



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

May 15, 2017

EA-17-045

Mr. Marty Richey
Site Vice President
First Energy Nuclear Operating Company
Beaver Valley Power Station
P. O. Box 4
Shippingport, PA 15077-0004

**SUBJECT: BEAVER VALLEY POWER STATION – INTEGRATED INSPECTION REPORT
05000334/2017001 AND 05000412/2017001 AND EXERCISE OF
ENFORCEMENT DISCRETION**

Dear Mr. Richey:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Beaver Valley Power Station, Units 1 and 2. On April 6, 2017, the NRC inspectors discussed the results of this inspection with Mr. Richard Bologna, General Plant Manager, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one Severity Level IV violation with no associated finding. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy. Additionally, a violation of FirstEnergy Nuclear Operating Company (FENOC's) site-specific licensing basis for tornado-generated missile protection was identified. 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 violations or significance of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Beaver Valley Power Station.

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.

M. Richey

2

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 Room in accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Michael L. Scott, Director
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000334/2017001
and 05000412/2017001 w/Attachment:
Supplementary Information

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05000334/2017001 AND 05000412/2017001 DATED MAY 15, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.: 50-334 and 50-412

License Nos.: DPR-66 and NPF-73

Report No.: 05000334/2017001 and 05000412/2017001

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Shippingport, PA 15077

Dates: January 1, 2017 to March 31, 2017

Inspectors: J. Krafty, Senior Resident Inspector
S. Horvitz, Resident Inspector
R. Rolph, Health Physicist

Approved By: Silas R. Kennedy, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY	3
1. REACTOR SAFETY.....	4
1R01 Adverse Weather Protection	4
1R04 Equipment Alignment.....	5
1R05 Fire Protection	5
1R06 Flood Protection Measures.....	7
1R07 Heat Sink Performance	7
1R11 Licensed Operator Requalification Program and Licensed Operator Performance ...	8
1R12 Maintenance Effectiveness.....	9
1R13 Maintenance Risk Assessments and Emergent Work Control	9
1R15 Operability Determinations and Functionality Assessments	10
1R18 Plant Modifications	11
1R19 Post-Maintenance Testing	11
1R22 Surveillance Testing.....	12
1EP6 Drill Evaluation	13
2. RADIATION SAFETY.....	13
2RS1 Radiological Hazard Assessment and Exposure Controls	13
2RS2 Occupational ALARA Planning and Controls	14
2RS3 In-Plant Airborne Radioactivity Control and Mitigation	14
4. OTHER ACTIVITIES	15
4OA1 Performance Indicator Verification	15
4OA2 Problem Identification and Resolution	16
4OA3 Follow-Up of Events and Notices of Enforcement Discretion	18
4OA5 Other Activities	18
4OA6 Meetings, Including Exit.....	21
SUPPLEMENTARY INFORMATION	A-1
KEY POINTS OF CONTACT.....	A-1
LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED.....	A-1
LIST OF DOCUMENTS REVIEWED.....	A-2
LIST OF ACRONYMS	A-10

SUMMARY

IR 05000334/2017001 and 05000412/2017001; 1/1/2017 – 3/31/2017; Beaver Valley Power Station Units 1 and 2; Other Activities.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The inspectors identified one non-cited violation (NCV) which was a Severity Level IV. The significance of most findings and violations is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. However, as explained below, certain violations are assessed using a different process referred to as traditional enforcement. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Mitigating Systems

- Severity Level IV. The inspectors identified a Severity Level IV NCV of Title 10 of the *Code of Federal Regulations* (CFR) 50.55a(z), "Alternatives to codes and standards requirements," for FENOC's failure to obtain prior authorization for implementing an alternative to the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). Specifically, until prompted by the inspectors, FENOC did not submit to the NRC and receive an alternative to the ASME OM Code requirement to not test the residual heat removal (RHR) relief valve, RV-1RH-721, during a recent refueling outage for Unit 1 when the charging system letdown relief valve, RV-1CH-203, failed to lift within three percent of set-pressure. FENOC's immediate corrective actions included performing a prompt operability determination, submitting a relief request, and entering the issue into the corrective action program (CAP) as condition report (CR) 2017-03937.

The inspectors determined that this violation impacted the ability of the NRC to perform its regulatory oversight function, and was therefore subject to traditional enforcement. Section 2.2.1.c of the Enforcement Policy states that failure to receive prior NRC approval for changes in licensed activities when required is an example of impacting the ability of the NRC to perform its regulatory oversight function. After considering the factors in Section 2.2.1.c of the Enforcement Policy, the inspectors determined that the performance deficiency was a Severity Level IV violation because the change implemented by FENOC would likely be approved by the NRC. Because this violation involves the traditional enforcement process and does not have an associated finding that is more than minor, the inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B. (Section 4OA5)

REPORT DETAILS

Summary of Plant Status

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

Unit 2 began the inspection period at 100 percent power and operated at or near full power until March 17, 2017, when the unit entered end-of-cycle coastdown operations. Unit 2 ended the inspection period at 95 percent power.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 External Flooding

a. Inspection Scope

During the week of January 16, 2017, the inspectors performed an inspection of the external flood protection measures for Beaver Valley Power Station. The inspectors reviewed technical specifications, procedures, Unit 1 updated final safety analysis report (UFSAR), Chapter 2.7.3 and Unit 2 UFSAR Chapter 3.4.1, which depicted the design flood levels and protection areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a walkdown of susceptible areas of the plant, including the lower elevations of the Unit 1 auxiliary building and the Unit 2 auxiliary building, cable tunnel, safeguards room, and control building to ensure that FENOC flood protection measures were in accordance with design specifications. The inspectors verified that adequate procedures existed for inspecting flood seals. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to confirm that FENOC had established adequate measures to protect against external flooding events and, more specifically, that credited operator actions were adequate. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed FENOC's preparations for the onset of extreme cold weather on February 9, 2017. The inspectors reviewed the implementation of adverse weather preparation procedures before the onset of and during this adverse weather condition. The inspectors walked down the refueling water storage tanks and demineralized water storage tanks to ensure availability. The inspectors verified that operator actions defined in FENOC's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 1 'C' charging pump aligned to 'A' train during 'A' charging pump maintenance on January 23, 2017;
- Unit 1 'A' motor driven auxiliary feedwater (MDAFW) pump and turbine driven auxiliary feedwater (TDAFW) pump while the 'B' MDAFW pump was out of service for maintenance on February 16, 2017;
- Unit 2 TDAFW pump following surveillance testing on February 22, 2017;
- Unit 2 emergency diesel generator (EDG) 2-2 following recent testing on March 21, 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, technical specifications, CRs, 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 CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 7 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 was available for use as specified in the area pre-fire plan, and 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 Auxiliary Building 768 Level, Fire Area PA-1A, on January 19, 2017;
- Unit 1 Turbine Building, Fire Areas TB-1, TB-2, TB-3, and TG-1, on January 19, 2017;
- Unit 1 EDG 1-2 room, Fire Area DG-2, on February 8, 2017;
- Unit 2 Battery Rooms 2-2 and 2-4, Fire Areas SB-8 and SB-9 on February 15, 2017;
- Unit 2 Computer Room, Fire Area CB-4 on February 17, 2017
- Unit 2 Battery Rooms 2-1 and 2-3, Fire Areas SB-6 and SB-7 on February 21, 2017;
- Unit 1 and Unit 2 Alternate Intake Structure, Fire Area AIS-1 on March 13, 2017

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on February 4, 2017, that involved a fire in the unit 2 EDG 2-1 room. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that FENOC personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated the following specific attributes of the drill:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with FENOC's fire-fighting strategies.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)Internal Flooding Reviewa. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to identify internal flooding susceptibilities for the site. The inspectors' review focused on the Unit 2 safeguards building. It verified the adequacy of equipment seals located below the flood line, floor and water penetration seals, common drain lines and sumps, sump pumps, level alarms, and control circuits. It assessed the adequacy of operator actions that FENOC had identified as necessary to cope with 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.

1R07 Heat Sink Performance (711111.07A – 1 sample)a. Inspection Scope

The inspectors reviewed the Unit 2 'C' charging pump oil cooler heat exchanger, 2CHS-E25C, readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified FENOC's commitments to NRC Generic Letter 89-13, "Service Water System Requirements Affecting Safety-Related Equipment." The inspectors reviewed the results of the inspection of the heat exchanger. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found condition. The inspectors verified that FENOC initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed a Unit 1 licensed operator annual requalification simulator examination on January 31, 2017, which included two scenarios: (1) a neutron shield tank leak with a loss of all alternating current (AC) power and failed open power operated relief valves and a failure of select components to automatically operate as required, and (2) a loss of the 4160 volts alternating current (VAC) DF safety bus with a faulted steam generator and a failure of selected components to automatically operate as required. 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. 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

a. Inspection Scope

The inspectors observed Unit 2 'B' train service water full flow test on March 16, 2017, and the Unit 1 EDG 1-1 surveillance test on March 22, 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 first time performance of the significant revision to the procedure. The inspectors observed shift turnover 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.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component 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 structure, system, or component was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by FENOC staff was reasonable. As applicable, for structures, systems, and components classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these structures, systems, and components 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 EDGs on January 9, 2017
- Unit 1 fire protection system on March 7, 2017

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 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 technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unit 1 EDG 1-1 and 'A' charging pump out of service for planned maintenance on January 24, 2017;
- Unit 2 'C' charging pump, 'B' plant safety monitoring system, and reactor coolant temperature loop 2RCS-T430 out of service for planned maintenance on February 7, 2017;
- Unit 2 'B' train of low head safety injection (LHSI) out of service for planned maintenance on the 'B' LHSI mini flow recirculation valve and the 'D' recirculation spray system discharge crossover valve to 'B' LHSI train on February 17, 2017;

- Unit 2 'A' Safeguards Protection System relays unavailable during testing on February 28, 2017;
- Unit 2 yellow probabilistic risk assessment (PRA) risk for alternate intake bay cleaning on March 13, 2017;
- Unit 1 yellow PRA risk for 'A' system station service transformer deluge testing on March 31, 2017

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 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 2 EDG 2-1 lube oil leak on February 1, 2017;
- Unit 1 battery 1-3 cracked cell covers on February 3, 2017;
- Unit 2 TDAFW pump steam line isolation valve, 2MSS*SOV105D, close stroke exceeded ASME OM Code limiting time on February 21, 2017;
- Unit 1 and Unit 2 main steam safety and atmospheric dump valve exhausts not protected from tornado-generated missiles on March 7, 2017,
- Unit 2 tornado doors not shut leaving safety-related equipment vulnerable to tornado-generated missiles on March 7, 2017

The inspectors evaluated the technical adequacy of the operability determinations to assess whether technical specification 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 technical specifications and UFSAR to FENOC's evaluations to determine whether the components or systems 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 structures, systems, and components 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 and Unit 2's main steam safety and atmospheric dump valve exhausts from tornado-generated missiles. Additionally, FENOC did not adequately protect Unit 2's component cooling pumps and spent fuel from tornado-generated missiles by failing to include in their procedures actions for closing the tornado doors in the event of a tornado.

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, is not issuing enforcement action, and is allowing continued reactor operation.

1R18 Plant Modifications (71111.18 – 1 sample)

Temporary Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification to install and remove a temporary jumper on the Unit 2 'C' component cooling pump because the pump could not be secured from the control room to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors reviewed the Urgent Maintenance Log and appropriate drawings and interviewed maintenance personnel to verify that the temporary modification did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 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 procedures 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, confirmed work site cleanliness was maintained, and witnessed the test or reviewed test data to verify quality control hold points were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- Unit 1 4160 VAC DF bus undervoltage (UV) relay replacement on January 10, 2017;
- Unit 2 'B' primary component cooling water pump, motor, and breaker maintenance on January 19, 2017;
- Unit 1 'A' centrifugal charging pump, motor, and relay maintenance on January 30, 2017;
- Unit 2 'C' centrifugal charging pump oil cooler cleaning on February 10, 2017;
- Unit 2 'A' fuel pool cooling pump and heat exchanger maintenance on March 22, 2017

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 7 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems, and components to assess whether test results satisfied technical specifications, 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:

- 2MSP-24.01-I, Loop 1 Narrow Range Steam Generator Water Level Channel I Test on January 24, 2017;
- 2OST-24.2, Motor Driven Auxiliary Feed Pump Test on January 25, 2017;
- 1OST-36.2, Diesel Generator No. 2 Monthly Test on February 8, 2017;
- 1MSP-21.19-I, P-1MS474, Loop1 Steamline Pressure Protection Channel II Calibration on February 8, 2017;
- 2OST-24.4, Steam Driven Auxiliary Feed Pump Quarterly Test on February 21, 2017;
- 2MSP-24.30-I, 2FWS-F497, Loop 3 Feedwater Flow Channel III Calibration on March 3, 2017;
- 2OST-30.13B, Train B Service Water System Full Flow Test on March 17, 2017

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)Training Observationsa. Inspection Scope

The inspectors observed a simulator annual requalification examination for Unit 1 licensed operators on January 31, 2017, which required emergency plan implementation by an operations crew. FENOC planned for this evolution to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that FENOC evaluators noted the same issues and entered them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY**Cornerstone: Occupational and Public Radiation Safety**2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - 1 sample)a. Inspection Scope

The inspectors reviewed FENOC's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, technical specifications, applicable Regulatory Guides (RGs), and the procedures required by technical specifications as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the performance indicators for the occupational exposure cornerstone, radiation protection program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazard Assessment (1 sample)

The inspectors conducted independent radiation measurements during walkdowns of the facility and reviewed the radiological survey program, air sampling and analysis, continuous air monitor use, recent plant radiation surveys for radiological work activities, and any changes to plant operations since the last inspection to verify survey adequacy of any new radiological hazards for onsite workers or members of the public.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02 - 2 samples)

a. Inspection Scope

The inspectors assessed FENOC's performance with respect to maintaining occupational individual and collective radiation exposures as low as reasonably achievable (ALARA). The inspectors used the requirements contained in 10 CFR 20, applicable RGs, technical specifications, and procedures required by technical specifications as criteria for determining compliance.

Inspection Planning

The inspectors conducted a review of Beaver Valley's collective dose history and trends; ongoing and planned radiological work activities; previous post-outage ALARA reviews; radiological source term history and trends; and ALARA dose estimating and tracking procedures.

Verification of Dose Estimates and Exposure Tracking Systems (1 sample)

The inspectors reviewed the current annual collective dose estimate; basis methodology; and measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors evaluated the adjustment of exposure estimates, or re-planning of work. The inspector reviewed post-job ALARA evaluations of excessive exposure.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with ALARA planning and controls were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 - 1 sample)

a. Inspection Scope

The inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR 20, RG 8.15, RG 8.25, NUREG/CR-0041, technical specifications, and procedures required by technical specification as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the UFSAR to identify ventilation and radiation monitoring systems associated with airborne radioactivity controls and respiratory protection equipment staged for emergency use. The inspectors also reviewed respiratory protection program procedures and current performance indicators for unintended internal exposure incidents.

Self-Contained Breathing Apparatus (SCBA) for Emergency Use (1 sample)

The inspectors reviewed the following: the status and surveillance records for three SCBAs staged in-plant for use during emergencies, FENOC's SCBA procedures and maintenance and test records, the refilling and transporting of SCBA air bottles, SCBA mask size availability, and the qualifications of personnel performing service and repair of this equipment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES4OA1 Performance Indicator Verification (71151)Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications (6 samples)a. Inspection Scope

The inspectors reviewed FENOC's submittals for the following Initiating Events Cornerstone performance indicators for the period of January 1, 2016, through December 31, 2016.

- Unit 1 Unplanned Scrams
- Unit 2 Unplanned Scrams
- Unit 1 Unplanned Power Changes
- Unit 2 Unplanned Power Changes
- Unit 1 Unplanned Scrams with Complications
- Unit 2 Unplanned Scrams with Complications

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

b. Findings

No findings were identified

4OA2 Problem Identification and Resolution (71152 – 2 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 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 third and fourth quarters of 2016 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the inspectors’ daily CR review (Section 4OA2.1). The inspectors reviewed FENOC’s Fleet Oversight Performance Gap Report for October through November 2016 and Performance Assessments of 1R24 outage management, operations, and maintenance, conducted under NOBP-LP-2013, “Performance Assessment,” to verify that FENOC personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures. The inspectors also reviewed Effectiveness Reviews completed in the third and fourth quarters of 2016 in order to determine if corrective actions were successful in addressing the issues identified in the respective condition reports.

b. Findings and Observations

No findings were identified.

The inspectors did not identify any trends that had not been identified by FENOC. As part of the performance assessment inspection, the inspectors reviewed NOBP-LP-2023, “Performance Assessment,” which states that the purpose and scope of the observation should be included in the assessment area. The inspectors noted that purpose and scope was not included in any of the assessment areas reviewed. FENOC documented this issue in CR 2017-03915. Additionally, an oversight assessment of the schedule change requests for deleting work from 1R24, oversight concluded that some of the justifications did not describe why it was acceptable from a risk standpoint. There were no follow-up actions resulting from this issue that were documented in a CR or other process as required by FENOC’s CAP. After engagement from the inspectors, notification 601069932 1R24 POLLS, item 44 was written to address the issue of the justifications for deleting work from 1R24.

FENOC initiated CR 2017-02303 to evaluate that no CR was written for an oversight assessment that was determined to be marginally effective. The inspectors determined that these two performance deficiencies are minor because they are administrative in nature and had no safety impact.

In the inspectors' review of 11 effectiveness reviews, one was determined to be ineffective. In three of the reviews that were determined to be effective, the effectiveness review plan did not have specific and quantifiable criteria for the expected results (2016-02356, 2016-03558, 2016-03125) as required by NOBP-LP-2011, FENOC Cause Analysis. In five of the reviews that were determined to be effective, the closure criteria either did not appear to be met or was unclear if it was met (2015-13615; 2015-06355, plus the three above). For example, the effectiveness review for CR 2016-02356 was to perform a review of rigging and material handling human performance events in 1R24. No specific criteria was given to determine effectiveness. Additionally, there were four rigging human performance events in 1R24, yet the corrective actions were determined to be effective. FENOC documented this issue in CR 2017-02227. The inspectors determined that this performance deficiency is minor because it is administrative in nature and there was no safety impact.

.3 Annual Sample: Operator Workarounds

a. Inspection Scope

The inspectors performed a review of Unit 1 and Unit 2 operator workarounds, burdens and control room deficiencies to verify that FENOC is identifying these issues at the appropriate threshold and are entering them into their CAP. The inspectors review included verifying that FENOC was evaluating these issues under all plant conditions and was considering the cumulative effects of all the issues. Additionally, the purpose of the review was also to verify that FENOC was following NOBP-OP-0012, Operator Work-Arounds, Burdens, Control Room Deficiencies and Operations Aggregate Assessment.

b. Findings and Observations

No findings were identified.

The inspectors determined, in general, FENOC was identifying these issues at the appropriate threshold and was entering the issues into their CAP. FENOC also evaluated the issues under all plant conditions and their cumulative effect on plant operation appropriately. The inspectors compared the number of issues in the fourth quarter 2015 aggregate risk review to the fourth quarter 2016 review and noted that the overall number of issues decreased from 48 to 11 for Unit 1 and from 67 to 33 for Unit 2. NOBP-OP-0012 requires that temporary modifications that require a compensatory operator action and locked in annunciators be considered in the aggregate assessment. The inspectors determined that the operations individual performing the assessment did not have access to the temporary modification list that is maintained by engineering. As a result, the compensatory action required for the modification to valve 1CCT-25 was not considered. This is a minor performance deficiency since the omission did not change the conclusions of the assessment. The inspectors noted that the procedure does not specify how long an annunciator should be locked in to be considered, so only long-term locked in annunciators (several months) were considered in the assessment.

40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)Plant Eventsa. Inspection Scope

For the Unit 1 notice of unusual event (NOUE) on January 27, 2017, caused by a smoke detector alarm in containment that FENOC could not verify that there was no fire within 15 minutes, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional and headquarters personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that FENOC made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors also verified that FENOC properly exited the NOUE after entering containment and verifying that there was no fire. The inspectors reviewed FENOC's follow-up actions related to the event to assure that FENOC implemented appropriate corrective actions commensurate with its safety significance.

b. Findings

No findings were identified.

40A5 Other Activities.1 Temporary Instruction (TI) 2515/192: Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systemsa. Inspection Scope

The inspectors verified that FENOC implemented interim compensatory measures associated with an open phase condition (OPC) design vulnerability in electric power systems for operating reactors. The inspectors verified the following:

- FENOC had identified and discussed with plant staff the lessons-learned from the OPC events at the United States operating plants including the Byron station OPC event and its consequences. This includes conducting operator training for promptly diagnosing, recognizing consequences, and responding to an OPC event.
- FENOC had updated plant operating procedures to help operators promptly diagnose and respond to OPC events on off-site power sources credited for safe shutdown of the plant.
- FENOC had established and continues to implement periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible OPC.

- FENOC had ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, FENOC assessed and managed plant risk in accordance with 10 CFR 50.65(a)(4) requirements.

b. Findings

No findings were identified.

.2 World Association of Nuclear Operators (WANO) Report Review

a. Inspection Scope

The inspectors reviewed the final report for the WANO plant assessment of Beaver Valley Power Station conducted in February 2017. The inspectors evaluated this report to ensure that NRC perspectives of FENOC performance were consistent with any issues identified during the assessments. The inspectors also reviewed these reports to determine whether WANO identified any significant safety issues that required further NRC follow-up.

b. Findings

No findings were identified.

.3 Unit 1 Relief from the Requirements of the ASME OM Code

a. Inspection Scope

The inspectors reviewed the March 2, 2017, NRC letter granting relief from the ASME OM Code which authorized FENOC's proposed alternative to delay testing valve RV-1RH-721 until the refueling outage in the spring of 2018. The inspectors also reviewed the circumstances surrounding the relief valve testing in October 2016 that caused FENOC to request an alternative to testing RV-1RH-721 in order to determine if there were performance issues. The operability aspects of this issue were reviewed in IR 05000334/2016004, Section 1R15.

b. Findings

Introduction. The inspectors identified a Severity Level IV NCV of 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," for FENOC's failure to obtain prior authorization for implementing an alternative to the ASME OM Code. Specifically, until prompted by the inspectors, FENOC did not submit and receive an alternative to the ASME OM Code requirement to not test the RHR relief valve, RV-1RH-721, during a recent refueling outage when the charging system letdown relief valve, RV-1CH-203, failed to lift within three percent of set-pressure.

Description. On October 4, 2016, letdown relief valve, RV-1CH-203, was tested and lifted more than three percent above its setpoint. CR 2016-11847 documented that this was a failure per ASME OM Code, Appendix I, which required that the remaining valve in the group, RV-1RH-721, the RHR relief valve, be tested. Engineering evaluation 601066674 approved on October 13, 2016, created a new owner specified limit of five percent above the reference value as an acceptance criteria.

Based on the as found lift pressure falling within the new acceptance range, FENOC, determined that no expansion of scope was necessary and that RV-1RH-721 would not be tested during the outage.

On October 14, 2016, the inspectors, in consultation with NRC headquarters staff, determined that establishing a new limit after the failed test did not eliminate the ASME OM Code requirement to test the other valve in the group. The inspectors discussed this conclusion with FENOC. FENOC indicated that it would be a hardship to test the other valve and that they would perform an operability determination and submit a relief request to test the RHR relief valve at the next refueling outage. A prompt operability determination was completed on October 15, 2016, which concluded that the RHR relief valve remained operable. The inspectors reviewed the prompt operability determination and determined that there was a reasonable expectation of operability of the RHR relief valve. FENOC submitted the relief request to delay the testing of the RHR relief valve on October 24, 2016 and it was approved by the NRC on March 2, 2017.

Analysis. The inspectors determined that the failure to request and receive relief from the ASME OM Code following the decision to not test the RHR relief valve, in accordance with 10 CFR 50.55a(z), was a performance deficiency reasonably within FENOC's ability to foresee and correct, and should have been prevented. The inspectors determined that this violation impacted the ability of the NRC to perform its regulatory oversight function and was therefore subject to traditional enforcement. Section 2.2.1.c of the Enforcement Policy states that failure to receive prior NRC approval for changes in licensed activities when required is an example of impacting the ability of the NRC to perform its regulatory oversight function. After considering the factors in Section 2.2.1.c of the Enforcement Policy, the inspectors determined that the performance deficiency was a Severity Level IV violation because the change implemented by FENOC would likely be approved by the NRC. Because this violation involves the traditional enforcement process and does not have an associated finding that is more than minor, the inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B.

Enforcement. 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," requires, in part, that alternatives to the requirements of 10 CFR 50.55a(f) may be used when authorized by the NRC and that the proposed alternative must be submitted and authorized prior to implementation. 10 CFR 50.55a(f), "Inservice testing requirements," requires, in part, that systems and components of pressurized water-cooled nuclear power reactors must meet the requirements of the ASME OM Code. ASME OM Code-2001, "Code for Operation and Maintenance of Nuclear Power Plants", Appendix I, requires that two additional valves from the same valve group shall be tested for each valve that exceeds the set-pressure acceptance criteria. Contrary to the above, FENOC implemented an alternative to the ASME OM Code without obtaining authorization from the NRC. Specifically, from October 4, 2016, when the letdown relief valve failed its set-pressure test, until March 2, 2017, FENOC implemented an alternative, which was to not test the RHR relief valve during the outage, without obtaining prior authorization from the NRC. FENOC's immediate corrective actions included performing a prompt operability determination and submitting a relief request to test the valve at the next refueling outage. Because this violation is Severity Level IV and the issue was entered into FENOC's CAP as CR 2017-03937, it is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 5000334/2017001-01, Failure to Follow the ASME OM Code for a Failed Relief Valve Set Pressure Test)**

4OA6 Meetings, Including Exit

On April 6, 2017, the inspectors presented the inspection results to Richard Bologna, General Plant Manager, and other members of the Beaver Valley Power Station 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

M. Richey, Site Vice President
 R. Bologna, General Plant Manager
 M. Adams, Unit 2 Shift Manager
 C. Battistone, Acting Supervisor, Fleet Oversight
 M. Berg, Nuclear Engineering Specialist, Electrical/I&C Engineering
 J. Crocker, Superintendent, Nuclear Shift Operations Unit 2
 E. Crosby, Radiation Protection Manager
 E. Ebeck, Supervisor, Nuclear Structural/Mechanical Engineering
 W. Etzel, Consulting Engineer, Analytical Methods
 R. Ferrie, Electrical Supervisor
 J. Fontaine, Radiation Protection Supervisor ALARA
 J. Gallagher, Maintenance Rule Coordinator
 D. Gibson, Training Manager
 D. Gmys, System Engineer
 L. Greeley, System Engineer
 J. Halvorsen, Maintenance Manager
 P. Hartig, Shift Manager
 M. Jansto, System Engineer
 D. Jones, IST Program Engineer
 S. Keener, Operations Shift Manager
 R. Kristophel, Superintendent, Nuclear Shift Operations Unit 1
 F. Magnotta, Technical Training Specialist
 C. Martin, Respiratory Protection Technician
 J. Miller, Fire Marshall
 A. Mueller, Manager, Fleet Maintenance and Work Management
 J. Ostrowski, Heat Exchanger Program Owner
 R. Patterson, Senior Radiation Protection Technician
 J. Sheets, PRA Specialist
 J. Snyder, Electrical Systems Engineer
 E. Thomas, Regulatory Compliance Supervisor

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000334/2017001-01	NCV	Failure to Follow the ASME OM Code for a Failed Relief Valve Set Pressure Test (Section 4OA5)
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Closed

05000334/2515/192 05000412/2515/192	TI	Inspection of the Licensee's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

1/2OST-45.1, Extreme Cold Weather Protection Verification, Revision 2
1/2OM-53C.4A.75.2, Acts of Nature – Flood, Revision 32
1BVT 1.33.07, Flood Seals Visual Inspection, Revision 5
2BVT 1.33.7, Flood Seals Visual Inspection, Revision 4

Work Orders

200562438
200562439

Section 1R04: Equipment Alignment

Procedures

1OM-24.3.B.1, Valve List - 1FW, Revision 23
1OM-7.3.B.1, Valve List - 1CH, Revision 36
1OM-7.4.W, Placing the Spare/Standby Charging Pump into Operation, Revision 26
1OST-24.3, Motor Driven Auxiliary Feed Pump Test [1FW-P-3B], Revision 52
2OM-24.3.B.2, Valve List - 2FWE, Revision 13

Condition Reports

2017-03574

Drawings

RM-0407-001, Valve Oper No Diagram Chemical & Volume Control System, Revision 36
RM-0424-003, Valve Oper No Diagram Auxiliary Feedwater, Revision 19
RM-0436-001, Valve Oper No Diagram Diesel Fuel Oil, Revision 7
RM-0436-002, Valve Oper No Diagram Diesel Air Intake, Exh & Vacuum, Revision 4
RM-0436-003, Valve Oper No Diagram Diesel Starting Air, Revision 23
RM-0436-004B, Valve Oper No Diagram Diesel Cooling Water, Revision 7
RM-0436-005B, Valve Oper No Diagram Diesel Lube Oil, Revision 7

Section 1R05: Fire Protection

Condition Reports

2017-00643
2017-01424
2017-01463
2017-02828

Miscellaneous

1/2PFP-AISX, Alternate Intake Structure, Revision 0
1PFP-AXLB-768, Auxiliary Building General Area, Fire Area PA-1A, Revision 4
1PFP-DGBX-735, Diesel Generator 2 Room, Fire Area DG-2, Revision 2
1PFP-TRBB-693-EAST, Turbine Building Basement East, Fire Area TB-1, Revision 1
1PFP-TRBB-693-WEST, Turbine Building Basement West, Fire Area TB-1, Revision 2
1PFP-TRBB-713, Turbine Mezzanine, Fire Area TB-1, Revision 2
1PFP-TRBB-735, Turbine Operating Deck, Fire Area TB-1 & TG-1, Revision 1
2DG-07, Fire Drill Scenario, U2/Diesel Generator Building, dated May 22, 2013

2PFP-CNTB-735, Control Room & Computer Room, Fire Areas CB-3 & CB-4, Revision 4
2PFP-SRVB-730, Battery Rooms 2-1 & 2-3, Fire Areas SB-6 & SB-7, Revision 1
2PFP-SRVB-730, Battery Rooms 2-2 & 2-4, Fire Areas SB-8 & SB-9, Revision 0
Beaver Valley Power Station Unit 2 Fire Protection Safe Shutdown Report Addendum 39

Section 1R06: Flood Protection Measures

Procedures

2BVT 1.33.7, Flood Seal Visual Inspection, Revision 4
2OM-13.4.AAD, Refueling Water Storage Tank Off Normal, Revision 14
2OM-24.4.AAI, Primary Plant Demin Water Storage Tank Level Low, Revision 12
2OM-33.4.ABB, Aux Feed/Comp Clg Pump Deluge Valve Operation, Revision 1
2OM-9.4.AAJ, Safeguards Area Sump Level High, Revision 1

Work Orders

200562439

Miscellaneous

PRA-BV2-AL-R06, Internal Flooding Notebook, Revision 6

Section 1R07: Heat Sink Performance

Procedures

½-ADM-2106, River/Service Water System Control and Monitoring Program, Revision 6

Miscellaneous

½-ADM-2106.F01, Heat Exchanger Inspection Report for 2CHS-E25C, Revision 6

Section 1R11: Licensed Operator Requalification Program

Procedures

1OST-36.1, Diesel Generator No. 1 Monthly Test, Revision 66

Miscellaneous

1DRLS-E-2.009, Licensed Operator Training/Licensed Requalification Training, Revision 4.
1DRLS-ECA-0.0.001, Licensed Operator Training/Licensed Requalification Training, Revision 4.

Section 1R12: Maintenance Effectiveness

Procedures

BVPM-ER-3004, Maintenance Rule (MR) Program Supplemental Guidance, Revision 2
NOP-ER-3004, FENOC Maintenance Rule Program, Revision 2

Condition Reports

2011-04608	2015-00212	2015-13853	2016-07798
2012-16039	2015-00893	2015-15402	2016-08243
2013-07789	2015-01124	2015-16099	2016-09110
2013-13710	2015-02700	2016-00256	2016-09250
2013-16081	2015-05656	2016-00562	2016-10158
2013-19200	2015-05749	2016-00636	2016-11075
2014-07545	2015-06039	2016-01211	2016-11772
2014-10908	2015-06039	2016-02697	2016-14575
2014-11228	2015-07415	2016-02761	2017-00468
2014-12968	2015-11165	2016-03916	2017-04060
2014-13084	2015-13661	2016-05380	
2014-17009	2015-13769	2016-05966	

Miscellaneous

Maintenance Rule (a)(1) Evaluation Form, CR 2013-01117
 Maintenance Rule (a)(1) Evaluation Form, CR 2014-00035
 Maintenance Rule (a)(1) Evaluation Form, CR 2014-13084
 Maintenance Rule (a)(1) Evaluation Form, CR 2015-14472; CR 2015-15590
 Maintenance Rule (a)(1) Evaluation Form, CR 2016-01988
 Maintenance Rule (a)(1) Evaluation Form, CR 2016-02744
 Maintenance Rule (a)(2) Evaluation Form, CR 2012-01872; CR 2012-02974
 Maintenance Rule (a)(2) Evaluation Form, CR 2013-01117
 Maintenance Rule (a)(2) Evaluation Form, CR 2014-13084
 Maintenance Rule System Basis Document, Fire Protection System, Unit 1 System 33,
 Revision 10
 Maintenance Rule System Basis Document, Unit 1 System 29, Revision 3
 Maintenance Rule System Basis Document, Unit 2 System 36A, Revision 6
 Unit 2 Emergency Diesel Generators System Health Report, 2016-1
 Unit 2 System 29 Monthly Monitoring Spreadsheet, January 2017

Section 1R13: Maintenance Risk Assessments and Emergent Work ControlProcedures

1OST-33.10G, 1A Service Station Transformer Deluge Valve Test, Revision 10
 NOP-OP-1007, Risk Management, Revision 23

Miscellaneous

Beaver Valley Power Station Daily Status Report for February 16 and 17, 2017
 Beaver Valley Power Station Daily Status Report for February 7, 2017
 Beaver Valley Unit 1 Narrative Logs for January 24, 2017
 Beaver Valley Unit 1 Weekly Maintenance Risk Summary, for the Week of January 23, 2017,
 Revision 0
 Beaver Valley Unit 2 Narrative Logs for February 28, 2017
 Beaver Valley Unit 2 Weekly Maintenance Risk Summary, for the Week of February 6, 2017,
 Revision 0
 Beaver Valley Unit 2 Weekly Maintenance Risk Summary, for the Week of February 13, 2017,
 Revision 1
 Beaver Valley Unit 2 Weekly Maintenance Risk Summary, for the Week of February 27, 2017,
 Revision 0
 Beaver Valley Unit 2 Weekly Maintenance Risk Summary, for the Week of March 13, 2017,
 Revision 0

NOP-OP-1007-01, Risk Management Plan, Unit 1 1A SSST Deluge Test, Revision 0
 NOP-OP-1007-01, Risk Management Plan, Unit 2 Aux Bay Cleared for Cleaning, Revision 0
 Unit 1 Protected Equipment Log

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

1/2OM-53C.4A.75.1, Acts of Nature – Severe Weather, Revision 19
 1MSP-E-39-302, Vital Monthly Battery Inspection, Revision 15
 1OM-53A.1.F-0.3(ISS3), Heat Sink Status Tree, Revision 0
 1OM-53A.1.FR-H.1(ISS2), Response to Loss of Secondary Heat Sink, Revision 2
 1OM-53A.1.FR-H.2(ISS3), Response to Steam Generator Overpressure, Revision 0
 2OM-53A.1.F-0.3(ISS3), Heat Sink Status Tree, Revision 0
 2OM-53A.1.FR-H.1(ISS2), Response to Loss of Secondary Heat Sink, Revision 1
 2OST-36.1, Emergency Diesel Generator [2EGS*EG2-1] Monthly Test, Revision 73

Condition Reports

2015-12218	2017-01202	2017-01959
2017-01115	2017-01884	2017-01963

Work Orders

200631260

Drawings

13-0637-001-001, Flow Diagram- Main Steam, Revision 0
 13-0637-001-002, Main Steam – Main to Aux Feed Pump Turbine, Revision 1
 8700-RC-0021V, Turbine Exhaust Bypass and Missile Barrier, Revision 1

Miscellaneous

DSS-ISG-2016-01, Clarification of Licensee Actions in Receipt of Enforcement Discretion
 Per Enforcement Guidance Memorandum EGM 15-002, "Enforcement Discretion for
 Tornado-Generated Missile Protection Noncompliance, February 2016
 ECP-13-0637-01, Install a Missile Resistant Structure for the Unit 1 TDAFWP Exhaust Vent
 Stack, Revision 2
 EER 601087040, Evaluation of Latching Mechanism Unit 2 Fuel Building Door F-66-3
 RIS 2015-06, NRC Regulatory Issue Summary 2015-06, Tornado Missile Protection, June 2015
 Standing Order 17-001, Criteria for Opening Missile Shield Door A-35-5A, Revision 1
 Standing Order 17-003, Tornado Missile Shielding Heightened Awareness, Revision 0

Section 1R18: Plant Modifications

Procedures

½-ADM-2028, Temporary Configuration Control, Revision 12
 NOP-CC-2003, Engineering Changes, Revision 20
 NOP-WM-1003, Nuclear Maintenance Notification Initiation and Screening, Revision 10
 NOP-WM-9001, FIN, Minor, Toolpouch, Immediate, Urgent Maintenance, Revision 10

Condition Reports

2017-00868
 2017-00910
 2017-03263

Drawings

10080-E-5DG, Elementary Diagram – 4160V Primary Comp. Cool. Pump 2CCP-P21C, Sheet 1, Revision 9
10080-RE-8EC, Wiring Diagram 4KVS*2AE CUB 2E3 Sheet 3, Revision 18

Miscellaneous

NOP-WM-9001-04, Immediate/Urgent Maintenance Log (2CCP-P-21C will not trip from Control Room), Revision 0
Unit 2 Weekly Maintenance Risk Summary for the Week of January 23, 2017, Revision 2
Unit 2 Operations Log January 26, 2017

Section 1R19: Post-Maintenance Testing

Procedures

1MSP-36.46-E, 1DF 4KV Emergency Bus Loss of Voltage Relay 27-VF100 Functional Test, Revision 24
1OM-7.4.W, Placing the Spare/Standby Charging Pump into Operation, Revision 26
1OST-7.4, Centrifugal Charging Pump Test [1CH-P-1A], Revision 44
2OST-15.2, Primary Component Cooling Water Pump [2CCP*P21B] Test, Revision 60
2OST-20.2, Fuel Pool Cooling Pump [2FNC*P21A] Operability Test, Revision 7
2OST-7.6, Centrifugal Charging Pump [2CHS*P21C], Revision 37

Condition Reports

2017-00829

Work Orders

200471797	200624638
200557039	200629882
200557826	200629883
200573379	200630517
200584492	200665710
200607618	200671980
200614691	200678089

Miscellaneous

ECP-11-0426-000, Replacement Relay for BV-27-VF1100, Revision 0
ECP-11-0426-002, Replace Relay BV-27-VF100, 3 Phase High Speed UV Undervoltage Relay, Revision 0

Section 1R22: Surveillance Testing

Procedures

1/2OM-48.1.I, Technical Specification Compliance, Revision 34
1OST-24.2, Motor Driven Auxiliary Feed Pump Test [1FW-P-3A], Revision 55
1OST-36.2, Diesel Generator No. 2 Monthly Test, Revision 76
2MSP-24.01-I, 2FWS-L474, Loop 1 Narrow Range Steam Generator Water Level Channel I Test, Revision 10
2OST-24.2, Motor Driven Auxiliary Feed Pump [2FWE*P23A] Test, Revision 40
2OST-24.4, Steam Driven Auxiliary Feed Pump [2FWE*P22] Quarterly Test, Revision 85

Condition Reports

2015-11477	2017-02539
2016-00530	2017-02937
2017-01225	2017-02958
2017-01427	2017-02985
2017-02231	2017-02986
2017-02266	2017-02990
2017-02319	2017-02991
2017-02424	

Work Orders

200633214

Miscellaneous

VT-17-1010, Visual Examination System Leakage Report, PT-2-Leakage Package 10B dated March 16, 2017

Section 1EP6: Drill Evaluation

Miscellaneous

1DRLS-E-2.009, Licensed Operator Training/Licensed Requalification Training, Revision 4
 1DRLS-ECA-0.0.001, Licensed Operator Training/Licensed Requalification Training, Revision 4

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures:

NOBP-OP-4113, ALARA Design Reviews, Revision 01
 NOBP-OP-4109, ALARA Post Outage Report, Revision 01
 NOP-OP-4005, ALARA Program, Revision 05
 NOP-OP-4101, Access Controls for Radiologically Controlled Areas, Revision 12
 NOP-OP-4102, Radiological Postings, Labeling, and markings, Revision 12
 NOP-OP-4107, Radiation Work Permit (RWP), Revision 15
 NOP-OP-4502, Control of Radioactive Material, Revision 04
 NOP-OP-4701, Radiological Survey Documentation, Revision 01

Condition Reports:

2016-10142
 2017-00092
 2017-00425
 2017-01450
 2017-01739

Surveys:

BV-M-20170205-2	2/5/17 - 1810	1/ PAB	722	Charging Pump "C"
BV-M-20170205-3	2/5/17 - 2041	1/ PAB	722	Charging Pump "A"
BV-M-20170205-4	2/5/17 - 1735	1/ PAB	722	Charging Pump "B"
BV-M-20170215-3	2/13/17 - 2000	2/ PAB	735	Charging Pump "B"
BV-M-20170215-4	2/13/17 - 2040	2/ PAB	735	Charging Pump "A"
BV-M-20170215-5	2/13/17 - 2020	2/ PAB	735	Charging Pump "C"

Section 2RS2: Occupational ALARA Planning and ControlsProcedures:

NOP-OP-4005, ALARA Program, Revision 06

RWP/ALARA Plans

<u>RWP No.</u>	<u>Description</u>	<u>ALARA #</u>
1-16-116-401	Primary Side Steam Generator Eddy Current	16-1-41
1-16-116-4018	Reactor Disassembly/Reassembly	16-1-21
1-16-116-4028	Scaffolding – Construction	16-1-33
1-16-116-4065	CET Repair/Replace/Test	16-1-66
1-16-116-4069	Cut Out and Cap KEROTEST Valves “B” Cubicle	16-1-65
1-16-116-4070	Cut Out and Cap KEROTEST Valves “C” Cubicle	16-1-65

Section 2RS3: In-Plant Airborne Radioactivity Control and MitigationProcedures:

½-EPP-IP-3.4, Emergency Respiratory Protection, Revision 14

½-HPP-3.10.022, Emergency SCBA Inspection and Usage, Revision 13

NOP-OP-4702, Air Sampling, Revision 05

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LIST OF ACRONYMS

AC	alternating current
ALARA	as low as reasonably achievable
ASME OM Code	American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants
CAP	corrective action program
CFR	<i>Code of Federal Regulations</i>
CR	condition report
EDG	emergency diesel generator
FENOC	FirstEnergy Nuclear Operating Company
IMC	Inspection Manual Chapter
LHSI	low head safety injection
MDAFW	motor driven auxiliary feedwater
NCV	non-cited violation
NOUE	notice of unusual event
NRC	Nuclear Regulatory Commission
OPC	open phase condition
PRA	probabilistic risk assessment
RG	Regulatory Guides
RHR	residual heat removal
SCBA	self-contained breathing apparatus
TDAFW	turbine driven auxiliary feedwater
TI	temporary instruction
UFSAR	Updated Final Safety Analysis Report
UV	undervoltage
VAC	volts alternating current
WANO	World Association of Nuclear Operators