



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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August 9, 2017

EA-17-103

Mr. David B. Hamilton
Site Vice President
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
Reg Affairs-A210
10 Center Road, P.O. Box 97
Perry, OH 44081-0097

**SUBJECT: PERRY NUCLEAR POWER PLANT—NRC INTEGRATED INSPECTION REPORT
05000440/2017002 AND EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Hamilton:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a baseline inspection at your Perry Nuclear Power Plant. On July 12, 2017, the NRC inspectors discussed the results of this inspection with Mr. F. Payne and other members of your staff. The results of this inspection are documented in the enclosed report.

Based on the results of this inspection, the NRC has identified one Severity Level IV violation with no associated finding. Because the licensee initiated condition reports to address this issue, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. This NCV is described in the subject inspection report.

In addition, the inspectors identified a violation involving the failure to set secondary containment during Operations with the Potential to Drain the Reactor Vessel (OPDRV). Specifically, from March 17, 2017, to March 24, 2017, Perry Nuclear Power Plant performed OPDRV activities without an operable primary or secondary containment, which is a violation of Technical Specification (TS) 3.6.1.10 and TS 3.6.4.1. The NRC issued EGM 11-003, "Enforcement Guidance Memorandum on Dispositioning Boiling Water Reactor Licensee Noncompliance with Technical Specification Containment Requirements During Operations with a Potential for Draining the Reactor Vessel," Revision 3, on January 15, 2016, allowing for the exercise of enforcement discretion for such OPDRV-related TS violations, when certain criteria are met. The NRC concluded that Perry Nuclear Power Plant met these criteria. Therefore, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion and refrain from issuing enforcement for the violation.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to: (1) the Regional Administrator, Region III; (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and (3) the NRC Resident Inspector at the Perry Nuclear Power Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Request for Withholding."

Sincerely,

/RA/

Jamnes Cameron, Chief
Branch 4
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000440/2017002

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Letter to David B. Hamilton from Jamnes Cameron dated August 9, 2017

SUBJECT: PERRY NUCLEAR POWER PLANT—NRC INTEGRATED INSPECTION REPORT
05000440/2017002 AND EXERCISE OF ENFORCEMENT DISCRETION

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000440/2017002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant

Location: North Perry, Ohio

Dates: April 1 through June 30, 2017

Inspectors: E. Sanchez, Acting Senior Resident Inspector
R. Elliott, Acting Senior Resident Inspector
J. Nance, Resident Inspector
S. Bell, Health Physicist
G. Hansen, Senior Emergency Preparedness Inspector

Approved by: J. Cameron, Chief
Branch 4
Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report (IR) 05000440/2017002, 04/01/2017 – 06/30/2017, Perry Nuclear Power Plant; Operability Determination and Functional Assessments.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of U.S. Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Mitigating Systems

- Severity Level IV. The inspectors identified a Severity Level IV Non-Cited Violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.72(b)(3)(v)(A) and (D), "Immediate Notification Requirements for Operating Nuclear Power Reactors," for the licensee's failure to report an event to the NRC within eight hours that at the time of discovery could have prevented the fulfillment of a safety function. Specifically, the licensee did not recognize there was a loss of safety function associated with multiple instrumentation functions as a result of a main steam turbine bypass valve opening at 100 percent reactor power. Therefore, the licensee did not make the required non-emergency eight hour report. After the inspectors questioned the licensee's conclusion, the licensee recognized there was indeed a loss of safety function and submitted the eight-hour notification report on May 3, 2017. They also and entered this issue into the corrective action program (CAP) as condition report (CR) 2017-04939, CR 2017-04868, and CR 2017-05022.

The failure to make an applicable non-emergency eight-hour event notification report within the required timeframe was a performance deficiency. The inspectors determined that traditional enforcement was applicable to the issue because it impacted the NRC's regulatory process. In accordance with Section 2.2.2.d, and consistent with the examples included in Section 6.9.d.9 of the NRC Enforcement Policy, this violation was screened as a Severity Level IV violation that was more than minor. In accordance with Inspection Manual Chapter 0612, because this violation involved traditional enforcement and does not have an associated finding that would be considered more-than-minor, a cross-cutting aspect was not assigned to this violation. (Section 1R15)

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period shutdown for refueling outage (RFO) 1R16. On April 2, 2017, at 10:09 a.m., the plant was placed in startup mode and achieved criticality at 2:33 p.m. the same day. The plant synchronized to the grid on April 3, 2017, at 11:42 a.m. and reached 100 percent power on April 6, 2017. On April 30, 2017, at 6:18 p.m., turbine bypass valve number one unexpectedly opened to approximately 35 percent open. In response to this issue, the licensee lowered power to 74 percent. On May 2, at 12:15 a.m., the operators commenced lowering power to 40 percent to support turbine control troubleshooting. While down shifting reactor recirculation pumps from fast speed to slow speed at 40 percent power, reactor recirculation pump 'A' failed to start in slow speed. Following the transient, reactor power stabilized at 25 percent. At 1:39 p.m. on May 2, operators lowered power to 20 percent and at 4:14 p.m. separated the turbine generator from the grid. On May 3, following repairs to the turbine control system and the reactor recirculation pump 'A' slow speed breaker circuitry, the licensee synchronized the turbine generator to the grid at 11:11 p.m. and commenced power ascension. The operators returned the plant to 100 percent power on May 5, 2017. The reactor remained at approximately 100 percent power for the remainder of the inspection period except for rod sequence exchanges and required testing.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate AC Power Systems

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's 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 impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- coordination between the TSO and the plant during off-normal or emergency events;
- explanations for the events;
- estimates of when the offsite power system would be returned to a normal state; and
- notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;
- compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- 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
- communications between the plant and the TSO when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01–05.

b. Findings

No findings were identified.

.2 Summer Seasonal Readiness Preparations

a. Inspection Scope

The inspectors performed a review of the licensee’s preparations for summer weather for selected systems, including conditions that could lead to an extended drought.

During the inspection, the inspectors focused on plant specific design features and the licensee’s procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Safety Analysis Report (USAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. The inspectors’ reviews focused specifically on the following plant systems:

- steam tunnel cooling systems;
- turbine building ventilation system;
- radwaste building control room heating, ventilation, and air conditioning (HVAC) system;
- emergency service water sluice gates; and
- major station transformers, including switchyard, main generator, auxiliary generator, and interbus transformers.

This inspection constituted one seasonal adverse weather sample as defined in IP 71111.01–05.

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 3 emergency diesel generator system;
- high pressure core spray (HPCS) system; and
- reactor core isolation (RCIC) cooling system.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones (RSC) 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, USAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, 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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These inspections constituted three partial system walkdown samples as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (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 Zone 1CC–3a; control complex 620' elevation, division 1 switchgear room;

- Fire Zone 1DG–1c; division 1 diesel generator CO2 system detection/operability test;
- Fire Zone 1CC–4a,c,d,e,l; Unit 1 division 1 and division 2 cable spreading rooms, division 2 125 VDC distribution and battery rooms, and computer room 638' elevation;
- Fire Zone 1DG–1b; Unit 1 division 3 diesel generator building 620' and 646' elevations; and
- Fire Zone 1AB–1g; Unit 1 corridor 574' 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 inspections constituted five quarterly fire protection inspection samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Underground Vaults

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 visible cables were not submerged, that visible 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 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 an inspection of the accessible areas of the following underground bunkers/manholes subject to flooding:

- electrical safety manhole 1, division 2 and division 3 safety-related circuits;
- electrical safety manhole 2, division 2 and division 3 safety-related circuits; and
- electrical safety manhole 3, division 1 unit 1 and division 1 unit 2 safety-related circuits.

Specific documents reviewed during this inspection are listed in the Attachment to this report.

This inspection constituted one underground vaults sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

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

a. Inspection Scope

On May 22, 2017, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that 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 preparedness (EP) 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 licensed operator regualification program simulator sample as defined in IP 71111.11–05.

b. Findings

No findings were identified.

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

a. Inspection Scope

On May 2, 2017, the inspectors observed licensed operators maneuvering the plant from twenty-six percent power to twenty percent using control rods and then disconnecting the main turbine generator from the grid and shutting the turbine down for troubleshooting and repair of the turbine control circuit. On May 4, 2017, the inspectors observed licensed operators synchronizing the main generator to the grid, maneuvering the plant from twenty percent to thirty-seven percent power, and shifting recirculation pumps from slow to fast. These were activities that required heightened awareness or were related to increased risk. 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 (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

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 licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- feedwater and feedwater leakage control system;
- 120 VAC vital inverter system; and
- fire protection system.

The inspectors reviewed events such as where ineffective equipment maintenance had 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 Title 10 of the *Code of Federal Regulations* (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 (SSCs)/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 three quarterly maintenance effectiveness samples as defined in IP 71111.12–05.

b. Findings

No findings were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

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:

- combustible gas mixing system 'A' operability test pressurizes drywell to approximately 1.0 psig;
- Unit 2 startup transformer lockout on phase differential due to faulted cable;
- diesel fire pump overspeed test failure and its impact to online risk;
- division 3 emergency core cooling system outage; and
- turbine bypass valve opening troubleshooting and repair.

These activities were selected based on their potential risk significance relative to the RSC. 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.

Documents reviewed during this inspection are listed in the Attachment to this report.

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 Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- turbine bypass valve opening at one hundred percent power and its effects on the operability of the turbine stop valve closure function and the turbine control valve fast closure function;
- power load unbalance circuit functionality determination;
- diesel fire pump functionality determination;
- RCIC unplanned inoperability due to a blown logic fuse; and
- emergency service water discharge valve leak-by.

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 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 five samples as defined in IP 71111.15–05.

b. Findings

Failure to Notify the NRC within Eight Hours of a Non-Emergency Event that Could Have Prevented the Fulfillment of Multiple Safety Functions

Introduction: The inspectors identified a Severity Level IV NCV of 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," for the

licensee's failure to report an event to the U.S. Nuclear Regulatory Commission (NRC) within eight hours that at the time of discovery could have prevented the fulfillment of a safety function. Specifically, the licensee did not recognize that there was a loss of safety function associated with multiple instrumentation functions as a result of a main steam turbine bypass valve opening at 100 percent reactor power. Therefore, the licensee did not make the required non-emergency eight hour report.

Description: On April 30, 2017, at 1818 hours, while reactor power was at 100 percent, the main turbine bypass valve (TBV) number one opened to approximately 35 percent open. The licensee, in 5 percent increments, lowered power to shut the bypass valve. Within approximately one minute after closing, the bypass valve would reopen and power would be lowered another 5 percent. When power was lowered to approximately 74 percent, the bypass valve remained closed. During the transient, the reactor protection system (RPS) turbine stop valve (TSV) closure and turbine control valve (TCV) fast closure trip functions were declared inoperable due to the opening of the TBV, which effected the bypass setpoint for those RPS trip functions. The licensee entered TS 3.3.1.1, "Reactor Protection System Instrumentation," 3.3.2.1, "Control Rod Block Instrumentation," and 3.3.4.1, "End of Cycle Recirculation Pump Trip Instrumentation," because the RPS TSV closure and TCV fast closure safety-related functions and the rod withdrawal limiter and end of cycle recirculation pump trip instrumentation safety-related functions were declared inoperable while TBV number one was partially open. Enabling of these four functions is normally accomplished automatically by pressure transmitters sensing turbine first stage pressure; therefore, to consider these functions operable, the TBVs must remain shut at greater or equal to 38 percent rated thermal power.

With the loss of those RPS trip functions, a loss of safety function existed intermittently for approximately 37 minutes. Also during this event, both channels of the rod withdrawal limiter (RWL) and the end of cycle reactor recirculation pump trip (EOC-RPT) were also declared inoperable. Those functions were credited in accident analyses which also resulted in a loss of safety function.

On May 1, 2017, the inspectors questioned why the licensee had not made an eight hour notification as required by 10 CFR 50.72(b)(3)(v)(A) and (D) for loss of safety function for the four sets of instrumentation referenced above. Initially, the licensee stated that it did not believe that there was a loss of safety function. After reviewing the plant narrative log and the TS Bases, the licensee made an Event Notification to the NRC (EN 52727) on May 3, 2017, for a loss of safety function for the four sets of instrumentation described previously. The licensee also entered this issue into their CAP as condition report (CR) 2017-04939, CR 2017-04868, and CR 2017-05022.

Analysis: The inspectors determined that the failure to report within eight hours an event or condition that at the time of discovery could have prevented the fulfillment of a safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition or mitigate the consequences of an accident, as required by 10 CFR 50.72(b)(3)(v)(A) and (D), was a performance deficiency.

The inspectors reviewed this issue in accordance with IMC 0612, Appendix B, and the NRC Enforcement Policy. The inspectors determined that traditional enforcement was applicable to this issue because it impacted NRC's regulatory process.

Specifically, the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in regulations in order to perform its regulatory function. The inspectors determined that this finding was not suitable for evaluation using the significance determination process. In accordance with Section 2.2.2.d, and consistent with the examples included in Section 6.9.d.9 of the NRC Enforcement Policy, this issue was screened as a Severity Level IV violation.

In accordance with IMC 0612, because this violation involved traditional enforcement and does not have an underlying finding that would be considered more-than-minor, a cross-cutting aspect was not assigned to this violation.

Enforcement: Title 10 CFR 50.72(b)(3)(v)(A) and (D), “Immediate Notification Requirements for Operating Nuclear Power Reactors,” requires, in part, that the licensee notify the NRC as soon as practical and in all cases within eight hours of the occurrence of any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition or, mitigate the consequences of an accident.

Contrary to the above, on April 30, 2017, the licensee failed to notify the NRC within eight hours after the discovery of an event or condition that could have prevented the fulfillment of a safety function of structures or systems that are needed shut down the reactor and maintain it in a safe shutdown condition or, mitigate the consequences of an accident. Specifically, at 1818 hours, the licensee experienced a reactor transient that resulted in the loss of multiple safety functions, including the RPS TSV closure and TCV fast closure trip functions for approximately 37 minutes. Also during this event, both channels of the RWL and the EOC–RPT were also declared inoperable. Those functions are credited in accident analysis which also resulted in a loss of safety function. The licensee subsequently submitted the report on May 3, 2017, a period in excess of eight hours, and entered the issue into its CAP as CR 2017–04939, CR 2017–04868, and CR 2017–05022. Because the violation was of very low safety significance, was not repetitive or willful, and was entered into the CAP, this violation is being treated as a Severity Level IV NCV, consistent with the NRC Enforcement Policy. **(SLIV NCV 05000440/2017002–01; “Failure to Notify the NRC within Eight Hours of a Non-Emergency Event that Could Have Prevented the Fulfillment of Multiple Safety Functions”)**

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- RCIC direct current distribution panel ED1A06 post maintenance test;
- annular exhaust gas treatment system post maintenance test;
- unit 2 startup transformer relay replacement and cable removal post maintenance test;
- diesel fire pump post maintenance test;

- division 3 HPCS emergency core cooling system outage post maintenance test; and
- replacement of flexible conduit outer jacket for residual heat removal heat exchanger inlet valve post maintenance test.

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 TSs, the 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 PM 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 six PM testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the RFO to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the RFO, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the OSP for key safety functions and compliance with the applicable TS when taking equipment out of service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TS and OSP requirements were met, and controls over switchyard activities;

- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by TS;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities, including fuel handling and sipping to detect fuel assembly leakage;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

Documents reviewed are listed in the Attachment to this report.

The inspection was partially completed in Inspection Report 2017001 which erroneously stated that the inspection was completed in the first quarter of 2017. The inspection was completed in the second quarter of 2017 and constituted one sample as defined in IP 71111.20-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

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:

- SVI-E22-T2001; HPCS Pump and Valve Operability Test (IST);
- PTI-P54-P0036; Diesel Fire Pump Flow Data and Control Panel Functional Test (routine);
- SVI-R22-T5069; Division 1 4.16KV Bus EH11 Degraded Voltage Channel Functional (routine);
- SVI-E22-T1319; Diesel Generator Start and Load Division 3 (routine); and
- SVI-B21-T0373-A; SRV [Safety Relief Valve] and Low-Low Set Pressure Actuation Channel Calibration for 1B21-N668A (ISO).

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

- did preconditioning occur;

- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were 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 was in accordance with TSs, the 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 for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- 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 three routine surveillance testing samples, one in-service test sample, and one containment isolation valve sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors reviewed documents, and conducted discussions with EP staff and management regarding the operation, maintenance, and periodic testing of the back-up and primary Alert and Notification System (ANS) in Perry Nuclear Power Plant's plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and the daily and monthly operability records from June 2015 through June 2017. Information gathered during document reviews and interviews were used to determine whether the ANS equipment was maintained and tested in accordance with EP commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This ANS inspection constituted one sample as defined in IP 71114.02.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

.1 Emergency Response Organization Staffing and Augmentation System

a. Inspection Scope

The inspectors reviewed and discussed with plant EP management and staff the emergency plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment the on-shift staff as well as the provisions for maintaining the plant's ERO team and qualification lists. The inspectors reviewed reports and a sample of CAP records of unannounced off-hour augmentation drills and call-in tests, which were conducted from June 2015 through June 2017, to determine the adequacy of the drill critiques and associated corrective actions. The inspectors also reviewed a sample of the training records of approximately fifteen ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment to this report.

This ERO augmentation testing inspection constituted one sample as defined in IP 71114.03.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

.1 Maintenance of Emergency Preparedness

a. Inspection Scope

The inspectors reviewed a sample of nuclear oversight staff's audits of the EP Program to determine whether these independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed critique reports and samples of CAP records associated with the 2016 biennial exercise, as well as various EP drills conducted in 2015, 2016 and 2017, to determine whether the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify, track, and resolve issues identified during these activities. The inspectors reviewed a sample of EP items and corrective actions related to the licensee's EP Program and activities to determine whether corrective actions were completed, in accordance with the site's CAP. Documents reviewed are listed in the Attachment to this report.

This correction of EP weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on June 7, 2017, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the control room simulator, the technical support center and the emergency offsite facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

.2 Training Observation

a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on May 22, 2017, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the CAP. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection of the licensee's training evolution with emergency preparedness drill aspects constituted one sample as defined in IP 71114.06–05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05)

.1 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors assessed select portable survey instruments that were available for use for current calibration and source check stickers, and instrument material condition and operability.

The inspectors observed licensee staff demonstrate performance checks of various types of portable survey instruments. The inspectors assessed whether high-range instruments responded to radiation on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. The inspectors compared monitor response with actual area conditions for selected monitors.

The inspectors assessed the functional checks for select personnel contamination monitors, portal monitors, and small article monitors to verify they were performed in accordance with the manufacturer's recommendations and licensee procedures.

These inspection activities constituted one complete sample as defined in IP 71124.05–05.

b. Findings

No findings were identified.

.2 Calibration and Testing Program (02.03)

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicated that the frequency of the calibrations was adequate and there were no indications of degraded instrument performance. The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded instrument performance.

The inspectors reviewed the methods and sources used to perform whole body count functional checks before daily use and assessed whether check sources were appropriate and aligned with the plant's isotopic mix. The inspectors reviewed whole body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

Inspectors reviewed select containment high-range monitor calibration and assessed whether an electronic calibration was completed for all range decades, with at least one decade at or below 10 rem/hour calibrated using an appropriate radiation source, and calibration acceptance criteria was reasonable.

The inspectors reviewed select monitors used to survey personnel and equipment for unrestricted release to assess whether the alarm setpoints were reasonable under the circumstances to ensure that licensed material was not released from the site. The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

The inspectors reviewed calibration documentation for select portable survey instruments, area radiation monitors, and air samplers. The inspectors reviewed detector measurement geometry and calibration methods for portable survey instruments and area radiation monitors calibrated on-site and observed the licensee demonstrate use of the instrument calibrator. The inspectors assessed whether appropriate corrective actions were taken for instruments that failed performance checks or were found significantly out of calibration, and that the licensee had evaluated the possible consequences of instrument use since the last successful calibration or performance check.

The inspectors reviewed the current output values for instrument calibrators. The inspectors assessed whether the licensee periodically measured calibrator output over the range of the instruments used with measuring devices that have been calibrated by a facility using National Institute of Standards and Technology traceable sources and corrective factors for these measuring devices were properly applied in its output verification.

The inspectors reviewed the licensee's Title 10 of the *Code of Federal Regulations*, (CFR) Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

These inspection activities constituted a partial sample as defined in IP 71124.05–05.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

These inspection activities constituted one complete sample as defined in IP 71124.05–05.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

.1 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with 10 CFR 20.1904, or controlled in accordance with 10 CFR 20.1905.

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20. For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801 and 10 CFR 20.1802.

The inspectors evaluated whether the licensee established a process for monitoring the impact of low-level radioactive waste storage that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors evaluated the licensee's program for container inventories and inspections. The inspectors selected containers of stored radioactive material, and assessed them for signs of swelling, leakage, and deformation.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.2 Radioactive Waste System Walk-down (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in plant and/or vendor manuals.

The inspectors reviewed administrative and/or physical controls to assess whether equipment, which is not in service or abandoned in place would not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety-significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59.

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the USAR were reviewed and documented in accordance with 10 CFR 50.59 or that changes to vendor equipment were made in accordance with vendor manuals. The inspectors also assessed the impact of these changes on radiation doses to occupational workers and members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers and assessed whether the waste stream mixing, sampling, and waste concentration averaging were consistent with the process control program, and provided representative samples of the waste product for the purposes of waste classification.

The inspectors evaluated whether tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's process control program correctly described the current methods and procedures for dewatering and waste stabilization.

These inspection activities constituted one complete sample as defined in IP 71124.08-05.

b. Findings

No findings were identified.

.3 Waste Characterization and Classification (02.04)

a. Inspection Scope

For select waste streams, the inspectors assessed whether the licensee's radiochemical sample analysis results were sufficient to support radioactive waste characterization as required by 10 CFR Part 61. The inspectors evaluated whether the licensee's use of

scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analysis.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR Part 61.

The inspectors evaluated whether the licensee had established and maintained an adequate quality assurance program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.4 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation and receipt activities. The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether shippers were knowledgeable of the shipping regulations and demonstrated adequate skills to accomplish package preparation requirements. The inspectors evaluated whether the licensee was maintaining shipping procedures in accordance with current regulations. The inspectors assessed whether the licensee was meeting the expectations in NRC Bulletin 79–19, “Packaging of Low-Level Radioactive Waste for Transport and Burial,” and 49 CFR, Part 172, Subpart H, “Training.”

The inspectors evaluated whether the requirements for Type B shipment, Certificates of Compliance had been met. The inspectors determined whether the user was a registered package user and had an NRC-approved quality assurance program. The inspectors assessed whether procedures for cask loading and closure were consistent with vendor procedures.

The inspectors assessed whether non-Type B shipments were made in accordance with the package quality documents.

The inspectors assessed whether the receiving licensee was authorized to receive the shipment packages.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.5 Shipping Records (02.06)

a. Inspection Scope

The inspectors reviewed select shipments to evaluate whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number. The inspectors assessed whether the shipment marking, labeling, and placarding was consistent with the information in the shipping documentation.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

.6 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

These inspection activities constituted one complete sample as defined in IP 71124.08–05.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

40A1 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 for the period from the second quarter of 2016 through the first quarter of 2017. To determine the accuracy of the performance indicator (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 7, dated August 31, 2013, 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 Inspection Reports for the period of April 1, 2016, through March 31, 2017, 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 safety system functional failures sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index—Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator for the period from the second quarter of 2016 through the first quarter of 2017. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC Integrated Inspection Reports for the period of April 1, 2016, through March 31, 2017, 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 MSPI emergency AC power system sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index—High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - High Pressure Injection Systems performance indicator for the period from the second quarter of 2016 through the first quarter of 2017. 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 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period of April 1, 2016, through March 31, 2017, 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 MSPI high pressure injection system sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.4 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise Performance (DEP) PI for the period from the third quarter 2016 through the first quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, were used. The inspectors reviewed the licensee’s records associated with the PI to verify that the licensee accurately reported the DEP indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records, and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions; performance during the 2014 biennial exercise; and performance during other drills. Specific documents reviewed are listed in the Attachment to this report.

This inspection constitutes one DEP sample as defined in IP 71151.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the third quarter of 2016 through the first quarter of 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, were used. The inspectors reviewed the licensee’s records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures, and NEI guidance. Specifically, the inspectors reviewed licensee

records and processes, including procedural guidance on assessing opportunities for the PI; performance during the 2016 biennial exercise; and other drills; and revisions of the roster of personnel assigned to key ERO positions. Specific documents reviewed are listed in the Attachment to this report.

This inspection constitutes one ERO drill participation sample as defined in IP 71151.

b. Findings

No findings were identified.

.6 Alert and Notification System

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the third quarter of 2016 through the first quarter of 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI Guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI and results of periodic ANS operability tests. Specific documents reviewed are listed in the Attachment to this report.

This inspection constitutes one ANS sample as defined in IP 71151.

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 discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Some minor issues were entered into the licensee's CAP as a result of the inspectors' observations; however, they are not discussed in 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.

b. Findings

No findings were identified.

40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Unit 2 Startup Transformer Lockout on Phase Differential Inspection Scope

The inspectors reviewed the operators' response to the unit 2 start-up transformer lockout which occurred on April 11, 2017. Multiple unexpected alarms were received in the control room due to the lockout. The east bus in the main transmission yard was isolated from the plant and the plant continued to operate with one source of off-site power available. The operators evaluated the off normal instructions (ONIs) and determined that no entries into any ONIs were required based on the existing plant conditions. Troubleshooting activities determined that a degraded relay on the 'B' phase was the cause of the lockout. When the unit 2 start-up transformer was re-energized after the degraded relay was replaced, the transformer immediately locked-out. A small puff of smoke was observed coming from the low side junction box. Further investigation determined that one of the seven cables providing power from the unit 2 start-up transformer to breaker L2001 had grounded to the housing of the junction box. The licensee's evaluation determined that the cable could be spared and that sufficient capacity would exist to meet all required power requirements. The licensee made a temporary modification to the unit 2 start-up transformer and spared the affected cable, tested the transformer and returned it to service on April 14, 2017. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report 05000440/2017-001-00: Implementation of Enforcement Guidance Memorandum 11-003, Revision 3

From March 17, 2017, to March 24, 2017, Perry Nuclear Power Plant (PNPP) performed Operations with the Potential to Drain the Reactor Vessel (OPDRV) while in Mode 5 without an operable primary and secondary containment. An OPDRV is an activity that could result in the draining or siphoning of the reactor pressure vessel water level below the top of fuel, without crediting the use of mitigating measures to terminate the uncovering of fuel. Secondary containment was required by TS 3.6.4.1 to be operable during OPDRVs. Primary containment was required by TS 3.6.1.10 to be operable during OPDRVs. The required action for these specifications was to suspend OPDRV operations. Therefore, entering the OPDRV without establishing primary and secondary containment integrity was considered a condition prohibited by TS as defined by 10 CFR 50.73(a)(2)(i)(B).

The NRC issued Enforcement Guidance Memorandum (EGM) 11-003, Revision 3, on January 15, 2016, to provide guidance on how to disposition boiling water reactor licensee noncompliance with TS containment requirements during OPDRV operations. The NRC considers enforcement discretion related to secondary containment operability during Mode 5 OPDRV activities appropriate because the associated interim actions necessary to receive the discretion ensure an adequate level of safety by requiring licensees' immediate actions to (1) adhere to the NRC plain language meaning of OPDRV activities; (2) meet the requirements which specify the minimum makeup flow rate and water inventory based on OPDRV activities with long drain down times;

(3) ensure that adequate defense in depth is maintained to minimize the potential for the release of fission products with secondary containment not operable by (a) monitoring RPV level to identify the onset of a loss of inventory event, (b) maintaining the capability to isolate the potential leakage paths, (c) prohibiting Mode 4 (cold shutdown) OPDRV activities, and (d) prohibiting movement of irradiated fuel with the spent fuel storage pool gates removed in Mode 5; and (4) ensure that licensees follow all other Mode 5 TS requirements for OPDRV activities.

The inspectors reviewed licensee event report (LER) 2017–001–00 for potential performance deficiencies and/or violations of regulatory requirements. The inspectors also reviewed the stations implementation of the EGM during OPDRVs:

- The inspectors observed that the OPDRV activities were logged in the control room narrative logs, the log entry appropriately recorded the standby source of makeup water designated for the evolutions, and that defense in-depth criteria were in place.
- The inspectors noted that the reactor vessel water level was maintained at least 22 feet and 9 inches over the top of the reactor pressure vessel flange as required by TS 3.9.6. The inspectors also verified that at least one safety-related pump was the standby source of makeup designated in the control room narrative logs for the evolutions. The inspectors confirmed that the worst case estimated time to drain the reactor cavity to the reactor pressure vessel flange was greater than 24 hours.
- The inspectors reviewed Engineering Change documents which calculated the time to drain down during these activities and the feasibility of pre-planned actions the station would take to isolate potential leakage paths during these periods of time. The inspectors verified that the OPDRVs were not conducted in Mode 4 and that the licensee did not move irradiated fuel during the OPDRVs. The inspectors noted that PNPP had in place a contingency plan for isolating the potential leakage path and verified that two independent means of measuring reactor pressure vessel water level were available for identifying the onset of loss of inventory events.
- The inspectors verified that all other TS requirements were met during the March 17, 2017, to March 24 2017, OPDRVs with primary and secondary containment inoperable.

Technical Specification 3.6.4.1 required, in part, that secondary containment shall be operable during OPDRV. Technical Specification 3.6.4.1, Condition C, required the licensee to initiate action to suspend OPDRV immediately when secondary containment is inoperable. Technical specification 3.6.1.10 required, in part, that primary containment shall be operable during OPDRV. Technical specification 3.6.1.10, Condition A, required the licensee initiate action to suspend OPDRV immediately when primary containment is inoperable. From March 17, 2017, to March 24, 2017, PNPP performed OPDRV activities while in Mode 5 without an operable primary or secondary containment. Specifically, the station performed the following OPDRV activities without an operable primary or secondary containment:

- draining of reactor recirculation loop 'B';
- replacement of 18 control rod drive mechanisms (unbolt and install);
- replacement of six instrument dry tubes;
- replacement of reactor recirculation pump 'B' seal;

- replacement of reactor recirculation loop 'B' flow control valve actuator;
- plugging of drain line appendages on reactor recirculation pump 'B'; and
- local leak rate testing of the reactor water cleanup suction line containment isolation valves.

The failure to perform OPDRV activities with operable primary and secondary containments is a violation of TS 3.6.1.10 and TS 3.6.4.1. Because the violation occurred during the discretion period described in EGM 11–003, Revision 3, the NRC is exercising enforcement discretion in accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and, therefore, will not issue enforcement action for this violation.

In accordance with EGM 11–003, Revision 3, each licensee that receives discretion must submit a license amendment request within 12 months of the NRC staff's publication in the Federal Register of the notice of availability for a generic change to the standard TS to provide more clarity to the term OPDRV. The inspectors observed that PNPP is tracking the need to submit a license amendment request as commitment PY–L–17–121–01.

This LER is closed. This inspection constituted one event follow-up sample as defined in IP 71153–05.

.3 (Closed) Licensee Event Report 05000440/2016–001–01: Pressure Boundary Leakage, Level 8 Automatic SCRAM, and APRM Loss of Function

On January 23, 2016, PNPP commenced a reactor shutdown to investigate unidentified leakage in the drywell which exceeded T.S. limits. On January 24, 2016, while performing the shutdown, the average power range monitors became inoperable for a brief period of time when the reactor recirculation pumps were shifted to slow speed. This resulted in the loss of a safety function. A few hours later, licensee personnel, while attempting to transfer feedwater flow from the turbine driven reactor feed pump to the motor driven feed pump, were unable to control the rate of feedwater flow to the reactor and the reactor pressure vessel level rose to the Level 8 SCRAM setpoint, causing an automatic reactor protection system scram which shutdown the reactor as designed. The inspectors documented non-cited violations for these events in NRC Integrated Inspection Report 05000440/2016001. The inspectors reviewed revision 0 of this LER and documented the results of their review in NRC Integrated Inspection Report 05000440/2016002. The licensee subsequently submitted revision 1 of the LER to clarify the reporting requirements for the event. The inspectors did not identify any issues related to this revision. Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

.4 (Closed) Licensee Event Report 05000440/2016–004–00: Loss of Safety Function due to Two Inoperable Standby Liquid Control Subsystems

On December 28, 2016, the standby liquid control (SLC) subsystem 'A' was declared inoperable for performance of a routine surveillance test. One hour after commencing the surveillance test the control room operators received an out of service alarm for the SLC discharge valve 'B'. With both systems inoperable there was a loss of safety

function. The cause for the subsystem 'B' inoperability was identified as a loss of continuity to one of the two firing circuits in the discharge valve due to a loose connection between a pin and jack on the connector. The inspectors performed a review of the event including a review of maintenance procedures, preventive maintenance plans, and corrective action documents, and did not identify any issues of concern. The corrective actions taken in response to this event included replacing the power supply cable and performing post maintenance testing on the system. Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

4OA5 Other Activities

.1 Contingency Plans For Licensee Strikes or Lockouts (IP 92709)

a. Inspection Scope

The inspectors reviewed the licensee's "Labor Contingency Plan FirstEnergy Nuclear Operating Company (FENOC)" for continued operations of the Perry Nuclear Power Plant in the event that the Utility Workers Union of America (UWUA) Local 270 personnel engage in a job action upon the expiration of their contract at midnight, on April 30, 2017.

The inspectors reviewed and evaluated the adequacy of the licensee's contingency plan prior to the end of the union's contract to determine if:

- The required minimum number of qualified personnel would be available for the proper operation, security, and safety of the facility;
- Reactor operation and facility security would be maintained as required; and
- The plan complied with the requirements in TS and the Code of Federal Regulations.

The inspectors reviewed and determined:

- the adequacy of the licensee's strike/lockout contingency plans and whether those plans have been reviewed by the facility's safety review committees or appropriate managers;
- the adequacy of the licensee's safeguards contingency plan;
- that the licensee's contingency plan would meet the requirements for minimum onsite shift staffing of the facility and verified that the licensee had scheduled covered workers such that the work hours conform to the requirements specified in 10 CFR 26.205;
- that the licensee's contingency plan would meet regulatory requirements in the following areas: plant management, operations, maintenance, security, chemistry and radiation protection, surveillance and calibrations, and administrative controls;
- that licensed personnel who would be performing licensed activities are qualified, per 10 CFR 55.53(e) and (f);
- that the licensee had properly trained or would have trained prior to shift assignment, non-licensed personnel who would be performing functions to which they are not normally assigned;

- through observation and discussion with each of the following plant personnel that they understood their function under the modified staffing plan: plant management, senior reactor operators, reactor operators, maintenance, health physics, security supervision, and other personnel responsible for operational or safety functions;
- the effectiveness of site security;
- that support from local agencies would be adequate to ensure: unimpeded access of personnel to the plant; unencumbered delivery of support goods to the site and unencumbered offsite shipment of radioactive materials; mitigation of any possible threat to the site, including abusive or violent strikers; unimpeded access of medical care and ambulance services to treat injured or contaminated persons; and unimpeded access of the local fire department to supplement the site fire-fighting unit;
- that the site staffing would be sufficient and qualified to implement the site emergency plan; and
- that the emergency communication equipment and the Emergency Notification System would be available and operable.

The inspectors met with the site employee concerns program (ECP) coordinator and determined that contract negotiations have not had any adverse impact on the safety conscious work environment at the site.

As of June 30, 2017, negotiations were ongoing between the licensee and the union. The inspectors determined that the licensee had maintained an adequate strike/lockout contingency plan and the inspectors will continue to monitor that plan.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 12, 2017, the inspectors presented the inspection results to Mr. F. Payne, 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 Radiation Safety Program review with Mr. F. Payne, Plant General Manager on April 28, 2017;
- The inspection results for the Radiation Safety Program review with Mr. F. Payne, Plant General Manager, on June 9, 2017; and
- The results of the Emergency Preparedness Program inspection with Mr. D. Hamilton, Site Vice President, on June 22, 2017.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Hamilton, Site Vice President
F. Payne, Plant Manager
D. Saltz, Performance Improvement Director
D. Reeves, Site Engineering Director
B. Blair, Operations Manager
K. Clark, Maintenance Manager
N. Conicella, Regulatory Compliance Manager
L. Zerr, Regulatory Compliance Supervisor
T. Kledzik, Regulatory Compliance
T. McGowan, FIN Supervisor
J. Paine, Engineering Supervisor
D. Lieb, Technical Services Supervisor
R. O'Connor, Emergency Preparedness Manager
L. Schlaugh, Nuclear Specialist
D. Magda, Radwaste Shipping Supervisor
S. Lee, Health Physicist

U.S. Nuclear Regulatory Commission

J. Cameron, Chief, Reactor Projects Branch 4

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000440/2017002-01	SLIV- NCV	Failure to Notify the NRC within Eight Hours of a Non-Emergency Event that Could Have Prevented the Fulfillment of Multiple Safety Functions
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Closed

05000440/2017-001-00	LER	Implementation of Enforcement Guidance Memorandum 11-003, Revision 3
05000440/2016-001-01	LER	Pressure Boundary Leakage, Level 8 Automatic SCRAM, and APRM Loss of Function
05000440/2016-004-00	LER	Loss of Safety Function due to Two Inoperable Standby Liquid Control
05000440/2017002-01	SLIV- NCV	Failure to Notify the NRC within Eight Hours of a Non-Emergency Event that Could Have Prevented the Fulfillment of Multiple Safety Functions

Discussed

None.

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–WM–2001; Work Management Scheduling, Assessment and Seasonal Readiness Processes; Revision 21
- ONI–ZZZ–1; Tornado or High Winds; Revision 26
- ISI–0015; Seasonal Variations; Revision 27
- PAP–0102; Interface with the Transmission System Owner; Revision 16
- ONI–R10; Loss of AC Power; Revision 12
- Site Certification Letter for Summer Readiness; dated May 31, 2017
- Summer Work List; dated May 17, 2017

1R04 Equipment Alignment

- VLI–R44/E22B; Division 3 Diesel Generator Starting Air System; Revision 10
- VLI–R45/E22B; Division 3 Diesel Generator Fuel Oil System (Unit 1); Revision 3
- VLI–R46/E22B; Division 3 Diesel Generator Jacket Water System; Revision 6
- VLI–R47/E22B; Division 3 Diesel Generator Lube Oil System (Unit 1); Revision 4
- VLI–R48/E22B; Division 3 Diesel Generator Exhaust, Intake and Crankcase Systems; Revision 1
- VLI–E22A; High Pressure Core Spray; Revision 10
- NORM–CC–3001; Fleet Scaffold Installation Engineering Guidance; Revision 01
- GCI–0016; Scaffolding Erection, Modification or Dismantling Guidelines; Revision 26
- VLI–E51; Reactor Core Isolation Cooling System; Revision 10
- OAI–0201; Operations General Instructions and Operating Practices; Revision 44

1R05 Fire Protection

- AP–1910; Fire Protection Program; Revision 38
- PAP–0911; Control Room Envelope Habitability and Tornado Depressurization Barrier Impairment; Revision 6
- FPI–0CC; Control Complex; Revision 10
- eSOMS; Plant Narrative Log; dated April 6, 2017
- eSOMS; Plant Narrative Log; dated April 18, 2017
- CR 2017–04333; NRC Identified: Door SB–015 Between Control Complex 599' and Service Building 603' will not Close and Latch on its Own due to Pressure Differential; dated April 18, 2017
- CR 2017–03102; Unplanned Fire Impairment Door SB–15; dated March 19, 2017
- Barrier Impairment; I–B–17–643491; Door SB–015; dated March 19, 2017
- CR 2017–03207; NRC ID: Door SB–15 Assessment of Tornado Barrier Function; dated March 21, 2017
- ONI–ZZZ–1; Tornado or High Winds; Revision 26
- CR 2017–04898; NRC Fire Question Concerning PTI–P54–0034A; dated May 1, 2017
- CR 2017–04960; Low Pressure Fire Protection CO2 Systems Declared Non-functional; dated May 2, 2017

- eSOMS Plant Narrative Logs; dated May 2, 2017
- PTI-P54-P0034A; Division 1 Diesel Generator CO2 Systems Detection and Operability Test; dated April 26, 2017
- Automatic Sprinkler Corporation of America; Quality Assurance Procedure; Low Pressure Carbon Dioxide System Performance Test; dated March 26, 1985
- Acceptance Test Procedure 1P54-A-006; Unit 1 Fire Protection CO2 Diesel Generators Room 5,6,7; dated January 31, 1985
- FPI-1AB; Auxiliary Building Unit 1; Revision 3
- FPI-1DG; Diesel Generator Building; Revision 8

1R06 Flood Protection

- WO 200664160; Manhole Maintenance Checklist; October 18, 2016
- WO 200664161; Manhole Maintenance Checklist; December 12, 2016
- WO 200664162; Manhole Maintenance Checklist; February 2, 2017
- WO 200664163; Manhole Maintenance Checklist; March 28, 2017
- Manhole Maintenance Checklist; May 23, 2017

1R11 Licensed Operator Requalification Program

- IOI-0003; Power Changes; Revision 65
- NOBP-OP-1004-02; Evolution Specific Reactivity Plan: May 2017-Power Reduction; Revision 1
- PTI-N32-P0002; Turbine-Generator Oil Systems Monthly Testing; Revision 4
- eSOMS Plant Narrative Logs; dated May 2, 2017, May 3, 2017, and May 4, 2017
- OTLC-3058201702-PY-SGC1; Evaluated Simulator Cycle 201702; Revision 0

1R12 Maintenance Effectiveness

- NOP-ER-3004; FENOC Maintenance Rule Program; Revision 2
- CR 2014-15914; Maintenance Rule (a)(1) Evaluation Form; October 20, 2014
- CR 2014-17832; Concern for Performing Maintenance on SPVs while On-line; December 3, 2014
- CR 2015-09613; PM/ER Program Health – Yellow Program Performance Cornerstone; July 15, 2015
- CR 2015-00328; PM/ER Program Health – Yellow Program Performance Cornerstone; January 9, 2015
- CR 2017-05014; Unplanned Fire Impairment for Diesel Fire Pump; May 3, 2017
- CR 2017-01034; CNRB Identified Improvement Opportunity in Response to CR 2016-11373; January 31, 2017
- CR 2016-00485; PM/ER Program Health – Yellow Program Performance Cornerstone; January 12, 2016
- CR 2016-11373; Maintenance Rule (a)(1) Evaluation Form; September 25, 2016
- Feedwater System Improvement Plan; Second Period 2016
- Fire Protection Action Plan

1R13 Maintenance Risk Assessments and Emergent Work Control

- NOP-OP-1007-01; Risk Management Plan for SVI-M51-T2003A Combustible Gas Mixing System 'A' Operability Test will Pressurize Drywell to Approximately 1.0 psig; dated April 18, 2017
- SVI-M51-T2003A; Combustible Gas Mixing System 'A' Operability Test, Revision 9

- CR 2017-04352; SVI not Performed when Scheduled; dated April 18, 2017
- NOP-OP-1007-01; Risk Management Plan for Troubleshoot / Rework Unit 2 Start-Up Transformer; dated April 13, 2017
- WO 200713587; 200-PY-B Startup Transformer; dated April 14, 2017
- WO 200713730; Implement Temporary Modification ECP 17-0163-0001; dated April 14, 2017
- CR 2017-04206; Cabling Connection on Unit 2 Startup Transformer Shows Minor Damage at Stress Cone for Cable; dated April 13, 2017
- CR 2017-04231; NRC Resident Inspector Requested Information Related to the 13.8kV Cable Flashover Event; dated April 14, 2017
- CR 2017-05227; NRC Request for Information: On-line Risk Verification for Week of May 1, 2017; dated May 8, 2017
- Perry Nuclear Power Plant Forecast On-Line Probabilistic Risk Assessment; Period 8 Week 7 May 1st, 2017 to May 7th, 2017
- NOP-OP-1007-01; Risk Management Plan for WO 200606060 1E22F0004 (HPCS Injection Valve) Danger Tagged for Clearance PY1-E22-0003, PSA YELLOW Risk; dated May 15, 2017
- PDB-R0003; Flex Specifications; Revision 2
- eSOMS Plant Narrative Logs; dated May 15, 2017
- Drawing 302-0701-00000; High Pressure Core Spray System; Revision KK
- CR 2017-05512; Yellow Risk Activity not Identified during Work Preparation Process; dated May 15, 2017
- CR 2017-05546; Identified during NRC Discussion – Component Potentially Incorrectly Mapped in Safety Monitor; dated May 15, 2017

1R15 Operability Determinations and Functionality Assessments

- eSOMS Plant Narrative Logs; dated April 30, 2017
- IOI-0003; Power Changes; Revision 65
- CR 2017-04868; Unexpected Main Turbine #1 Bypass Valve Opening; dated April 30, 2017
- CR 2017-04939; NRC ID: Potential Loss of Safety Function with Bypass Valve #1 Open; dated May 1, 2017
- PTI-P54-P0036; Diesel Fire Pump Flow Data and Control Panel Functional Test; dated June 22, 2017
- PTI-N32-P0001; Turbine Overspeed Protection Devices Trip and Turbine Lube Oil Pump Starts Weekly Test; Revision 8
- PDB-F0001; Core Operating Limits Report for the Perry Nuclear Power Plant Unit 1 Cycle 17; Revision 26
- eSOMS Plant Narrative Logs; dated May 5, 2017
- CR 2017-05660; NRC ID: Unplanned Diesel Fire Pump Impairment; dated May 17, 2017
- CR 2017-05670; Use of Diesel Fire Pump as a Backup Pump to Meet PAP-1910 Attachment 3, Section 3.D.1.a as Available; dated May 17, 2017
- CR 2017-05800; Thrust Bearing Wear Test and Power Load Unbalance Circuit Test Failed – PTI-N32-P0001; May 21, 2017
- CR 2017-06055; Review the Power Load Unbalance Features and Procedure References and Directions; May 27, 2017
- PAP-1910; Fire Protection Program; Revision 38
- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revision 06

1R19 Post-Maintenance Testing

- WO 200713587; 200-PY-B Startup Transformer; dated April 14, 2017

- WO 200713730; Implement Temporary Modification ECP 17-0163-0001; dated April 14, 2017
- WO 200655272; (18M) Diesel Fire Pump Flow Data and Control Panel Functional Test; dated June 22, 2017
- PTI-P54-P0036; Diesel Fire Pump Flow Data and Control Panel Functional Test; dated June 22, 2017
- WO 200718178; RCIC DC Distribution Panel ED1A06; dated June 5, 2017
- CR 2017-06265; Unplanned RCIC OUT OF SERVICE and Power Loss; dated June 5, 2017
- WO 200701137; Replacement of Outer Jacket of Flex Conduit for E12F0047A Valve; dated June 28, 2017

1R22 Surveillance Testing

- SVI-E22-T2001; HPCS Pump and Valve Operability Test; dated May 9, 2017
- PTI-P54-P0036; Diesel Fire Pump Flow Data and Control Panel Functional Test; dated June 22, 2017
- SVI-E22-T1319; Diesel Generator Start and Load Division 3; dated June 6, 2017
- SOI-M25/M26; Control Room HVAC and Emergency Recirculating System; Revision 24
- SOI-E22B; Division 3 Diesel Generator; Revision 31
- CR-2017-04652; Found High Gross Fail Value for 1B21-N0617A was Outside the LAIZ; April 25, 2017
- WO 200644502; SRV and Low-Low Set Pressure Actuation Channel Calibration for 1B21-N668A; April 25, 2017
- WO SVI-B21-T0373-A; SRV and Low-Low Set Pressure Actuation Channel Calibration for 1B21-N668A, Revision 4; April 25, 2017
- SVI-R22-T5069; Division 1 4.16kV Bus EH11 Degraded Voltage Channel Functional Test; Revision 4
- CR 2017-07052; Missed Surveillance SVI-R22-T5069; June 30, 2017

1EP2 Alert and Notification Evaluation

- Perry Nuclear Power Plant Prompt Alert Siren System (PASS) Design Report; Revision 0
- FEMA Approval of Perry Nuclear Power Plant Prompt Alert Siren System (PASS) Design Report Update, Revision 0; Dated July 17, 2015
- NOBP-LP-5018; FENOC Siren Testing and Maintenance; Revision 2
- NOP-LP-5005; FENOC Siren Testing and Maintenance; Revision 0
- Federal Signal Models 2001-130, Equinox, and 508-128 Sirens Installation, Operation, and Service Manual; Revision A5 0017
- Federal Signal DCB, DCFCB, and DCFCTB Models Battery Operated Mechanical Siren Control System Installation, Operation, and Service Manual; Revision LO 1015
- Perry EPZ Siren Test Data; July 2016-2017
- Perry Nuclear Power Plant 2016 Population Update Analysis; dated September 9, 2016
- 2016 Evacuation Time Estimate Population Update; dated November 1, 2014
- Preventative and Corrective Maintenance on Alert and Notification System from June 2015 through May 2017
- CR 2015-13847; Possible Declining Trend in Siren Performance; dated October 14, 2015
- CR 2016-10917; Perry Siren Weekly Test Results; dated September 15, 2016
- CR 2016-11186; ANS Siren Removed From Service due to Test Failure; dated September 22, 2016
- CR 2017-03949; Document Siren Test Issues; dated April 6, 2017
- 1EP3 Emergency Response Organization Augmentation Testing (71114.03)
- PNPP ERO On-Shift Staffing Analysis Report; dated December 18, 2012

- PSI-0026; Control and Revision of the PNPP On-Shift Staffing Analysis Report; Revision 1
- SPI-0032; Notification of Key Plant Personnel; Revision 15
- EPI-B1; Emergency Notification System; Revision 26
- PSI-0022; Emergency Plan Training Program; Revision 4
- PTI-GEN-P0003; Quarterly Testing of the Emergency Pager System; Revision 8
- PNPP No. 9100; Pager Messages; dated September 8, 2014
- ERO Augmentation Quarterly Pager Test Records; 2nd Quarter of 2015 through 1st Quarter of 2017
- PYBP-ERS-0026; Emergency Response Organization (ERO) Participation and Response; Revision 10
- PYBP-ERS-0033; Off-Hour Unannounced Drill Conduct; Revision 4
- Emergency Response Telephone Directory; dated June 21, 2017
- CR 2015-08538; Potential Negative Trend for E-Plan Call In Response; dated June 22, 2015
- CR 2015-09975; Issues with Staffing Levels within the Emergency Response Organization (ERO); dated July 23, 2015
- CR 2016-04271; Declining Trend in Pager Test Responses; dated March 31, 2016
- CR 2016-13541; MS-C-16-11-24, Finding: Perry Emergency Plan is not in Compliance with 10 CFR 50 Appendix E for Training Descriptions; dated November 18, 2016

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

- Emergency Plan for Perry Nuclear Power Plant; Revision 50
- KLD TR-481; Perry Nuclear Power Plant Development of Evacuation Time Estimates; dated October 2012
- KLD TR-775; Perry Nuclear Power Plant 2015 Population Update Analysis; dated September 30, 2015
- KLD TR-866; Perry Nuclear Power Plant 2016 Population Update Analysis; dated September 9, 2016
- NOP-LP-5011; Emergency Response Drill and Exercise Program; Revision 8
- PYBP-ERS-0003, Attachment 3; Emergency Operations Facility Equipment Checklist; Revision 19
- PYBP-ERS-0003, Attachment 1; Technical Support Center Equipment Checklist; Revision 19
- Ohio Department of Public Safety Emergency Management Agency Letter of Agreement; dated August 11, 2003
- Ashtabula County Emergency Management Agency Letter of Agreement; dated October 21, 2014
- Lake County Emergency Management Agency Letter of Agreement; dated August 29, 2013
- Geauga County Department of Emergency Services Letter of Agreement; dated November 3, 2015
- Auburn Career Center Letter of Agreement; dated December 31, 2016
- Metro Life Flight Letter of Agreement; dated October 17, 2015
- Perry Joint Fire District Letter of Agreement; dated January 9, 2013
- MS-C-15-11-24; Fleet Oversight Audit Report of Emergency Preparedness; dated December 4, 2015
- MS-C-16-11-24; Fleet Oversight Audit Report of Emergency Preparedness; dated December 12, 2016
- Emergency Preparedness Drill and Exercise Records (Sample); June 2015 – June 2017
- Emergency Response Organization Training and Qualification Records (Sample)
- SN-SA-2015-0320; Performance Observation of Perry Licensed Operator Requalification Training (LORT) Emergency Planning Activities; dated December 4, 2015
- SN-SA-2016-0709; 11-18-15 Integrated Facility Drill; dated January 14, 2016

- CR 2015–16152; ERO Drill – Dose Assessment Issues (Objective F.6); dated December 1, 2015
- CR 2016–02466; Drill, The MIDAS Program Requires a Change Based on the New NEI–99–01 Emergency Action Levels (EAL's) Change; dated February 21, 2016
- CR 2016–03852; Drill, ERO Drill: Objective A1 not Met – GE Classification; dated March 24, 2016
- CR 2016–10056; ERO Drill – Inaccurate Dose Projection – Objectives A.1 and F.6 not Met; dated August 21, 2016

1EP6 Drill Evaluation

- OTLC–3058201702–PY–SGC1; Evaluated Simulator Cycle 201702; Revision 0; Darren Smith–US
- PNPP ERO Drill, 6/7/2017, Scenario Guide; dated May 30, 2017
- PNPP No. 7794; FENOC Nuclear Power Plant Initial Notification Form: Perry; Drill, dated June 7, 2017

2RS5 Radiation Monitoring Instrumentation

- NOP–OP–3201; FENOC Chemistry Quality Control Program; Revision 6
- NOP–OP–3202; FENOC Radiochemistry Quality Control Program; Revision 4
- NOP–OP–4401; Radiation Protection Instrumentation Program; Revision 2
- NOP–OP–4404; PCM–2 Calibration, Source Checks and Use; Revision 4
- CHI–0053; Operation of the Gamma Spectroscopy System; Revision 16
- HPI–J0054; Calibration of the Abacos 2000 Whole Body Counting System; Revision 3
- HPI–J0059; Operation of the Radcal MDH; Revision 4
- HPI–J0061; Operation and Calibration of the JL Shepherd Calibrators; Revision 9
- Drywell High Range Monitor Channel A Electronic Calibration; dated August 13, 2015
- Drywell High Range Monitor Channel B Calibration; dated March 30, 2015
- JL Shepherd Model 89 Maintenance Records; dated August 30, 2016
- Chemistry Gamma Spectroscopy Interlaboratory Comparison Program Data; 2016 Records
- Quality Control Data; Gamma Spectroscopy System #2; dated May 2017
- Calibration Sources Instrumentation Table; dated May 19, 2017
- An Evaluation of the Decision to Reduce the Source Check Frequencies for Radiological Control Point Exit Monitors; dated August 2016
- H809 Ai Sampler Calibration; Serial Number L701.2011; dated March 2, 2017
- AMP 50 Calibration; Serial Number L701.080J; dated March 7, 2017
- AMP 200 Calibration; Serial Number L701.085C; dated March 7, 2017
- ASP–1/HP 270 Calibration; Serial Number L70.L0010C; dated April 27, 2017
- BC–4 Calibration; Serial Number L70L006A; dated October 31, 2016
- Gamma 60 Calibration; Serial Number L70L009H; dated January 20, 2017
- Microanalyst Calibration; Serial Number L70–101A; dated May 20, 2016
- RO20 Calibration; Serial Number L701.041X; dated February 27, 2017
- SAM12 Calibration; Serial Number L70L0504T; dated October 25, 2016
- MGP Telepole Calibration; Serial Number L701.073E; dated January 24, 2017
- RM–14 Calibration; Serial Number L70L120Q; dated June 30, 2016
- CR–2014–11099; Model 12 Survey Instrument Failed Source Check; dated June 29, 2014
- CR–2014–11638; Instrument Failed Response Check; dated July 11, 2014
- CR–2014–14451; Rad Air Sample Calibrators Suspect due to Calibration Standard Found Deficient, dated September 16, 2014

- CR-2015-11379; MS-C-15-08-03; RP Instrument Calibration/Source Check Record Deficiencies; dated August 28, 2015
- CR-2017-05390; Chemistry Gamma Spectroscopy System Efficiency Calibration not Performed in 2016; dated May 11, 2017
- CR-2017-05391; Chemistry Instrument Calibration Data is not Contained within the Chemistry Database; dated May 11, 2017
- CR-2017-05397; Action Missed on Control Chart Data Point Trending; dated May 11, 2017

40A1 Performance Indicator Verification

- NOBP-LP-4012; NRC Performance Indicators; Revision 5
- NRC Performance Indicator Data; Emergency Preparedness – Drill/Exercise Performance; 3rd Quarter of 2016 through 1st Quarter of 2017
- NRC Performance Indicator Data; Emergency Preparedness – ERO Readiness; 3rd Quarter of 2016 through 1st Quarter of 2017
- NRC Performance Indicator Data; Emergency Preparedness – Alert and Notification System Reliability; 3rd Quarter of 2016 through 1st Quarter of 2017
- NOBP-LP-4012; NRC Performance Indicators; Revision 5
- NOBP-LP-4012-08, Revision 2; Safety System Functional Failures; April 2016–March 2017
- NOBP-LP-4012-04, Revision 3; Mitigating Systems Performance Index (MSPI) Unavailability Index (UAI) & Unreliability Index (URI) for Emergency AC Power Systems; April 2016 through March 2017
- NOBP-LP-4012-05, Revision 2; Mitigating Systems Performance Index (MSPI) Unavailability Index (UAI) & Unreliability Index (URI) for High Pressure Injection System (HPIS) & High Pressure Emergency Diesel Generator (EDG); April 2016–March 2017

40A3 Follow-Up of Events and Notices of Enforcement Discretion

- ONI-C51; Unplanned Change in Reactor Power or Reactivity; Revision 27
- ONI-C85; Pressure Regulator Failure; Revision 1
- eSOMS Plant Narrative Logs; dated April 30, and May 1, 2017
- CR 2017-04945; Reactor Recirculation Pump 'A' Failed to Downshift to Slow Speed; dated May 2, 2017
- CR 2017-04896; Unplanned ONI-C85, ONI-C51 Entry due to Bypass Valve Opening; dated May 1, 2017
- Perry Plant Event of Potential Public Interest; Lowering Reactor Power to Twenty-five Percent; dated May 1, 2017
- PTI-N32-P0002; Turbine-Generator Oil Systems Monthly Testing; Revision 4
- IOI-14; Fast Unload and Trip of Main Turbine; Revision 7
- OAI-1703; Hardcards; Revision 28
- ONI-C51; Unplanned Power Changes in Reactor Power or Reactivity Flowchart; Revision L
- ONI-ZZZ-7; Contingency Plans; Revision 8
- ONI-SPI E-1; Containment/Fuel Handling Building Closure; Revision 0
- CR 2017-03127; LPCS and RHR A Operated on Minimum Flow for Greater than 1 Hour; March 20, 2017
- CR 2017-04129; Unit 2 Startup Transformer Lockout; dated April 11, 2017
- CR 2017-04206; Cabling Connection on Unit 2 Startup Transformer Shows Minor Damage at Stress Cone Cable; dated April 13, 2017
- CR 2017-04231; NRC Resident Inspector Requested Information Related to the 13.8kV Cable Flashover Event; dated April 14, 2017
- CR 2017-04232; NRC Request: Unit 2 SU Transformer PMT; dated April 14, 2017

- WO 200713730; Implement Temporary Modification ECP 17-0163-0; dated April 14, 2017
- IOI-0020; Operations with the Potential to Drain the Reactor Vessel; Revision 0

4OA5 Other Activities

- Labor Contingency Plan FirstEnergy Nuclear Operating Company (FENOC); dated March 28, 2017
- NLO (Non-Licensed Operator) Requalification Training Attendance Sheet; dated April 18, 2017
- Labor Contingency Preparation Checklist; dated April 27, 2017
- Labor Contingency Training Plan; April 2017

LIST OF ACRONYMS USED

AC	Alternating Current
ANS	Alert and Notification System
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
CR	Condition Report
DEP	Drill/Exercise Performance
ECP	Employee Concerns Program
EGM	Enforcement Guidance Memorandum
EOC-RPT	End of Cycle – Reactor Recirculation Pump Trip
EP	Emergency Preparedness
ERO	Emergency Response Organization
FENOC	First Energy Nuclear Operating Company
HPCS	High Pressure Core Spray
HVAC	Heating, Ventilation, and Air Conditioning
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
ONI	Off-Normal Instruction
OPDRV	Operation with the Potential to Drain the Reactor Vessel
OSP	Outage Safety Plan
PI	Performance Indicator
PM	Post-Maintenance
PNPP	Perry Nuclear Power Plant
RCIC	Reactor Core Isolation Cooling
RSC	Reactor Safety Cornerstone
RFO	Refueling Outage
RPS	Reactor Protection System
RWL	Rod Withdrawal Limiter
SLC	Standby Liquid Control
SRV	Safety Relief Valve
SSC	Structure, System or Component
TBV	Turbine Bypass Valve
TCV	Turbine Control Valve
TS	Technical Specification
TSO	Transmission System Operator
TSV	Turbine Stop Valve
USAR	Updated Safety Analysis Report
UWUA	Utility Workers Union of America
WO	Work Order