



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

May 7, 2015

Mr. Eric A. Larson  
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 – NRC INTEGRATED INSPECTION  
REPORT 05000334/2015001 AND 05000412/2015001 AND INDEPENDENT  
SPENT FUEL STORAGE INSTALLATION (ISFSI) REPORT NO.  
07201043/2015001

Dear Mr. Larson:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Beaver Valley Power Station, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on April 9, 2015 with C. McFeaters, Director of Site Operations, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The NRC inspectors did not identify any findings or violations of more than minor significance.

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

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Sincerely,

*/RA/*

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

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

Enclosure:  
Inspection Report 05000334/2015001, 05000412/2015001, and 07201043/2015001  
w/Attachment: Supplementary Information

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**U.S. NUCLEAR REGULATORY COMMISSION**

## REGION I

Docket Nos.: 50-334, 50-412

License Nos.: DPR-66, NPF-73

Report No.: 05000334/2015001, 05000412/2015001, and 07201043/2015001

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station (BVPS), Units 1 and 2

Location: Shippingport, PA 15077

Dates: January 1, 2015 to March 31, 2015

Inspectors: J. Krafty, Senior Resident Inspector  
B. Reyes, Resident Inspector  
B. Bollinger, Project Engineer  
M. Davis, Senior Safety Inspector  
S. Hammann, Senior Health Physicist  
P. Kaufman, Senior Reactor Inspector  
O. Masnyk-Bailey, Health Physicist  
C. Morell, Storage Safety & Transportation Inspector  
S. Rich, Acting Senior Resident Inspector, Vermont Yankee

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

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## **SUMMARY**

IR 05000334/2015001, 05000412/2015001; 01/01/2015 – 03/31/2015; Beaver Valley Power Station, Units 1 and 2; Integrated Report.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors.

The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

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**

#### 1R01 Adverse Weather Protection (71111.01 – 1 sample)

##### .1 Readiness for Impending Adverse Weather Conditions

###### a. Inspection Scope

The inspectors reviewed FENOC's preparations for the onset extreme cold weather on January 6, 2015. The inspectors reviewed the implementation of extreme cold weather protection procedures before the onset of and during this adverse weather condition. The inspectors walked down Unit 1 and Unit 2 refueling water storage tanks to ensure system availability. The inspectors verified that operator actions defined in FENOC's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness for adverse weather response with operations personnel. Documents reviewed for each section of this inspection report are listed in the attachment.

###### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment

##### .1 Partial System Walkdowns (71111.04 – 4 samples)

###### a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 1 river water 'B' train while the 'A' train was out of service for maintenance on January 29, 2015
- Unit 2 'A' charging train while the 'B' train was out of service for scheduled maintenance on February 11, 2015
- Unit 2 'A' service water train while the 'B' train was out of service for surveillance testing on February 13, 2015
- Unit 2 'B' quench spray train while the 'A' train was out of service for surveillance testing on March 3, 2015

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, technical specifications, work orders, condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their 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's staff had properly identified equipment issues and entered them into the corrective action program for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 6 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 control room heating, ventilating, and air conditioning equipment room, fire area CR-2, on January 15, 2015
- Unit 2 primary auxiliary building, fire area PA-5, on January 23, 2015
- Unit 2 main feedwater regulating valve room, fire area SB-5, on January 30, 2015
- Unit 2 single access facility, fire area WH-2, on February 4, 2015
- Unit 1 west cable vault, fire area CV-1, on February 4, 2015
- Unit 2 battery room 2-5, fire area SB-10, on March 6, 2015

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 March 18, 2015, that involved a fire in the Unit 1 diesel driven air compressor. 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 specific attributes as follows:

- 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 – 2 samples)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and the site flooding analysis to assess susceptibilities involving internal flooding. The inspectors also reviewed the corrective action program to determine if FENOC identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on the Unit 2 fan room to verify the adequacy of watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

No findings were identified.

.2 Annual Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could affect risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manholes EMH-8A and EMH-8B containing service water and river water cables, to verify that the cables

were not submerged in water, that cables and splices appeared intact, and to observe the condition of cable support structures. When applicable, the inspectors verified proper sump pump operation and verified level alarm circuits were set in accordance with station procedures and calculations to ensure that the cables will not be submerged.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed Unit 2 licensed operator simulator training on February 9, 2015, which included loss of the 2A system station service transformer, a reactor coolant system (RCS) leak, and a loss of secondary heat sink. 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 1 containment entry preparations on March 12, 2015. Inspectors also observed Unit 1 RCS leakage calculations, response to a failed open temperature control valve on the charging system, and an RCS dilution on March 17, 2015. The inspectors observed evolution briefings prior to these operations to verify that the briefings met the criteria specified in NOP-OP-1002, "Conduct of Operations," Revision 9. Additionally, the inspectors observed operator 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 – 1 sample)a. Inspection Scope

The inspectors reviewed the Unit 2 chemical and volume control system on February 5, 2015, to assess the effectiveness of maintenance activities on structure, system, or component (SSC) performance and reliability. The inspectors reviewed system health reports, maintenance work orders, 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 10 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.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 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.

- Scheduled surveillance testing of the Unit 2 'C' service water pump and 'C' charging pump on January 9, 2015
- Emergent work on the Unit 2 service water system due to a leak on the turbine plant component cooling water bypass line on January 12, 2015
- Planned maintenance on the Unit 2 'B' quench spray pump, 2-2 emergency diesel generator, and the 4 and 6 345 kilovolt buses on January 22, 2015
- Yellow risk for Unit 2 alternate intake bay cleaning on January 23, 2015
- Yellow risk for Unit 1 'B' river water pump post-maintenance testing on February 13, 2015

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:

- CR 2015-01082, Leak on service water supply line to the Unit 2 'B' control room air conditioning unit on January 26, 2015
- CR 2015-01196, Slow stroke time for valve 2MSS\*SOV105C, steam admission valve for the Unit 2 turbine-driven auxiliary feedwater (TDAFW) pump on January 28, 2015
- CR 2015-01749, Unit 2 pressurizer liquid space sample valve exceeded American Society of Mechanical Engineers acceptable range on both strokes on February 11, 2015
- CR 2015-01854 and CR 2015-01819, Unit 1, 1-1 emergency diesel generator lube oil circulating pump on February 18, 2015
- CR 2015-01928, Battery acid leak on Unit 1 station battery 1-3 between cells 26 & 27 on February 19, 2015
- CR 2015-02673, Swelling of positive posts and cracks in jar lids on Unit 1 battery 1-3 on March 3, 2015
- CR 2015-01719 and CR 2015-03104, Unit 2 personnel airlock containment door equalizing valves tested in non-accident direction on March 10, 2015

The inspectors selected these issues based on the risk significance of the associated components and systems. 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. 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. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 3 samples)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the Unit 2 temporary modification, Engineering Change Package 14-0734-001, "Temporary Modification to Add Fluid From 2CHS-TK21A/B to 2SIS-TK21B," Revision 3, to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results, and conducted field walkdowns of the modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

No findings were identified.

.2 Permanent Modifications (Radiation Monitor Replacement)

a. Inspection Scope

The inspectors evaluated a modification that replaced the Unit 1 special particulate, iodine, and noble gas radiation monitors. The radiation monitors are used by the control room to monitor dose releases and to perform dose forecasting and are equipment important to emergency response. 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 design change, including replacement of the reactor building/supplemental leakage collection and release system vent monitor, auxiliary building/ventilation vent exhaust monitor, gaseous waste/process vent monitor, liquid water blowdown monitor, and control room operator console. The inspectors also reviewed revisions to the emergency action levels (EALs) and interviewed engineering and operations personnel to ensure the procedure could be reasonably performed.

b. Findings

No findings were identified.

.3 Permanent Modifications (Spent Fuel Pool Cooling Modification)

a. Inspection Scope

The inspectors evaluated a modification to the Unit 1 spent fuel pool cooling and purification 2" blind flange branch from line 6"-FC-9-152-Q3 downstream of the train 'A' spent fuel pool heat exchanger implemented by engineering change package 13-0635. The modification extends an existing line with a blind flange and installs a new branch line with two isolation valves, an expander, and a Storz connection to provide a secondary connection point for the Unit 1 Diverse and Flexible Coping Strategies phase 2, spent fuel pool cooling strategy. The inspectors verified that the design bases, licensing basis, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the design change including revisions to system drawings and calculations for the qualification of new piping supports. The inspectors also interviewed

plant personnel in regards to the post maintenance testing and performed a walkdown of the modification to ensure the modification was installed correctly and the system would perform as designed.

b. Findings

No findings were identified

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

Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Unit 1 '1A' river water pump seal replacement and discharge check valve maintenance on January 12, 2015
- Steam admission valve relay replacement for the Unit 2 TDAFW pump on January 27, 2015
- Unit 1, 1-1 emergency diesel generator air start motors hose replacements and emergency diesel generator building exhaust fan breaker replacement on January 28, 2015
- Unit 1 power supply replacements for the channel 1 Delta T Tavag instrument on January 30, 2015
- Unit 1 'A' motor driven auxiliary feed water pump clean and lubrication on February 5, 2015
- Unit 2 'A' service water pump clean and lubrication and vacuum break check valve inspection on February 6, 2015
- Unit 2 residual heat release valve, 2SVS-HCV104, installation of passive electromagnetic interference/radio frequency interference filter on March 23, 2015
- Unit 1 nuclear instrumentation power range channel N41 25 volt and high voltage power supply replacements on March 31, 2015

a. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 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 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:

- 1MSP-21.05-I, P-1MS485, Loop 2 Steamline Pressure Protection Channel III Test, Revision 15 on January 7, 2015
- 2OST-1.11A, Safeguards Protection System Train A Blockable Test, Revision 16 on January 26, 2015
- 1OST-13.1, Quench Spray Pump [1QS-P-1A] Test, Revision 39 on February 22, 2015 (IST)
- 2OST-1.12E, Safeguards Protection System Train B Miscellaneous Go Test, Revision 24 on March 9, 2015
- 1OST-6.2A, Computer Generated RCS Water Inventory Balance, Revision 26 on March 17, 2015 (RCS Leak Detection)

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)a. Inspection Scope

FENOC implemented various changes to the Beaver Valley EALs, Emergency Plan, and Implementing Procedures. FENOC had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, Emergency Plan, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 10 CFR 50.47(b) and the requirements of 10 CFR 50 Appendix E.

The inspectors performed an in-office review of all EAL and Emergency Plan changes submitted by FENOC as required by 10 CFR 50.54(q)(5), including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential reductions in effectiveness of the Emergency Plan. This review by the inspectors was not documented in an NRC Safety Evaluation Report and does not constitute formal

NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria.

#### Findings

No findings were identified.

#### 1EP6 Drill Evaluation (71114.06 – 1 sample)

##### Training Observations

##### a. Inspection Scope

The inspectors observed a simulator training evolution for Unit 2 licensed operators on February 9, 2015, 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 corrective action program.

##### b. Findings

No findings were identified.

#### **4. OTHER ACTIVITIES**

#### 4OA1 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, 2014, through December 31, 2014.

- 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, maintenance planning schedules, CRs, 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 – 4 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 that FENOC entered issues into the corrective action program 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 corrective action program and periodically attended CR 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, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by FENOC outside of the corrective action program, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or corrective action program backlogs. The inspectors also reviewed individual issues identified during the NRC's daily CR review (Section 4OA2.1). The inspectors reviewed the FENOC performance assessment report for the period September 2014 through January 2015, conducted under NOBP-LP-2023, "Performance Assessment," and selected fleet oversight audit reports for 2014 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 determined that the performance assessment report followed the guidance in procedure NOBP-LP-2023 in that new and closed elevations and escalations for the reporting period were identified as well as elevations and escalations remaining open. Additionally, performance was rated for each of the ten functional areas including examples of improvement in areas as well as identifying areas where gaps exist. The inspectors determined that, in general, FENOC has been identifying adverse trends in the organization. The inspectors have noted adverse trends in two areas: inadequate implementation of the risk management procedure for elevated risk and inadequate evaluation of degraded conditions in condition reports that have not been formally identified by FENOC. The inadequate implementation of the risk management procedure has been discussed at several levels in the organization every quarter since July 2014 and is evidenced by a non-cited violation in the 2014 fourth quarter integrated inspection report (2014005) and a failure to post the 'A' river water pump as protected when racking in the 'B' river water pump in February 2015. FENOC entered this issue into their corrective action program as CR 2015-04793.

The inspectors' identified the trend of inadequate evaluation of degraded conditions through the review of the following condition reports:

- CR 2014-16599, Unit 2 TDAFW solenoid valves, the engineering evaluation incorrectly assumed D/P across valve was cause of slow stroke time on first stroke.
- CR 2014-17079, Unit 1 river water leak on 24" header to Recirculation Spray (RSS) pumps, initial leak rate calculation of 13.6 gpm was incorrect. It was subsequently corrected to 126 gpm.
- CR 2015-01719, Personnel Airlock Equalizing Valve was not tested in accident direction and was incorrectly concluded that no further action was necessary.
- CR 2015-01928, Acid leak between cell 26 & 27 on Unit 1 Battery 3. The composition of liquid and source was not determined prior to operability assessment.

These issues are minor because none of the conditions resulted in the inoperability of safety related equipment. FENOC entered the issue into their corrective action process, CR 2015-04934.

### .3 Annual Sample: Critical Preventive Maintenance (PM) Deferrals

#### a. Inspection Scope

The inspectors performed a review of critical PM deferrals on safety related systems for both units. The review's focus was to determine the number of deferred critical PMs, if the deferrals were approved in accordance with FENOC procedures, and if the deferrals were adequately justified considering the risk and consequences. The inspectors reviewed system health reports, PM work orders, and PM deferrals. The inspectors also interviewed system engineers in order to better understand the impact of the deferrals.

b. Findings and Observations

No findings were identified.

The inspectors identified that Unit 1 had 45 critical PM deferrals on safety systems and Unit 2 had nine. PM deferrals generally followed the requirements of NOP-WM-3001, "Work Management PM Process," in that the deferrals were technically evaluated, the risk was determined using the probability and consequence of failure, and had the required approvals. Also PMs that had been deferred more than once had CRs written as required by procedure. Additionally the inspectors conducted a more detailed review of PM deferrals from four systems: Unit 1 charging, safety injection, and RSS, and Unit 2 auxiliary feedwater (AFW). Of the eight PM deferrals reviewed, five had been deferred more than once. The 23A AFW pump motor refurbishment is a 15 year PM that has not been performed since plant start-up in 1987, has been deferred three times since 2009 and is currently scheduled for 2R18 in October 2015. Predictive maintenance has not shown any significant degradation of this motor. The 1B RSS pump motor refurbishment is a 30 year PM that has not been performed since plant startup in 1976, has been deferred three times since 2007, and is currently scheduled for 1R23 in April 2015. Bridge and meggar testing have shown a declining trend on stator insulation resistance over several years. The inspectors noted that the risk of failure for two deferrals: BV-DF-11-0091, RSS 1B motor refurbishment, and BV-DF-13-0226, internal inspection of valve 1CH-188, was determined by FENOC to be unacceptable but was recommended for approval. The inspectors determined that this was not in accordance with NOP-WM-3001, which states that deferring the PM shall not be recommended for an unacceptable risk assessment determination. The inspectors determined that this was a performance deficiency that was minor in nature since it was a FENOC administrative requirement that had no safety significance. The PM deferrals were subsequently approved based a review of the technical justification as allowed by procedure. FENOC entered the issue into their corrective action process, CR 2015-04944.

.4 Annual Sample: Out-of-Calibration Safety-Related Electrical Components

a. Inspection Scope

The inspectors performed an in-depth review of the FENOC staff's identification, evaluation and corrective actions related to the identification of out-of-calibration safety-related power supplies and relays. The inspectors assessed the problem identification threshold, extent of condition reviews, and the prioritization and timeliness of corrective actions to determine whether FENOC personnel were appropriately identifying, characterizing, and correcting problems associated with calibration deficiencies of electrical components and whether the planned or completed corrective actions were appropriate.

The inspectors reviewed a sample of relevant corrective action documents, CRs and implementing test control procedures, noted in the Attachment to this report and discussed the out-of-calibration of safety-related electrical components with cognizant technical personnel to assess the effectiveness of the planned, scheduled, and completed corrective actions to resolve the identified calibration deficiencies. The inspectors compared the actions taken to verify compliance with FENOC's corrective action program procedure and 10 CFR 50, Appendix B requirements.

b. Findings and Observations

No findings were identified.

The inspectors verified the Instrument and Controls (I&C) calibration procedures complied with the Test Control Program requirements and when a safety-related power supply breaker or relay set points drifted outside their specified tolerance band a condition report was initiated and evaluated by FENOC's technical staff. The inspectors verified testing records and trending data of safety-related power supplies and relays met the acceptance parameters contained in engineering documents.

The inspectors determined that the CRs reviewed were written to document adjustments to power supplies, relays, and instrumentation that deviated from the expected values in the Maintenance Test Surveillance procedures. FENOC's I&C technicians identified power supply drifting was recurring on some nuclear instrumentation, solid state protection, and rod control electrical components and increased the monitoring frequency of these critical applications. The inspectors determined that the corrective actions taken were to adjust the electrical components back into calibration or replace the deficient component. The inspectors verified that there was no consequence to the plants as no equipment operability or functionality was affected by these electrical components (in-service or during surveillances) at BVPS and the power supplies were calibrated each time to meet the voltage requirements.

The inspectors determined the extent-of-condition reviews, previous occurrence, generic implications, and common cause evaluations were adequately performed and technically accurate. The inspectors also found that FENOC's Maintenance I&C technical staff had issued operating experience to the industry of the drifting low voltage issue associated with a specific type of 48 volts direct current power supply.

The inspectors reviewed FENOC's corrective actions to ensure timely identification of out-of-calibration deficiencies of safety-related power supplies, relays, and instrumentation. The inspectors determined FENOC's overall response to identify the causes of the out-of-calibration and drifting of these electrical components, evaluate the impact, and initiate corrective actions met the standards in FENOC's corrective action program. The scope and timing of the corrective actions was determined to be commensurate with the safety significance of the problems.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 3 samples)

.1 (Closed) Licensee Event Report (LER) 05000334/2014-001-01: Beaver Valley Unit 1 Reactor Trip due to Main Unit Transformer Failure

This LER supplement provides additional information gained from further internal inspections of the transformer. The original LER was previously documented in NRC inspection report 05000334/2014003. The supplement stated that due to the extent of damage, the exact cause of the dielectric breakdown could not be identified. Possible causes include migration of contamination due to overheated oil, a latent manufacturing defect, and/or static electrification. The enforcement aspects of this issue were previously documented in inspection report 05000334/2014002. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

- .2 (Closed) LER 05000334/2014-003-00 and 05000412/2014-003-00: Operation Outside of the Pressure and Temperature Limits Report During Isolated RCS Loop Vacuum Fill and LER Withdrawal Letter dated November 18, 2014

On February 26, 2014, during a review of external operating experience, FENOC discovered that they had previously operated outside of the limits specified in the Pressure and Temperature Limits Report during RCS loop vacuum fill operations. Specifically, the RCS loops were placed under a vacuum and the pressure/temperature limits figure is not defined for pressures less than 0 psig. The NRC's Office of Nuclear Reactor Regulation has determined that, although operation below 0 psig was not considered when licensing the plant, there are no safety concerns with operating at a vacuum as long as temperatures remain to the right of the pressure/temperature limits curve. FENOC operated to the right of the pressure/temperature limits curve while at vacuum conditions. NRR has also determined that this is not a violation of the technical specifications. The inspectors did not identify any issues during the review of the LER and LER withdrawal letter. This LER is closed.

- .3 (Closed) LER 05000412/2014-006-00: Unplanned Automatic Actuation of both Standby Service Water Pumps

On December 9, 2014, Unit 2 experienced an unplanned automatic start of both standby service water pumps. As an equipment clearance was being restored, the 'A' pump started automatically. Within seconds, the 'B' pump started due to a brief low header pressure condition that occurred while the 'A' pump discharge valve cycled open prior to the 'A' pump reaching its rated speed and discharge pressure. Operations confirmed that the standby pumps were not required to be running since the safety related service water headers were being supplied by the normally running service water pumps and secured the standby pumps. The inspectors did not identify any issues during the review of the LER. This LER is closed

#### 4OA5 Other Activities

- .1 Preoperational Test Program (60854 and 60854.1 – 1 sample)

a. Inspection Scope

The inspectors evaluated BVPS' performance during NRC observed pre-operational dry run activities that were performed in order to fulfill requirements in Certificate of Compliance (CoC) No. 1004, Amendment 13, Condition 8. The inspectors observed BVPS's dry run activities on March 3 – 4, 11 – 12, and 16, 2015.

During the dry run activities the inspectors observed cask loading and cask movement activities to determine whether the BVPS staff and contractors had developed the capability to properly load and move the dry shielded canister (DSC) to be used in storage of spent fuel at BVPS. The inspectors observed movement of a dummy fuel assembly into eight locations in the DSC, down-ending the transfer cask (TC)/DSC onto the transporter, transporting the TC/DSC to the Independent Spent Fuel Storage Installation (ISFSI) pad, alignment of the TC/DSC to a horizontal storage module (HSM), inserting a DSC into a HSM, and retrieving a DSC from a HSM.

The inspectors attended BVPS pre-job briefings to assess their ability to identify critical steps of the evolution, potential failure scenarios, and human performance tools to prevent errors. The inspectors reviewed the training program and training records of personnel assigned to ISFSI activities. The inspectors reviewed DSC loading, unloading, and processing procedures to ensure that they contained commitments and requirements specified in the CoC, technical specifications, Final Safety Analysis Report (FSAR), and 10 CFR Part 72. Also, the inspectors reviewed fuel selection procedures to ensure they appropriately incorporated the requirements in the technical specifications and confirmed that BVPS did not plan to load any damaged fuel assemblies during their initial campaign.

The inspectors reviewed radiation protection procedures and radiation work permits associated with the proposed ISFSI loading campaign. The inspectors also reviewed the radiological controls which would be established during a DSC loading campaign.

b. Findings

No findings were identified.

.2 Initial Loading of the ISFSI (60855 and 60855.1 – 1 sample)

a. Inspection Scope

On March 18 – 22, and 25 – 26, 2015, the inspectors observed and evaluated BVPS's loading of the first DSC associated with their initial ISFSI dry cask campaign. The inspectors also reviewed the licensee's planned activities related to long-term operation and monitoring of the ISFSI. The inspectors verified compliance with the CoC, technical specifications, regulations, and station procedures.

The inspectors observed the heavy load movement of the TC/DSC to the cask pit in the spent fuel pool and fuel assemblies being loaded into the DSC. The inspectors also observed DSC processing operations including: installation of the DSC inner top cover, removal of the annulus seal, installation of the automated welding system, welding, non-destructive weld examinations, draining, vacuum drying, helium backfill, decontamination, and surveying. The inspectors observed the down-ending of the TC/DSC, movement of the DSC to the ISFSI pad, and alignment of the TC/DSC with the HSM. During performance of these activities, the inspectors verified that procedure use, communication, and coordination of ISFSI activities met established BVPS standards and requirements. The inspectors also reviewed the actions taken by BVPS when they encountered difficulties with the insertion of the DSC into the HSM (CR 2015-04055-1).

The inspectors reviewed BVPS' program associated with fuel characterization and selection for storage. The inspectors reviewed the first cask fuel selection package, including alternate fuel assemblies, to verify that the licensee was loading fuel in accordance with the CoC, technical specifications, and procedures. Inspectors reviewed a recording made of the fuel assemblies loaded into the first DSC to ensure the loading was in accordance with BVPS's loading plan.

The inspectors observed radiation protection technicians as they performed surveys and provided job coverage for the cask loading workers. The inspectors reviewed survey data maps and radiological records from the first DSC loading to confirm that radiation

survey levels measured were within limits specified by the technical specifications and consistent with values specified in the FSAR.

The inspectors performed a walk-down of the heavy haul path and toured the ISFSI pad to assess the material condition of the pad and the HSMs. The inspectors also verified that transient combustibles were not being stored on the ISFSI pad or the vicinity of the HSMs. In addition, the inspectors confirmed that transient combustible materials entry onto the ISFSI pad was controlled in accordance with procedures.

The inspectors reviewed corrective action reports and the associated follow-up actions that were generated since BVPS started planning for their initial ISFSI campaign to ensure that issues were entered into the corrective action program, prioritized, and evaluated commensurate with their safety significance.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On April 2, 2015, the team presented the ISFSI Inspection results via telephone to W. Cothen, BVPS Regulatory Compliance Manager. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

On April 9, 2015, the inspectors presented the Quarterly Inspection results to C. McFeaters, Directors of Operations, 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

E. Larson	Site Vice President
C. McFeaters	Director of Site Operations
M. Adams	Shift Manager
B. Bartko	Shift Manager
B. Boyle	Superintendent of Nuclear Construction Services
G. Caccani	10CFR50.59 Program Manager
W. Cothen	Regulatory Compliance Manager
A. Crotty	Supervisor, Electrical and I&C Systems
K. Deberry	System Engineer
A. Delmonico	Maintenance Supervisor
M. Dzumba	Engineer, Electrical and I&C Systems
M. Gorham	System Engineer
T. Hayward	Manager, Work Management
D. Hecht	Engineer, Engineering Programs
D. Hughes	Reactor Operator
S. James	RP Technician
M. Jansto	System Engineer
D. Jones	IST Program Engineer
K. Kemmerle	RP Supervision
J. Kinest	Work Week Manager
T. King	Engineer, Electrical and I&C Systems
D. McBride	Engineer
K. McIntyre	ISFSI Project Manager
J. Miller	Fire Marshall
A. Odudo	Electrical/I&C Engineer
C. O'Neill	Supervisor, Engineering Programs
N. Rodland	Supervisor, I&C
S. Sawtschenko	Emergency Preparedness Manager
B. Sepelak	Supervisor, Regulatory Compliance
D. Sharbaugh	Outage Manager
K. Sloan	Shift Manager
J. Sheetz	On-Line PRA Assessor
M.D. Smith	Unit Supervisor
S. Vicinie	Supervisor, Fleet Oversight
G. Westbrook	Design Engineering
M. Whitfield	Dry Cask Shift Lead

Areva TN

S. Bostic	Project Coordinator
K. Ewell	Cask Lead
M. Williams	Director of Field Operations

## LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

### Closed

05000334/2014-001-01	LER	Beaver Valley Unit 1 Reactor Trip due to Main Unit Transformer Failure (Section 4OA3)
05000334/2014-003-00 05000412/2014-003-00	LER	Operation Outside of the Pressure and Temperature Limits Report During Isolate Loop Vacuum Fill (Section 4OA3)
05000412/2014-006-00	LER	Unplanned Automatic Actuation of both Standby Service Water Pumps (Section 4OA3)

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### Procedures

1/2OST-45.1, Extreme Cold Weather Protection Verification, Revision 0

#### Condition Reports

2015-00291

### **Section 1R04: Equipment Alignment**

#### Procedures

1OM-30.3.A, System and Component Arrangement, Revision 8

1OM-30.3.B.1, Valve list – 1RW, Revision 48

2OM-7.3.B.1, Valve List – 2CHS, Revision 27

2OM-7.3.C, Power Supply and Control Switch List, Revision 15

2OM-13.3.A, System and Component Arrangement, Revision 6

2OM-13.3.B.1, Valve List – 2QSS, Revision 11

2OM-13.3.C, Power Supply and Control Switch List, Revision 9

2OM-30.3.B.1, Valve List - 2SWS, Revision 45

#### Miscellaneous

RM-0407-001A, Valve Oper No Diagram Chemical and Volume Control, Revision 22

RM-0413-002, Valve Oper No Diagram Quench Spray System, Revision 20

RM-0430-001, Valve Oper No Diagram Service Wtr Supply & Distribution, Revision 33

RM-0430-002, Valve Oper No Diagram Service Water Primary Cooling, Revision 42

### **Section 1R05: Fire Protection**

#### Procedures

1/2-ADM-1900, Fire Protection Program, Revision 35

1/2-ADM-1901, Fire Protection Pre-Fire Plan Administrative Control, Revision 3

1/2-ADM-1902, Fire Brigade, Revision 11

1PFP-SFGB-735-West Cable Vault Fire Area CV-1, Revision 2  
1PFP-SRVB-713-Control Room HVAC Equipment Room CR-2, Revision 0  
2OST-33.15A, Fire Extinguisher Inspection, Revision 9  
2PFP-SRVB-780-Main Feed Reg Valve Room Fire Area SB-5, Revision 0  
2PFP-WHBX-774-Single Access Facility Fire Area WH-2, Revision 1  
2PFP-SRVB-760-Battery Room 2-5 Fire Area SB-10, Revision 0

Miscellaneous

Fire Protection Safe Shutdown Report BVPS Unit 2, Revision 38

**Section 1R06: Flood Protection Measures**

Miscellaneous

10080-N-868, PRA Internal Flooding Scenario for BVPS Unit 2 Service Water, Revision 0  
1/2MI-75-MANHOLE-1E, Inspection of Manholes for Water Induced Damage, Revision 10  
211-N-265, Flood Analysis Outside Containment, Revision 6

**Section 1R11: Licensed Operator Regualification Program**

Miscellaneous

2LOCT-FR-H.1.001, License Operator Training/Licensed Regualification Training, Revision 0  
NOP-LP-2601, Procedure/Work Instruction Use and Adherence, Revision 5  
NOP-OP-1002, Conduct of Operations, Revision 9

**Section 1R12: Maintenance Effectiveness**

Condition Reports

2012-14791    2012-14793    2012-15239    2012-15631    2012-17036    2012-17503  
2013-08676    2013-09725    2013-10059

Miscellaneous

Unit 2 Chemical and Volume Control System Health Report, 2014-1  
Unit 2 Chemical and Volume Control System Maintenance Rule Basis Document, Revision 5

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Condition Reports

2015-00395    2015-00620    2015-00736

Miscellaneous

Weekly Maintenance Risk Summary for the Week of January 5, 2015, Revision 7  
Weekly Maintenance Risk Summary for the Week of January 19, 2015, Revision 0

Work Orders

200539126

**Section 1R15: Operability Determinations and Functionality Assessments**

Procedures

1MSP-E-39-302, Vital Bus Monthly Battery Inspection, Revision 13  
1MSP-39.08-E, Battery No. 1-3 Inspection and Interconnection Resistance Check, Revision 9

Condition Reports

2015-01819 2015-01854

**Section 1R18: Plant Modifications**Procedures

1MSP-43.58-I, RM-GW109 Gaseous Waste Disposal Blower Discharge Radiation Monitor Calibration, Revision 19  
 1MSP-43.59-I, RM-VS110 Reactor Bldg/SLCRS Radiation Monitor Calibration, Revision 21  
 1MSP-43.60-I, RM-1VS-109 Ventilation Vent Radiation Monitor Calibration, Revision 23  
 1OST-43.7, Noble Gas Monitors Functional Test (PING), Revision 14  
 1OST-43.7A, Alternate Noble Gas Monitor Functional Test, Revision 11  
 1OST-43.9A, Liquid and Gaseous Effluent Monitoring Instrumentation Channel Source Check, Revision 7  
 14-0734-000, Reference Documents for ECP-14-0734 – Temporary Modification to Add Fluid from 2CHS-TK21A/B to 2SIS-TK21B, Revision 2  
 14-0734-001, Implementation Documents for ECP-14-0734 – Install a Temporary System to Add Fluid from 2CHS-TK21A/B to 2SIS-TK21B, Revision 3  
 14-0734-001 RM-0411-002, TDUN for ECP-14-0734 RM-0411-002 Rev 19, Revision 0  
 14-0734-002 RM-0407-002, TDUN for ECP-14-0734 RM-0407-002 Rev 19, Revision 0

Condition Reports

2014-10036	2014-10776	2014-15990	2015-01261	2015-01731	2015-01753
2015-01805	2015-02326	2015-02574	2015-02743	2015-02827	2015-02903
2015-03098	2015-03918	2015-04710			

Maintenance Orders/Work Orders

200513236 200513237 200513238 200597555

Miscellaneous

ECP 10-0150-000, Replacement of BV1 Effluent Radiation Monitoring System, Revision 3  
 ECP 13-0635-001, FLEX – Modify 2" blind flange branch line off 6"-FC-9-152-Q3 between 1FC-E-1A and 1 FC-113, Revision 2  
 DUN 13-0635-001-001, Piping and Instrumentation Diagram Fuel Pool Cooling and Purification System, Revision 0  
 RM-0420-00, Piping and Instrumentation Diagram Fuel Pool Cooling and Purification System, Revision 10  
 Calculation No. 11700.34-NP(B)-00105-Z-019, Qualification of Fuel Pool Cooling FLEX Modification Piping Supports PSR-001 and PSR-002, Revision 0

**Section 1R19: Post-Maintenance Testing**Procedures

1OST-24.2, Motor Driven Auxiliary Feed Pump Test [1FW-P-3A], Revision 50  
 1OST-30.2, Reactor Plant River Water Pump 1A Test, Revision 54  
 1OST-30.6A, Reactor Plant River Water Pump 1C Test on Train A Header, Revision 35  
 1OST-36.1, Diesel Generator No. 1 Monthly Test, Revision 61  
 2OST-24.4, Steam Driven Auxiliary Feed Pump (2FWE\*P22) Quarterly Test, Revision 78  
 2OST-30.2, Service Water Pump [2SWS\*P21A] Test, Revision 42  
 2OST-47.3G, Containment Penetration and ASME Valve Test – Work Week 2, Revision 21

1MSP-2.03-I, Power Range Neutron Flux Channel N41 Refueling Calibration, Revision 39  
 1MSP-6.38, T-RC412 Delta T TAVG Protection Instrument Channel 1 Calibration, Revision 36

Condition Reports

2015-00252

Maintenance Orders/Work Orders

200358377	200429408	200520712	200511567	200511607	200513947
200537551	200539269	200541258	200546542	200547078	200589621
200589622	200589623	200589624	200597357	200622713	

**Section 1R22: Surveillance Testing**

Procedures

1OST-13.1, Quench Spray Pump [1QS-P-1A] Test, Revision 39  
 1OST-6.2A, Computer Generated Reactor Coolant System Water Inventory Balance,  
 Revision 26

**Section 1EP4: Emergency Action Level and Emergency Plan Changes**

Procedures

1/2-EPP-IP-4.1, Offsite Protective Actions, Revision 31  
 EPP-I-1a, Recognition and Classification of Emergency Conditions, Revision 17

Emergency Plan

Beaver Valley Emergency Preparedness Plan, Section 4 Revision 30

**Section 4OA1: Performance Indicator Verification**

Miscellaneous

NOBP-LP-4012, NRC Performance Indicators, Revision 4  
 NOBP-LP-4012-20, Unplanned Scrams Per 7,000 Critical Hours - Beaver Valley, Revision 0  
 NOBP-LP-4012-21, Unplanned Scrams with Complications - Beaver Valley, Revision 1  
 NOBP-LP-4012-22, Unplanned Power Changes Per 7,000 Critical Hours - Beaver Valley,  
 Revision 0  
 Scram PI data, January 2014 - December 2014

Condition Reports

2014-04175 2014-09422

**Section 4OA2: Problem Identification and Resolution**

Procedures

1LCP-13-P101B, P1QS101B, Containment Spray Header Pressure Loop Calibration,  
 Revision 2  
 1ICP-24-FIS151A, FIS-1FW-151A Auxiliary Feedwater Pump 1FW-P-3A Recirculation Flow  
 Indicator Calibration, Revision 9  
 1MSP-1.04-I, Reactor Protection System Train A Test, Revision 50  
 1/2RCP-30A-PC, Calibration of Timing Relays, Revision 20  
 2MSP-2.04-I, Power Range Neutron Flux Channel N42 Refueling Calibration, Revision 40  
 2MSP-2.05-I, Power Range Neutron Flux Channel N43 Refueling Calibration, Revision 39

2MSP-2.06-I, Power Range Neutron Flux Channel N44 Refueling Calibration, Revision 35  
 2MSP-6.52-I, Reactor Coolant Temperature Loop 2RCS-T410 Protection Channel II Calibration, Revision 10  
 2MSP-36.09A-E, 21A Reactor Coolant Pump 4KV Bus Undervoltage Relay 27-VA3200 Functional Test, Revision 14  
 NOBP-LP-2013, Performance Assessment, Revision 14  
 NOP-LP-2001, Corrective Action Program, Revision 35  
 NOP-SS-8001, FENOC Activity Tracking, Revision 2  
 NOP-ER-3004, FENOC Maintenance Rule Program, Revision 2  
 NOP-WM-3001, Work Management PM Process, Revision 12  
 NORM-ER-3102, Motor, Revision 4

#### Condition Reports

2012-15853	2013-00817	2014-01088	2014-14123	2014-14448	2014-14573
2014-14591	2014-14696	2014-14762	2014-14938	2014-14989	2014-15469
2014-15730	2015-04793	2015-04934	2015-04944		

#### Work Orders

200074211	200252937	200375035	200375040	200375728	200383097
200383309	200440482	200440880	200440901	200441459	200445242
200445243	200445273	200445274	200505443	200507894	200589085

#### Miscellaneous

Beaver Valley Power Station Performance Assessment Report September 1, 2014 through January 31, 2015  
 NORM-ER-3311, Instrumentation & Control Loop Components, Revision 8  
 NRC Regulatory Guide 1.160; Monitoring the Effectiveness of Maintenance At Nuclear Power Plants, Revision 3  
 Reactor Engineering and Nuclear Fuels/Test Control Programs (MS-C-10-05-12), 7/6/10

### **Section 40A5: Other Activities**

#### Procedures

1RP-3.10, Refueling Procedures Spent Fuel Bridge Crane, Revision 8  
 1RP-3.28, Refueling Procedures Fuel Movement in Spent Fuel Pool, Revision 9  
 1OM-49.4.0, Movement of Spent Fuel Pool Crane Checklist, Revision 11  
 1OM-70.4.A, Dry Shielded Canister Receipt, Revision 0  
 1OM-70.4.B, Transfer Cask Lift Yoke Receipt, Revision 0  
 1OM-70.4.D, Dry Shielded Canister Preparations for Fuel Loading, Revision 0  
 1OM-70.4.E, Transfer Cask Handling for Fuel Loading, Revision 0  
 1OM-70.4.F, Dry Shielded Canister Processing, Revision 0  
 1OM-70.4.G, Dry Shielded Canister Insertion into HSM-H, Revision 0  
 1OM-70.4.H, Dry Shielded Canister Extraction from HSM-H, Revision 0  
 1OM-70.4.L, Safe Configuration Guidance for ISFSI Equipment Malfunctions, Revision 0  
 1/2-ADM-1601, Radiation Protection Standards, Revision 21  
 1/2-ADM-1611, Radiation Protection Administrative Guide, Revision 14  
 1/2-ADM-1906, Control of Transient Combustible and Flammable Materials, Revision 11  
 1/2OM-53C.4A.75.1, Acts of Nature – Sever Weather, Revision 17  
 1/2OM-53C.4A.75.2, Acts of Nature – Flood, Revision 31  
 1/2OM-53C.4A.75.3, Acts of Nature – Seismic Event, Revision 19  
 1/2RP-3.10, Refueling Procedure Spent Fuel Bridge Crane, Revision 8

1/2RP-3.28, Refueling Procedure Fuel Movement in Spent Fuel Pool, Revision 9  
 BVPM-ISFSI-0001, HSM Thermal Monitoring Program  
 ITLS Procedure 37PTH PT, Liquid Dye Penetrant Examination Procedure, Revision 0  
 NOP-LP-2601, Procedure/Work Instruction Use and Adherence, Revision 5  
 NOP-OP-4005, ALARA Program, Revision 4  
 NOP-OP-4001, Radiation Protection Program, Revision 3  
 NOP-OP-4002, Conduct of Radiation Protection, Revision 5  
 NOP-OP-4010, Determination of Radiological Risk, Revision 8  
 NOP-WM-4001, Foreign Material Exclusion, Revision 12  
 NUHOMS 37PTH LT, Helium Leak Test Procedure, Revision 1  
 SPM 9.5, NUHOMS 37PTH DSC Closure Procedure, Revision 0  
 WPS-TN P8-P8-GT1, Welding Procedure Specification, Revision 1

#### Condition Reports

2015-02543	2015-02759	2015-02769	2015-02940	2015-03065	2105-03460
2015-03612	2015-04055	2015-04078	2015-04155	2015-04191	2015-04257

#### Calculations

Calculation 8700-DMC-1695, Rev. 1, Beaver Unit 1 Nuclear Fuel Characterization  
 Calculation 8700-DMC-1696, Rev. 1, Beaver Unit 1 Individual Assembly Decay Heat for the  
 2014 Dry Cask Campaign  
 Calculation 8700-DMC-3405, Rev. 1, Beaver Valley Unit 1 Fuel Assembly Certification and  
 Canister Loading Maps for the 2014 Campaign

#### Work Orders

200614403, Transfer Cask and Lift Yoke Extension Receipt Activities  
 200613708, Dry Shielded Canister Receipt Activities

#### Miscellaneous

1/2-ADM-1301.F06, Classroom Lesson Material, Dry Cask Storage System Overview  
 1/2-ADM-1301.F16, Classroom Lesson Material, NUHOMS Horizontal Storage Modular Storage  
 System for Irradiated Nuclear Fuel  
 72.48 Evaluation, CR 721004-1419.R-1  
 Airgas, Certificate of Batch Analysis, Ultra High Purity Helium  
 Areva, Certificate of Conformance, OSTC-1 Transfer Cask  
 BVPS Independent Spent Fuel Storage Installation (ISFSI) 10 CFR 72.212 Evaluations Report,  
 Revision 0, dated 12/19/14  
 Beaver Valley Power Station, Nuclear Material Transfer Record, DSC Loading – Cask 1, 2, 3, 4  
 Certificate of Conformance, OSTC-1 Transfer Cask  
 Form SPM 9.1a-1, Welding Procedure Specification  
 ITLS, Certificate of Qualification and Certification Summary  
 Measuring and Test Equipment Traveler, 158565, Digital Pressure Gauge BPGD0134  
 NOP-LP-2020-01, Rev. 04, Quality Control Receiving Inspection Report, Helium 99.999%  
 Radiological Survey Form, Survey Map ISFSI-1, 3/21/15  
 Training Program Number: RP-DryCask\_BV3, Revision 0  
 Wheelift Transporter Manual, Section 11.4.4, Hydraulic Ram Cylinder Assembly

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
AFW	auxiliary feedwater
BVPS	Beaver Valley Power Station
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
DSC	dry shielded canister
EAL	emergency action levels
FENOC	FirstEnergy Nuclear Operating Company
FSAR	Final Safety Analysis Report
HSM	horizontal storage module
I&C	instrument and controls
ISFSI	Independent Spent Fuel Storage Installation
LER	licensee event report
NRC	Nuclear Regulatory Commission
PM	preventative maintenance
RCS	reactor coolant system
RSS	recirculation spray
SSC	structure, system, or component
TC	transfer cask
TDAFW	turbine driven auxiliary feedwater
UFSAR	Updated Final Safety Analysis Report