



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, IL 60532-4352

August 10, 2015

Mr. Ernest Harkness
Site Vice-President
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
P. O. Box 97, 10 Center Road, A-PY-290
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT INTEGRATED INSPECTION
REPORT 05000440/2015002

Dear Mr. Harkness:

On June 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed a baseline inspection at your Perry Nuclear Power Plant. On July 16, 2015, the NRC inspectors discussed this inspection with you and members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

No findings were identified during this inspection.

In accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System

E. Harkness

-2-

(ADAMS). ADAMS is accessible from the NRC Web site
<http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael Kunowski, Chief
Branch 5
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000440/2015002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-440

License No: NPF-58

Report No: 05000440/2015002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant

Location: North Perry, Ohio

Dates: April 1 through June 30, 2015

Inspectors: M. Marshfield, Senior Resident Inspector
J. Nance, Resident Inspector
J. Beavers, Acting Resident Inspector
S. Bell, Health Physicist
J. Jandovitz, Project Engineer
M. Phalen, Senior Health Physicist

Approved by: M. Kunowski, Chief
Branch 5
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS	2
REPORT DETAILS	3
Summary of Plant Status	3
1. REACTOR SAFETY	3
1R01 Adverse Weather Protection (71111.01).....	3
1R04 Equipment Alignment (71111.04)	4
1R05 Fire Protection (71111.05)	6
1R06 Flooding Protection Measures (71111.06).....	6
1R07 Heat Sink Performance (71111.07)	7
1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)	7
1R12 Maintenance Effectiveness (71111.12).....	9
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)	9
1R15 Operability Determinations and Functionality Assessments (71111.15).....	10
1R18 Plant Modifications (71111.18)	11
1R19 Post-Maintenance Testing (71111.19).....	11
1R20 Outage Activities (71111.20).....	12
1R22 Surveillance Testing (71111.22)	13
1EP6 Drill Evaluation (71114.06).....	14
2. RADIATION SAFETY	15
2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)	15
2RS2 Occupational As-Low-As-Is-Reasonably-Achievable Planning and Controls (71124.02).....	21
4. OTHER ACTIVITIES	21
4OA1 Performance Indicator Verification (71151)	21
4OA2 Problem Identification and Resolution (71152)	23
4OA5 Other Activities	24
4OA6 Management Meetings	25
SUPPLEMENTAL INFORMATION	1
Key Points of Contact	1
List of Items Opened, Closed and Discussed	1
List of Documents Reviewed	2
List of Acronyms Used	7

SUMMARY OF FINDINGS

Inspection Report (IR) 05000440/2015002, 04/01/2015 – 06/30/2015, Perry Nuclear Power Plant; Integrated Baseline Inspection.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. No findings were identified. 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 Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

A. NRC-Identified and Self-Revealed Findings

No findings were identified.

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

The plant was shutdown for refueling outage (RFO) 1R15 at the beginning of the quarter. On April 23, 2015, at 10:37 a.m., the plant was placed in startup mode and achieved criticality at 1:50 p.m. the same day. The plant synchronized to the grid on April 24th at 5:28 p.m. and reached 100 percent power on April 29th. With the exception of small power changes for plant maintenance and testing, the plant remained at full power for the remainder of the quarter.

1. REACTOR SAFETY

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

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 were appropriate. The inspectors verified that the licensee's procedures address measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors reviewed the material condition of offsite AC power systems and onsite alternate AC power systems to the plant (to include switchyard and transformers). The inspectors verified that the systems would continue to provide appropriate "as designed" capabilities.

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. Specifically, the inspectors verified that the procedures addressed the following:

- the 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;
- the 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;
- a 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
- the 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 the CAP in accordance with station corrective action procedures.

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

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Safety Analysis Report (USAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area and areas immediately external to the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors reviewed the operating procedures for mitigating the design basis flood to ensure they could be implemented as written. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one external flooding sample as defined in IP 71111.01–05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Quarterly Partial System Walkdowns

a. Inspection Scope

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

- standby liquid control system, train 'A';
- low-pressure core spray system; and
- high-pressure core spray system.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures,

system diagrams, the USAR, Technical Specification (TS) requirements, past and outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.1 Semi-Annual Complete System Walkdown

a. Inspection Scope

During the first quarter of 2015, the inspectors performed a complete system alignment inspection of the residual heat removal (RHR) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors specifically reviewed train 'A' of RHR because it was primarily impacted by the outage maintenance activities for 1RFO15, but did in fact review the room conditions and system status for all three trains of RHR as part of the inspection process. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed were listed in the Attachment to the 2015-001 integrated IR for the Perry Nuclear Power Plant. Credit for the inspection is being documented in this report.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

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 0EW-1A and 0EW-1B, Emergency Service Water Pumphouse;
- Fire Zone 0CC-1A/B/C; Control Complex 574'-Elevation;
- Fire Zone 0CC-3D, Control Complex 620'-Elevation;
- Fire Zone 1 Diesel Generator (DG)-1B and 1CC-3B, Division 2 Emergency Diesel Generator (EDG) and Switchgear Room; and
- Fire Zone 01B-2, Intermediate Building 599'-Elevation and Fire Zone 1AB-2, Auxiliary Building 599'-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. The inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R06 Flooding Protection Measures (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the USAR, engineering calculations, and abnormal operating procedures, to

identify licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the CAP with respect to past flood-related items to assess the adequacy of the corrective actions. The inspectors walked down the auxiliary building to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments. This area of the plant was reviewed because of the extensive recent changes made to water system piping throughout the auxiliary building by Fukushima response modifications implemented during the RFO.

Documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed the licensee’s inspection of the Division 2 DG jacket water heat exchanger to verify that potential deficiencies did not mask the licensee’s ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee’s observations and acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between design conditions and testing conditions. Documents reviewed are listed in the Attachment to this document.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11)

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

a. Inspection Scope

On May 14, the inspectors observed a crew of licensed operators in the plant’s simulator during licensed operator regualification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope—Refueling Outage Startup Activities

On April 24, 2015, the inspectors observed control room personnel as the reactor was started up and synched to the grid at the completion of 1RFO15. The inspectors observed the startup of the steam-driven feed pumps, upshift of recirculation pumps to fast speed, and connection to the grid. The reactor and steam plant startup processes were activities that required heightened awareness and 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.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the diesel-driven fire pump.

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

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

This inspection constituted one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- Division 2 Loss of Offsite Power (LOOP)/Loss-of-Coolant Accident (LOCA) to Division 1 LOOP/LOCA testing transition;
- Division 1 DG maintenance window;
- continued operations with steam jet air ejector 'B' out of service;

- Division 3 high-pressure core spray; and
- scram discharge volume first drain valve.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. 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 Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Operational Decision-Making Issue (ODMI) for local power range monitor (LPRM) replacement risk recognition;
- ODMI for reactor water cleanup pump 'B' seal leakage; and
- ODMI for reactor water cleanup delta flow differential reading issue on plant startup.

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 TSs 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 three samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modifications:

- Engineering Change Package (ECP) 15-0212-001; Site Flooding Sand Bags Temporary Modification;
- ECP 13-0802-001; Minor Stream Modification (Draft reviewed); and
- ECP 13-0802-003; Major Stream Modification (Draft reviewed).

The inspectors reviewed the plant configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the USAR, and the TSs, as applicable, to verify that the modification did not affect the operability or availability of affected plant systems. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one temporary modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- balance of plant static inverter modification;
- source range monitor 'D' repair;
- control rod drive mechanisms post overhaul;
- Division 1 Emergency DG cooling water seal leak repair;
- Division 3 Emergency DG right bank air start pressure regulator repair;
- EH 1301 Division 3 Emergency DG output breaker post overhaul;

- 1R22Q7036 Division 3 under-voltage time relay repair; and
- scram discharge volume first drain valve repair.

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 post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted eight post-maintenance 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 continued during this quarter to review Outage Safety Plans (OSPs) and contingency plans for the refueling outage which was in effect at the start of the quarter. The inspectors confirmed that the licensee appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. This quarter during the RFO, the inspectors 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;
- control 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 TSs;
- 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.

This inspection constituted one refueling outage sample as defined in IP 71111.20–05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- Surveillance Instruction (SVI)-R43-T7000-B; Division 2 ECCS Integrated Test; Revision 4 (Inservice Testing);
- Inservice Instruction (ISI)-B21-T1300-1; Reactor Coolant System Leakage Pressure Test; Revision 18 (Reactor Coolant System Leakage);
- SVI-T23-T0400; Drywell Leak Rate Test; Revision 10 (Isolation Valve Testing);
- SVI-E51-T2001; RCIC Pump and Valve Operability Test; Revision 37 (Routine); and
- SVI-R22-T5074; Division 3 4-KV Bus EH13 Undervoltage/Degraded Voltage Channel Calibration and Logic System Functional Test; Revision 9 (Routine).

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 two routine surveillance testing samples, one isolation valve sample, one reactor coolant system leakage sample, and one inservice testing sample as defined in IP 71111.22, Sections –02 and –05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Training Observation

a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on May 14, 2015, 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 71114.06-06.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted one complete sample as defined in IP 71124.01-05. Documents reviewed are listed in the attachment to this report.

.1 Inspection Planning (02.01)

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the potential impact of these changes and had implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

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

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

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

- Unit 1 Refueling Outage 15 (1RFO15) reactor disassembly and reassembly activities;
- 1RFO15 feed-water venturi repairs;
- 1RFO15 under-vessel activities;
- 1RFO15 dry tube removal/replacement and support work; and
- 1RFO15 under-vessel activities - Stuck LPRM 40-57D.

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

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

The inspectors observed work in potential airborne areas and evaluated whether the air samples were representative of the breathing air zone. The inspectors evaluated whether continuous air monitors were located in areas with low background to minimize false alarms, and were representative of actual work areas. The inspectors evaluated the licensee's program for monitoring levels of loose surface contamination in areas of the plant with the potential for the contamination to become airborne.

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected various containers holding non-exempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers, and assessed whether the containers were labeled and controlled in accordance with 10 CFR 20.1904,

“Labeling Containers,” or met the requirements of 10 CFR 20.1905(g), “Exemptions To Labeling Requirements.”

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

- 1RFO15 reactor disassembly and reassembly activities;
- 1RFO15 feed-water venture repairs;
- 1RFO15 under-vessel activities;
- 1RFO15 dry tube removal/replacement and support work; and
- 1RFO15 under-vessel activities-stuck LPRM 40-57D.

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

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

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

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors potentially contaminated material leaving the radiological control area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures, and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had appropriate sensitivity for the type(s) of radiation present.

The inspectors reviewed the licensee’s criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicated the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee has established a *de facto* "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high background area.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact.

The inspectors evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

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

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high noise areas as high radiation area monitoring devices.

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

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

The inspectors reviewed the radiation work permits for the following work activities within airborne radioactivity areas with the potential for individual worker internal exposures:

- 1RFO15 reactor disassembly and reassembly activities;
- 1RFO15 feed-water venturi repairs;
- 1RFO15 under-vessel activities;
- 1RFO15 dry tube removal/replacement and support work; and
- 1RFO15 under-vessel activities - stuck LPRM 40-57D.

For these radiation work permits, the inspectors evaluated airborne radioactive controls and monitoring, including potential for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, and reactor

cavities). The inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high-efficiency particulate air ventilation system operation.

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (i.e., nonfuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

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

b. Findings

No findings were identified.

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

a. Inspection Scope

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

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

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

b. Findings

No findings were identified.

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors assessed whether workers were aware of

the radiological conditions in their workplace and the radiation work permit controls/limits in place, and whether their performance reflected the level of radiological hazards present.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the radiation protection technicians with respect to all radiation protection work requirements. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

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

b. Findings

No findings were identified.

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

The inspection activities supplement those documented in IR 05000440/2014003, and constitute one complete sample as defined in IP 71124.02-05. Documents reviewed are listed in the attachment to this report.

.1 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

.2 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors evaluated whether workers demonstrated the as-low-as-is-reasonably-achievable (ALARA) philosophy in practice (e.g., workers were familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers were not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

Cornerstones: Mitigating Systems, Occupational and Public Radiation Safety

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 (PI) for the second quarter of 2014 through the first quarter of

2015. To determine the accuracy of the PI data reported, definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC Integrated Inspection Reports for the period of April 1, 2014, through March 31, 2015, 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 (MS05) 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 (Alternating Current) Power System PI for the second quarter of 2014 through the first quarter of 2015. To determine the accuracy of the PI data reported, the definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's operator logs, MSPI derivation reports, issue reports, event reports, and NRC IRs for the period of April 1, 2014, through March 31, 2015, 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 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 (MS06) 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 System PI for the second quarter of 2014 through the first quarter of 2015. To determine the accuracy of the PI data reported, definitions and guidance contained in NEI 99-02 "Regulatory Assessment Performance Indicator Guideline," Revision 7, were used. The inspectors reviewed the licensee's operator logs, MSPI derivation reports, issue reports,

event reports, and NRC IRs for the period of April 1, 2014, through March 31, 2015, 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 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 (MS07) sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Exposure Control Effectiveness PI from the second quarter 2014 through the first quarter 2015. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator related data were adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff, the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational exposure control effectiveness (OR-1) sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

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

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

4OA5 Other Activities

Institute of Nuclear Power Operations Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final reports for the Institute of Nuclear Power Operations (INPO) plant evaluation in October 2013 and the INPO pilot evaluation process completed in November 2014. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 16, 2015, the inspectors presented the inspection results to Mr. E. Harkness 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

On April 3, 2015, the inspectors presented inspection results to Mr. E. Harkness and other members of the licensee staff for the inspection areas of radiological hazard assessment and exposure controls; occupational ALARA planning and controls; and occupational exposure control effectiveness performance indicator verification. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

E. Harkness, Site Vice-President
D. Hamilton, Site Operations Director
T. Brown, Performance Improvement Director
J. Ellis, Maintenance Director
D. Reeves, Site Engineering Director

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

None

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

- IOI-15; Seasonal Variations; Revision 26
- ONI-R10; Loss of AC Power; Revision 12
- ONI-S11; Hi/Low Voltage; Revision 10
- ONI-ZZZ-1; Tornado or High Winds; Revision 22
- ONI-SPI F-1; Off-Site Power Restoration; Revision 4
- ONI-SPI F-2; Yard Inspection; Revision 3
- PAP-0102; Interface with the Transmission System Owner; Revision 13
- NOP-OP-1003; Grid Reliability Protocol; Revision 7
- NOP-WM-2001; Work Management Scheduling, Assessment and Seasonal Readiness Processes; Revision 17
- NOBP-CC-2008; Transformer, Switchyard, and Grid Reliability Design Interface and Control; Revision-1
- Summer Work List Spreadsheet; dated May 14, 2015
- CR 2015-02512; Summer Readiness Meeting Not Held as Required; dated February 27, 2015
- CR 2015-07160; 2014 Summer Voltage Assessment Not Incorporated into Calculation PSTG-0001; dated May 18, 2015
- ECP 15-0033-01; Perry License Renewal – Plug Unit 2 Turbine Power Complex Pipe Tunnel Drain Pit to Prevent Unit 2 Aux Bldg Flooding; dated February 17, 2015
- ECP 15-0212-001; Site Flooding Sand Bags TM Temporary Modification; dated April 21, 2015
- CR 2015-00527; Flooding Due to Major Stream; dated January 14, 2015
- CR 2015-05079; External Flooding during a Probable Maximum Flooding Event (West Side of the Plant); dated April 12, 2015
- CR 2014-16612; License Renewal – Temporary Drain Plug May Be Outside of Configuration Control Program; dated November 4, 2014
- CR 2014-00938; External flooding Barriers with Small Available Physical Margin; dated January 20, 2014
- CR 2014-00139; CRs 2013-10119 and 2013-10825 Did Not Fully Evaluate NRC NCV 05000440/2013008-04; dated January 6, 2014
- CR 2014-06040; Less Than Fully Functional Roof Drains; dated April 1, 2014
- CR 2014-10876; 8” Drain Pipe Connecting Unit 2 TPC and Unit 2 Aux Buildings Was Not Sealed/Plugged; dated June 24, 2014

1R04 Equipment Alignment

- VLI-C41; Standby Liquid Control System; Revision 8
- VLI-E21; Low Pressure Core Spray System; Revision 11
- Drawing (DWG) 302-0705-00000; Low Pressure Core Spray System; Revision GG
- DWG 302-0701-00000; High Pressure Core Spray System; Revision KK
- VLI-E22A; Valve Lineup Instruction for High Pressure Core Spray; Revision 10

1R05 Fire Protection

- FPI-1DG; Revision 6
- FPI-0EW; Emergency Service Water Pumphouse; Revision 5
- FPI-0CC; Control Complex- Unit 1 Division 3 Switchgear; Revision 9
- FPI-1DG; Division 2 EDG; Revision 6
- FPI-0CC; Control Complex- Closed Cooling; Revision 9
- FPI-1AB; Auxiliary Building; Revision 3
- FPI-0IB; Intermediate Building; Revision 7

1R06 Flooding

- PRA-PY1-FP-R0b; IF-001 Internal Flooding Notebook; dated December 20, 2012
- CR 2013-10825; Liquid Radwaste Cross ECCS Room Flooding Issue; dated July 16, 2013

1R07 Heat Sink Review

- SN-SA-2015-0634; Pre-NRC Inspection on Heat Sink Performance; dated March 30, 2015
- SN-SA-2014-0599; Perry 89-13 Program; dated December 23, 2014
- WO 200340425; Division II Diesel Generator Jacket Water Heat Exchanger Open and Inspect; dated March 31, 2015

1R11 Licensed Operator Regualification Program

- IOI-0001; Cold Startup; Revision 41
- IOI-0003; Power Changes; Revision 55
- OTLC03058201501B_PY-SGC1; Cycle 1B 2015 Evaluated Scenario C1; Revision 0
- CR 2015-07311; LOR Cycle Roll Up. Generic Training Issues from Operator Training; dated May 21, 2015
- CR 2015-07444; EOP-SPI 1.8 Alternate Boron Injection Procedure Needs Corrected - Identified During Out of the Box Simulator Exam on LOR Cycle 2015-01B; dated May 24, 2015
- CR 2015-07443; Procedure Change Identified During the Out of the Box Simulator Exam Scenario in LOR Cycle 2015-01B; dated May 24, 2015

1R12 Maintenance Effectiveness

- NOBP-ER-3009; FENOC Plant Health Report Program; Revision 11
- P54 Fire Protection System Health Report; 2014-02
- CR 2014-04724; Diesel Fire Pump Lube Oil Leak; Dated March, 11, 2014
- CR 2014-18442; Diesel Fire Pump Coolant Leak; Dated December 17, 2014
- CR 2015-06632; Diesel Fire Pump Crankcase Heater; Dated May 8, 2015

1R13 Maintenance Risk Assessments and Emergent Work Control

- NOP-OP-1007; Risk Management; Revision 20
- 1R15 Defense-in-Depth REPORT; Revisions 1 and 2
- SVI-R43-T7000-A; Division 1 ECCS Integrated Test; Revision 5
- CR 2015-05310; ODMI Operating with SJAEB Out-of-Service; dated April 20, 2015
- Forecast On-Line Probabilistic Risk Assessment; dated May 11, 2015 to May 17, 2015
- CR 2015-08545; 1C11F001 Scram Discharge Drain Volume; dated June 22, 2015

1R15 Operability Determinations and Functionality Assessments

- NOP-OP-1010; Operational Decision Making; Revision 5
- CR 2015-05498; ODMI LPRM Replacement Risk Recognition; dated April 22, 2015
- CR-2015-06712; ODMI Reactor Water Clean Up (RWCU) Pump B Seal Leakage dated May 10, 2015
- CR 2015-07165; ODMI Elevated Differential Flow Readings for RWCU; dated May 20, 2015
- NOP-OP-1007; Risk Management; Revision 20

1R18 Plant Modifications

- ECP 15-0212-001; Site Flooding Sand Bags TM Temporary Modification; dated April 21, 2015
- ECP 13-0802-001; Minor Stream Modification; (Draft reviewed during sample) dated July 23, 2015
- ECP 13-0802-003; Major Stream Modification; (Draft reviewed during sample) dated July 6, 2015
- CR 2015-05079; External Flooding during a Probable Maximum Flooding Event (West Side of the Plant); dated April 12, 2015
- CR 2013-05625; Calculation for Minor Stream Cannot be Located; dated April 11, 2013

1R19 Post-Maintenance Testing

- WO 200579899; BOP Static Inverter; dated March 25, 2015
- WO 200501861; SRM D; dated March 26, 2015
- PTI-C11-P0010; Control Rod Speed Adjustments; dated April 15, 2015
- WO 200579291; Pump, Engine Driven Jacket Water Coolant Leak; dated April 20, 2015
- SVI-R43-T1317; Diesel Generator Start and Load Division 1; Revision 18
- WO 200516185; Division 3 EDG Right Bank Air Start Pressure Regulator; dated May 15, 2015
- WO 200496500; EH 1301 Division 3 EDG Output Breaker; dated May 15, 2015
- EN 51159; Emergency Diesel Generator Found Inoperable; dated June 16, 2015
- WO 200547749; 1R22Q7036 Relay Calibration, SVI-R22T5074; dated June 16, 2015
- WO 200646293; 1C11F0011 Scram Discharge Volume First Drain Valve, SVI-C11T2004; dated June 23, 2015

1R20 Outage Activities

- IOI-0001; Cold Startup; Revision 41
- IOI-0003; Power Changes; Revision 56
- CR 2015-05174; NRC Identified that Two Individuals Were Inattentive; dated April 14, 2015
- CR 2015-07023; Results of 1R15 Core Shroud UT Exams; dated May 15, 2015

1R22 Surveillance Testing

- SVI-R43-T7000-B; Division 2 ECCS Integrated Test; Revision 4
- ISI-B21-T1300-1; Reactor Coolant System Leakage Pressure Test; Revision 18
- CR 2015-05508; Reactor Vessel Head Leak during Testing; dated April 20, 2015
- CR 2015-05497; Reactor Recirculation System Leaks during Testing; dated April 20, 2015
- SVI-T23-T0400; Drywell Leak Rate Test; Revision 10
- SVI-E51-T2001; RCIC Pump and Valve Operability Test; Revision 37

- CR 2015-0596; 1E51F0025 Full Closed Indication Failed; Dated April 28, 2015
- SVI-R22-T5074; Division 3, 4-KV Bus EH13 Undervoltage/Degraded Voltage Channel Calibration and Logic System Functional Test; Revision 9

1EP6 Drill Evaluation

- OTLC03058201501B_PY-SGC1; Cycle 1B 2015 Evaluated Scenario C1; Revision 0

2RS1 Radiological Hazard Assessment and Exposure Controls

- CR-2015-00560; Lessons learned From Reactor Water Clean Up (RWCU) Outage Related to Radiation Protection; dated January 13, 2015
- CR-2015-02311; 2014 Emergent Locked High Radiation Entries; dated February 23, 2015
- CR-2015-03105; RFO-15 Telemetry System Failed to Communicate Data From the Refuel Floor in Support of Reactor Cavity Entries; dated March 10, 2015
- NOBP-OP-4008; Response to Radiological Events; Revision 04
- NOP-OP-4001; Radiation Protection Program; Revision 03
- NOP-OP-4002; Conduct of Radiation Protection; Revision 05
- NOP-OP-4101; Access Controls for Radiologically Controlled Areas; Revision 11
- NOP-OP-4102; Radiological Postings, Labeling, and Marking; Revision 10
- NOP-OP-4104; Job Coverage; Revision 06
- NOP-OP-4107; Radiation Work Permit; Revision 14
- NOP-OP-4502; Control of Radioactive Material; Revision 03
- NOP-OP-4503; Personnel Contamination Monitoring; Revision 10
- NOP-OP-4601; Contamination Control Program; Revision 04
- PAP-0114; Radiation Protection Program; Revision 18
- Perry Electronic Dosimeter Alarms; dated January 1, 2015, through April 3, 2015
- Perry Refuel Outage 15 Multiple Location Whole Body Monitoring Plan; Undated
- Radiation Work Permit Listing – 2015
- Radiation Work Permit 156018; 1R15 Reactor Disassembly Activities; Revision 00
- Radiation Work Permit 156021; 1R15 Reactor Reassembly Activities; Revision 00
- Radiation Work Permit 156037; 1R15 Feed-Water Venture Repairs; Revision 01
- Radiation Work Permit 156048; 1R15 Under-Vessel Activities; Revisions 00, 01, and 02
- Radiation Work Permit 156049; 1R15 Dry Tube Removal / Replacement and Support Work; Revision 02
- Radiation Work Permit 156064; 1R15 Suppression Pool Cleaning Activities; Revision 00
- Radiation Work Permit 156074; 1R15 Under-Vessel Activities – Stuck LPRM 40-57D; Revision 00
- RFO 15; EDE Pre-Job Brief; Reactor Cavity and Under-Vessel; dated March 7, 2015
- SN-SA-2015-0629; Self-Assessment Snapshot; NRC Inspection Procedures 71124.01 and 71124.02; dated March 30, 2013
- System Description Manual; IRM (Intermediate Range Monitoring System); Revision 08
- System Description Manual; LPRM (Power Range Monitoring and Oscillation Power Range Monitoring Systems); Revision 12
- System Description Manual; SRM (Source Range Monitoring System); Revision 08
- System Description Manual; TIP (Traversing In-Core Probe System); Revision 07

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

- NOBP-OP-3501; Source Term Reduction Committee; Revision 02
- NOBP-OP-4005; ALARA Suggestion Program; Revision 02

- NOBP-OP-4006; Corporate ALARA Committee; Revision 04
- NOBP-OP-4105; ALARA Awards Guidelines; Revision 00
- NOBP-OP-4109; ALARA Post Outage Report; Revision 01
- NOBP-OP-4111; 5 Year Exposure Reduction Plan; Revision 02
- NOBP-OP-4113; ALARA Design Reviews; Revision 01
- NOP-OP-4005; ALARA Program; Revision 04
- NOP-OP-4010; Determination of Radiological Risk; Revision 08
- Perry Exposure Reduction Plan 2014-2018; Revision 03
- Station ALARA Committee (SAC) Meeting Notes; Selected Records; various dates 2015
- NOP-OP-4204; Special External Exposure Monitoring; Revision 06
- NOP-OP-4205; Dose Assessment; Revision 04
- NOP-OP-4330; Use of Non-Face Sealing Respirators; Revision 01

4OA1 Performance Indicator Verification

- NOBP-LP-4012-08, Revision 2; Safety System Functional Failures; April 2014 through March 2015
- NOBP-LP-4012-04, Revision 3; Mitigating Systems Performance Index Unavailability Index (UAI) and Unreliability Index (URI) for Emergency AC Power Systems; April 2014 through March 2015
- NOBP-LP-4012-05, Revision 2; Mitigating Systems Performance Index Unavailability Index (UAI) and Unreliability Index (URI) for High-Pressure Injection System (HPICS) and High-Pressure Emergency Diesel Generator (EDG); April 2014 through March 2015
- NOBP-LP-4012; NRC Performance Indicators; Revision 04
- NOBP-LP-4012-14; NRC Performance Indicator Data Sheets, Occupational Radiation Safety, Second Quarter 2014 through First Quarter 2015

LIST OF ACRONYMS USED

1RFO15	Unit 1 Refueling Outage 15
AC	Alternating Current
ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
CR	Condition Report
DG	Diesel Generator
DWG	System Drawing
ECP	Engineering Change Package
EDG	Emergency Diesel Generator
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
ISI	Inservice Instruction
LOCA	Loss-of-Coolant Accident
LOOP	Loss of Offsite Power
LPRM	Local Power Range Monitor
MSPI	Mitigating System Performance Index
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
ODMI	Operational Decision-Making Issue
OSP	Outage Safety Plan
PI	Performance Indicator
RFO	Refueling Outage
RHR	Residual Heat Removal
RWCU	Reactor Water Clean Up
SVI	Surveillance Instruction
TS	Technical Specification
TSO	Transmission System Operator
USAR	Updated Safety Analysis Report
WO	Work Order

E. Harkness

-2-

(ADAMS). ADAMS is accessible from the NRC Web site
<http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael Kunowski, Chief
Branch 5
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000440/2015002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

DISTRIBUTION w/encl.:

Kimyata MorganButler
RidsNrrPMPalisades Resource
RidsNrrDorLpl3-1 Resource
RidsNrrDirslrib Resource
Cynthia Pederson
Darrell Roberts
Richard Skokowski

Allan Barker
Carole Ariano
Linda Linn
DRPIII
DRSIII
Jim Clay
Carmen Olteanu
ROPreports.Resource@nrc.gov

ADAMS Accession Number: ML15222B119

Publicly Available Non-Publicly Available Sensitive Non-Sensitive
To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII	RIII	RIII	RIII
NAME	MKunowski:te			
DATE	08/10/15			

OFFICIAL RECORD COPY