



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

July 21, 2015

Mr. Brian D. Boles
Site Vice President
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION
NRC INTEGRATED INSPECTION REPORT 05000346/2015002

Dear Mr. Boles:

On June 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Davis-Besse Nuclear Power Station. The enclosed report documents the results of this inspection, which were discussed on June 30, 2015, with you and other members of your staff.

Based on the results of this inspection, no findings were identified. One licensee-identified violation which was determined to be of very low safety significance is documented in Section 4OA7 of this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

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

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

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 4
Division of Reactor Projects

Docket No. 50-346
License No. NPF-3

Enclosure:
Inspection Report 05000346/2015002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-346
License No: NPF-3

Report No: 05000346/2015002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: Oak Harbor, OH

Dates: April 1, 2015, through June 30, 2015

Inspectors: D. Kimble, Senior Resident Inspector
T. Briley, Resident Inspector
P. Lee, Ph.D., CHP, Health Physicist
M. Mitchell, Health Physicist
J. Rutkowski, Project Engineer
A. Schwab, Reactor Engineer

Approved by: J. Cameron, Chief
Branch 4
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).....	5
1R06 Flood Protection Measures (71111.06)	6
1R11 Licensed Operator Requalification Program (71111.11)	6
1R12 Maintenance Effectiveness (71111.12)	7
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)..	8
1R15 Operability Determinations and Functionality Assessments (71111.15)	9
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
2. RADIATION SAFETY	14
2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01).....	14
2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02)	16
2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03).....	17
2RS4 Occupational Dose Assessment (71124.04)	20
4. OTHER ACTIVITIES	25
4OA1 Performance Indicator Verification (71151).....	25
4OA2 Identification and Resolution of Problems (71152).....	28
4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153).....	31
4OA5 Other Activities	33
4OA6 Management Meetings.....	34
4OA7 Licensee-Identified Violations.....	34
SUPPLEMENTAL INFORMATION.....	1
KEY POINTS OF CONTACT.....	1
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED	2
LIST OF DOCUMENTS REVIEWED.....	3
LIST OF ACRONYMS USED	17

SUMMARY OF FINDINGS

Inspection Report (IR) 05000346/2015002; 4/1/15-6/30/15; Davis-Besse Nuclear Power Station; Routine Quarterly Integrated IR.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Cross-cutting aspects are determined using Inspection Manual Chapter (IMC) 0310, "Aspects Within the Cross-Cutting Areas" effective date December 4, 2014. All violations of U.S. Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 5, dated February 2014.

Cornerstone: Mitigating Systems

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

REPORT DETAILS

Summary of Plant Status

The unit began the inspection period operating at full power. With the exception of small power maneuvers (e.g., reductions in power of about 10 percent or less) to facilitate planned testing evolutions, the unit continued to operate at or near full power until May 9, 2015. On that day at about 7:09 p.m., the unit was manually tripped from approximately 30 percent power in response to a steam line rupture in the turbine building (see Section 4OA3 for additional details). Following repairs during the ensuing forced maintenance outage (see Section 1R20 for additional details), the reactor was restarted on May 11, 2015, and the unit returned to operation at full power on May 14, 2015. The unit then operated at or near full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate AC Power Systems

a. Inspection Scope

During the weeks ending April 18, 2015, and April 25, 2015, 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, but were not limited to:

- 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.

These reviews by the inspectors constituted a single summer readiness of offsite and alternate AC power systems inspection sample as defined in Inspection Procedure (IP) 71111.01–05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Alignment Verifications

a. Inspection Scope

The inspectors performed partial system physical alignment verifications of the following risk significant systems:

- Verification of the alignment for the station blackout diesel generator when Emergency Diesel Generator (EDG) No. 2 was out of service for planned testing during the week ending April 25, 2015;
- Verification of the alignment for EDG No. 1 when EDG No. 2 was out of service for planned testing during the week ending May 23, 2015; and
- Verification of the alignment for Auxiliary Feedwater (AFW) Train No. 2 when AFW Train No. 1 was out of service for a scheduled maintenance work window during the week ending May 30, 2015.

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Safety Analysis Report (USAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment

alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities by the inspectors constituted three partial system alignment verification inspection samples as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Protection Zone Inspections

a. Inspection Scope

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

- High Voltage Switchgear Room A (Room 325 – Fire Area S) during the week ending May 2, 2015;
- High Voltage Switchgear Room B (Room 323 – Fire Area O) during the week ending May 2, 2015;
- Auxiliary Shutdown Panel and Transfer Switch Room (Room 324 – Fire Area R) during the week ending May 2, 2015;
- Low Level Radwaste Storage Building (Rooms 389 through 397 – Fire Area RW) during the week ending May 2, 2015; and
- Emergency Core Cooling System Room No. 2 (Rooms 113, 114, 115, and 125 – Fire Area A and portions of Fire Area AB) during the week ending May 2, 2015.

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 zone inspection tour samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

.1 Underground Bunkers/Manholes

a. Inspection Scope

During the week ending June 20, 2015, the inspectors conducted a review of underground bunkers/manholes subject to flooding that contained electrical cables. The inspectors' reviews included the following underground bunkers/manholes subject to flooding:

- Electrical Manholes SA1/SA2; and
- Electrical Manholes SB1/SB2.

The inspectors checked for submerged cables, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as sump pumps, the inspectors verified that the devices were functional and that any level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues to verify the adequacy of the corrective actions. Specific documents reviewed during this inspection are listed in the Attachment to this report.

The inspectors' reviews of these underground bunkers/manholes constituted a single inspection sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Observation of Operator Activities in the Control Room and in the Plant

a. Inspection Scope

During the course of the inspection period, the inspectors performed numerous observations of operator performance in the plant's control room and in the plant to verify that operator performance was adequate and that plant evolutions were being conducted in accordance with approved plant procedures. Specific activities observed that involved a heightened tempo of activities or periods of elevated risk included, but were not limited to:

- Implementation of changes to the integrated control system (ICS) and associated unit power maneuvers during the weeks ending May 2, 2015, and June 20, 2015;
- Periodic diverse scram system and reactor trip breaker testing and associated unit power maneuvers during the weeks ending May 9, 2015, and June 20, 2015;
- Transient and post-trip response following the rupture of a high pressure steam line in the turbine building during the week ending May 9, 2015 (see Section 4OA3 for additional details);
- Unit recovery and startup from a forced outage during the week ending May 16, 2015 (see Section 1R20 for additional details); and
- Emergent shutdown of Circulating Water Pump No. 4 following a rapid increase in circulating water canal screen differential level during the week ending May 23, 2015.

The inspectors evaluated the following areas during the course of the control room and in-plant observations:

- Licensed operator performance;
- The clarity and formality of communications;
- The ability of the crew to take timely and conservative actions;
- The crew's prioritization, interpretation, and verification of annunciator alarms;
- The correct use and implementation of normal operating, annunciator alarm response, and abnormal operating procedures by the crew;
- Control board manipulations;
- The oversight and direction provided by on-watch Senior Reactor Operators (SROs) and plant management personnel; and
- The ability of the crew to identify and implement appropriate TS 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.

These observation activities by the inspectors of operator performance in the station's control room and in the plant constituted a single quarterly inspection 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:

- Shield Building Condition Monitoring Program, with particular emphasis on the licensee's summer 2015 concrete inspection campaign; and

- Secondary Piping Condition Monitoring Program, with particular emphasis on the number and extent of active secondary plant steam leaks.

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 (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 two 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:

- Corrective maintenance for issues associated with Main Turbine Electronic Trip Device No. 3B during the week ending April 25, 2015;
- Corrective maintenance for a leak on the 2,000 pounds per square inch gauge air system for 345 KV Air Circuit Breaker (ACB) No. 34562 during the week ending May 2, 2015; and
- Corrective maintenance to adjust steam generator operate range level indication during the weeks ending May 23, 2015 through June 13, 2015;

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

The inspectors' review of these maintenance risk assessments and emergent work control activities constituted three inspection samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- The operability of the plant's once-through steam generators with respect to higher than nominal operating range levels, as discussed in CRs 2015-05633 and 2015-01595;
- The operability of the plant's main steam isolation valves following discovery that closure times did not meet the expected values described in applicable procedures, as discussed in CR 2015-06720; and
- The seismic qualifications of a heavy drill rig being used to facilitate construction activities in close proximity to the station's borated water storage tank, and other safety-related components, as described in Engineering Evaluation Request (EER) 600965176.

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 verified, where applicable, that the bounding limitations of the evaluations were valid. 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.

The review of these operability determinations and functionality assessments by the inspectors constituted three inspection samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

.2 Periodic Review of Operator Workarounds

a. Inspection Scope

Operator workarounds are operator actions taken to compensate for degraded or non-conforming conditions. Operator workarounds that cannot be implemented effectively can contribute to an increase in overall plant risk. As a result, the inspectors verified that the licensee is identifying operator workarounds at an appropriate threshold, entering them into the CAP, and addressing them in a manner that effectively manages the related adverse effects. As part of the review, the inspectors considered all existing plant conditions and the cumulative impact of the entire population of operator workarounds put in place by the licensee.

During the weeks ending April 11, 2015, and April 18, 2015, the inspectors evaluated the licensee's operator workarounds with respect to mitigating systems to determine if the functions of the mitigating systems were adversely impacted. Additionally, the inspectors assessed whether or not the operator workarounds had adversely impacted any operator's ability to implement abnormal or emergency operating procedures. The inspectors placed particular emphasis on any operator workarounds that had not been effectively evaluated by the licensee; that had been formalized or proceduralized as the long-term corrective actions for a degraded or nonconforming condition (and therefore may not have been properly tracked by the licensee); and that may have increased the potential for human error, such as operator workarounds that:

- Required operations that were not consistent with current training and system knowledge;
- Required a change from longstanding operational practices;
- Required operation of a system or component in a manner that was inconsistent with similar systems or components;
- Created the potential for the compensatory action to be performed on equipment or under conditions for which it was not intended;
- Impaired access to required indications, increased dependence on oral communications, or impacted the timeliness of time-critical event mitigating actions under adverse environmental conditions;
- Required the use of equipment and interfaces that had not been designed with consideration of the task being performed;
- Required the licensee to assess and manage an increase in risk; or
- Required a license amendment in accordance with 10 CFR 50.59.

Documents reviewed are listed in the Attachment to this report.

These activities by the inspectors constituted a single operator workarounds review inspection sample as required by IP 71111.15, Section 02.01(a).

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Permanent Plant Modification

a. Inspection Scope

The inspectors reviewed the following ongoing change to the facility:

- Engineering Change Package (ECP) No. 13-0195-000: Emergency Feedwater Facility, with particular emphasis on activities associated with construction of the facility's below grade secant wall.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation documents against the design basis, the USAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of any safety-related systems, or systems important to safety. The inspectors conducted a significant number of field observations of the ongoing construction activities to ensure that the modification was installed as directed and consistent with the design control documents; that the modification operated as expected; and that the ongoing construction activities associated with the modification did not impact the operability of any interfacing or nearby systems. The inspectors verified that relevant procedure, design, and licensing documents were properly updated, as applicable. Finally, the inspectors discussed the plant modification with operations, engineering, and training department personnel to ensure that the individuals were aware of how the operation with the modification in place could impact overall plant performance. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

The inspectors' review of this permanent plant modification constituted a single inspection sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Quarterly Resident Inspector Observation and Review of Post-Maintenance Testing Activities

a. Inspection Scope

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

- Nondestructive testing associated with repairs to a failed vent line connecting No. 1 Moisture Separator Reheater (MSR) and the Second Stage Reheater Drain Tank during the week ending May 16, 2015;

- Operational and functional testing of the No. 2 Station Air Compressor following corrective maintenance during the week ending May 23, 2015;
- Operational and functional testing of the rod position indication for Control Rod Drive Mechanism 3-2 following corrective maintenance during the week ending May 23, 2015;
- Operational and functional testing of the station's motor-driven feedwater pump following planned maintenance during the week ending June 20, 2015; and
- Parameter testing associated with replacement of Module No. ICSFW5212A/B, which provides the unit with rapid feedwater temperature reduction following a plant trip, during the week ending June 20, 2015.

These activities were selected based upon the SSC'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 the PMTs 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.

The inspectors' reviews of these activities constituted five PMT inspection samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 May 2015 Forced Maintenance Outage

a. Inspection Scope

The inspectors evaluated outage activities for a forced maintenance outage that began with a manual reactor trip at approximately 7:09 p.m. on May 9, 2015, as a result of a steam line rupture in the turbine building (see Section 4OA3.1 for event details). Following completion of various plant repairs associated with the event, the reactor was restarted on May 11, 2015, and the unit returned to full power on May 14, 2015.

The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule. The inspectors reviewed plant records associated with the reactor trip and steam line rupture in the turbine building. Outage equipment configuration, risk management, electrical lineups, selected

clearances, control and monitoring of decay heat removal, personnel fatigue management, startup activities, and identification and resolution of problems associated with the outage were also reviewed and selectively observed by the inspectors. Documents reviewed are listed in the Attachment to this report.

These observations and reviews by the inspectors constituted a single other (i.e., non-refueling) outage 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 results for the following testing 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:

- Periodic functional testing and calibration of pressure switches associated with Main Feed Pump Nos. 1 and 2 hydraulic oil and Anticipatory Reactor Trip System Channel No. 3 during the week ending May 2, 2015 (routine);
- Monthly testing of AFW Train No. 1 during the week ending May 2, 2015 (routine);
- Monthly logic output testing for Safety Features Actuation System Channel No. 1 during the week ending May 2, 2015 (routine);
- Periodic functional testing and calibration of pressure switches associated with Steam Feed Rupture Control System Channel No. 1 during the week ending May 2, 2015 (routine);
- Quarterly No. 2 Makeup Pump surveillance and inservice test during the week ending May 23, 2015 (inservice test);
- Quarterly containment entry and visual inspections during the week ending June 20, 2015 (routine); and
- Periodic 184-day fast start surveillance test of No. 2 EDG during the week ending June 20, 2015 (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;

- That measuring and test equipment calibration was current;
- That test equipment was used within the required range and accuracy;
- That applicable prerequisites described in the test procedures were satisfied;
- That 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;
- That test data and results were accurate, complete, within limits, and valid;
- That 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 (ASME) code, and reference values were consistent with the system design basis;
- Where applicable, that 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, that reference setting data were accurately incorporated in the test procedure;
- Where applicable, that actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- That prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- That equipment was returned to a position or status required to support the performance of its safety functions; and
- That all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

These activities conducted by the inspectors constituted six routine surveillance testing inspection samples and a single inservice testing inspection sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

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

.1 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 types 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 indicates 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-radiation 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 Title 10, *Code of Federal Regulations* (CFR), Part 20.2207.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

The inspectors discussed the controls in place for special areas that have the potential to become very-high radiation areas during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight

authority). The inspectors assessed whether these plant operations require communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for very-high radiation areas and areas with the potential to become 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.

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

The inspectors' reviews documented in this section supplement those documented in NRC IR 05000346/2014002 (ADAMS Accession No. ML14113A073), and constitute a single complete inspection sample as defined in IP 71124.02-05.

.1 Radiological Work Planning (02.02)

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 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.

.3 Problem Identification and Resolution (02.06)

a. Inspection Scope

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

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

These activities constituted one complete inspection sample as defined in IP 71124.03-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant's USAR to identify areas designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. Instrumentation review included continuous air monitors (continuous air monitors and particulate-iodine-noble-gas-type instruments) used to identify changing airborne radiological conditions such that actions to prevent an overexposure may be taken. The review included an overview of the respiratory protection program and a description of the types of devices used. The inspectors reviewed USAR, TS, and emergency planning documents to identify location and quantity of respiratory protection devices stored for emergency use.

Inspectors reviewed the licensee's procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus as well as procedures for air quality maintenance.

The inspectors reviewed any reported performance indicators (PIs) related to unintended dose resulting from intakes of radioactive material.

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

The inspectors reviewed the licensee's use of permanent and temporary ventilation to determine whether the licensee uses ventilation systems as part of its engineering controls (in lieu of respiratory protection devices) to control airborne radioactivity. The inspectors reviewed procedural guidance for use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation, and assessed whether the systems are used, to the extent practicable, during high-risk activities (e.g., using containment purge during cavity floodup).

The inspectors selected installed ventilation systems used to mitigate the potential for airborne radioactivity, and evaluated whether the ventilation airflow capacity, flow path (including the alignment of the suction and discharges), and filter/charcoal unit efficiencies, as appropriate, were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable.

The inspectors selected temporary ventilation system setups (high-efficiency particulate air/charcoal negative pressure units, down draft tables, tents, metal "Kelly buildings," and other enclosures) used to support work in contaminated areas. The inspectors assessed whether the use of these systems is consistent with licensee procedural guidance, and the ALARA concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant, and evaluated whether the alarms and setpoints were sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR Part 20 and the ALARA concept.

The inspectors assessed whether the licensee had established trigger points (e.g., the Electric Power Research Institute's "Alpha Monitoring Guidelines for Operating Nuclear Power Stations") for evaluating levels of airborne beta-emitting (e.g., plutonium-241) and alpha-emitting radionuclides.

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

For those situations where it is impractical to employ engineering controls to minimize airborne radioactivity, the inspectors assessed whether the licensee provided respiratory protective devices such that occupational doses are ALARA. The inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether the licensee performed an evaluation concluding that further engineering controls were not practical and that the use of respirators is ALARA. The inspectors also evaluated whether the licensee had established means (such as routine bioassay) to determine if the level of protection (protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in the licensee's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration or have been approved by the NRC per 10 CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their National Institute for Occupational Safety and Health/Mine Safety and Health Administration certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use.

The inspectors selected several individuals qualified to use respiratory protection devices, and assessed whether they have been deemed fit to use the devices by a physician.

The inspectors selected several individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device as appropriate. Through interviews with these individuals, the inspectors evaluated whether they knew how to safely use the device and how to properly respond to any device malfunction or unusual occurrence (loss of power, loss of air, etc.).

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings). The inspectors reviewed the respirator vital components maintenance program to ensure that the repairs of vital components were performed by the respirators' manufacturer.

b. Findings

No findings were identified.

.4 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the USAR, TS, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., onsite search and rescue duties) to assess whether control room operators and other emergency response and radiation protection personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of self-contained breathing apparatuses (including personal bottle changeout). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type match what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the

sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrected lenses) was available as appropriate.

The inspectors reviewed the past two years of maintenance records for select self-contained breathing apparatus units used to support operator activities during accident conditions and designated as “ready for service” to assess whether any maintenance or repairs on any self-contained breathing apparatus unit’s vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically are the pressure-demand air regulator and the low-pressure alarm. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine any inconsistencies with the self-contained breathing apparatus manufacturer’s recommended practices. For those self-contained breathing apparatuses designated as “ready for service,” the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up to date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee CAP. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

These activities constituted one complete inspection sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

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

The inspectors reviewed the most recent national voluntary laboratory accreditation program accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

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

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

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

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

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

The inspectors assessed whether non-national voluntary laboratory accreditation program accredited passive dosimeters (e.g., direct ion storage sight read dosimeters) were used according to licensee procedures that provide for periodic calibration, application of calibration factors, usage, reading (dose assessment) and zeroing. The licensee does not use non-national voluntary laboratory accreditation program accredited passive dosimeters.

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

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

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

a. Routine Bioassay (In Vivo)

(1) Inspection Scope

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

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

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

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

(2) Findings

No findings were identified.

b. Special Bioassay (In Vitro)

(1) Inspection Scope

The inspectors selected internal dose assessments obtained using in vitro monitoring. The inspectors reviewed and assessed the adequacy of the licensee's program for in vitro monitoring (i.e., urinalysis and fecal analysis) of radionuclides (tritium, fission products, and activation products), including collection and storage of samples.

The inspectors reviewed the vendor laboratory quality assurance program and assessed whether the laboratory participated in an industry recognized cross-check program, including whether out-of-tolerance results were resolved appropriately.

(2) Findings

No findings were identified.

c. Internal Dose Assessment - Airborne Monitoring

(1) Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The inspectors determined whether flow rates and collection times for air sampling equipment were adequate to allow lower limits of detection to be obtained. The inspectors also reviewed the adequacy of procedural guidance to assess internal dose if respiratory protection was used.

(2) Findings

No findings were identified.

d. Internal Dose Assessment - Whole-Body Count Analyses

(1) Inspection Scope

The inspectors reviewed several dose assessments performed by the licensee using the results of whole-body count analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with the licensee's procedures.

(2) Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

a. Declared Pregnant Workers

(1) Inspection Scope

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

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

(2) Findings

No findings were identified.

b. Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

(1) Inspection Scope

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated the licensee's criteria for determining when alternate monitoring, such as use of multi-badging, was to be implemented.

The inspectors reviewed dose assessments performed using multi-badging to evaluate whether the assessment was performed consistently with licensee procedures and dosimetric standards.

(2) Findings

No findings were identified.

c. Shallow Dose Equivalent

(1) Inspection Scope

The inspectors reviewed shallow dose equivalent dose assessments for adequacy. The inspectors evaluated the licensee's method (e.g., VARSKIN or similar code) for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

(2) Findings

No findings were identified.

d. Neutron Dose Assessment

(1) Inspection Scope

The inspectors evaluated the licensee's neutron dosimetry program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether:

- a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra;
- b) there was sufficient sensitivity for low-dose and/or dose rate measurement; and
- c) neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration, and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

(2) Findings

No findings were identified.

e. Assigning Dose of Record

(1) Inspection Scope

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigns dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures (e.g., radiation incident investigation reports and skin contamination reports), and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

(2) Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

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

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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 (PI) for the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 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 2014 through March 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.

The inspectors' reviews of this PI data constituted a single Safety System Functional Failure inspection 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 PI for the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 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 2014 through March 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 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.

The inspectors' reviews of this PI data constituted a single MSPI – Emergency AC Power System inspection 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 for the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 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 2014 to March 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 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.

The inspectors' reviews of this PI data constituted a single MSPI – High Pressure Injection System inspection 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 for the period from the second quarter 2014 through the first quarter 2015. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator related data was 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.

The inspectors' reviews of this PI data constituted a single Occupational Exposure Control Effectiveness inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual
Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences PI for the period from the second quarter 2014 through the first quarter 2015. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, to determine the accuracy of the PI data reported during those periods. The inspectors

reviewed the licensee's CR database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

The inspectors' reviews of this PI data constituted a single Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences inspection sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of

items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily CR packages.

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

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review: Verification Errors Associated with Personnel Working in Tandem

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspectors CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six-month period of January 1 through June 30, 2015, although examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, Quality Assurance audit/surveillance reports, self-assessment reports, and maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Observations

During the course of the review period for this inspection sample, the inspectors noted examples where errors had been made by licensee personnel working in pairs. The errors noted involved the common element of one individual improperly performing, or failing to perform, a verification activity for a colleague during an in-plant work task. Although these errors did not always result in any immediate adverse consequences, a potential trend in this area is apparent and suggests that additional licensee attention to effect corrective actions may be appropriate. Following discussions with the inspectors, the licensee has entered this potential adverse trend into their CAP as CR 2015-08977. Specific examples associated with this trend included, but were not limited to:

- As discussed in Section 4OA7 of NRC Inspection Report 05000346/2014005 (ADAMS Accession No. ML15028A034), on November 3, 2014, two reactor operators failed to adequately perform procedure DB-SC-03113, "SFAS [Safety Features Actuation System] Channel 4 Functional Test." Specifically, the

operators errantly began performing the test procedure on SFAS Channel 2 instead of SFAS Channel 4, as the procedure required. During the performance of the initial procedures steps, the operators failed to utilize proper peer checking and component verification techniques and placed the SFAS Channel 2 test trip bypass switch in the "reactor coolant pressure" position. This resulted in the "reactor coolant system pressure-low" and the "reactor coolant system pressure-low low" functions for SFAS Channel 2 being rendered inoperable and an unplanned entry into TS 3.3.5, Condition A. Shortly thereafter, the operators recognized that they were performing their actions on the wrong SFAS channel, stopped all associated activities, and reported the error to the on-shift unit supervisor in the control room. CR 2014-16542.

- As discussed in Section 4OA7 of this report, on May 29, 2015, two maintenance technicians failed to adequately perform procedure DB-MI-03205, "Channel Functional Test/Calibration and Response Time of RCP [Reactor Coolant Pump] Monitor (RC3601) to SFRCS [Steam Feed Rupture Control System] Logic Channel 1 and RPS [Reactor Protection System] Channel 1." Specifically, the technicians did not perform a portion of a step during the safety system testing procedure even though the step required concurrent verification and was signed off by both technicians as being completed. Later, during the restoration steps for DB-MI-03205, the technicians recognized that knurled screws had not been inserted into the applicable shorting bar terminals as required by an earlier part of the procedure. The failed concurrent verification and procedure compliance error resulted in plant operators having to declare SFRCS Logic Channel 1 inoperable and place it in a tripped condition to comply with the requirements of TS 3.3.11, Condition A. CR 2015-07685.
- On June 8, 2015, two plant operators were tasked with removing safety-related Battery Charger DBC2PN from service per procedure DB-OP-06321, "250/125 Vdc Station DC Switching Procedure." After dispatching the two plant operators to perform the task, personnel in the control room noted some anomalous indications associated with the battery charger on the unit's electrical control panel. Operations shift supervisory personnel responded to the No. 2 Low Voltage Switchgear Room where the task was being performed and found that the two plant operators had erroneously closed Circuit Breakers D205 and D221 for the battery charger. The applicable procedure steps in DB-OP-06321, which required a formal concurrent verification, specified that the two circuit breakers were to be verified in the open position. Fortunately, the errors by the plant operators were identified and their actions stopped by the intervention of other personnel; and, since the intent of the task had been to remove the battery charger from service and it was not being relied upon to meet any TS requirements, the errors had no adverse consequences. CR 2015-08043.

c. Findings

No findings were identified.

.4 NRC Inspection Report 05000346/2014008 Reactor Oversight Process Credit

On May 28, 2015, the NRC issued Inspection Report 05000346/2014008 (ADAMS Accession No. ML15148A489) to document the inspectors' reviews of certain licensee corrective actions associated with the identification of laminar cracking within the plant's shield building. Because this inspection began in late 2014, the inspection report was

assigned a calendar year 2014 identification number. However, because the inspection was completed in 2015, the inspection sample documented in that report is being administratively credited to this report (IR 05000346/2015002) to ensure proper accounting within the 2015 reactor oversight process inspection cycle.

As discussed in NRC Inspection Report 05000346/2014008, the inspectors' review of the issue constituted a single follow-up inspection sample for in-depth review as defined in IP 71152-05.

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

.1 Event Notification No. 51061: Unusual Event Declared Due to Steam Leak in the Turbine Building

The inspectors reviewed the response of the licensee's staff and the plant to a steam line rupture in the turbine building on May 9, 2015. The transient prompted control room operators to conduct a rapid power reduction, initiate a manual reactor trip, actuate the steam and feedwater rupture control system (SFRCS), and declare a notice of unusual event (NOUE) in accordance with the station's emergency plan.

At approximately 6:56 p.m. with the plant operating at full power, control room operators heard loud anomalous sounds within the turbine building, and plant personnel visually observed steam in the turbine building in the vicinity of the No. 1 MSR. Control room operators performed a controlled rapid power reduction to approximately 30 percent reactor power and manually tripped the reactor at approximately 7:09 p.m. in accordance with plant procedures. The operators then manually initiated SFRCS to isolate the steam leak and start AFW. At approximately 7:10 p.m., a NOUE was declared based on the conservative judgment of senior operators in the control room that the anomalous noise in the turbine building might have stemmed from an explosion of some type within the protected area of the plant. The NOUE was terminated at approximately 9:21 p.m. after the steam leak was isolated and the plant was stabilized in Mode 3, Hot Standby, with decay heat removal being provided by the steam generators via AFW and the atmospheric vent valves.

The inspectors responded to the site immediately following the manual reactor trip and verified that the trip was uncomplicated by any significant equipment or human performance issues, and that the reactor was stable with fission product decay heat being adequately removed by AFW and by steam release to atmosphere. Several minor equipment issues were reviewed by the inspectors to verify that plant operators were appropriately compensating for the issues in accordance with plant procedures. In addition, the inspectors also reviewed the licensee's emergency action level declarations and ensured that applicable notifications to the State of Ohio, affected units of local government, and the NRC Headquarters Operations Center were made in a timely manner.

The steam line rupture occurred at an elbow of a four inch vent line between the No. 1 MSR second stage reheat drain tank and the No. 1 MSR. The steam line failed as a result of pipe wall thinning from two-phase flow accelerated corrosion. As a result of the steam line rupture, Station Air Compressor No. 2 tripped at the onset of the event due to a cable junction box being damaged from the force of the high pressure steam. Station Air Compressor No. 1 automatically started as designed to maintain plant system air

pressure. Several non safety-related, low-voltage cables were also partially displaced from a nearby cable tray. Additionally, a single fire protection sprinkler head actuated in the turbine building and wetted some non safety-related plant equipment and electrical switchgear. No significant damage was noted to any cables that were displaced or any equipment that was wetted. Station Air Compressor No. 2 was subsequently repaired and returned to service. The plant remained in Mode 3, Hot Standby, while repairs were made to the ruptured steam line elbow.

Prior to unit restart, the inspectors observed and reviewed the licensee's steam line repair activities and extent of condition review, which included but was not limited to additional ultrasonic testing, plant walkdowns, and documentation reviews. Additional ultrasonic testing performed by the licensee did identify significant pipe wall thinning on a similar elbow location (on the opposite train) between the No. 2 MSR second stage reheat drain tank and the No. 2 MSR. This elbow was also replaced prior to restarting the unit. On May 11, 2015, the unit was restarted and full power was reached on May 14, 2015.

At the end of the inspection period the licensee had recently completed a root cause evaluation and was in the process of developing a licensee event report notification to the NRC. The issue remains under review by the inspectors pending their subsequent receipt and review of the licensee's event report. The licensee had entered this issue into their CAP as CR 2015-06691.

This event follow-up review constituted a single inspection sample as defined in IP 71153-05.

.2 Event Notification No. 51185: Both Auxiliary Feedwater Trains Declared Inoperable

The inspectors reviewed the response of the licensee's staff to an emergent non-emergency condition that occurred during the backshift on June 26-27, 2015. With AFW Train No. 1 already inoperable for a scheduled surveillance test, at approximately 11:35 p.m. on June 26, 2015, plant operators identified that the supply breaker for motor-operated valve SW1395, the Service Water (SW) Loop No. 2 Nonessential Isolation, was in the open position and out of its normal configuration. This condition forced plant operators to declare SW Loop No. 2 inoperable, which also required AFW Train No. 2 to be declared inoperable as well due to the inoperability of its associated safety-related suction water supply source. The on-watch operations crew immediately began concurrent actions to restore the operability of both trains of AFW. While steps were completed to restore AFW Train No 1 from the ongoing surveillance test, electrical checks were performed on the breaker for SW1395 to confirm that no electrical faults were present and that the breaker could be restored to its normally closed position. With both AFW trains restored to an operable status, all TS Limiting Condition for Operation (LCO) required actions were exited at approximately 1:33 a.m. on June 27, 2015. Per the requirements of 10 CFR 50.72(b)(3)(v), the licensee reported the condition to the NRC via telephone at 7:16 a.m. on June 27, 2015, as a condition that at the time of discovery could have prevented the fulfillment of a safety function.

The inspectors reviewed the licensee's actions in response to this event and verified that the operability of the plant's AFW trains had been appropriately restored in accordance with plant procedures. In addition, the inspectors also reviewed the licensee's actions to properly report the issue and ensured that the applicable notification to the NRC

Headquarters Operations Center was made in a timely manner, as well as courtesy notifications to the State of Ohio and affected units of local government per the licensee's procedures.

At the end of the inspection period, circumstances surrounding the event, including its cause, were still under investigation by the licensee. The issue remains under review by the inspectors pending receipt and review of the licensee's causal evaluation and written event report to the NRC. The licensee had entered this event into their CAP as CR 2015-08774.

This event follow-up review constituted a single inspection sample as defined in IP 71153-05.

4OA5 Other Activities

.1 Spring 2015 Groundwater Sampling Results

a. Inspection Scope

The inspectors reviewed the results of a series of expanded groundwater samples taken from wells in the plant owner-controlled area. The sampling of wells was completed as part of the licensee's voluntary groundwater monitoring initiative and in response to the results obtained earlier, as discussed in Section 4OA5 of NRC Inspection Report 05000346/2015001 (ADAMS Accession No. ML15113B387). Several of the monitoring well locations sampled as part of the licensee's ongoing investigations indicated tritium levels above the 2,000 picocuries per liter (pCi/L) groundwater monitoring program threshold requiring courtesy notifications to state and local government officials and the NRC resident inspectors. The highest tritium concentration, approximately 10,527 pCi/L from a sample obtained on February 10, 2015, was located in a monitoring well, designated MW-22S, on the west side of the plant near the borated water storage tank. The formal reporting limit threshold for tritium in groundwater samples is 30,000 pCi/L, as documented in the licensee's Offsite Dose Calculation Manual (ODCM).

The licensee continues to investigate and monitor wells in accordance with their groundwater monitoring program, and has established a formal problem solving team to address this ongoing issue. The inspectors have reviewed the licensee's compliance with their stated offsite agency reporting requirements.

These routine reviews for samples to detect tritium in groundwater did not constitute any additional inspection samples. Instead, they were considered as part of the inspectors' daily plant status monitoring activities.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On June 30, 2015, the inspectors presented the inspection results to the Site Vice President, Mr. Brian Boles, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspectors confirmed with the licensee the scope of material reviewed that was considered to be proprietary. Proprietary information reviewed by the inspectors was controlled in accordance with appropriate NRC policies regarding sensitive unclassified information, and has been denoted as "proprietary" in the Attachment.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The results of a routine radiation protection baseline inspection with the Site Vice President, Mr. R. Lieb, on May 8, 2015.

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.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as an NCV.

.1 Error in Procedure Use and Execution Results in Steam Feed Rupture Control System Logic Channel 1 Unplanned Inoperability During Testing

Appendix B of 10 CFR Part 50, Criterion V, "Instructions, Procedures, Drawings" requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to this requirement, on May 29, 2015, two maintenance technicians failed to adequately perform procedure DB-MI-03205, "Channel Functional Test/Calibration and Response Time of RCP Monitor (RC3601) to SFRCS Logic Channel 1 and RPS Channel 1." Specifically, the technicians did not perform a portion of a step during the safety system testing procedure even though the step required concurrent verification and was signed off by both technicians as being completed. During the performance of Step 8.1.4.a.2, the technicians were required to: "Remove two (2) of the knurled screws stored on TB5R (terminal block) and screw them into the shorting bars for TB6L terminals 3 and 4." Although the technicians appropriately removed two knurled screws from TB5R as specified, they did not insert the screws into the shorting bars for TB6L terminals 3 and 4 as was also required by the procedure step. Later, during the restoration steps for DB-MI-03205, the technicians recognized that the knurled screws had not been inserted into the shorting bars for TB6L terminals 3 and 4 as required; they stopped work after placing equipment in a safe condition and reported the error to supervisory personnel.

While RPS Channel 1 was already inoperable and in "bypass" for the testing that was in progress, because of the procedure compliance error plant operators were forced to declare the affected SFRCS Logic Channel 1 inoperable and place it in a tripped condition to comply with the requirements of TS 3.3.11, Condition A. The maintenance technicians performing the testing were removed from duty pending an investigation. To recover from the error and restore the operability of RPS Channel 1 and SFRCS Logic Channel 1, plant management directed that the test procedure be re-briefed and performed over using different maintenance technicians. The DB-MI-03205 procedure was successfully completed under enhanced supervisory oversight later that same day and both RPS Channel 1 and SFRCS Logic Channel 1 were restored to an operable status.

The objective of the Mitigating Systems Cornerstone of Reactor Safety is to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). A key attribute of this objective is human performance, and specifically, configuration control. In accordance with NRC IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," the inspectors determined that the violation was of more than minor significance in that it had a direct impact on this cornerstone objective. The licensee's failure to complete DB-MI-03205 as written resulted in the unplanned inoperability of SFRCS Logic Channel 1, and needlessly extended the time RPS Channel 1 was inoperable and in a bypassed condition. The licensee had entered this issue into their CAP as CR 2015-07685. An apparent cause evaluation was commissioned and corrective actions taken and planned included, but were not limited to:

- A lessons learned communication was provided to each station workgroup during a stand down conducted on June 1, 2015;
- An enhancement is planned to DB-MI-03205 to split the applicable procedure step into two distinct actions, with the concurrent verification being required for specifically installing the knurled screws; and
- An interim action was established to ensure a consistent standard of concurrent verification / independent verification performance within the station's maintenance organization. Specifically, this action required all concurrent verification / independent verification maintenance steps have direct oversight by a qualified maintenance supervisor.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

B. Boles, Site Vice President (incoming)
R. Lieb, Site Vice President (outgoing)
K. Byrd, Director, Site Engineering
G. Cramer, Manager, Site Protection
J. Cuff, Manager, Training
J. Cunnings, Manager, Site Maintenance
A. Dawson, Manager, Chemistry
D. Hartnett, Superintendent, Operations Training
J. Hook, Manager, Design Engineering
B. Howard, Manager, Site Outage Management
D. Imlay, Director, Site Performance Improvement
B. Kremer, Manager, Site Operations
G. Laird, Manager, Technical Services Engineering
B. Matty, Manager, Plant Engineering
P. McCloskey, Manager, Site Regulatory Compliance
D. Noble, Manager, Radiation Protection
G. Nordlund, Superintendent, Radiation Protection
W. O'Malley, Manager, Nuclear Oversight
R. Oesterle, Superintendent, Nuclear Operations
R. Patrick, Manager, Site Work Management
M. Roelant, Manager, Site Projects
D. Saltz, Director, Site Operations
J. Sturdavant, Regulatory Compliance
L. Thomas, Manager, Nuclear Supply Chain
J. Vetter, Manager, Emergency Response
G. Wolf, Supervisor, Regulatory Compliance
K. Zellers, Supervisor, Reactor Engineering

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

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

Condition Reports:

- 2014-03359; Some Material Storage in Switchyard Restricted Area Does not Meet Requirements of DBBP-OPS-0040
- 2014-05164; MS-C-14-03-01 Rollup of 12 Condition Reports Associated with Switchyard Material Control Violations
- 2014-17862; Trip Path from X02 Lockout Relay 86-1A/X02 to ACB34562 Trip Coil 1 Not Functionally Tested
- 2015-00656; NERC Standard VAR-002 - Failure to Maintain Voltage Schedule
- 2015-03468; 345KV A Phase Voltage Lowered to Technical Specification Minimum Allowable Voltage
- 2015-03601; Upgrade to CdM YELLOW Level for the B Phase Plant Side North Conductor on the OE/Beaver Line as it Enters the Davis-Besse Yard

Procedures:

- NOP-OP-1003; Grid Reliability Protocol; Revision 7
- NOP-OP-1012; Material Readiness and Housekeeping Inspection Program; Revision 7
- DB-OP-01300; Switchyard Management; Revision 10
- DB-OP-02025; Davis-Besse 345 KV Switchyard Alarm Panel 25 Annunciators; Revision 12
- DB-OP-02521; Loss of AC Bus Power Sources; Revision 23
- DB-OP-02546; Degraded Grid; Revision 3
- DB-SC-03023; Off-Site AC Sources Lined Up and Available; Revision 32

FENOC Business Practices:

- DBBP-OPS-0040; Switchyard Area Material Control; Revision 1
- NOBP-CC-2008; Transformer, Switchyard and Grid Reliability Design Interface and Control; Revision 1

Other:

- Nuclear Plant Interface Coordination and Requirements Agreement Between FENOC – Davis-Besse Unit 1 and PJM Interconnection, LLC; Revisions 1 and 2

1R04 Equipment Alignment

Drawings:

- M-017A; Diesel Generators; Revision 19
- M-017B; Diesel Generators Air Start; Revision 47
- M-017C; Fuel Oil; Revision 30
- M-036A; Component Cooling Water System; Revision 30
- M-036B; Component Cooling Water System; Revision 40
- OS-0017A: Sheet 1; Auxiliary Feedwater System; Revision 31
- OS-0017A: Sheet 2; Auxiliary Feedwater System; Revision 4

- OS-0017B: Sheet 1; Auxiliary Feedwater Pumps and Turbines; Revision 25
- OS-0017B: Sheet 2; Auxiliary Feedwater Pumps and Turbines; Revision 9
- OS-0041A: Sheet 1; Emergency Diesel Generator Systems; Revision 32
- OS-0041B; Emergency Diesel Generator Air Start / Engine Air System; Revision 42
- OS-0041C; Emergency Diesel Generator Diesel Oil System; Revision 16
- OS-0041D; Station Blackout Diesel Generator Lube Oil and Jacket Water; Revision 14
- OS-0041E; Station Blackout Diesel Generator Air Start / Engine Air System; Revision 17
- OS-0041F; Station Blackout Diesel Generator Electrical Control and Fuel Oil Systems; Revision 5

Procedures:

- DB-OP-06233; Auxiliary Feedwater System; Revision 38
- DB-OP-06316; Diesel Generator Operating Procedure; Revision 57
- DB-OP-06334; Station Blackout Diesel Generator Operating Procedure; Revision 22

1R05 Fire Protection

Drawings:

- A-0221F; Fire Protection General Floor Plan, Elevation 545'-0 and 555'-0; Revision 9
- A-0223F; Fire Protection General Floor Plan, Elevation 585'-0; Revision 24

Condition Reports:

- 2015-05985; RP Quarterly Chemical Inspections Not Documented Timely

Procedures:

- DB-FP-00003; Pre-Fire Plan Guidelines; Revision 8
- DB-FP-00005; Fire Brigade; Revision 8
- DB-FP-00007; Control of Transient Combustibles; Revision 13
- DB-FP-00009; Fire Protection Impairment and Fire Watch; Revision 20
- DB-FP-00018; Control of Ignition Sources; Revision 12

Pre-Fire Plans:

- PFP-AB-113; Decay Heat Coolers Room and Hatch Area – Rooms 113 and 113A, Fire Area AB; Revision 8
- PFP-AB-114; Miscellaneous Waste Monitor Tank and Pump Room – Room 114, Fire Area A; Revision 4
- PFP-AB-115; Emergency Core Cooling System Pump Room 1-2 – Room 115, Fire Area A; Revision 5
- PFP-AB-125; Detergent Waste Tank Drain Room – Room 125, Fire Area A; Revision 4
- PFP-AB-323; High Voltage Switchgear Room B – Room 323, Fire Area O; Revision 5
- PFP-AB-324; Auxiliary Shutdown Panel and Transfer Switch Room – Rooms 324 and 324DC, Fire Area R; Revision 5
- PFP-AB-325; High Voltage Switchgear Room A – Room 325, Fire Area S; Revision 5
- PFP-LR-389; Dry Active Waste Storage – Room 389, Fire Area RW; Revision 5
- PFP-LR-390; Truck Bay – Room 390, Fire Area RW; Revision 5
- PFP-LR-391; Compactor Room – Room 391, Fire Area RW; Revision 5
- PFP-LR-392; Sorting Room – Room 392, Fire Area RW; Revision 5
- PFP-LR-394; Interface Corridor and (Fenced Area) – Rooms 393 and 394, Fire Area RW; Revision 5
- PFP-LR-395; Dry Active Waste Receiving Room – Room 395, Fire Area RW; Revision 5

- PFP-LR-397; Interface Corridor and (Fire Service Valve Area) – Rooms 396 and 397, Fire Area RW; Revision 5

Other:

- Fire Hazard Analysis Report; Revision 26

1R06 Flood Protection Measures

Condition Reports:

- 2015-08396; Cables Found Submerged in Electrical Manholes

Procedures:

- RA-EP-02830; Flooding; Revision 3
- RA-EP-02880; Internal Flooding; Revision 3

Work Orders:

- 200560648; Inspect Various Site Manholes – PM4296; 6/15/2015

Prints and Drawings:

- E-0304; Electrical Site Plan; Revision 44

Reference Manuals:

- NORM-ER-3112; Cable Monitoring; Revision 2

1R11 Licensed Operator Regualification Program and Licensed Operator Performance

Condition Reports:

- 2015-07214; Low Level Limit Control and RFR for SG 2
- 2015-07262; Circulating Water Screen 4 Rapid Screen Differential Rise Noted
- 2015-07277; CT873 Manually Closed Due to Failure to Reach Closed Position (Circulating Water Pump 4 Discharge)
- 2015-07360; Black Plastic Cooling Tower Fill Removed From Circulating Water Screens

Procedures:

- DB-OP-06232; Circulating Water System and Cooling Tower Operation; Revision 36
- DB-OP-06401; Integrated Control System Operating Procedure; Revision 23
- DB-OP-06407; Non-Nuclear Instrumentation System Operating; Revision 15
- DB-OP-06902; Power Operations; Revisions 48-49
- DB-ME-03045; C1 Bus Under Voltage Units Monthly Functional Test; Revision 20
- DB-MI-03013; Channel Functional Test of Reactor Trip Breaker D, RPS Channel 3 Reactor Trip Module Logic, and ARTS Channel 3 Output Logic; Revision 33
- DB-MI-03014; Channel Functional Test of Reactor Trip Breaker C, RPS Channel 4 Reactor Trip Module Logic, and ARTS Channel 4 Output Logic; Revision 29
- DB-SC-04112; DSS Channel 1 Functional Test; Revision 4
- DB-SC-04113; DSS Channel 2 Functional Test; Revision 4
- NOP-OP-1002; Conduct of Operations; Revision 10

Work Orders:

- 200638295; Implement ECP-14-0376-011 To Revise Integrated Control System Operate Range Limit; 4/30/2015
- 200641712; Replace Module ICSFW5212A/B – RFR FW Control; 6/17/2015

FENOC Business Practices:

- DBBP-TRAN-0014; License Requirements for Licensed Individuals; Revision 10
- NOBP-TR-1122; Operating Crew Performance Critique; Revision 1

Drawings:

- M-533-176-1; ICS Feedwater Analog Logic (w/out RFR); Revision T1
- M-533-176-2; ICS Feedwater Analog Logic (w/ RFR); Revision T2

Engineering Change Packages (ECPs):

- 14-0376-011; Change Integrated Control System Steam Generator High Level Limit from 93.5% to 96%; Revision 0

1R12 Maintenance Effectiveness

Condition Reports:

- 2014-16626; Superheated Steam Leak From Packing on the West Side of MS209, Side Closest to the Wall and Fire Damper
- 2015-06400; Shield Building Bore S5-666.0-10 Findings
- 2015-06496; Shield Building Bore S7-666.0-9 Findings
- 2015-06640; Shield Building Bore S10-780.0-19 Findings
- 2015-06990; Superheated Steam Leak From Packing of MS199, MSR 1 Reheat Steam Source
- 2015-06592; Shield Building Bore S7-666.0-7 Findings
- 2015-06841; Shield Building Bore S4-650.0-16 Findings
- 2015-06975; Shield Building Core Bore S6-666.0-44 Findings
- 2015-07137; Shield Building Bore S13-633.0-11 Findings
- 2015-07260; Potential Steam Leak at MSR 2 Second Stage Drain Tank Near RO4971
- 2015-07296; Shield Building Bore S4-648.75-16 Findings
- 2015-07832; MS710 Has a Minor Steam Leak From the Packing Area
- 2015-08012; Shield Building Depth of Carbonation
- 2015-08335; Minor Packing Leak on Steam Generator Pressure Transmitter Isolation Valve

Drawings:

- C-111A; Shield Building Exterior Developed Elevation; Revision 5
- C-111B; Shield Building Exterior Developed Elevation; Revision 1

Procedures:

- EN-DP-01511; Design Guidelines For Maintenance Rule Evaluation of Structures; Revision 3

Notifications:

- 600785848; HD370B – Repack; 9/14/2012
- 600931198; MS209 – Superheated Steam Leak From Packing; 11/4/2014
- 600968425; MS199 – Superheated Steam Leak at Packing; 5/15/2015
- 600975690; SP12B2A – Active Packing Leak; 6/16/2015

Work Orders:

- 200618358; MS353 – Leak at Packing Leakoff Plug; 1/13/2015

Other:

- Davis-Besse System Health Report 2014 Second Half
- MRPM; Maintenance Rule Program Manual; Revision 33

1R13 Maintenance Risk Assessments and Emergent Work Control

Condition Reports:

- 2015-01595; Indicated Steam Generator Level is Not Adjusted for Instrument Uncertainty in DB-OP-03006 When Checking Against the Maximum Allowable Steam Generator Level for SR 3.7.18.1
- 2015-05071; PTR-3B/ETD3-B Alarms During DB-SS-04159 Online ETD Test
- 2015-05351; Minor Air Leak on ACB 34562 Air Receiver Tank
- 2015-05633; CR to Track Revision to Steam Generator (SG) Operating Range (OR) Level ODMI
- 2015-06466; Margin Management: Steam Generator (SG) Operating Range (OR) Levels
- 2015-07386; OTSG Monitoring - Post- Rapid Shutdown / Trip Recovery Operating Range Levels

Calculations:

- AREVA 32-9236557-000; Davis-Besse ROTSG Level and Inventory Resolution; 4/6/2015 [PROPRIETARY]
- BWC 205S-A151; Davis-Besse Unit 1 ROTSG Recommended Setpoints; Revision 1 [PROPRIETARY]

Engineering Change Package (ECP):

- 15-0269-000; Steam Generator Operate Range Indication Adjustment; Revision 0

Procedures:

- DB-OP-03006; Miscellaneous Instrument Shift Checks; Revision 49-50
- DB-OP-06434; Plant Process Computer System Operating Procedure; Revision 13
- DB-OP-06902; Power Operations; Revision 49
- DB-SS-04159; Online Electrical Trip Device Test; Revision 10

Work Orders:

- 200638182; Electronic Trip Device 3B / SV 4206 Manifold B Rebuild/Replace/Test; 4/24/2015
- 200638323; Repair ACB 34562 Air Receiver Minor Leak; 4/27/2015
- 200640154; Rescaling of Steam Generator Operate Level Indications; 5/21/2015

Engineering Evaluation Requests:

- 600950828; Evaluate S/G Level Adjustment; 2/18/2015

Other:

- AREVA Letter 15-00766; D-B ROTSG Level and Uncertainty; 3/26/2015 [PROPRIETARY]
- MPR Letter DRN-0200-0174-01; Third Party Review of Davis-Besse Replacement Once through Steam Generator Water Level Analysis; 4/16/2015
- Davis-Besse System Health Report 2014 Second Half

1R15 Operability Determinations and Functionality Assessments

Condition Reports:

- 2015-01547; January Performance Indicator – Operator Workarounds D-RPO-16 Monthly is Red
- 2015-01549; January Performance Indicator – Operational Focus Index D-OPS-03 Monthly is Yellow

- 2015-01595; Indicated Steam Generator Level is Not Adjusted for Instrument Uncertainty in DB-OP-03006 When Checking Against the Maximum Allowable Steam Generator Level for SR 3.7.18.1
- 2015-01867; Evaluation of Calculation Effect not Documented in ECP for ROTSG
- 2015-04441; Red Indicator for Monthly March Operator Workarounds Performance Index D-RPO-16
- 2015-04445; Yellow Indicator for Monthly March Control Room Deficiencies Performance Index D-RPO-15
- 2015-04525; Yellow Indicator for Monthly and 6-Month February Mispositioning Performance Index D-OPS-02
- 2015-04527; Yellow Indicator for 6-Month Cumulative Index for March Mispositioning Performance Index D-OPS-02
- 2015-04613; Yellow Indicator for March Monthly Operational Focus Index D-OPS-03
- 2015-04884; OTSG Monitoring – Transient Decrease in LCO 3.7.18 Margin Observed Coincident with CAC Outage
- 2015-05002; Potential Organizational Learning Opportunities Surrounding Steam Generator (SG) Operate Range Level Technical Issues
- 2015-05633; CR to Track Revision to Steam Generator (SG) Operating Range (OR) Level ODMI
- 2015-06488; Procedure change and ODMI revision contributed to CTRM nuisance alarms
- 2015-05625; Steam Generator (SG) Operating Range (OR) Level ODMI Not Tracked IAW NOP-OP-1010
- 2015-06720; Main Steam Isolation Valves did not meet expected closure time of NA-QC-00356

Engineering Change Packages (ECPs):

- 13-0195-000; Emergency Feedwater Facility; Revision 3

Calculations:

- AREVA 32-9236557-000; Davis-Besse ROTSG Level and Inventory Resolution; 4/6/2015 [PROPRIETARY]
- BWC 205S-A151; Davis-Besse Unit 1 ROTSG Recommended Setpoints; Revision 1 [PROPRIETARY]

Procedures:

- DB-OP-03006; Miscellaneous Instrument Shift Checks; Revision 49-50
- DB-OP-06902; Power Operations; Revision 49
- DB-SP-03444; SFRCS Channel 1 Trip of MS100 and MS101; Revision 12
- DB-SP-03445; SFRCS Channel 2 Trip of MS100 and MS101; Revision 13
- NA-QC-00356; Transient Assessment Program; Revision 4
- NOP-OP-01010; Operational Decision Making; Revision 5

FENOC Business Practices:

- NORM-OP-0002; Operations Section Performance Indicators; Revision 10

Engineering Evaluation Requests (EERs):

- EER 600965176; Global Stability Evaluation for the BG24H Heavy Construction Drill Rig; 5/1/2015

1R18 Plant Modifications

Engineering Change Packages (ECPs):

- 13-0195-000; Emergency Feedwater Facility; Revision 3

Engineering Evaluation Requests (EERs):

- 600965176; Global Stability Evaluation for the BG24H Heavy Construction Drill Rig; 5/1/2015

1R19 Post Maintenance Testing

Condition Reports:

- 2015-06697; Post Trip Response of SP6A
- 2015-06715; UT Thickness Readings Below Minimum Wall Thickness Requirements
- 2015-06749; Junction Box JB4407 Damage Identified During Extent of Condition Walkdown
- 2015-06768; Low Wall Thickness Reading on 2nd Stage Reheat Drain Tank 1 Steam Discharge Restricting Orifice DS Flange
- 2015-06776; Relative Rod Position for Rod 3-2 Failed to Respond
- 2015-06929; Station Air Compressor 2 Blown Fuses
- 2015-06960; SAC2 Electrical Drawings Do Not Match As-built Configuration
- 2015-07214; Low Level Limit Control and RFR for SG 2

Drawings:

- E-0062B, Sheet 13; Air & N2 Supply Systems Station Air Compressor 1-2; Revision 7
- M-205C; Scavenging Steam, 2nd Stage to Feedwater Heater and Condenser, Turbine Building; Revision 2
- M-533-176-1; ICS Feedwater Analog Logic (w/out RFR); Revision T1
- M-533-176-2; ICS Feedwater Analog Logic (w/ RFR); Revision T2
- M-601, Sheet 13; Plant Design Standard Piping Class EBD; Revision 8
- M-602; Plant Design Standard Piping Class EBD; Revision 30
- OS-0014A; Moisture Separator Reheater Drains System; Revision 20

Procedures:

- DB-MM-05003; Vibration Monitoring; Revision 11
- DB-MM-09245; General Welding Procedure (ASME/ANSI Applications); Revision 9
- DB-MM-09500; Installation and Termination of Electrical Cables; Revision 29
- DB-OP-06225; MDFP Operating Procedure; Revision 21
- DB-OP-06251; Station and Instrument Air System Operating Procedure; Revision 42
- DB-OP-06401; Integrated Control System Operating Procedure; Revision 23
- DB-PF-05015; Ultrasonic Thickness Examination; Revision 8
- DB-SS-03091; Motor Driven Feed Pump Quarterly Test; Revision 16

Work Orders:

- 200481935; Clean LC6459, MDFP Level Controller to OTSG No. 1; 6/16/2015
- 200481936; Clean LC6460, MDFP Level Controller to OTSG No. 2; 6/16/2015
- 200565184; Replace LC6459, MDFP Level Controller to OTSG No. 1; 6/16/2015
- 200569115; Replace MDFP Supply Breaker AD210; 6/16/2015
- 200641712; Replace Module ICSFW5212A/B – RFR FW Control; 6/17/2015
- 200640775; Troubleshoot / Repair Control Rod Drive Rod 3-2 Relative Position Indication; 5/18/2015
- 200640474; Repair Damaged 4" EBD-73 Pipe/Elbow; 5/18/2015
- 200640477; Repair Elbow Associated with RO4972; 5/18/2015

- 200640475; Station Air Compressor #2 Troubleshooting; 5/14/2015

1R20 Outage Activities

Condition Reports:

- 2015-06691; Manual Reactor Trip Due to Steam Leak
- 2015-06692; Station Air Compressor 2 Trip Following Plant Trip
- 2015-06693; MCC F71 Post Reactor Trip Condition
- 2015-06696; MCC F13 Post Reactor Trip Condition
- 2015-06699; No. 2 Heater Drain Pump was Initially Rotating Backwards After it Tripped
- 2015-06701; Steam Leak Impact on Cables in Cable Trays
- 2015-06749; Junction Box JB4407 Damage Identified During Extent of Condition Walkdown
- 2015-06750; Minor Cable Jacket Cracking Identified During Extent of Condition Walkdown
- 2015-06768; Low Wall Thickness Reading on 2nd Stage Reheat Drain Tank 1 Steam Discharge Restricting Orifice DS Flange
- 2015-06817; Turbine Tripped During Shell Warming
- 2015-06856; Transient During Plant Startup Apparently Caused by Turbine in ICS Auto
- 2015-06908; Reverse Flow on No. 1 Main Feedwater Pump
- 2015-07034; Orifice Extent of Cause Review of Root Cause 2015-06691, Steam Leak
- 2015-07053; RD159B1 2nd Stage Reheat Drain Tank 1 Normal Drain is Not Responding
- 2015-07911; Operations Crew Performance Critique for DB-OP-02526 Entry 5/13/15

Procedures:

- DB-OP-02526; Primary to Secondary Heat Transfer Upset; Revision 4
- DB-OP-06202; Turbine Operating Procedure; Revision 26
- DB-OP-06224; Main Feed Pump and Turbine; Revision 36
- DB-OP-06901; Plant Startup; Revision 37
- DB-OP-06902; Power Operations; Revision 49
- DB-OP-06912; Approach to Criticality; Revision 17
- NA-QC-00356; Transient Assessment Program; Revision 4

1R22 Surveillance Testing

Condition Reports:

- 2015-00128; Speed/Pressure Spike During AFP1 Monthly (DB-SP-04150)
- 2015-02282; Make-Up Pump No. 2 Minor Oil Leak
- 2015-02880; Black Tape Found in CTMT During Quarterly Entry
- 2015-04530; Catch Basin Leak on #2 MUP
- 2015-04620; System Trending: Particulate Filters from RE4597AA and RE4597BA
- 2015-07223; DB-SP-03376 vibration point H-V in alert range
- 2015-07715; Oil Leak From Makeup Pump 2 Inboard Pump Bearing
- 2015-07911; Increased Leak Rate for Makeup Pump 2 (p37-2) Inboard Seal – System Monitoring - BACC
- 2015-08330; BACC: Packing leak on DB-DH159
- 2015-08331; BACC: Packing leak on DB-RC14EB
- 2015-08332; BACC: Packing leak on DB-MU281
- 2015-08333; BACC: Packing leak on DB-RC147
- 2015-08334; BACC: Packing leak on DB-RC18B2C
- 2015-08335; Minor Packing Leak on Steam Generator Pressure Transmitter Isolation Valve
- 2015-08419; Recorder for EDG 2 184 Day Test Used Outside of Its Calibrated Temperature Range

Procedures:

- DB-MI-03353; Channel Functional/Calibration Test of PSL-4533C, 4534C and 4535C, Main Feed Pump 1 and 2 Turbine Hydraulic Oil Trip and Main Turbine Oil Trip ARTS Channel 3; Revision 12
- DB-OP-01101; Containment Entry; Revision 13
- DB-OP-03013; Containment Daily Inspection & Closeout Inspection; Revision 10
- DB-SC-03077; Emergency Diesel Generator 2 184 Day Test; Revision 28
- DB-SC-03115; SFAS Output Logic Test for Actuation Channel 1; Revision 7
- DB-SP-04150; AFP1 Monthly Test; Revision 16
- DB-MI-03201; Channel Functional Test and Calibration of SFRCS ACH 1 Pressure Inputs PS-3689K, PS-3689L, PS-3689M and PS-3689N; Revision 13
- DB-PF-06703; CC 13.5; Miscellaneous Operations Curves: EDG Reactive Capability Curve; Revision 22
- DB-SP-03376; Quarterly Makeup Pump 2 Inservice Test and Inspection; Revision 16

Work Orders:

- 200564176; SP3376-001 Makeup Pump 2 Quarterly; 5/19/2015
- 200564177; SP3376-002 MU58A (MU32 Bypass Flow); 5/19/2015
- 200564178; SP3376-003 MU169 Forward Flow; 5/19/2015

2RS1 Radiological Hazard Assessment and Exposure Controls

Condition Reports:

- 2014-05958; Work Completed Without Having Written Radiation Protection Approval
- 2013-10204; Individual's Available Site Dose is Over 1300 Millirem Indicating a Dose Extension When No Dose Extension Has Been Done

Procedures:

- DB-HP-01152; Performance of High Exposure Work; Revision 18
- DB-HP-01706; Vehicle and Material Release from the Radiologically Controlled Area; Revision 11
- NOP-OP-4101; Access Controls for Radiologically Controlled Areas; Revision 11
- NOP-OP-4502; Control of Radioactive Material; Revision 3

Completed Forms:

- DB-HP-3000-001; Licensed Sources Leak Test and Inventory; March 14, 2015

FENOC Business Practices:

- DBBP-RP-1001; Locked High and Very High Radiation Area Key Authorization; Revision 15

2RS2 Occupational ALARA Planning and Controls

Condition Reports:

- 2014-03871; Service Water Project Dose Estimate
- 2014-03145; Service Water Replacement Project dose Higher Than Expected
- 2014-05722; Radiation Work Permit/ALARA Plan 2014-5214 Activities Requiring Additional Dose
- 2014-06566; Radiation Work Permit 2014-05212 Dose Estimate Revisions
- 2014-13541; Contamination Discovered Outside the Radiologically Controlled Area
- 2014-14398; 2014 Mid-Cycle Assessment: NNI-PR.2-2 Radiation Work Packages

Procedures:

- NOP-OP-4005; ALARA Program; Revision 4
- NOP-OP-4107; Radiation Work Permit; Revision 14
- NOP-OP-4107-13; ALARA Post-Job Review: RWP 2014-05212; February 3, 2014

Other:

- RWP 2014-05212; Reactor Coolant System Cut, Preparation and Welding; Revisions 0-6
- Davis-Besse 18RFO Outage ALARA Report; June 17, 2014
- Davis-Besse News and Information; Davis-Besse Sets Online Dose Record (1001 millirem); February 18, 2015

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

Condition Reports:

- 2013-03739; Two Neutron Dose Alarms Received While Performing Containment Entry Walkdown/Inspection at 100 Percent Power Operations
- 2013-12002; Fire-Hawk M7 Self-Contained Breathing Apparatus Monthly was Not Completed for July
- 2013-12288; Review of Neutron Correction Factor for Reactor Containment
- 2013-13712; Dose Rate Meter Found Out of Tolerance
- 2013-14786; M7 Self-Contained Breathing Apparatus Regulator Returned From Fire Training Broken
- 2013-19261; Worker Alarmed PCM on Exit Due to Tritium in Watch
- 2014-02411; High Efficiency Particulate Air Filter Use in Containment
- 2014-02761; Issue of Respiratory Protection Equipment
- 2014-03532; Two Power Air Purifying Respirators Removed from Service
- 2014-03682; Issues with Using Masking Tape
- 2014-04102; Power Air Purifying Respirators Found with Hood Clamp Removed
- 2014-05240; Improper High Efficiency Particulate Air Filter Unit in Steam Generator 1-1 Caused Low Oxygen During Welding
- 2014-06453; M7 Fire-Hawk Self-Contained Breathing Apparatus Extend-Air/Rescue-Air Vendor Safety Notice
- 2014-16799; Expired Millennium Respirator Canister Filter
- 2015-01868; Form NOP-OP-4703-01 Not Used for Alpha Level Assessment Due to Unavailability

Procedures:

- DB-HP-04008; Monthly Respiratory Protection Equipment Inventory; Revision 5
- DB-HP-06503; Containment Purge System Procedure; Revision 24
- DB-HP-01312; Testing of Portable HEPA-Filtered Equipment; Revision 3
- NOP-OP-3202; FENOC Radiochemistry Quality Control Program; Revision 4
- NOP-OP-4310; FireHawk M7 Self Contained Breathing Apparatus; Revision 7
- NOP-OP-4702; Air Sampling; Revision 5
- NOP-OP-4703; Determination of Alpha Monitoring Levels; Revision 3

2RS4 Occupational Dose Assessment

Condition Reports:

- 2014-05916; Dose Rate Alarm
- 2014-06256; 2014 March Collective Radiation Exposure Performance

- 2014-13829; Station Monthly Dose (August 2014) Performance Greater Than 110 Percent of Monthly Budgeted Dose Estimate

Procedures:

- DB-CN-04060; A Priori Minimum Detectable Activity for High Purity Germanium Gamma Spectrometers; Revision 1
- DB-HP-01112; Calibration of the Gamma Spectrometer System; Revision 7
- DB-HP-01113; Count Room Analysis system (CAS) Operation; Revision 9
- DB-HP-01320; Operation of Whole Body Counters; Revision 11
- DB-HP-01322; Body Counter Calibration and Performance Testing; Revision 6
- DB-HP-01435; Calibration and Use of the Portal Monitor SPM 904C/SPM 906; Revision 7
- DB-OP-06512; Auxiliary Building Radioactive Ventilation System; Revision 20

Other:

- Breathing Air Systems Air/Gas Quality Report and Certificate Grade D Air; April 22, 2015
- NAVLAP Certificate of Accreditation to ISO/IEC 17025:2005; Mirion Technologies (GDS), Inc.; July 7, 2014 to June 30, 2015
- SN-SA-2015-0708; Self-Assessment-Snapshot Airborne Radioactivity and Occupational Dose; February 23, 2015

40A1 Performance Indicator Verification

Forms:

- NOBP-LP-4012-45; Safety System Functional Failures; Revision 0; Completed Forms for April 2014 through March 2015
- NOBP-LP-4012-46; MSPI Emergency AC Power System; Revision 1; Completed Forms for April 2014 through March 2015
- NOBP-LP-4012-47; MSPI High Pressure Injection System; Revision 1; Completed Forms for April 2014 through March 2015
- NOBP-LP-4012-57; Occupational Exposure Control Effectiveness; Revision 0; Completed Forms for April 2014 through March 2015
- NOBP-LP-4012-58; RETS/ODCM Radiological Effluent Occurrence; Revision 0; Completed Forms for April 2014 through March 2015

FENOC Business Practices:

- NOBP-LP-4012; NRC Performance Indicators; Revisions 4 and 5

Other:

- Davis-Besse Nuclear Power Station Reactor Oversight Program Mitigating System Performance Index Basis Document; Revision 4
- Select Operator Logs covering the period of April 2014 through March 2015

40A2 Problem Identification and Resolution

Condition Reports:

- 2014-16542; Misposition During the Performance of DB-SC-03113, SFAS CH 4 Functional Test
- 2014-18323; Elevation – Davis Besse Human Performance Trend and Performance
- 2015-07395; Minor Amount of Steam Can Escape During Operation of DD3, MSD Demineralizer Heat Exchanger Bypass

- 2015-07685; Unplanned LCO Entry Due to Human Performance Error During RCP Monitoring Test
- 2015-08043; D205 and D221 Mispositioned During DB-OP-06321 Performance
- 2015-08507; Operating Crew Performance Critique for Plant Status Control Event During Removal of DBC2PN from Service on 6-8-2015
- 2015-08833; Concurrent Verification Performed Incorrectly
- 2015-08977; NRC Observed Trend in Verification Errors

Procedures:

- NOP-LP-2001; Corrective Action Program; Revision 36
- DB-MI-03205; Channel Functional Test/Calibration and Response Time of RCP Monitor (RC3601) to SFRCS Logic Channel 1 and RPS Channel 1; Revisions 20 and 21
- DB-OP-06321; 250/125 Vdc Station DC Switching Procedure; Revision 23
- DB-SC-03113; SFAS Channel 4 Functional Test; Revision 16

Other:

- Select Operator Logs covering the period of January 2015 through June 2015

4OA3 Followup of Events and Notices of Enforcement Discretion

Condition Reports:

- 2015-06691; Manual Reactor Trip Due to Steam Leak
- 2015-06692; Station Air Compressor 2 Trip Following Plant Trip
- 2015-06693; MCC F71 Post Reactor Trip Condition
- 2015-06695; Documentation of Missed Hourly Fire Watch for 7 Rooms for the 5/9/15 1900 Hour Due to Conditions Within the Turbine Building
- 2015-06696; MCC F13 Post Reactor Trip Condition
- 2015-06697; Post Trip Response of SP6A
- 2015-06700; ACB 34560 and 34561 Couldn't be Closed to Restore Ring Bus; Turbine Generator Anti-Motoring Scheme Did Not Function as Expected
- 2015-06701; Steam Leak Impact on Cables in Cable Trays
- 2015-06702; Fire Protection System Sprinklers Initiated by Steam Leak
- 2015-06703; DCMCC 1 and DCMCC 2 Grounds
- 2015-06707; Damaged 24V Power Supply Inside of C4403
- 2015-06715; UT Thickness Readings Below Minimum Wall Thickness Requirements
- 2015-06728; Deaerator Storage Tanks 1 & 2 Hi Hi Levels Reached Following Reactor Trip on 5/9/2015
- 2015-06732; SP7B Closure Time Exceeded Max Allowed by Transient Assessment Program
- 2015-06744; Initiate the Transient Assessment Program for Manual Reactor Trip on May 9th 2015
- 2015-06749; Junction Box JB4407 Damage Identified During Extent of Condition Walkdown
- 2015-06757; Communication Issues for Unusual Event
- 2015-06768; Low Wall Thickness Reading on 2nd Stage Reheat Drain Tank 1 Steam Discharge Restricting Orifice Down Steam Flange
- 2015-07034; Orifice Extent of Cause Review of Root Cause 2015-06691, Steam Leak
- 2015-07214; Low Level Limit Control and RFR for SG 2
- 2015-07260; Potential Steam Leak at MSR 2 Second Stage Drain Tank Near RO4971
- 2015-07323; RCP 1-1 Radial Displacement Probes Indicate Increase in Vibration Following May 9 Reactor Trip – System Monitoring
- 2015-07324; RCP 2-2 Radial Displacement Probes Indicate Increase in Vibration Following May 9 Reactor Trip – System Monitoring

- 2015-07337; Option to Perform Assembly Not Included in Unusual Event Implementing Procedure
- 2015-07339; Operating Crew Performance Critique of the 5/9/2015 Reactor Trip
- 2015-07355; Post Trip Repressurization of Main Steam Lines
- 2015-07386; OTSG Monitoring – Post Rapid Shutdown / Trip Recovery Operating Range Levels
- 2015-07667; Failure of the Plant Computer to Automatically Trigger the Post Trip Review Summary
- 2015-08774; BF1277 for SW1395 Tripped Open

Drawings:

- M-004B; High Pressure Extraction Steam System; Revision 49
- M-005; Moisture Separator Reheater Drains; Revision 55
- M-204K; Scavenging Steam, 1st Stage to Feedwater Heater and Condenser, Turbine Building; Revision 2
- M-204L; Scavenging Steam, 1st Stage to Feedwater Heater and Condenser, Turbine Building; Revision 5
- M-205C; Scavenging Steam, 2nd Stage to Feedwater Heater and Condenser, Turbine Building; Revision 2
- OS-0014A; Moisture Separator Reheater Drains System; Revision 20

NRC Event Notification System Forms:

- Event Notification 51061; Unusual Event Declared Due to Steam Leak in the Turbine Building; 5/9/2015
- Event Notification 51185; Both Auxiliary Feedwater Trains Declared Inoperable; 6/27/2015

Procedures:

- DB-MM-09245; General Welding Procedure (ASME/ANSI Applications); Revision 9
- DB-OP-02000; RPS, SFAS, SFRCS Trip, or SG Tube Rupture; Revision 28
- DB-OP-02525; Steam Leaks; Revision 11
- DB-OP-06910; Trip Recovery; Revision 28
- DB-PF-05015; Ultrasonic Thickness Examination; Revision 8
- NA-QC-00356; Transient Assessment Program; Revision 4
- NOP-OP-1015; Event Notifications; Revision 2
- RA-EP-01500; Emergency Classification; Revision 15
- RA-EP-01600; Unusual Event; Revision 8 NOP-OP-1015; Event Notifications; Revision 2

Business Practices:

- NOBP-OP-1015; Event Notifications; Revision 3

Work Orders:

- 200640477; UT Erosion / Corrosion Examination; 5/12/2015

UT Erosion / Corrosion Examination Records:

- Report No. BOP-UT-15-024; Piping Up/Down Stream of RO4970; 5/11/2015
- Report No. BOP-UT-15-027; Elbow Downstream of RO4972; 5/11/2015
- Report No. BOP-UT-15-026; Elbow Downstream of RO4971; 5/11/2015
- Report No. BOP-UT-15-025; Piping Up/Down Stream of RO4969; 5/11/2015
- Report No. BOP-UT-15-021; First Elbow Downstream RO4972; 5/12/2015
- Report No. BOP-UT-15-023; 2nd Stage Reheat Drain Tank 1 Steam Discharge Restricting Orifice Down Steam Flange; 5/11/2015

- Report No. BOP-UT-15-022; Second Elbow Upstream RO4970; 5/11/2015

Other:

- Select Operations Logs covering the period of May 9, 2015 through June 30, 2015

4OA5 Other Activities

Condition Reports:

- 2015-00214; Groundwater Tritium Concentration in Monitoring Well (MW-37S) Above 2,000 pCi/liter
- 2015-01455; Elevated Tritium Concentrations in Seven Groundwater Monitoring Wells
- 2015-01639; Water Containing 1 Million pCi/L Tritium on the Floor in the Borated Water Storage Tank Pit
- 2015-02108; Groundwater Tritium Results Greater Than Courtesy Notification Level of 2000 pCi/l
- 2015-03642; Several Davis-Besse March Groundwater Well Tritium Samples Over 2,000 pCi/liter
- 2015-07189; Fourteen of Thirty-One Groundwater Samples Over 2,000 PicoCuries/Liter (pCi/L) Tritium

Procedures:

- NOP-OP-1015; Event Notifications; Revision 2
- NOP-OP-2012; Groundwater Monitoring; Revision 8
- NOP-OP-4705; Response to Contaminated Spills/Leaks; Revision 7

Business Practices:

- NOBP-OP-1015; Event Notifications; Revision 3

Other:

- Groundwater Monitoring Well Data covering the period of January 2014 through June 2015

4OA7 Licensee-Identified Violations

Condition Reports:

- 2015-07685; Unplanned LCO Entry Due to Human Performance Error During RCP Monitoring Test

Procedures:

- DB-MI-03205; Channel Functional Test/Calibration and Response Time of RCP Monitor (RC3601) to SFRCS Logic Channel 1 and RPS Channel 1; Revisions 20 and 21

Other:

- Operations Unit Narrative Logs for May 29, 2015

LIST OF ACRONYMS USED

AC	Alternating Current
ACB	Air Circuit Breaker
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAC	Containment Air Cooler
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DCKV	Direct Current
ECP	Engineering Change Package
EDG	Emergency Diesel Generator
EER	Engineering Evaluation Request
FW	Feedwater
ICS	Integrated Control System
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
KV	Kilovolt
LCO	Limiting Condition for Operation
MSPI	Mitigating Systems Performance Index
MSR	Moisture Separator Reheater
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NOUE	Notice of Unusual Event
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records System
pCi/L	Picocuries per Liter
PI	Performance Indicator
PMT	Post-Maintenance Testing
RP	Radiation Protection
RPS	Reactor Protection System
RWP	Radiation Work Permit
SFAS	Safety Features Actuation System
SFRCS	Steam and Feedwater Rupture Control System
SRO	Senior Reactor Operator
SSC	Structures, Systems, and Components
SW	Service Water
TS	Technical Specification
TSO	Transmission System Operator
USAR	Updated Safety Analysis Report
Vdc	Volts Direct Current
WO	Work Order

B. Boles

-2-

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

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 4
Division of Reactor Projects

Docket No. 50-346
License No. NPF-3

Enclosure:
Inspection Report 05000346/2015002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

DISTRIBUTION w/encl:

Kimyata MorganButler
RidsNrrDorLpl3-2 Resource
RidsNrrPMDavisBesse 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: ML15202A203

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	JCameron:mz							
DATE	07/21/15							

OFFICIAL RECORD COPY