UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., Suite 100
KING OF PRUSSIA, PA 19406-2713

October 26, 2017

EA-17-045

Mr. Richard Bologna
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
P. O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION - INTEGRATED INSPECTION REPORT 05000334/2017003 AND 05000412/2017003

Dear Mr. Bologna:

On September 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Beaver Valley Power Station, Units 1 and 2. On October 17, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented a violation of FirstEnergy Nuclear Operating Company (FENOC's) site-specific licensing basis for tornado-generated missile protection. Because this violation was identified during the discretion period covered by Enforcement Guidance Memorandum 15-002 Revision 1, "Enforcement Discretion for Tornado Missile Protection Non-compliance" (ML16355A286)[1] and because FENOC is implementing compensatory measures, the NRC is exercising enforcement discretion by not issuing an enforcement action and is allowing continued reactor operation.

If you contest the violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Beaver Valley Power Station. This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and the NRC's Public Document

Sincerely,

/RA/

Silas R. Kennedy, Branch Chief
Division of Reactor Projects

[1] Designation in parentheses refers to the Agencywide Documents Access and Management System (ADAMS) Accession Number. Documents referenced in this letter are publicly-available using the Accession Number in ADAMS.

Docket Nos. 50-334 and 50-412
License Nos. DPR-66 and NPF-73

Enclosure:
Inspection Report 05000334/2017003 and 05000412/2017003
w/Attachment: Supplementary Information

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REGION I

Docket Nos.:	50-334 and 50-412
License Nos.:	DPR-66 and NPF-73
Report No.:	05000334/2017003 and 05000412/2017003
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Beaver Valley Power Station (BVPS), Units 1 and 2
Location:	Shippingport, PA 15077
Dates:	July 1, 2017 through September 30, 2017
Inspectors:	J. Krafty, Senior Resident Inspector S. Horvitz, Resident Inspector T. Fish, Senior Operations Engineer T. Hedigan, Operations Engineer
Approved By:	Silas R. Kennedy, Chief Reactor Projects Branch 6 Division of Reactor Projects

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SUMMARY

Inspection Report 05000334/2017003 and 05000412/2017003; 07/01/2017-09/30/2017; BVPS Units 1 and 2; Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

No findings were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1 and Unit 2 operated at or near 100 percent power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 1 emergency diesel generator (EDG) 1-1 during EDG 1-2 surveillance run on July 26, 2017
- Unit 1 turbine driven auxiliary feedwater (AFW) pump and 'B' AFW pump trains during the 'A' AFW pump surveillance test on August 14, 2017
- Unit 2 service water (SW) system power supply during 'A' SW pump maintenance on August 16, 2017

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether FENOC staff had properly identified equipment issues and entered them into the corrective action program (CAP) for resolution with the appropriate significance characterization. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On August 10, 2017, the inspectors performed a complete system walkdown of accessible portions of the Unit 1 river water (RW) system to verify the existing equipment lineup was correct. The inspectors reviewed drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems.

The inspectors performed field walkdowns of accessible portions of the systems to verify as-built system configuration matched plant documentation, and that system components and support equipment remained operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. For identified degradation the inspectors confirmed the degradation was appropriately managed by the applicable aging management program. Additionally, the inspectors reviewed a sample of related condition reports and work orders to ensure FENOC appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 4 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that FENOC controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment were available for use as specified in the area pre-fire plan and that passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 1 storeroom, Fire Area WH-1 and WH-2, on July 11, 2017
- Unit 2 turbine building, Fire Area TB-1, on August 21, 2017
- Unit 2 battery room 2-6, Fire Area TB-2, on August 24, 2017
- Unit 1 transformers, Fire Area TR-1, 2, 3, 4, and 5, on August 29, 2017

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the internal flooding analysis and plant procedures to identify internal flooding susceptibilities for the site. The inspectors' review focused on the Unit 1 safeguards area pipe tunnel. It assessed the adequacy of door seals, common drain lines and sumps, sump pumps, level alarms, and appropriate preventive maintenance activities. It assessed the adequacy of FENOC's procedures used to identify flooding in this area and also reviewed the CAP to determine if FENOC was identifying and correcting problems associated with both flood mitigation features and site procedures for responding to flooding.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed Unit 2 licensed operator annual simulator examination on August 1, 2017, which included two scenarios: (1) an anticipated transient without a scram with a main turbine trip failure, a faulted steam generator, and an AFW regulating valve failing open and (2) a feedwater regulating valve failing closed requiring a manual reactor trip, a loss of the 'DF' 4160 volts alternating current (VAC) safety bus, a failure of the 2-2 EDG to start, and a ruptured steam generator. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the technical specification (TS) action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed the Unit 2 control rod F10 digital rod position indication (DRPI) verification during the control rod partial movement test on August 25, 2017, and the Unit 1 EDG 1-1 surveillance test on September 6, 2017. The inspectors observed the briefings for the surveillance tests to determine if the review and coordination of the surveillances were given the appropriate level of attention for the limited use change to the procedure. The inspectors observed shift turnover briefings, pre-job briefings, and reactivity control briefings to verify that the briefings met the criteria specified in FENOC's Procedure NOP-OP-1002, "Conduct of Operations," Revision 12. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

.3 Annual Review of Requalification Examination Results (71111.11A – 1 sample)

a. Inspection Scope

The inspectors conducted an in-office review of results of licensee-administered annual operating tests for 2017, Beaver Valley, Unit 1 operators. There were no Unit 1 written exams this year. The inspection assessed whether pass/fail rates were consistent with the guidance of NRC Inspection Manual Chapter (IMC) 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The review verified that the individual failure rate did not exceed 20 percent.

- 0 out of 29 operators failed at least one section of the annual exam. The overall individual failure rate was 0 percent.
- 0 out of 8 crews failed the simulator test. The crew failure rate was 0 percent.

b. Findings

No findings were identified.

.4 Annual Review of Requalification Examination Results (71111.11A – 1 sample)

a. Inspection Scope

The inspectors conducted an in-office review of results of licensee-administered comprehensive written exams for 2017, Beaver Valley, Unit 2 operators. The comprehensive written exams were administered in the first quarter of 2017. The inspection assessed whether pass/fail rates were consistent with the guidance of IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The review verified that the individual failure rate did not exceed 20 percent.

- 0 out of 35 operators failed the comprehensive written exam. The overall individual failure rate was 0 percent.

b. Findings

No findings were identified.

.5 Biennial Review During Requalification Examinations (71111.11B – 1 sample)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11, and Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program and Licensed Operator Performance."

Examination Results

The operating tests for the week of July 24, 2017, were reviewed for quality and performance.

On August 28, 2017, the results of the annual operating tests were reviewed to determine if pass/fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11, and IMC 0609, Appendix I, “Licensed Operator Requalification Significance Determination Process (SDP).” The review verified that the failure rate (individual or crew) did not exceed 20 percent.

- 0 out of 35 operators failed at least one section of the annual exam. The overall individual failure rate was 0 percent.
- 0 out of 9 crews failed the simulator test. The crew failure rate was 0 percent.

Written Examination Quality

The inspectors reviewed four written examinations previously administered during the February – March 2017 examination cycle for qualitative and quantitative attributes as specified in Appendix B of IP 71111.11, “Licensed Operator Requalification Program and Licensed Operator Performance.”

Operating Test Quality

Five job performance measures (JPMs) and two scenarios were reviewed for qualitative and quantitative attributes as specified in Appendix C of IP 71111.11, “Licensed Operator Requalification Program and Licensed Operator Performance.”

Licensee Administration of Operating Tests

Observations were made of the dynamic simulator exams and JPMs administered during the week of July 24, 2017. These observations included facility evaluations of crew and individual performance during the dynamic simulator exams and individual performance of JPMs.

Examination Security

The inspectors assessed whether facility staff properly safeguarded exam material. JPMs, scenarios, and written examinations were checked for excessive overlap of test items.

Remedial Training and Re-Examinations

The remediation plans for one crew dynamic simulator failure (from the 2016 annual operating exam) was reviewed to assess the effectiveness of the remedial training. Remediation for the individuals was processed in accordance with site procedures.

Conformance with Operator License Conditions

Medical records for three Senior Reactor Operator licenses and two Reactor Operator licenses were reviewed to assess conformance with license conditions. All records reviewed were satisfactory.

Proficiency watch standing records were reviewed for the first three quarters of 2017. All active licensed operators met the watch standing requirements to maintain an active license.

The reactivation plan for one licensed operator was reviewed to assess the effectiveness of the reactivation process. The reactivation was successfully processed in accordance with site procedures.

Records for the participation of licensed operators in the requalification program from January 2016 through July 2017 were reviewed. Records for the performance of licensed operators on annual requalification operating test and biennial requalification written exams were reviewed.

Simulator Performance

Simulator performance and fidelity was reviewed for conformance to the reference plant control room. A sample of simulator deficiency reports was also reviewed to ensure facility staff addressed identified modeling problems. Simulator test documentation was also reviewed.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, or component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, and maintenance rule basis documents to ensure that FENOC was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with Title 10 of the *Code of Federal Regulations* (CFR) 50.65 and verified that the (a)(2) performance criteria established by FENOC staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that FENOC staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Unit 2 480 VAC station service system on August 9, 2017
- Control of quality parts during the mechanical seal replacement of the Unit 2 ‘A’ charging pump on August 17, 2017 (quality control)
- Unit 1 main steam system on August 23, 2017

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 3 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that FENOC performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that FENOC

personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When FENOC performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unit 2 'A' SW strainer emergent work on August 1, 2017
- Unit 2 yellow risk for system station service transformer (SSST) '2A' out of service for schedule maintenance on an upstream line on August 14, 2017
- Unit 1 yellow risk for racking 'B' RW pump breaker onto 'DF' 4160 VAC bus on August 23, 2017

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 7 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

- Unit 1 Anchor Darling double disk gate valves evaluation resulting from NRC Information Notice 2017-03 on July 13, 2017
- Unit 1 fire protection system functionality during a fire water header break on July 20, 2017
- Impact on Unit 1 SSST '1A' from nearby fire water header break on July 20, 2017
- Unit 1 EDG exhaust piping not protected from tornado-generated missiles on July 25, 2017
- Unit 1 degraded main steam valve room high energy line break door on July 26, 2017
- Unit 2 inoperable DRPI impact on verifying operability of control rod F10 on August 25, 2017
- Unit 1 EDG 1-2 building exhaust damper missing louver on September 22, 2017

The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject SSC remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to FENOC's evaluations to determine whether the SSCs were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by FENOC.

b. Findings

10 CFR 50, Appendix B, Criterion III, “Design Control,” requires, in part, that measures shall be established to assure that the applicable regulatory requirements and the design basis for SSCs are correctly translated into specifications, drawing, procedures, and instructions. Contrary to the above, FENOC failed to correctly translate the design basis for protection against tornado generated missiles into their specifications and procedures. Specifically, FENOC did not adequately protect Unit 1 EDG’s exhausts from tornado generated missiles. FENOC documented the condition adverse to quality in their CAP under condition report 2017-07550 and took immediate compensatory actions. The inspectors evaluated FENOC’s immediate compensatory measures, which included verifying that procedures are in place and training is current for performing actions in response to a tornado. Because this violation was identified during the discretion period covered by Enforcement Guidance Memorandum 15-002, Revision 1, “Enforcement Discretion for Tornado Missile Protection Non-compliance” (ML16355A286) and because FENOC has implemented compensatory measures, the NRC is exercising enforcement discretion and is not issuing enforcement action and is allowing continued reactor operation.

1R18 Plant Modifications (71111.18 – 1 sample)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated a modification to the Unit 1 SSST ‘1A’ implemented by engineering change package 17-0169, “Replace the Damaged #10 AWG Wire with #6 AWG wire on Unit 1 SST TR-1A from the Control Panel A to AT-1 & AT-2.” The modification was implemented to replace wire that had been previously damaged so that the degraded transformer could be restored to full capability. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change. The inspectors also interviewed maintenance personnel and reviewed the post maintenance test to verify that the testing was appropriate for the maintenance performed.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 8 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief, confirmed work site cleanliness was maintained, witnessed the test or reviewed test data to verify quality control hold points were performed and checked, and verified that results adequately demonstrated restoration of the affected safety functions.

- Unit 2 'C' charging pump motor oil change on July 12, 2017
- Unit 2 safety injection accumulator nitrogen makeup valve containment isolation valve, 2GNS-AOV-101-1, packing leak repair on July 13, 2017
- Unit 1 'B' reactor coolant loop average temperature, summator and lead/lag card, T-RC-422, replacement on July 14, 2017
- Calibration of the tap changer for the Unit 2 SSST '2B' due to an out of tolerance surveillance on July 28, 2017
- Control room air exhaust damper maintenance on August 3, 2017
- Unit 2 'A' train SW strainer, 2SWS-STRM47, troubleshooting and repair on August 4, 2017
- Unit 2 'A' charging pump mechanical seal replacement on August 18, 2017
- Replacement of capacitors in Unit 2 uninterruptible power supply number 4, UPS-VITBS2-4, on August 29, 2017

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 3 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and FENOC procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied.

Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- 1OST-15.3, 'C' Reactor Plant Component Cooling Water Pump Test on July 18, 2017
- 1OM-54.3.PAB1, Primary Auxiliary Building Log Readings on July 27, 2017
- 1OM-54.3.L5, Surveillance Verification Log on July 27, 2017

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine FENOC emergency drill on July 20, 2017, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities.

The inspectors observed emergency response operations in the simulator, technical support center, and emergency offsite facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by FENOC staff in order to evaluate FENOC's critique and to verify whether the FENOC staff were properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Mitigating Systems Performance Index (6 samples)

a. Inspection Scope

The inspectors reviewed FENOC's submittal of the Mitigating Systems Performance Index for the following systems for the period of July 1, 2016, through June 30, 2017:

- Unit 1 Heat Removal System (AFW)
- Unit 2 Heat Removal System (AFW)
- Unit 1 Residual Heat Removal Systems (Low Head Safety Injection and Recirculation Spray)
- Unit 2 Residual Heat Removal System (Recirculation Spray)
- Unit 1 Cooling Water System (RW)
- Unit 2 Cooling Water System (SW)

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed FENOC's operator narrative logs, maintenance rule records, condition reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 1 sample)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by IP 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify FENOC entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends.

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 CAP and periodically attended condition report screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues to identify trends that might indicate the existence of more significant safety concerns. The inspectors reviewed FENOC's CAP database for the first and second quarters of 2017 to assess condition reports written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the inspectors' daily condition report review (Section 4OA2.1) and condition reports related to components found out of tolerance for January 1, 2014 through June 30, 2017. The inspectors also reviewed the FENOC Fleet Oversight Performance Gap Reports for February 2017 through June 2017, conducted under NOBP-LP-2023, "Performance Assessment," to verify that FENOC personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

The inspectors did not identify any adverse trends that had not been previously identified by FENOC in their review of condition reports generated over the past two quarters. However, the inspectors noted that there were more than 100 condition reports documenting instances of equipment found out of tolerance over the past six months, so an in depth review was conducted for the past three years. Further review identified that there have been more than 50 conditions reports documenting equipment found out of tolerance each quarter since 2014 and two issues were identified. In 2012, CR-2012-03539 documented that the pressure switch for the EDG 2-1 crankcase high alarm was found out of tolerance and exceeded its measured maintenance data (MMD) drift limit. This was evaluated by engineering and had a corrective action to remove this pressure switch from the MMD program. This corrective action was not implemented as required by NOP-LP-2001, "Corrective Action Program." Additionally, in 2016, CR-2016-02864 documented that the pressure switch for the EDG 2-1 crankcase high alarm was again found out of tolerance and exceeded its MMD drift limit. An engineering evaluation was requested, but no evaluation was performed as required by NOBP-ER-3914, "Measured Maintenance Data (MMD) Program Requirements." The inspectors determined that FENOC failed to perform the corrective actions to remove the pressure switch from the MMD program and perform an engineering evaluation for the out of tolerance pressure switch. In accordance with IMC 0612, "Power Reactor Inspection Reports," the inspectors determined that these performance deficiencies were minor because they had no safety impact. Specifically, the crankcase pressure switch's function is limited to alarm only indication with no link to the safety analysis, design basis, or licensing basis requirements and the drift value was based on conservative engineering judgment as opposed to instrument uncertainty. FENOC documented this issue in CR-2017-09947.

4OA6 Meetings, Including Exit

On October 17, 2017, the inspectors presented the inspection results to Mr. Richard Bologna, Site Vice President, and other members of the BVPS staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Bologna, Site Vice President
J. Grabnar, General Plant Manager
S. Baldwin, Supervisor, Mechanical Maintenance
C. Battistone, Fleet Oversight Supervisor
M. Belculfine, Supervisor, Mechanical Maintenance
T. Boyda, Maintenance Technician
A. Crotty, Manager, Plant Engineering
F. Etzel, Analytical Methods Engineer
R. Ferrie, Supervisor, Electrical Maintenance
T. Gaydosik, Fleet Exam Development Lead
J. Iliff, Supervisor, Licensed Operator Continuing Training
M. Jansto, System Engineer
M. Kienzle, System Engineer
R. Klindworth, Unit Supervisor
R. Kuhn, Mechanical Maintenance Consulting Engineer
M. Mayer, Staff Nuclear Engineering Specialist
S. Mercer, System Engineer
J. Miller, Fire Marshal
T. O'Leary, Shift Manager
P. Pauvlinch, Design Engineering Manager
D. Ronnenberg, Operations Training Superintendent
H. Scott, Supervisor, FIN Maintenance
J. Snyder, System Engineer
E. Thomas, Supervisor, Nuclear Compliance
D. Tiberio, Simulator Support Supervisor
M. Unfried, Engineering Analysis Engineer
M. Wimmel, MOV Program Engineer
T. Winfield, Relay Supervisor

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

None.

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Procedures
1/2-ADM-2106, River/Service Water System Control and Monitoring Program, Revision 6
1/2OM-36.4A.A, Racking 4kV Breakers, Revision 18
1OM-24.3.B.1, Valve List – 1FW, Revision 23
1OM-30.3.B.1, Valve List - 1RW, Revision 56
1OM-30.3.C, Power Supply and Control Switch List, Revision 21
1OM-36.3.B.1, Valve List – 1DA, Revision 7
2OM-30.3.C, Power Supply and Control Switch List, Revision 17

Work Orders
200707183

Drawings
8700-RM-0424-002, Valve Oper No. Diagram Feedwater System, Revision 20
RM-0430-001, Piping & Instrumentation Diagram - River Water System, Revision 37
RM-0430-002, Piping & Instrumentation Diagram - River Water System, Revision 23
RM-0430-003, Piping & Instrumentation Diagram - River Water System, Revision 31
RM-0430-004, Piping & Instrumentation Diagram - River Water System, Revision 22
RM-0430-005, Piping & Instrumentation Diagram - River Water System, Revision 27
RM-0436-001, Valve Oper No Diagram Emergency Diesel Generator Air Start System, Revision 11
RM-0436-002, Valve Oper No Diagram Emerg Diesel Gen Fuel Oil Sys, Revision 12
RM-0436-003, Valve Oper No Diagram Lube Oil System, Revision 6
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1PFP-YARD-701, Transformers TR-1, TR-1C, TR-1D, Fire Area TR-1, 2, 3, Revision 2
1PFP-YARD-720, Transformer TR-1A, Fire Area TR-4, Revision 1
1PFP-YARD-735, Transformer TR-1B, Fire Area TR-5, Revision 0
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2PFP-TRBB-730, Turbine Basement East Fire Area TB-1, Revision 2
2PFP-TRBB-730, Turbine Basement West Fire Area TB-1, Revision 2
2PFP-TRBB-730, Turbine Oil Reservoir Fire Area TB-1A, Revision 0
2PFP-TRBB-752, Battery Room 2-6 Fire Area TB-2, Revision 0
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Miscellaneous
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2OST-1.1, Control Road Assembly Partial Movement Test, Revision 14
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2CR-591
2CR-620
2PL-040
2PL-083

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2017U2C1E2
2017U2C1E4
2017U2C1E3
2017U2C1E5

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2DRLS-FR-S.1.007

Unit 2 Simulator Testing
2 DRLS-ECA.0.0.001
2DRLS-FR-H.1.001
2DRLS-FR-S.1.008
SQT-3.1 U2 Cycle 19, Core Cycle Installation Test
SQT-5, 7 U2, Maximum Rate Power Ramp

Miscellaneous
2017 Unit 2 LOR Annual Operating Exam Sample Plan
2DRLS-E-3.009, Licensed Operator Training/Licensed Requalification Training, Revision 3
2DRLS-FR-S.1.007, Licensed Operator Training/Licensed Requalification Training, Revision 3
SA-BN-2017-0474, Requalification Program Self-Assessment

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1/2-CMP-M-7-001, High Head Safety Injection Charging Pump Overhaul, Revision 19
NOP-ER-3004, FENOC Maintenance Rule Program, Revision 2

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2007-19025	2015-11688	2016-11536
2013-15890	2015-12767	2016-12652
2013-15997	2015-12932	2017-02189
2013-16101	2015-14462	2017-02693
2013-16339	2015-14463	2017-03050
2013-16425	2015-15248	2017-04502
2013-17744	2015-16958	2017-04517
2014-09025	2016-01657	2017-04540
2014-16662	2016-01911	2017-06161
2014-17474	2016-05272	2017-08305
2014-17624	2016-05429	2017-08366
2014-17770	2016-06242	2017-08950
2014-18677	2016-09128	
2015-08969	2016-10037	

Work Orders
200708044

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Maintenance Rule (a)(1) Evaluation Form for CR 2015-08969
Maintenance Rule (a)(2) Evaluation Form for CR 2015-08969
Maintenance Rule System Basis Document, Main Steam System, Unit 1 System 21, Revision 10
Pre-Engineered Material List (PEML), Revision 5
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Risk Management Plan for work order 200726028

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1/2-ADM-1900, Fire Protection Program, Revision 40
1/2-ADM-2021, Control of Penetrations (Including HELB Doors), Revision 9
1/2 RCP-96A-PC, Calibration of Beckwith Electric M-2001D Load Tap Changer (LTC) Voltage Regulating Relay, Revision 2
1OM-33.3.B.1, Valve List - 1FP, Revision 34
2OST-1.1, Control Rod Assembly Partial Movement, Revision 14

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2013-06879	2017-06710	2017-07668
2013-18679	2017-06896	2017-07767
2014-06551	2017-07189	2017-08598
2017-05781	2017-07550	2017-09424
2017-05787	2017-07594	
2017-06390	2017-07609	

Drawings
RM-0433-001, Valve Oper No Diagram Fire Protection - Water, Revision 21
RM-0433-002, Valve Oper No Diagram Fire Protection - Water, Revision 20

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EER 601122105
EER 601123921
EM 106360, High Energy Line Break Door Evaluation at BVPS-1, dated September 15, 1993
MOV Dynamic Test Summary, MOV-1SI-890A/B/C, March 25, 2006
Standing Order 17-004, Tornado Missile Shielding Heightened Awareness, Revision 0
TP16-1-112, Recommendations to Resolve Flowserve 10CFR Part 21 Notification Affecting Anchor Darling Double Disk Gate Valve Wedge Pin Failures, Revision 3
Unit 1 Operations Logs July 19, 2017

Section 1R18: Plant Modifications

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2017-08334

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200712229
200714865
200715098
200715547
200718682

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RE-0002DC, Wiring Diagram System Station Service Transformer 1A, Revision 1
RE-0002Q, Wiring Diagram System Station Service Transformer 1A, Revision 0

Miscellaneous
ECP 17-0169-000, Replace the Damaged #10 AWG Wire with #6 AWG Wire on Unit 1 SST TR-1A from the Control Panel a to AT-1 & AT-2, Revision 0
ECP 17-0169-001, Replace the Damaged #10 AWG Wire with #6 AWG Wire on Unit 1 SST-TR-1A from the Control Panel a to AT-1 & AT-2, Revision 1

Section 1R19: Post-Maintenance Testing

Procedures
1/2OST-44A.16B, Train B – [1VS-545 and 547] Leak Testing, Revision 1
1/2RCP-96-PC, Calibration of Westinghouse and McGraw Edison Load Tap Changer (LTC) Voltage Regulating Relays, Revision 5
1MSP-6.39-I, T-RC422 Delta T TAVG Protection Instrument Channel II Calibration, Revision 381-PMP-M-75-005, Shan Rod Damper Maintenance, Revision 0
2CMP-30SWS-STRM47-48-1M, Repair of Service Water Motor Operated Strainers, Revision 4
2OM-30.4.I, Standby Service Water System Shutdown, Revision 7
2OM-30.4.A, Service Water System Startup, Revision 24
2OST-36.7, Offsite to Onsite Power Distribution System Breaker Alignment Verification, Revision 19
2OST-36.8, AC Power Source Weekly Breaker Alignment Verification, Revision 21
2OST-47.3H, Containment Penetration and ASME Valve Test – Work Week 3, Revision 14
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2017-07255	2017-07520	2017-08059
2017-07381	2017-07924	2017-08092
2017-07506	2017-08018	2017-08094

Work Orders

200623489	200673088	200724100
200628030	200708044	200725089
200648766	200716329	200726349
200651092	200720229	200726592
200665693	200721224	

Miscellaneous
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Procedures
1OM-54.3.PAB1, PAB Log Readings, Revision 76
1OST-15.3, [1CC-P-1C] Quarterly Test, Revision 42

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2017-07672

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1/2-EPP-IP-1.4, Technical Support Center Activation, Operation and Deactivation, Revision 37
1/2-EPP-IP-1.6, Emergency Operations Facility Activation, Operation and Deactivation, Revision 26

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2017-07602	2017-07688
2017-07685	2017-07691

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Condition Reports

2016-12282	2016-14343	2017-02970
2016-13786	2017-02606	2017-05426

Miscellaneous
BVRM-RAS-0001, Mitigating System Performance Index Basis Document Beaver Valley Power Station Unit 1, Revision 8
BVRM-RAS-0002, Mitigating System Performance Index Basis Document Beaver Valley Power Station Unit 2, Revision 10
Unit 1 Auxiliary Feedwater System Health Report 2017-1
Unit 1 Containment Depressurization System Health Report 2017-1
Unit 1 River Water System Health Report 2017-1
Unit 1 Safety Injection System Health Report 2017-1
Unit 1 System 11 Maintenance Rule Monthly Monitoring Spreadsheet, July 2017
Unit 1 System 13 Maintenance Rule Monthly Monitoring Spreadsheet, July 2017
Unit 1 System 24B Maintenance Rule Monthly Monitoring Spreadsheet, July 2017
Unit 1 System 30 Maintenance Rule Monthly Monitoring Spreadsheet, July 2017
Unit 2 MSPI Cooling Water System, July 2016 through June 2017
Unit 2 MSPI Heat Removal System, July 2016 through June 2017
Unit 2 MSPI Residual Heat Removal System, July 2016 through June 2017
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Unit 2 System 13 Containment Depressurization System Health Report 2017-1
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Unit 2 System 24B Maintenance Rule Monthly Monitoring Spreadsheet, July 2017
Unit 2 System 30 Maintenance Rule Monthly Monitoring Spreadsheet, July 2017
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NOBP-ER-3914, Measured Maintenance Data (MMD) Program Requirements, Revision 0
NOBP-LP-2023, Performance Assessment, Revision 18
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2011-01282	2016-14457	2017-01186
2012-03539	2017-00676	2017-01207
2013-19558	2017-01083	2017-01209
2014-04308	2017-01135	2017-02441
2014-04324	2017-01136	2017-02498
2016-02864	2017-01160	2017-02499
2016-14448	2017-01184	2017-09947

Miscellaneous

PA-BV-2016-0101-003, Fleet-wide performance by roofing vendor
PA-BV-2017-0003-004, Work Week Manpower Fluctuations
PA-BV-2017-0004-001, Assessment of Unit 2 RM-11 Computer Issues and Previous Actions
PA-BV-2017-0005-001, Fire Protection CRs – Quality of responses and action tracking
PA-BV-2017-0018-007, Justifications for Schedule Change Requests
FLOV-ES-BV-16-04, Fleet Oversight Escalation – Gaps in behaviors during plant activities, Revision 0
FLOV-EL-BV-16-11, Fleet Oversight Elevation – Gaps in preventing foreign material from entering plant systems and components, Revision 0

LIST OF ACRONYMS

AFW	auxiliary feed water
BVPS	Beaver Valley Power Station
CAP	corrective action program
CFR	*Code of Federal Regulations*
DRPI	digital rod position indication
EDG	emergency diesel generator
FENOC	FirstEnergy Nuclear Operating Company
IMC	Inspection Manual Chapter
IP	Inspection Procedure
JPM	job performance measure
MMD	measured maintenance data
NRC	Nuclear Regulatory Commission
RW	river water
SSC	structure, system, or component
SSST	system station service transformer
SW	service water
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
VAC	volts alternating current