed a walkdown of the system. The licensee determined that the readings recorded by the plant operators were not consistent with the actual amount of steam/water leaking out of the crack in the FW 5A heater instrument tree tap. The leakage rate was determined to be approximately 400 dpm which was consistent with the logged readings prior to April 16, 2012.

The licensee's failure to recognize an exceeded trigger point and take actions in accordance with the requirements of NOP-OP-1010 was entered into the licensee's CAP as CR 2012-06660.

Analysis: The inspectors determined that the failure of licensed operators to recognize and take action to correct out-of-specification conditions documented on the Daily Surveillance Requirements Sheets from April 16, 2012, through April 26, 2012, for a known 5A FW heater leak, in accordance with NOP-OP-1010; "Operational Decision Making," was a performance deficiency. The inspectors evaluated the performance deficiency in accordance with IMC 0612, Appendix B, "Issue Screening." This performance deficiency was determined to be more than minor because it is similar to Example 4.h in IMC 0612, Appendix E, and occurred over a 10-day period, across all shifts, involving at least four different crews, and numerous licensed operators, including at least six different senior reactor operators acting in a supervisory review capacity. Additionally, the deficiency impacted the Human Performance attribute of the Initiating Events Cornerstone, adversely affecting the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. In addition, if left uncorrected, this issue could lead to a more significant safety concern.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," using Table 4a for the Initiating Events Cornerstone, under Transient Initiators. Specifically, the inspectors answered "No" to Question 1 – Does the finding contribute to both the likelihood of a reactor trip AND the likelihood that mitigation equipment or functions will not be available? Based upon this Phase 1 screening, the inspectors concluded that the finding was of very low safety significance (Green).

This finding has a cross-cutting aspect in the Work Practices component of the Human Performance cross-cutting area (H.4(c)) since licensee supervisory personnel failed to make risk-significant decisions when faced with uncertain or unexpected plant conditions to ensure safety was maintained. Specifically, licensee supervisory and management oversight of work activities failed to adequately review the daily surveillance logs and failed to implement timely corrective actions based upon the data recorded in the daily surveillance logs.

Enforcement: This finding did not involve enforcement action because no regulatory requirement was violated. **(FIN 05000440/2012003-01; Failure To Follow Operations Procedures)**

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- main steam line, channel 'C', high-flow instrument failure on April 17, 2012;
- RCIC leaking orifice repairs and system outage work, week of April 30, 2012;
- RCIC steam flow instrument indication reading higher than normal;
- 'B' flow control valve, failed linear velocity transducer (LVT) connector, replacement;
- source range monitor 'A' full-in limit switch repair;

- main steam isolation valve 'C' outboard isolation valve limit switch failure; and
- RCIC waterleg pump motor replacement.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted seven post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated outage activities for a forced outage that began on June 14, 2012, and continued through June 18, 2012. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule. The inspectors observed or reviewed the reactor shutdown and cooldown, outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, control of containment activities, personnel fatigue management, startup and heatup activities, and identification and resolution of problems associated with the outage. The outage was caused by oscillations in the 'B' recirculation loop flow control valve which placed the unit in TS 3.4.2 which requires the recirculation loop flow control valve to be hydraulically locked up within 4 hours after declaring the flow control valve inoperable. The licensee determined that the failure of the flow control valve was due to either a failure of the LVT or the connector for the LVT, both of which are located inside the drywell. The licensee conducted a risk analysis as part of its operational decision making issue process and determined that it was safer for personnel if the work to be performed was conducted with the plant shutdown and cooled down. The failure of the 'B' recirculation loop flow control valve was determined by subsequent troubleshooting while shut down to have been due to a recessed pin in the LVT connector.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one "other outage" sample as defined in IP 71111.20-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- emergency closed cooling system pump and valve operability in-service testing
- main steam line channel 'C' high-flow trip routine testing;
- RCIC pump and valve routine operability testing;
- remote shutdown control routine testing for RCIC and residual heat removal;
- average power range monitor 'E' functional routine surveillance testing; and
- drywell floor drain sump flow functional reactor coolant system (RCS) leakage testing on May 8, 2012, and June 7, 2012.

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges, and the calibration frequency were in accordance with TS, USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy;
- applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability;
- tests were performed in accordance with the test procedures and other applicable procedures;
- jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis;

- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four samples for routine surveillance testing and one sample for in-service testing and one sample of RCS leakage detection as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

2. **RADIATION SAFETY**

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted a partial sample as defined in IP 71124.01-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators for the occupational exposure cornerstone for follow-up. The inspectors reviewed the results of radiation protection program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the

potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and performed independent radiation measurements to verify conditions.

The inspectors selected the following radiologically risk-significant work activities that involved exposure to radiation.

- septa filter removal/replacement;
- incline fuel transfer system (IFTS) diving activities;
- refueling outage (RFO)-13 balance of plant general maintenance;
- RFO-13 under-vessel activities;
- safety relief valve replacement;
- 1G33 reactor water cleanup (RWCU) system fill and vent; and
- remove, cutup, and replace low-power range monitors (LPRMs) and dry tube replacement.

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if hazards were properly identified, including the following:

- identification of hot particles;
- the presence of alpha emitters;
- the potential for airborne radioactive materials, including the potential presence of transuranics and/or other hard-to-detect radioactive materials (This evaluation may include licensee planned entry into non-routinely entered areas subject to previous contamination from failed fuel.);
- the hazards associated with work activities that could suddenly and severely increase radiological conditions and that the licensee has established a means to inform workers of changes that could significantly impact their occupational dose; and
- severe radiation field dose gradients that can result in non-uniform exposures of the body.

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors reviewed the following radiation work permits used to access high radiation areas and evaluated the specified work control instructions or control barriers:

- septa filter removal/replacement;
- IFTS diving activities;
- RFO-13 balance of plant general maintenance;
- RFO-13 under-vessel activities;
- safety relief valve replacement;
- 1G33 RWCU system fill and vent; and
- remove, cutup, and replace LPRMs and dry tube replacement.

For these radiation work permits, the inspectors assessed whether allowable stay times or permissible dose (including from the intake of radioactive material) for radiologically significant work under each radiation work permit were clearly identified. The inspectors evaluated whether electronic personal dosimeter alarm set-points were in conformance with survey indications and plant policy.

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the CAP and dose evaluations were conducted as appropriate.

For work activities that could suddenly and severely increase radiological conditions, the inspectors assessed the licensee's means to inform workers of changes that could significantly impact their occupational dose.

b. Findings

No findings were identified.

.4 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels) during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, radiation work permits, and worker briefings.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients.

The inspectors examined the posting and physical controls for selected high radiation areas and very high radiation areas to verify conformance with the occupational performance indicator.

b. Findings

No findings were identified.

.5 Risk-Significant High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the radiation protection manager the controls and procedures for high-risk high radiation areas and very high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduce the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that have the potential to become very high radiation areas during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations require communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for very high radiation areas and areas with the potential to become very high radiation areas to ensure that an individual was not able to gain unauthorized access to the very high radiation area.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance and an associated NCV of TS 5.7.2 for the failure to properly barricade and conspicuously post an area that was 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 mRem.

Description: On May 8, 2012, while inspecting the turbine building 557' catacomb area, the inspectors noted that some scaffolds (numbers 200389089 and 200176510) in the area provided access to upper scaffold decks and permanently installed work platforms in the area. The work platforms in the area then provided further access to the overhead locked high radiation areas of the steam affected areas under and on the turbine deck.

The licensee controls access to these locked high radiation areas through a combination of administrative and physical controls. The use of the scaffolds at the station is administratively controlled by the use of color coded scaffold tags (Green for "authorized use" and red for "do not use.") Additional administrative requirements on the use of scaffolds included completion of scaffold user training, notification to radiation protection when climbing above 6 feet, and the use of scaffold access ladders when climbing. One of the scaffolds discussed above was Green-tagged as ready for use.

The licensee is required to provide reasonable assurance that locked high radiation areas are secured against unauthorized access and that the physical controls cannot be easily circumvented. The lower sections of the subject scaffold ladders had been removed. However, the lower levels of the scaffolds themselves were designed such that they created natural ladders to the upper scaffold decks and permanently installed work platforms. Once on the upper scaffold decks and permanently installed work

platforms, personnel would have unencumbered access to the locked high radiation areas of the steam affected areas under and on the turbine deck.

The inspectors determined that the natural ladders created by the lower levels of the scaffolds could be easily circumvented by an individual who assumes, for whatever reason, that he or she is authorized to enter the area.

The turbine building 577' elevation catacomb area had historically been controlled as a locked high radiation area at the plant. The area was down posted and ladders to the permanently installed work platforms were posted and barricaded with ladder guards in the fall of 2011. Several CRs were initiated by radiation protection staff that questioned the adequacy of the down posted configuration at that time. However, station management determined that the reconfigured controls were adequate and no changes to the physical locked high radiation area controls were made.

There were some physical controls in place in the area. The licensee had installed ladder guards on permanently installed ladders to impede access to the permanently installed work platforms in the area. The ladder guards were posted as access points to the overhead locked high radiation areas.

Analysis: The inspectors determined that the failure to appropriately barricade and conspicuously post areas that are accessible to personnel such that a major portion of the whole body could receive in 1 hour, a dose greater than or equal to 1000 mRem, in accordance with station TS 5.7.2, was a performance deficiency consistent with IMC 0612 "Power Reactor Inspection Reports." The performance deficiency was reasonably within the licensee's ability to foresee and correct and was indicative of current performance, in that, the licensee had recently down posted the area from locked high radiation area controls in the fall of 2011.

The inspectors reviewed IMC 0612 Appendix E, "Examples of Minor Issues," 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 incidents did not have a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and were not willful.

In accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance because the finding was not an as-low-as-is-reasonably-achievable (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 their CAP as CR 2012-07583. Corrective actions included posting, barricading, and locking the doors to the turbine building 577' catacomb area.

The inspectors identified that the most significant contributor to the finding was a cross-cutting aspect in the area of problem identification and resolution in operating experience. Specifically, the licensee failed to implement and institutionalize operating experience through changes to station processes, procedures, equipment and training programs (P.2 (b)).

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 mRem shall be provided with locked or continuously guarded doors to prevent unauthorized entry. Contrary to the above, on May 7, 2012, the inspectors identified that the turbine building 577' catacomb area had unposted and unbarricaded access points, such that, station personnel had unencumbered access to areas with dose rates greater than 1000mRem/hr. This was corrected on May 8, 2012. Because this violation is of very low safety significance and it was entered into the licensee's CAP as CR 2012-07583, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000440/2012003-02; Failure to Appropriately Control Access to a Locked High Radiation Area)**

.6 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings were identified.

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable Planning and Controls (71124.02)

This inspection constituted a partial sample as defined in IP 71124.02-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

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 3-year rolling average collective exposure.

The inspectors reviewed the site-specific trends in collective exposures (using NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," and plant historical data) and source term (average contact dose rate with reactor coolant piping) measurements (using Electric Power Research Institute (EPRI) TR-108737, "BWR Iron Control Monitoring Interim Report," issued December 1998, and/or plant historical data, when available).

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected the following work activities of the highest exposure significance:

- septa filter removal/replacement;
- IFTS diving activities;
- RFO-13 balance of plant general maintenance;
- RFO-13 under-vessel activities;
- safety relief valve replacement;
- 1G33 RWCU system fill and vent; and
- remove, cutup, and replace LPRMs and dry tube replacement.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors assessed whether the licensee's planning identified appropriate dose mitigation features; considered alternate mitigation features; and defined reasonable dose goals. The inspectors evaluated whether the licensee's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment (e.g., ice vests). The inspectors determined whether the licensee's work planning considered the use of remote technologies (e.g., teledosimetry, remote visual monitoring, and robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and radiation work permit documents.

The inspectors compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in the licensee's ALARA planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements, and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity, failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted and if identified problems were entered into the licensee's CAP.

b. Findings

No findings were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors reviewed the assumptions and basis (including dose rate and man-hour estimates) for the current annual collective exposure estimate for reasonable accuracy for select ALARA work packages. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome.

The inspectors evaluated whether the licensee had established measures to track, trend, and, if necessary, to reduce occupational doses for ongoing work activities. The inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to control the work. The inspectors evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

No findings were identified.

.4 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors evaluated whether problems associated with ALARA planning and controls are being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted a partial sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the results of radiation protection program audits related to internal and external dosimetry (e.g., licensee's quality assurance audits, self-assessments, or other independent audits) to gain insights into overall licensee performance in the area of dose assessment and focus the inspection activities consistent with the principle of "smart sampling."

The inspectors reviewed the most recent National Voluntary Laboratory Accreditation Program (NVLAP) accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

A review was conducted of the licensee procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multibadging, extremity, neutron, etc.), assessment of internal dose (operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and evaluation of and dose assessment for radiological incidents (distributed contamination, hot particles, loss of dosimetry, etc.).

The inspectors evaluated whether the licensee had established procedural requirements for determining when external and internal dosimetry is required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor is NVLAP accredited and if the approved irradiation test categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present and the way the dosimeter is being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or lens dose equivalent).

The inspectors evaluated the onsite storage of dosimeters before their issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to radiation workers with respect to care and storage of dosimeters.

The inspectors assessed whether non-NVLAP accredited passive dosimeters (e.g., direct ion storage sight read dosimeters) were used according to licensee procedures that provide for periodic calibration, application of calibration factors, usage, reading (dose assessment) and zeroing.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee uses a "correction factor" to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when the electronic personal dosimeter must be used to assign dose and whether the correction factor is based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports or CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The inspectors assessed whether the licensee had identified any trends and implemented appropriate corrective actions.

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

The inspectors reviewed procedures used to assess the dose from internally deposited nuclides using whole body counting equipment. The inspectors evaluated whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake and the assignment of dose.

The inspectors reviewed the whole body count process to determine if the frequency of measurements was consistent with the biological half-life of the nuclides available for intake.

The inspectors reviewed the licensee's evaluation for use of its portal radiation monitors as a passive monitoring system to determine if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors selected several whole body counts and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine its appropriateness. The inspectors evaluated whether any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. The inspector's reviewed the licensee's 10 CFR Part 61 data analyses to determine whether the nuclide libraries included appropriate gamma-emitting nuclides. The inspectors evaluated how the licensee accounts for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

a. Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The inspectors determined whether flow rates and collection times for air sampling equipment were adequate to allow lower limits of detection to be obtained. The licensee had not performed dose assessments using airborne/derived air concentration monitoring since the last inspection.

b. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

The inspectors assessed whether the licensee informs workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy.

The inspectors selected individuals who had declared pregnancy during the current assessment period and evaluated whether the licensee's radiological monitoring program (internal and external) for declared pregnant workers is technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls employed by the licensee and with respect to the requirements of 10 CFR Part 20.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving occupational dose assessment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures performance indicator (PI) for the period from second quarter 2011 through the first quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance WOs, issue reports, event reports and NRC Integrated IRs for the period second quarter 2011 through the first quarter 2012 to validate the accuracy of the submittals. The inspectors also

reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample for safety system functional failures as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - Emergency Alternating Current Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System PI for the period from the second quarter 2011 through the first quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC Integrated IRs for the period of the second quarter 2011 through the first quarter 2012 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and one instance was identified by the licensee. A condition report was reviewed with regard to the submission challenges identified by the licensee. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample for MSPI emergency AC power system PI as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index – High-Pressure Injection System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI – High-Pressure Injection System PI for the period from the second quarter 2011 through the first quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated IRs for the period of the second quarter 2011 through the first quarter 2012 to validate the accuracy of the submittals. The inspectors reviewed the

MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample for MSPI high-pressure injection system PI as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline IPs discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily CR packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Selected Issue Follow-Up Inspection: High Risk Lift in Fuel Handling Building

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting a root cause for a dropped support column during a high-risk lift in the fuel handling building. Earlier observation of the event had identified the probability that the failure to properly rig the load was a performance deficiency. Review of the licensee corrective actions in the root cause along with interviews of the personnel involved in the decision making and execution of the lift was also conducted as part of the review of this event. Other rigging and lifting events were also reviewed for a pattern and the licensee procedures for conducting crane evolutions were also reviewed.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction: A self-revealed Finding of very low safety significance (green) was identified when a rigging evolution in the fuel handling building resulted in suspension of an approximately 10,000 pound support column by only part of the planned lift rig. Specifically, the licensee failed to develop an adequate lift plan in accordance with their procedure, resulting in a rolling motion of the load, causing a lifting strap to part. The column pivoted on one corner of the baseplate and a flat side impacted the floor, stabilizing the load.

Description: On April 19, 2012, the licensee commenced a lift of an approximate 10,000 pound column in the fuel handling building. The column is a major support element for the seismic construction which provides the vertical restraint function during stack up of the independent spent fuel storage cask loading process. The personnel conducting the lift of the column from horizontal to vertical were utilizing Revision 2 of the load plan that had been changed by a pen and ink process on April 11, 2012. The plan had been reviewed by the Perry Rigging Program Owner. The column was designed with lifting points but the lift plan did not call for their usage because the personnel in charge felt that the use of "choker" straps provided better control of the load. The lift plan as approved in accordance with NOP-WM-5003, "Rigging, Lifting and Load Handling," contained a diagram of the generic support column for the seismic construction elements, with the pen and ink changes, which did not match the actual column being lifted. The baseplate was angled on the column to be lifted but orthogonal on the diagram in the lift plan.

At the beginning of the lift, the crane operator raised the hook of the crane to load two chain falls which were attached through “choker” straps, synthetic load straps wrapped around the column. This process caused the lighter end, the top, of the column to rise up off its stand as expected. The other end of the column, the baseplate, remained in contact with the floor and the baseplate began to rotate through its center of gravity as it was resting on only one corner of the non-orthogonal baseplate. As the column rotated, the support stand shifted underneath and the lift process was paused. The crane operator continued the lift after a short consultation and the column eventually rotated off the support stand because of the location of the load's center of gravity. One corner of a structural element on the side of the column rotated into the lower “choker” strap and cut the strap, which was under tension. The column rotated on the baseplate corner which was in contact with the floor and a flat side of the baseplate impacted the floor of the fuel handling building as the crane and lift rig adjusted to the parted strap with the lighter end of the column still supported in the air by the crane and remaining elements of the lift rig.

The licensee's root cause found that the “rigging technique did not compensate for the irregular shape of the column nor was the sequence of the lift adequate to control the load.” The root cause also found that there were “contributing factors within the Lift Plan such as ambiguous instructions and no consideration of the center of gravity, load vectors and/or angles of attachment points which should have been addressed for an increased risk lift per NOP-WM-5003,” the licensee's Rigging, Lifting and Load Handling Procedure. Several CRs including CR 2012-06153, which contains the root cause evaluation, were written. Immediate actions were taken to stop all crane evolutions on site until interim preventive measures were in place to ensure the safety of suspended loads as well as personnel and equipment in the vicinity of those loads. The fuel handling building floor structure was not damaged.

Analysis: The inspectors determined that the licensee's failure to develop an adequate lift plan to support raising the column safely in the fuel handling building was a performance deficiency. The inspectors evaluated the performance deficiency in accordance with IMC 0612, Appendix B, “Issue Screening.” This deficiency was not similar to any of the examples in IMC 0612, Appendix E, but was determined to be more than minor because if left uncorrected the safety concern would become more significant. Additionally, the performance deficiency impacted the Human Performance attribute of the Initiating Events Cornerstone, and adversely affected the cornerstone objective to limit 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 could be evaluated in accordance with IMC 0609, Attachment 4, Phase 1, “Initial Screening and Characterization of Findings.” The finding was determined to be of very low safety significance (Green) by answering ‘no’ to the questions in the Initiating Events column of Table 4a, since the finding does not contribute to both a reactor trip and the likelihood that mitigation equipment or functions will not be available.

This finding has a cross-cutting aspect in the work practices component of the Human Performance cross-cutting area per IMC 0310 (H.4(a)) because licensee personnel proceeded in the face of uncertainty or unexpected consequences. Specifically, the licensee continued the attempted lift of the column despite indications that the load was not reacting as expected for the lifting rig which was attached to the column.

Enforcement: Because this performance deficiency did not significantly impact safety-related components, there were no violations of NRC regulations associated with this Finding (FIN) and as such, no enforcement is applicable. **(FIN 05000440/2012003-03; Inadequate Lift Plan Causes Lifting Rig Failure)**

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Feedwater Temperature Reduction

a. Inspection Scope

The inspectors reviewed and observed the licensee's evolution to remove second stage moisture separator reheaters from service and partially bypass the final FW heaters in order to reduce FW temperature. Towards the end of a fuel cycle, the reactor will enter a coastdown period where reactor power will slowly lower due to burn-up of available fuel. Reducing FW temperature raises reactor output to recover some losses and maintain maximum output. Documents reviewed associated with the evolution activities are listed in the attachment to this report.

This inspection activity constituted one sample as defined in IP 71153-05.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report 05000440/2011-003-01: Switchyard Configuration During Startup Results in Operation Prohibited by Technical Specifications

a. Inspection Scope

On October 18, 2011, at 3:51 a.m., the plant entered Mode 2 during plant startup. One of the two offsite power circuits required by TS 3.8.1, "AC Sources –Operating" was the delayed access circuit through the Unit 1 auxiliary transformer due to a previously experienced failure of the Unit 1 startup transformer (SUT) earlier in the month of October. At 4:19 p.m., the same day, the manual disconnects in the main switchyard were found to be open with danger tags installed. The failure to meet TS 3.8.1 requirements for operable equipment prior to the mode change was a performance deficiency and previously evaluated in Perry Integrated IR 2011-005. The licensee documented the deficiency in CR-2011-03926 and conducted a root cause evaluation to determine appropriate corrective actions. Immediate corrective actions were to initiate a night order which modified the tracking of switchyard configurations by control room personnel and revisions to procedures to validate switchyard configurations prior to startup, not just inside the plant equipment.

This revision to the Licensee Event Report (LER) was reviewed by the inspectors and no additional findings or violations of NRC requirements were identified. The revision updated the causal analysis and corrective actions associated with this event. Documents reviewed are listed in the attachment. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

b. Findings

No findings were identified.

.3 (Closed) Licensee Event Report 05000440/2012-001-00: Manual Reactor Protection System Actuation Due to Automatic Turbine Generator Runback

a. Inspection Scope

On March 1, 2012, at 2:24 a.m., operators manually initiated a reactor protection system actuation in response to a turbine generator runback event. The runback was a result of maintenance to calibrate a gauge in the generator stator water cooling system. This event was evaluated by the inspectors during the previous quarter when it occurred and a finding was documented in Perry Integrated Inspection Report 2012-002. The inspectors reviewed the LER submittal and root cause. The inspectors determined that no additional deficiencies were identified by the licensee. Documents reviewed are listed in the attachment. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

b. Findings

No findings were identified.

4OA5 Other Activities

Temporary Instruction - 2515/182 - Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, NEI 09-14, "Guideline for the Management of Buried Piping Integrity," (ADAMS Accession No. ML1030901420) to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122), with an expanded scope of components, which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued TI-2515/182 "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks" to gather information related to the industry's implementation of this initiative.

The inspectors reviewed the licensee's programs for buried pipe, underground piping and tanks in accordance with Temporary Instruction (TI)-2515/182 to determine whether the program attributes and completion dates identified in Sections 3.3 A and 3.3 B of NEI 09-14 Revision 1 were contained in the licensee's program and implementing procedures. For the buried pipe and underground piping program attributes with completion dates that had passed, the inspectors reviewed records to determine whether the attribute was in fact complete and to determine if the attribute was

accomplished in a manner which reflected good or poor practices in program management.

Based upon the scope of the review described above, Phase I of TI-2515/182 was completed.

b. Observations

The licensee's buried piping and underground piping and tanks program was inspected in accordance with Paragraphs 03.01.a through 03.01.c of TI-2515/182 and was found to meet all applicable aspects of NEI 09-14 Revision 1, as set forth in Table 1 of the TI.

c. Findings

No findings were identified.

4OA6 Meetings

.1 Exit Meeting Summary

On July 12, 2012, the inspectors presented the inspection results to the Site Vice President, Mr. Vito Kaminskas, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for

- The inspection results for the areas of radiological hazard assessment and exposure controls; occupational ALARA planning and controls; and occupational dose assessment with Mr. Vito Kaminskas, Site Vice President, on May 11, 2012.
- The Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks (TI -2515/182) with Manager-Programs and Technical Services, Ms. P. Boissoneault, and other members of the licensee staff on June 14, 2012.

The inspectors confirmed that none of the potential report inputs discussed were considered proprietary.

.3 Other Meetings

End-Of-Cycle Meeting

On April 5, 2012, the NRC held a formal public meeting at the Quail Hollow Resort in Painesville, Ohio, to present the 2011 end-of-cycle assessment of the Perry Nuclear Power Plant. The summary of that meeting is documented in the Publicly Available Records System (PARS) component of NRC's document system (ADAMS) as ML12102A212.

4OA7 Licensee-Identified Violations

Title 10 of the Code of Federal Regulations, Part 20.1902, requires, in part, that the licensee shall post each high radiation area with a conspicuous sign or signs bearing the words "Caution, High Radiation Area" or "danger High Radiation Area." Contrary to the above, on January 29, 2011, the licensee identified that a high radiation area on auxiliary building 599' by the alternate decay heat removal overhead was not conspicuously posted. This issue was documented in the licensee's CAP in CR 2011-88938. Immediate corrective actions included restoring the required high radiation area posting. 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
E. Larson, Acting Site Vice President
J. Grabnar, Site Operations Director
R. Fili, Site Engineering Director
H. Hanson, Performance Improvement Director
P. McNulty, Radiation Protection Manager
F. Smith, Emergency Preparedness Manager
V. Veglia, Maintenance Director
J. Tufts, Operations Manager

NRC

J. Jandovitz

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000440/2012003-01	FIN	Failure To Follow Operations Procedures (Section 1R15)
05000440/2012003-02	NCV	Failure To Appropriately Control Access To A Locked High Radiation Area (Section 1RS1)
05000440/2012003-03	FIN	Inadequate Lift Plan Causes Lifting Rig Failure (Section 4OA2.3)

Closed

05000440/2011-003-01	LER	Switchyard Configuration During Startup Results in Operation Prohibited by Technical Specifications
05000440/2012-001-0	LER	Manual Reactor Protection System Actuation due to Automatic Turbine Generator Runback

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection

- NOP-OP-1003; Grid Reliability Protocol; Revision 4
- ONI-ZZZ-1; Tornado or High Winds; Revision 16
- ONI-P56-4; Grid Threat; Revision 1
- ONI-SPI F-2; Yard Inspection; Revision 2
- ONI-R36-2; Extreme Cold Weather; Revision 3
- PAP-0102; Interface with the Transmission System Operator; Revision 8
- EROI-842-000 American Transmission Systems, Inc.; Original Service Agreement No. 290; FERC Electric Tariff, Second Revised Volume No. 1; Schedule No. 3; Filing Date: December 29, 2000; Effective Date: February 22, 2001, entitled, "Generator Interconnection and Operating Agreement"
- ONI-S11; Hi/Low Voltage; Revision 9
- ONI-R10; Loss of AC Power; Revision 10
- ONI-SPI F-1; Off-Site Power Restoration; Revision 4
- NOP-OP-1005; Shutdown Defense in Depth; Revision 13
- FPI-XFMR; Perry Operations Manual: Pre-Fire Plan Instruction; Revision 2
- Summer Work List Remaining spreadsheet; dated May 22, 2012
- Summer Work List Total spreadsheet; dated May 29, 2012
- IOI-15; Seasonal Variations; Revision 18
- NOP-WM-2001; Work Management Scheduling, Assessment and Seasonal Readiness Processes; Revision 13

1R04 Equipment Alignment

- P42 System Description; Emergency Closed Cooling System; Revision 10
- SOI P42; Emergency Closed Cooling System; Revision 18
- Drawing 302-0621-00000; Emergency Closed Cooling System; Revision SS
- Drawing 302-0622-00000; Emergency Closed Cooling System; Revision M
- Plant Health Report 2011-04; P42 Emergency Closed Cooling System
- WO200319635; Rebuild Pump (A); scheduled for RFO14
- WO200436337; ECC HX A Temp Control Valve Stem Lead; not scheduled
- WO200316576; Replace Pump Inboard Bearing Oil Seals, "A" Pump; scheduled RFO14
- Drawing 302-0354-00000; Standby Diesel Generator Jacket Water; Revision U
- Drawing 302-0353-00000; Standby Diesel Generator Lube Oil; Revision S
- Drawing 302-0351-00000; Standby Diesel Generator Starting Air; Revision BB
- Drawing 302-0355-00000; HPCS and Standby Diesel Generator Exhaust, Intake and Crankcase; Revision W
- WO200407166; Division 2 Diesel Post 1R13 Torque Checks; Revision 0
- SOI-R43; Division 1 and 2 Diesel Generator System; Revision 41
- WO200489185; Emergency Service Water Valve Position Verification; dated June 25, 2012
- SVI-P45-T1254; Emergency Service Water System Valve Position Verification; Revision 6
- VLI-P45; Perry Operations Manual Valve Lineup Instruction Emergency Service Water System; Revision 12
- Drawing 302-0791-00000; Emergency Service Water System; Revision UU

- Drawing 302-0792-00000; Emergency Service Water System; Revision NN
- Drawing 302-0793-00000; Emergency Service Water Operating Data; Revision N
- Drawing 302-0705-00000; Low Pressure Core Spray System; Revision FF
- VLI-E21; Perry Operations Manual Valve Lineup Instruction Low Pressure Core Spray System; Revision 9

1R05 Fire Protection (Annual/Quarterly)

- PAP-1910; Fire Protection Program; Revision 24
- FPI-1DG; Pre-Fire Plan Instruction – Diesel Generator Building; Revision 6
- FPI-0IB; Pre-Fire Plan Instruction – Intermediate Building; Revision 6
- FPI-0FH; Pre-Fire Plan Instruction – Fuel Handling Building; Revision 4
- Drawing 105-0013-00000; Control Complex Floor Plan – El. 620' 6"; Revision J
- Drawing 101-0032-00000; Intermediate Building Floor Plan – El. 599' 0"; Revision L
- Drawing 101-0033-00000; Intermediate Building Floor Plan – El. 620' 6"; Revision K
- Drawing 101-0064-00000; Diesel Generator Building Floor Plan - El. 620' 6" and 646' 6"; Revision H
- FPI-0CC; Pre-Fire Plan Instruction - Control Complex; Revision 9
- FPI-1AB; Pre-Fire Plan Instruction – Auxiliary Building Unit 1; Revision 3
- ONI-P54; Fire; Revision 15

1R06 Flood Protection Measures – Underground Vaults

- PDB-H0055; Equipment Associated With Electrical Manholes; Revision 0
- Drawing 215-0711-00000; Electrical Conduit Layout Manholes and Underground Duct Runs – Plans; Revision S
- Drawing 04-4549-215-0712; Electrical Conduit Layout Underground Duct Runs Section 1-1 Thru 31-31; Revision H

1R11 Licensed Operator Regualification Program

- OTLC-3058201208_Perry-SG-C1; Out of the Box Evaluation for LOR Cycle 201208; dated April 11, 2012
- NOP-OP-1002; Conduct of Operations; Revision 5
- NOBP-OP-0007; Conduct of Infrequently Performed Tests or Evolutions; Revision 4
- NOBP-OP-0007-01; IPTE Worksheet; Revision 1 – Titled: Removal and Return of the 1A, 2A, and 5A Feedwater Heaters; dated April 28, 2012
- NOBP-OP-0007-01; IPTE Worksheet; Revision 1 – Titled: Removal and Return of the 1A, 2A, and 5A Feedwater Heaters; dated April 27, 2012; Terminated on April 28, 2012, at 5:05 a.m.
- NOBP-OP-1004-02; Evolution Specific Reactivity Plan; Revision 0; - Titled: April 2012 Feedwater Heater Repair; Including Updates 1 and 2.
- Reactivity Plan – Perry Nuclear Power Plant; Evolution Specific – April 2012 Feedwater Heater Repair; Revision 0; Update 2; dated: April 28, 2012, at 12:13 a.m.

1R12 Maintenance Effectiveness

- CR 2012-08958; Non-safety Signal Resistor Unit Installed in Safety-Related Application; dated May 30, 2012
- Bailey Controls Company, Wickliffe, Ohio, Qualification Report Addendum; Report Number: QR-3202-E98-766-ADD1; dated October 24, 1984

- Bailey Controls Company Quality Assurance Data Sheet; Cat. No. 766100BAAA2WBJ; Serial No. 5440, 5441, 5442, 5445, 5446, 5447, 5448, 5449, 5450, 5451, 5452, all dated October 24, 1984
- Bailey Controls Company, Wickliffe, Ohio, Certificate of Compliance, Subject: BCCo.JOB/SO.NO. 20776H17, Customer Order No. Q-2877-25, Perry Nuclear Power Plant, (11) 766100BAAA2WBJ Signal Resistors, Item # 8, Tagging: CEI STK 9685363; dated October 24, 1984
- CR 2012-09946; RCIC Waterleg Pump Operations Did Not Reflect Actual Work Plan; dated June 19, 2012
- Perry System Health Report for System E-51 for the First Quarter 2012; dated April 30, 2012
- CR 2011-04803; Delay in Scheduled SVI-E51-T2001 for RCIC; dated November 2, 2011
- CR 2012-01387; RCIC Waterleg Pump Increased Vibration Level; dated January 27, 2012
- CR 2012-01587; Challenge Meeting for RCIC Identified a Potential Non-conservative Decision in Conduct of Turbine Overspeed Testing; dated January 31, 2012.
- CR 2012-01755; Second Deferral due to Parts not being Available for RCIC Turbine Trip Throttle Valve Latch; dated February 2, 2012
- CR 2012-02399; RCIC Pump Suction Pressure High Alarm; dated February 14, 2012
- CR 2012-08774; RCIC Waterleg Pump High Vibrations; dated May 26, 2012

1R13 Maintenance Risk Assessments and Emergent Work Control

- NOP-OP-1010; Operational Decision Making; Revision 3
- NOP-OP-1010-01; ODMI Recommendation Summary Sheet; Revision 4 for CR 2012-003929; Leak at the Bottom of the 5A Intermediate Pressure Feedwater Heater (1N27B0001A) Near Instrument Tree Line Tap; Revision Number 0
- NOP-OP-1007; Risk Management; Revision 13
- CR 2012-05748; Borescope Inspection of Steam Leak on 5A Feedwater Heater; dated April 13, 2012
- Drawing 302-0111-00000; High Pressure Heater Drains and Vents "A"; Revision EE
- Drawing 44-2228-4-100; Outline 22,808 Square Foot Horizontal U-Tube Low Pressure Elliptical HD. Feedwater Heater; Revision D
- CR 2012-06091; While Performing SVI-E31-T0075-G, Received an Unexpected ½ MSIV Isolation From RPS Channel D; dated April 19, 2012
- SVI-E31-T0075-G; MSL High Flow Channel C Calibration For 1E31-N087C and 1E 31-N089C; Revision 6
- NOP-WM-2003-01; Test Cover Sheet; Revision 01; Function Location: SVI-E31-T0075-G; Maintenance Plan #: 45504; Order #: 2004499997; dated April 19, 2012
- WO 200414013; SVI-E31-T0075-G; (24M) MSL High Flow Channel C Calibration for 1E31-N087C and 1E31-N089C; dated April 18, 2012
- NOBP-OP-0007; Conduct of Infrequently Performed Tests or Evolutions; Revision 4
- ONI-N36; Loss of Feedwater Heating; Revision 15
- ONI-C51; Unplanned Change in Reactor Power or Reactivity; Revision 25
- NOBP-OP-0007-01; IPTE Worksheet; Revision 1 for Removal and Return of the 1A, 2A and 5A Feedwater Heater; dated April 27, 2012
- EOP-03; Secondary Containment Control and Radioactive Release Control; Revision 1
- NOP-WM-2001; Work Management Scheduling/Assessment/Seasonal Readiness Processes; Revision 13
- Perry Nuclear Power Plant Week 5 Period 4, Cycle 14 Power Reduction Schedule as of April 26, 2012, at 12:50 p.m.

- WO 200422903; SVI-E12-T1195-B; (24M) LPCI Pump B Discharge Low Flow (Bypass) Channel Calibration For 1E12-N052B; dated May 11, 2012
- SVI – C61-T1201; Remote Shutdown Panel 1C61-P001 Control Operability Test RHR "A", ESW "A", ECC "A", and Division 1 Diesel Generator; Revision 11; dated May 26, 2012
- Perry Work Implementation Schedule; Week 09, Period 4, Non-Divisional; From 1200 Monday, 05/21/12 to 1200 Tuesday, 05/22/12
- Perry Work Implementation Schedule; Week 09, Period 4, Non-Divisional; From 1200 Tuesday, 05/22/12 to 1200 Wednesday, 05/23/12
- Perry Work Implementation Schedule; Week 09, Period 4, Non-Divisional; From 1200 Wednesday, 05/23/12 to 1200 Thursday, 05/24/12
- CR 2012-08490; SVI-C61-T1201 Unsat Voltage Readings; dated May 22, 2012
- CR 2012-08510; Found Loose Connections; dated May 23, 2012

1R15 Operability Determinations and Functionality Assessments

- CR 2012-06660, NRC ID, Feedwater Heater 5A Leak as Reported is Above an ODMI Trigger Point; dated April 26, 2012
- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revision 3
- ODMI from CR 2012-003929; Leak at Bottom of the 5A Intermediate Pressure Feedwater Heater (1N27B0001A) Near Instrument Tree Line Tap; dated March 23, 2012
- ODMI from CR 2012-003929; Leak at Bottom of the 5A Intermediate Pressure Feedwater Heater (1N27B0001A) Near Instrument Tree Line Tap; Update 1; dated March 23, 2012
- OAI-1701; Tracking of LCOs; Revision 14
- PNPP No. 7156; Daily Surveillance Requirements Sheets; Revision 6/19/02; dated March 20, 2012 to April 25, 2012
- OAI-0201; Operations General Instructions and Operating Practices; Revision 27
- PNPP No. 8364; Operations Night Order; dated 04/17/12 at 1200
- CR 2012-07909; Reactor Core Isolation Cooling (RCIC) System Steam Flow Instrument Reading High; dated May 14, 2012
- CR 2012-08697; Offgas Pretreatment Sample Had Small Instantaneous Increase in Xe-133 Value but Below Action Level; dated May 25, 2012
- CR 2012-08802; Elevated Xe-133 in Offgas Pretreatment Sample; dated May 28, 2012
- NOP-NF-1102; Fuel Integrity Monitoring and Assessment; Revision 5
- FTI-B0013; Fuel Defect Localization and Suppression; Revision 1
- ODMI from CR 2012-08802; Course of Action for a Fuel Defect in Cycle 14; Revision 0
- CR 2012-04734; NRC FP Triennial: Potential Spray Nozzle Coverage Issue in 638' Penetration Room; dated March 38, 2012
- PNPP Daily Log Entry for 4/17/2012 at 17:25 iaw OAI-1702
- Prompt Functionality Assessment from CR 2012-04734 for Spray Nozzle Discharge Density in the Cable Trays in the Cable Spreading Rooms on the 638' Level; Revision 0

1R19 Post-Maintenance Testing

- WO200414013; Partial Calibration of Calibration Unit C71A-21D-1; dated April 19, 2012
- WO200499884; MSL Channel "C" Flow 1E71-N688B Downscale; dated April 18, 2012
- SVI-E31-T0075-G; MSL High Flow Channel C Calibration for 1E31-N087C and 1E31-N089C
- CR 2012-06010; MSL "B" Hi Flow Instrument Failed; dated April 17, 2012
- WO200498967; RCIC Orifice Leaking; dated May 3, 2012
- SOI-E51; Reactor Core Isolation Cooling System; Revision 30
- CR 2012-05664; RCIC Drain Pot Isolation Valve Leaking; dated April 12, 2012

- CR 2012-06335; Floor Drain in RCIC Room Blocked; dated April 22, 2012
- CR 2012-07218; Degraded Insulation Found in Reactor Core Isolation Cooling Room; dated May 4, 2012
- WO 200498967; RCIC Drain Pot Isolation Leaking Underneath Insulation About 50 dpm to the Floor Drain; dated May 3, 2012
- CR 2012-07909; RCIC System Steam Flow Instrument Reading High; dated May 14, 2012
- IMI-E2-43; Filling and Venting RCIC Instrument Lines for 1E31-N083A and 1E31-N083B; Revision 4; dated May 14, 2012
- WO 200505382; PY-1B33 Reactor Recirculation System; dated June 13, 2012
- CR 2012-09427; Flow Control Valve B Oscillations; dated June 6, 2012
- WO 200509025; Source Range Monitor; dated June 16, 2012
- SVI-C51-T0234-A; SRM A and C Channel Functional Test for 1C51-K600A and 1C51-K600C; dated June 16, 2012
- WO 200509192; Main Steam Line 'C' Outboard Main Steam Isolation Valve Limit Switch replacement; dated June 17, 2012; with Addendum # 1 and # 2
- WO 200508574; Replace RCIC Waterleg Pump Motor; dated June 15, 2012
- SVI-E51-T2003; RCIC Waterleg Pump and Associated Valves Cold Shutdown Test; Revision 12
- CR 2012-09670; RCIC Waterleg Pump High Vibration; dated June 12, 2012

1R20 Other Outage

- Perry Nuclear Power Plant Work Implementation Schedule – “B” Flow Control Valve Oscillation Forced Outage; dated June 14, 2012 at 0522
- Perry Nuclear Power Plant Work Implementation Schedule – “B” Flow Control Valve Oscillation Forced Outage; dated June 14, 2012 at 1100
- Perry Nuclear Power Plant Work Implementation Schedule – “B” Flow Control Valve Oscillation Forced Outage; dated June 15, 2012 at 1300
- Perry Nuclear Power Plant Work Implementation Schedule – “B” Flow Control Valve Oscillation Forced Outage; dated June 18, 2012 at 1300
- IOI-1; Cold Startup; Revision 35
- IOI-3; Power Changes; Revision 47
- IOI-4; Shutdown; Revision 18
- IOI-8; Shutdown By Manual Reactor Scram; Revision 6
- IOI-12; Maintaining Cold Shutdown; Revision 14
- IOI-17; Drywell Entry and Access Control; Revision 14
- NOBP-OM-4003; FENOC Forced Outage Management; Revision 5
- NOP-OP-1010-01; ODMI Recommendation Summary Sheet; Revision 4 for CR 2012-09514; Plant Operational Condition for repair of Reactor Recirculation Loop B Flow Control Valve (FCV). The reactor recirculation FCV B is currently locked open at 22 percent open; Revision Number 0
- NOP-OP-1007; Risk Management; Revision 14
- ONI-ZZZ-5; Spills and Unauthorized Discharges; Revision 5
- ONI-N62; Loss of Main Condenser Vacuum; Revision 9
- CR 2012-09813; Auxiliary Boiler “A” fuel oil leak; dated June 15, 2012
- ALARA Plan 125205 for 1B33N0721B Linear Velocity Transducer (LVT) Repairs and support work including scaffold installation/removal, clearances, troubleshooting LVT/Connector, LVT connector replacement and radiological protection support
- SOI-B33; Reactor Recirculation System, Section 7.5, Transferring Recirculation Pump from Slow to Fast Speed; Revision 30

1R22 Surveillance Testing

- SVI-E51-T2001; Reactor Core Isolation Cooling Pump and Valve Operability Test; Revision 36; dated May 1, 2012
- SVI-E31-T0074-B; MSL High Flow Channel B Functional for 1E31-N686B and 1E31-N688B; Revision 4
- SVI-C61-T1200; Remote Shutdown Control Test – RCIC and RHR; Revision 5; dated May 3, 2012
- SVI-P42-T2001B; Emergency Closed Cooling System B Pump and Valve Operability Test; Revision 11; dated May 7, 2012
- SVI-C51-T0027-E; APRM 'E' Channel Functional for 1C51-K605E; Revision 12; dated June 19, 2012
- SVI-E31-T0375; Drywell Floor Drain Sump Monitoring System Channel Functional for 1E31-K606; Revision 9; dated May 8, 2012
- SVI-E31-T0375; Drywell Floor Drain Sump Monitoring System Channel Functional for 1E31-K606; Revision 9; dated June 7, 2012

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

- CR 2011-88938; ADHR Posting Found UNSAT; dated January 29, 2011
- CR 2011-03063; LHRA Boundary Improvement Identified; dated November 4, 2011
- CR 2011-05946; Locked High Radiation Area Barrier Concern Identified; dated November 24, 2011
- CR 2012-07583; Challenges Identified for Inadvertent Climbing and Access to Locked High Radiation Area; dated May 9, 2012
- CR 2012-07595; Unsafe Scaffolds Found Green Tagged During Catacomb Walk Down; dated May 9, 2012
- HPI-C0014; Radlock Key Issue; Revision 01
- GCI-0016; Scaffolding Erection, Modification or Dismantling Guidelines; Revision 20
- NOBP-OP-4008; Response to Radiological Events; Revision 04
- NOP-OP-4002; Conduct of Radiation Protection; Revision 04
- NOP-OP-4101; Access Controls for Radiologically Controlled Areas; Revision 07
- NOP-OP-4102; Radiological Postings, Labeling, Markings; Revision 09
- NOP-OP-4104; Job Coverage; Revision 02
- NOP-OP-4105; Diving in Contaminated Systems; Revision 02
- NOP-OP-4107; Radiation Work Permit; Revisions 10
- PYBP-RPS-0016; Radiation Protection Response to Changing Plant Conditions; Revision 11

2RS2 Occupational ALARA Planning and Controls (71124.02)

- NOP-OP-4005; ALARA Program; Revision 03
- Perry Nuclear Power Station; RFO-13 Outage ALARA Report; undated
- RWP 1100134; Septa Filter Removal/Replacement; Revision 01
- RWP 11-0171; IFTS Diving Activities; Revision 0
- RWP 11-6008; RFO-13 Balance of Plant General Maintenance; Revision 09
- RWP 11-6013; RFO-13 Under-Vessel Activities; Revision 09
- RWP 11-6015; Safety Relief Valve Replacement; Revision 03
- RWP 11-6040; 1G33 RWCU System Fill and Vent; Revision 02
- RWP 11-6047/11-6050; Remove, Cutup, and Replace LPRMs and Dry Tube Replacement; Revision 02

2RS4 Occupational Dose Assessment (71124.04)

- NOP-OP-4201; Routine External Exposure Monitoring; Revision 01
- NOP-OP-4202; Declared Pregnant Workers; Revision 00
- NOP-OP-4204; Special External Exposure Monitoring; Revisions 05 and 06
- NOP-OP-4205; Dose Assessment; Revision 03
- NOP-OP-4206; Bioassay Program; Revision 00
- Whole Body Count Reports; Selected Records; various dates

4OA1 Performance Indicator Verification

- NOBP-LP-4012-08, Revision 2; Safety System Functional Failures; April 2011 through March 2012
- NOBP-LP-4012-04, Revision 3; MSPI for Emergency AC Power Systems; April 2011 through March 2012
- NOBP-LP-4012-05, Revision 2; MSPI for High Pressure Injection System and High Pressure Emergency Diesel Generator; April 2011 through March 2012
- CR 2012-02737; August 2011 MSPI Numbers for Emergency AC Power Need Reevaluated (sic); dated February 12, 2012
- CR 2011-01116; Reporting of MSPI NRC Performance Indicator Data; dated August 25, 2011
- MSPI Basis Document; Revision 4;
- MSPI Basis Document; Revision 5; dated July 8, 2011
- MSPI Basis Document; Revision 6; dated October 18, 2011
- PYBP-DES-0011; Mitigating Systems Performance Index; Revision 2
- SVI-E22-T1319; Diesel Generator Start and Load Division 3; Revision 18
- SOI-E22B; Division 3 Diesel Generator; Revision 28
- NOBP-LP-4012; NRC Performance Indicators; Revision 3

4OA2 Problem Identification and Resolution

- CR 2012-06153; Loss of Control of Load for the Seismic Restraint for the Dry Cask Storage Project; dated April 19, 2012
- PAP-1313; Control of Lifting Operations; Revision 15
- Dry Cask Seismic Restraint Rigging Plan; Revision 1
- Dry Cask Seismic Restraint Rigging Plan; Revision 2
- CR 2012-07048; Corrective Actions for Several Lifting and Rigging Issues has been Ineffective; dated May 2, 2012
- CR 2012-06565; Assessment of the Dry cask Seismic Rigging Plan Rev. 1 for Order 200463034; dated April 25, 2012
- CR 2012-08358; Dry Cask Seismic Restraint Rigging Plan Revision 2 was not Followed When Unloading the "A" Column from the Trailer; dated May 21, 2012
- CR 2012-06153; Loss of Control of Load for the Seismic Restraint for the Dry Cask Storage Project; dated April 19, 2012
- CR 2012-06489; Seismic Restraint Column Assembly may Require Evaluation Post-Rigging and Lifting Incident; dated April 24, 2012
- NOP-WM-5003; Rigging, Lifting and Load Hauling; Revision 3
- Root Cause Analysis Report; Loss of Control of Seismic Restraint for the Dry Cask Storage Project; dated May 31, 2012
- Dry Cask Seismic Restraint Rigging Plan; Revision 3
- CR 2012-07067; Gaps Found during Assessment of Dry Cask Seismic Restraint Rigging Plan, Revision 3; dated May 2, 2012

4OA3 Follow-up of Events and Notices of Enforcement Discretion

- LER 05000440/2012-01-00; Manual Reactor Protection System Actuation due to Automatic Turbine Generator Runback; dated April 27, 2012
- LER 05000440/2011-03-01; Switchyard Configuration During Startup Results in Operation Prohibited by TSS; dated February 29, 2012

4OA5 Other Activities

- 3203.100-01; Perry Nuclear Power Plant Buried Piping Program Basis Document; Revision 0
- Perry Underground Piping and Tanks Inspection Plan; Revision 1
- 3203.100-01; Attachment E; Electronic Markup of Plant drawings; Revision 0
- NOP-ER-2007; Underground Piping and Tanks Integrity Program; Revision 3
- NOP-ER-2101; Engineering Program Management; Revision 4
- NOP-CP-2012; Groundwater Monitoring; Revision 6
- NOP-OP-4705; Response to Contaminated Spills/Leaks; Revision 6
- NORM-ER-3113; Cathodic Protection; Revision 2
- P.O. No. 55111120; Cathodic Protection System Annual Survey Report for the Perry Nuclear Power Plant; dated January 2012
- Final Report v.1.0; Long Range Guided Wave Inspection Report – Perry Station Guided Wave Examination; dated August 10, 2009
- ESP-JFGENGPBPIPE_FEN; Buried Pipe Integrity (BPIPE) Program Owner Job Familiarization Guide (JFG); Revision 0
- SN-SA-2012-0004 (Self-Assessment) Implementation of NEI 09-14 Guidance for the Management of Underground Piping and Tank Integrity; dated February 7, 2012
- 2011-1; Quarterly Program Health Report; Buried Piping – Perry
- CR-2012-00803; Underground Piping And Tanks Integrity Initiative Milestone Tracking; dated January 17, 2012
- CR-G202-2010-85066; Unusual Drop In Indicated Service Water Sodium Hypochlorite Tank Level; dated October 28, 2010
- CR 2011-03841; Fuel Oil Spill at the Fire Training Grounds, from an Underground Pipe; dated October 17, 2011
- CR 2012-09231; Potential Vulnerability In Underground Piping Program Needs to be Assessed; dated June 4, 2012

LIST OF ACRONYMS USED

AC	alternating current
ADAMS	Agencywide Document Access Management System
ALARA	as-low-as-reasonably-achievable
CAP	corrective action program
CR	condition report
CFR	<i>Code of Federal Regulations</i>
dpm	drops per minute
EPRI	Electric Power Research Institute
gpm	gallons per minutes
FIN	finding
FW	feedwater
IFTS	incline fuel transfer system
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
LPRM	low-power range monitor
LVT	linear velocity transducer
MSPI	Mitigating Systems Performance Indicator
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
ODMI	Operational Decision Making Issue
PI	performance indicator
RCIC	reactor core isolation cooling
RCS	reactor coolant system
RFO	refueling outage
SDP	Significance Determination Process
RWCU	reactor water cleanup
TI	Temporary Instruction
TS	Technical Specification
TSO	transmission system operator
USAR	Updated Safety Analysis Report
WO	work order

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Sincerely,

/RA/

John B. Giessner, Chief
Branch 4
Division of Reactor Projects

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SUBJECT: PERRY NUCLEAR POWER PLANT NRC INTEGRATED INSPECTION
REPORT 05000440/2012003

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