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

November 13, 2014

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 05000334/2014004 AND 05000412/2014004

Dear Mr. Larson:

On September 30, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Beaver Valley Power Station (BVPS), Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on October 17, 2014, with you, 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.

This report documents one violation of NRC requirements which was of very low safety significance (Green). However, because of the very low safety significance, and because it is entered into your corrective action program, the NRC is treating this finding as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited violation in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Beaver Valley Power Station. In addition, if you disagree with the cross-cutting aspect assigned to this finding, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Beaver Valley Power Station.

In accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390 of the NRCs "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 System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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 05000334/2014004 and 05000412/2014004
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.:	05000334/2014004 and 05000412/2014004
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Beaver Valley Power Station (BVPS), Units 1 and 2
Location:	Shippingport, PA 15077
Dates:	July 1, 2014 to September 30, 2014
Inspectors:	J. Krafty, Senior Resident Inspector E. Andrews, Resident Inspector B. Reyes, Resident Inspector D. Werkheiser, Senior Resident Inspector T. Fish, Senior Operations Engineer H. Gray, Senior Reactor Inspector M. Patel, Operations Engineer
Approved By:	Silas R. Kennedy, Chief Reactor Projects Branch 6 Division of Reactor Projects

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SUMMARY

IR 05000334/2014004, 05000412/2014004; 07/01/2014 – 09/30/2014; Beaver Valley Power Station, Units 1 and 2; Followup of Events and Notices of Enforcement Discretion

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one finding of very low safety significance (Green), which was a non-cited violation (NCV). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Initiating Events

- Green. A self-revealing NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" was identified for FENOC's failure to have an adequate plant startup procedure. Specifically, 2OM-52.4A, "Raising Power from 5% to Full Load Operation," did not adequately address plant startup with one condensate pump in operation. This led to an inability to adequately control steam generator (SG) level when the second condensate pump was started which required the operators to trip the reactor. FENOC is in the process of implementing corrective actions to revise procedure 2OM-52.4A and to address the human performance errors associated with this event. Additionally, FENOC entered the issue into their corrective action program as condition report (CR) 2014-09256.

  The finding is more than minor because it is associated with the procedure quality and human performance attributes of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate procedure led to SG level fluctuations that could not be adequately controlled when the second condensate pump was started, and required the operators to trip the reactor. The inspectors determined that this finding is of very low safety significance (Green), because while it did result in a reactor trip, it did not cause a loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition. The finding has a cross-cutting aspect in Human Performance, Challenge the Unknown, because FENOC operators did not stop when faced with uncertain conditions. Specifically, the adequacy of the procedure was not sufficiently questioned when the plant was not in the normal start up configuration of two running condensate pumps nor later when the condensate pump discharge header pressure low alarm occurred (H.11). (Section 4OA3)

REPORT DETAILS

Summary of Plant Status

Both units operated at or near 100 percent power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 5 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2 charging system on July 17, 2014
- Unit 2 auxiliary feedwater system following terry turbine testing on August 15, 2014
- Unit 1 'B' train river water system in preparation for removing the 'A' train from service for clamicide application on August 19, 2014
- Unit 2 No. 1 emergency diesel generator (EDG) following monthly surveillance on August 20, 2014
- Unit 1 'A' low head safety injection train following surveillance testing on September 2, 2014

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), technical specifications, work orders, 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.

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

a. Inspection Scope

On August 28 and September 2, 2014, the inspectors performed a complete system walkdown of accessible portions of the Unit 1 charging system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs and work orders to ensure FENOC appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 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 2 Auxiliary Building, Fire Area PA-3 on July 1, 2014
- Unit 2 Auxiliary Building, Fire Area PA-5 on July 1, 2014
- Unit 1 Process Rack Room, Fire Area CR-4 on July 3, 2014
- Unit 2 Instrumentation and Relay Area, Fire Area CB-1 on July 11, 2014
- Unit 1 and Unit 2 Intake Structure Cubicles, Fire Areas IS-1,2,3,4 on August 25, 2014
- Unit 2 Fuel Building, Fire Area FB-1 on August 25, 2014
- Unit 1 Main Steam Valve Room, Fire Area MS-1 on September 29, 2014

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures 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 common intake structure 'B' cubicle to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, 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.

1R07 Heat Sink Performance (711111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the Unit 2 E21A component cooling heat exchanger to determine its 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. The inspectors reviewed and discussed the results of the most recent inspection with engineering staff, reviewed pictures of the as-found conditions and also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed. The inspectors also reviewed the results of both units' chemical treatment of the service water systems for Asiatic clams and zebra mussels.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed a Unit 2 licensed operator simulator training on July 15, 2014, which included a loss of 2A system station service transformer, coincident with a loss of station air, turbine trip, and an isolable leak off the reactor coolant system. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the technical specification action statements entered 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 and reviewed the recirculation spray pump automatic start surveillance for Unit 2 on September 5, 2014. The inspectors observed pre-shift briefings, reactivity control briefings, and pre-job briefings to verify that the briefings met the criteria specified in station procedure NOP-OP-1002, “Conduct of Operations,” Revision 9. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

.3 Unit 1 Licensed Operator Requalification (71111.11B) (1 sample)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and Inspection Procedure Attachment 71111.11, “Licensed Operator Requalification Program and Licensed Operator Performance.”

Examination Results

Requalification exam results for Unit 1 for year 2014 were reviewed to determine if pass/fail rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, and “Operator Requalification Human Performance Significance Determination Process (SDP).”

The review verified the following:

- Individual pass rate on the dynamic simulator scenarios was greater than 80 percent. (Pass rate was 94.1 percent.)
- Individual pass rate on the job performance measure (JPM) part of the operating exam was greater than 80 percent. (Pass rate was 97.0 percent.)
- Individual pass rate on the comprehensive written examination was greater than 80 percent. (N/A: Written exams were previously administered at the end of the two year requalification program cycle, February and March 2014.)
- More than 80 percent of the individuals passed all portions of the requalification exam. (Pass rate was 88.2 percent.)
- Crew pass rate was greater than 80 percent. (Pass rate was 87.5 percent.)

Written Examination Quality

The inspectors reviewed a sample of comprehensive written exams that facility staff previously administered to the Unit 1 operators in February and March 2014.

Operating Test Quality

The inspectors reviewed the Unit 1 operating tests (scenarios and JPMs) associated with the onsite examination week, plus additional scenarios and JPMs administered to operators prior to the inspection week.

Licensee Administration of Operating Tests

The inspectors observed facility training staff administer dynamic simulator exams and JPMs during the week of September 1, 2014. These observations included facility evaluations of Unit 1 crew and individual operator performance during the simulator exams and individual performance of JPMs.

Exam Security

The inspectors assessed whether facility staff properly safeguarded exam material, and whether test item repetition guidelines were met.

Remedial Training and Re-examinations

The inspectors reviewed the remedial training package and associated re-exam for three operators who failed an annual operating test (scenario portion) administered in August 2014.

Conformance with License Conditions

License reactivation and license proficiency records were reviewed to ensure that Title 10 of the *Code of Federal Regulations* (10 CFR) 55.53 license conditions and applicable program requirements were met. The inspectors also reviewed a sample of Unit 1 records for requalification training attendance, and a sample of medical examinations for compliance with license conditions and NRC regulations.

Simulator Performance

Unit 1 scenario-based tests and simulator performance tests were reviewed for conformance and fidelity to the plant control room. A sample of simulator deficiency reports was also reviewed to ensure facility staff addressed any identified modeling problems.

Problem Identification and Resolution

The inspectors reviewed recent operating history documentation found in inspection reports, licensee event reports, the licensee's corrective action program, NRC End of Cycle and Mid Cycle reports, and the most recent NRC plant issues matrix. The inspectors focused on events associated with operator errors that may have occurred due to possible training deficiencies.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 4 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, or component (SSC) performance and reliability. The inspectors reviewed system health reports, corrective action program documents, 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.

- Unit 2 Plant Safety Monitoring System the week of July 7, 2014
- Unit 1 Chilled Water System the week of July 14, 2014
- Unit 2 Supplementary Leak Collection and Release System the week of August 25, 2014
- Unit 1 Reactor Control and Protection System the week of September 22, 2014

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 7 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.

- Planned yellow nuclear safety risk for Unit 1 1B reactor coolant pump (RCP) undervoltage relays testing and rod speed control calibration on July 30, 2014
- Emergent excavation adjacent to Unit 2 primary auxiliary building due to an underground piping leak from July 31, 2014 through August 28, 2014
- Planned yellow nuclear safety risk during Unit 1 vital bus battery charger transfers (BAT-CHG1-4A and BAT-CHG1-4B) to support battery charger load tests on August 7, 2014
- Planned yellow probabilistic risk/safety assessment (PRA) risk during Unit 1 'C' river water pump breaker and train swap to support surveillance testing on August 8, 2014
- Planned yellow nuclear safety risk for Unit 1 Delta T/T_{ave} channel operation test and 'C' RCP undervoltage relay test on August 19, 2014
- Planned yellow PRA risk during Unit 1 'B' river water pump breaker swap to support surveillance testing on August 29, 2014
- Planned orange generation risk while paralleling the Unit 2 2-7 battery charger to the 2-1 battery charger on September 10, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations or functionality assessments, as applicable, for the following degraded or non-conforming conditions:

- Unit 1 Terry turbine found with water in the turbine casing as documented in CR 2014-11653 on July 12, 2014
- Unit 1 G13 rod position indication drifting, as documented in CR 2014-09892, on July 29, 2014
- Unit 2 Degraded service water flood seals at 710' elevation of auxiliary building, as documented in CRs 2014-12393 and 2014-12544, on August 6, 2014
- Unit 1 Degraded 48 volt direct current (DC) power supply to 'B' train of the solid state protection system, as documented in CR 2014-12656, on August 5, 2014
- Unit 1 River water leak in the common discharge header of the component cooling heat exchangers as documented in CR 2014-13103, on August 18, 2014
- Unit 2 Service water piping excavation as documented in CR 2014-12418 on August 25, 2014

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 – 1 sample)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated a modification to the Unit 1 rod position indication system for control rod G13 implemented by engineering change package 14-0439-000, "Add a fixed resistor in series with existing Full Scale Adjustment Potentiometer in BV-1 Control Rod Position G13 Vertical Board-B Indicator BV-IND-1RPI-G13 to resolve drifting indication." The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change including revisions to system drawing and the 10 CFR 50.59 screen. The inspectors also reviewed post maintenance testing documentation and interviewed maintenance personnel 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 – 7 samples)

a. 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 2 'B' EDG (2-2) fuel oil transfer pump motor replacement on July 9, 2014
- Unit 1 Reactor plant component cooling water pump mechanical seal replacement on July 16, 2014
- Unit 1 'C' Charging pump mechanical seal replacement and leak repair on July 25, 2014
- Unit 1 'B' control room outside air damper (1VS-D-40-1B, 1D) maintenance on August 5, 2014
- Unit 2 'B' train EDG heat exchanger service water inlet valve (2SWS-MOV113D) motor-operated actuator alignment and fastening on August 4 – 5, 2014
- Unit 2 Pressurizer pressure channel 2RCS-P455 card replacement and test on August 12, 2014
- Unit 1 48 volt DC power supply replacement for 'B' solid state protection system on August 28, 2-14

b. 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:

- 1OST-36.1, Emergency Diesel Generator No. 1 Monthly Test, on July 16, 2014
- 2OST-7.6, Centrifugal Charging Pump [2CHS*P21C] Operating Surveillance Test, on July 17, 2014 [(in-service test (IST)]
- 1OST-11.1, Safety Injection Pump Test [1SI-P-1A], on July 21, 2014
- 2OST-24.3, 'B' Motor Driven Auxiliary Feedwater Pump Test, on September 2, 2014 (IST)
- 2OST-15.1, Primary Component Cooling Water Pump (2CCP*P21A) Test, on September 19, 2014 (IST)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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 July 14, 2014, 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 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)

Mitigating Systems Performance Index (6 samples)

a. Inspection Scope

The inspectors reviewed FENOC's submittal of the Mitigating Systems Performance Index for the following systems for the period of July 1, 2013, through June 30, 2014:

- Unit 1 Auxiliary Feedwater System
- Unit 2 Auxiliary Feedwater System
- Unit 1 Residual Heat Removal System
- Unit 2 Residual Heat Removal System
- Unit 1 Support Cooling Water System
- Unit 2 Support Cooling Water System

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed FENOC's operator narrative logs, CRs, mitigating systems performance index derivation reports, system health 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 – 3 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 FENOC’s corrective action program database for the first and second quarters of 2014 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily CR review (Section 4OA2.1). The inspectors reviewed selected FENOC integrated performance assessment and trending (IPAT) reports for the first 6 months of 2014, conducted under NOBP-LP-2018, “Integrated Performance Assessment and Trending,” 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 review of the FENOC departments’ IPATs included technical services engineering, site protection, human performance, operations, plant and reactor engineering, and the site rollup. The inspectors determined that FENOC was identifying adverse trends and tracking the implementation of corrective actions that were developed as a result of the trends. The inspectors also noted new CRs were written for previous trends that had not made adequate improvement. The inspectors did not identify any adverse trends that had not been identified by FENOC.

.3 Annual Sample: Cold Weather Corrective Actions

a. Inspection Scope

The inspectors performed an in-depth review of FENOCs apparent cause analysis and corrective actions associated with CR 2014-00490, cold weather challenges both Beaver Valley Units. Specifically, severe cold weather in January 2014 led to a reactor trip, an inoperable train of river water due to frazil ice, and inoperable safety related indications.

The inspectors assessed FENOC's problem identification threshold, cause analyses, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether FENOC was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of FENOC's corrective action program and 10 CFR 50, Appendix B. In addition, the inspectors interviewed plant personnel and reviewed procedure changes to assess the effectiveness of the implemented corrective actions.

b. Findings and Observations

No findings were identified.

FENOC determined that the causes were inadequate guidance to address extreme cold weather conditions and less than adequate accountability for plant engineering inspections to support winter preparations. The inspectors determined that FENOC appropriately identified the apparent causes of the cold weather issues and the proposed corrective actions which included revising the cold weather procedure to require verification that engineering has completed their cold weather inspections and developing a procedure for extreme cold weather were adequate to address the apparent causes. The inspectors review of corrective actions determined that the completed corrective actions adequately addressed the identified causes and the corrective actions that had not been completed were on schedule to meet the assigned due dates.

.4 Annual Sample: Reactor Coolant Pump "B" Increased Vibrations

a. Inspection Scope

The inspectors performed an in-depth review of BVPS staff's identification, evaluation and corrective actions related to vibration of the "B" reactor coolant pump (RCP-1B). The purpose of the inspection was to determine whether BVPS staff identified problems at the appropriate threshold, entered the issues into their corrective action program, and evaluated the problems in sufficient detail to identify appropriate and timely corrective actions.

On October 18, 2013, BVPS operators issued CR 2013-16712 to document an increase in pump shaft vibrations for the RCP-1B. BVPS staff continued to monitor the RCP-1B vibrations as a part of diagnostic maintenance. BVPS staff initiated CRs CR 2013-16712 and CR 2013-19837 which described the problem, probable causes, and initial actions completed. The inspectors determined that corrective actions completed to date involved examination of the pump shaft to verify there were no

indications of a shaft cracking, and to collect detailed vibration information every two months and evaluate the results for changes that may indicate shaft crack initiation. During the week of June 23, 2014, after a set of periodic vibration measurements were taken, the inspectors met with the BVPS Vibrations Program Owner, the BVPS system engineer responsible for RCPs, and contractor personnel who conducted periodic RCP vibration measurements at BVPS Unit 1. The inspectors reviewed and discussed the history of vibration measurement of RCP-1B, the results for the test conducted in June 2014, plans for future measurements, and the significance of the vibration measurements. In addition, the inspectors reviewed the Westinghouse Vibration Analysis Report TR-RES-13-14 of the RCP vibration trending and measurements taken on RCP-1B as part of the RCP monitoring.

b. Findings

No findings were identified.

The inspectors determined BVPS staff identified this problem at an appropriate threshold, entered the issue into their corrective action program, and were implementing corrective actions to closely monitor pump performance to reasonably provide indication of problems prior to a shaft crack developing and affecting the pumps ability to perform its intended safety functions. Specifically, the inspectors noted that in 2013 the BVPS staff had identified an increase in vibrations for the RCP-1B, and implemented corrective actions involving periodic measurements and analysis to characterize changes in the vibration magnitude and significance. The inspectors' review of ongoing test results indicated that as of September 12, 2014, measurements did not indicate significant increase in vibration magnitude or initiation of shaft crack initiation.

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

.1 (Closed) Licensee Event Report (LER) 0500334/2014-002-01: Containment Liner Through-Wall Defect Discovered During Planned Visual Inspection

This LER supplement documents typographical corrections from the initial LER that was documented in NRC Inspection Report 05000334/2013005. These LERs deal with containment leakage rate values due to through wall penetrations on the Unit 1 interior Reactor Containment Building steel liner. The as-left leakage rate was edited from 2395 standard cubic feet per day (SCFD) to 2393 SCFD and does not change the conclusions of the initial LER. No findings or violations of NRC requirements were identified during the review of the LER. This LER is closed.

.2 (Closed) LER 05000412/2014-001-00: Unacceptable Indication Identified During Reactor Vessel Head Inspection

On May 1, 2014, during the Unit 2 refueling outage (2R17), the results of the planned ultrasonic examinations performed on Penetration 41 of the reactor vessel head did not meet the applicable acceptance criteria. The indication was not through-wall. Primary water stress corrosion cracking of the Alloy 600 penetration tube material was determined to be the apparent cause of the flaw. The flaw in the J-groove weld was repaired by weld overlay in accordance with approved procedures. No findings or violations of NRC requirements were identified during the review of the LER. This LER is closed.

.3 (Closed) LER 05000412/2014-002-00: Manual Reactor Trip Due to High Steam Generator Water Level

On May 20, 2014, Unit 2 was performing a plant startup following its 17th refueling outage. A single condensate pump was in operation. As reactor power was raised, feedwater flow to the SG increased, requiring the start of a second condensate pump. The start of the second condensate pump resulted in SG level oscillations. A manual reactor trip was inserted when it was recognized that trip criteria of 85 percent narrow range level in the 'A' SG would be met. Due to low decay heat input, the main steam isolation valves were shut in order to limit the reactor coolant system cool down. Plant trip response was as expected without complications, and all control rods fully inserted in the core.

Introduction. A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" was identified for FENOC's failure to have an adequate plant startup procedure. Specifically, 2OM-52.4A, "Raising Power from 5% to Full Load Operation," did not adequately address plant startup with one condensate pump in operation.

Description. On May 19, 2014, Unit 2 was in Mode 1, starting up the plant from refueling outage 2R17. One condensate pump was in service. Typically two are in service for a plant startup; however, because of multiple competing activities that had been in progress the previous few days, a second pump had not been started. The control room began raising power in accordance with 2OM-52.4.A, Raising Power from 5% to Full Load Operation. The 'B' main feed water recirculation valve was placed in OPEN in accordance with the procedure. Since the 'A' recirculation valve was already OPEN, one condensate pump was now supplying flow to the SGs through the bypass feed water regulating valves (BFRVs) and back to the condenser through both recirculation valves. The opening of the second recirculation valve caused condensate pump discharge pressure to lower. The drop in header pressure locked in the condensate pump AUTO start signal and the vertical board annunciator for condensate pump discharge header pressure low [392 pounds per square inch gage (psig)] at 1711. A second condensate pump did not auto start because neither of the other two condensate pumps were in standby. The control room operators incorrectly concluded that the alarm was expected for operation with one condensate pump and did not implement the alarm response procedure to restore header pressure. Between 1711 on May 19, 2014 and 0445 on May 20, 2014, operations raised power from five percent to fourteen percent using control rods and condenser steam dumps. Condensate pump discharge pressure continued to lower, stabilizing at 325 psig (67 psig below the annunciator setpoint). Around 0400, the control room received the feedwater pumps suction pressure low status alarm on the plant computer. The reactor operator looked at the wrong indication on the vertical board and discussed the alarm with the unit supervisor. The unit supervisor referenced the overhead annunciator alarm response procedure for SG feed pump 21A/B suction pressure low and incorrectly determined that the alarm was not valid.

The oncoming dayshift operators noted the low condensate discharge header pressure and determined that additional condensate flow was required. The field operator contacted the control room to coordinate pump pre-start checks in accordance with 2OM-22A.4.C, "Placing a Second Condensate Pump in Service." However, he was not

given time to perform them and, at 0723, the 'A' condensate pump was started. The discharge pressure and motor current parameters were not as expected and the pump was secured. The field operator determined that the discharge valve was shut. The field operator opened the 'A' condensate pump discharge valve as well as performing the other pre-start checks. Operators placed the pump control switch in AUTO and the pump started. The increased condensate flow and pressure caused SG levels to fluctuate and the BFRVs were placed in manual. The control room operator attempted to gain control of SG level for the next 17 minutes, but was unsuccessful in controlling the 'A' SG level. The SG level reached reactor trip criteria and operators tripped the reactor at 0835.

The inspectors concluded that procedure 2OM-52.4A was inadequate for one condensate pump operation because it resulted in the plant being placed in a condition where sufficient suction pressure could not be maintained to the feed pump. The operator action of starting the second condensate pump to address the low suction pressure created SG fluctuations that could not be adequately controlled.

Analysis. The inspectors determined that FENOC's failure to have an adequate procedure for raising power from five percent to full load, as required by 10 CFR 50, Criterion V, is a performance deficiency that was within FENOC's ability to foresee and correct and should have been prevented. The performance deficiency is more than minor because it is associated with the procedure quality and human performance attributes of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate procedure led to SG level fluctuations that could not be adequately controlled when the second condensate pump was started and required the operators to trip the reactor.

In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, The Significance Determination Process for Findings At-Power, the inspectors determined that this performance deficiency was of very low safety significance (Green), because while this issue did result in a reactor trip, it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition.

The finding has a cross-cutting aspect in Human Performance, Challenge the Unknown, because FENOC operators did not stop when faced with uncertain conditions. Specifically, the adequacy of the procedure was not sufficiently questioned when the plant was not in the normal start up configuration of two running condensate pumps nor later when the condensate pump discharge header pressure low alarm occurred (H.11).

Enforcement. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. Contrary to the above, prior to May 20, 2014, FENOC failed to have an appropriate procedure for raising power from five percent to full load with one condensate pump in operation. This deficiency eventually required the operators to trip the reactor when SG levels could not be adequately controlled. FENOC is in the process of implementing corrective actions to revise procedure 2OM-52.4A and to address the human performance errors associated with this event. Because this violation was of very low safety significance and FENOC

entered this issue into their corrective action program, CR 2014-09256, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000412/2014004-01, Inadequate Plant Startup Procedure Led to Reactor Trip)**

4OA6 Meetings, Including Exit

Licensed Operator Requalification Inspection Debrief: On September 5, 2014, the inspectors presented the inspection results to Mr. D. Ronnenberg, Superintendent Nuclear Operations Training, and other facility staff.

Resident Inspectors Quarterly Inspection Report Exit: On October 17, 2014, the inspectors presented the inspection results to Eric Larson, Site Vice President, 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

E. Larson	Site Vice President
A. Crotty	Supervisor, System Engineering
J. Dougherty	Supervisor, Operations Services
M. Dzumba	System Engineer
P. Eisenmann	Nuclear Operations Instructor, Exam Team
M. Flynn	Operation Services Specialist
T. Gaydosik	Fleet Exam Development Lead
D. Gmys	System Engineer
A. Hewitt	Supervisor, FIN Maintenance
J. Jansto	Component Engineer
M. Jansto	System Engineer
P. Johnson	Human Performance Consultant
M. Kienzle	System Engineer
T. King	System Engineer
M. Klingensmith	Nuclear Operations Instructor, Exam Team
J. Kowalski	Component Engineer
J. Miller	Fire Marshall
M. Mertens	Senior Reactor Operator
J. Metts	Supervisor, Operations Services
J. Meyers	System Engineer
R. Palonis	Work Week Manager
D. Price	Supervisor, Nuclear Mechanical and Structural
A. Reardon	System Engineer
D. Ronnenberg	Superintendent Nuclear Operations Training
R. Scheib	Operations Services Consultant
H. Scott	Supervisor, Electric Maintenance
W. Scott	Senior Reactor Operator
B. Sepelak	Supervisor, Regulatory Compliance
M. Stoner	Supervisor, Instrumentation and Controls
J. Tanouye	System Engineer
J. Tolbert	Supervisor, Nuclear Operations Continuing Training
J. Treese	Operations Services Specialist
H. Tremblay	System Engineer
D. Wacker	Regulatory Compliance
Z. Warchol	Supervisor, BOP Systems Engineering

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000412/2014004-01	NCV	Inadequate Plant Startup Procedure Led to Manual Reactor Trip (Section 4OA3)

Closed

05000334/2013-002-01	LER	Containment Liner Through Wall Defect Discovered During Planned Visual Inspection (Section 4OA3)
05000412/2014-001-00	LER	Indication Identified During Reactor Vessel Head Inspection (Section 4OA3)
05000412/2014-002-00	LER	Manual Reactor Trip Due to High Steam Generator Water Level During Plant Startup (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Procedures
1OM-30.3.B.1, Valve List - 1RW, Revision 48
2OM-7.3.B.1, Valve List - 2CHS, Revision 27
2OM-24.3.B.2, Valve List – 2FWE, Revision 11
2OM-36.3.B.1, Valve List – 2EDG, Revision 7
2OM-36.3.B.2, Valve List – 2EGA, Revision 15
2OM-36.3.B.3, Valve List – 2EGF, Revision 10
2OM-36.3.B.4, Valve List – 2EGO, Revision 9
2OM-36.3.B.5, Valve List – 2EGS, Revision 11
1OM-7.3.B.1, Valve List – 1CH, Revision 30
1OM-7.3.C, Power Supply and Control Switch List, Revision 13
1OST-11.3, Boron Injection Flow Path Valve Position Verification, Revision 18

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8700-RM-0407-003, Valve Oper No Diagram Chemical and Volume Control System, Revision 23
8700-RM-0407-004, Valve Oper No Diagram Chemical and Volume Control System, Revision 25
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Section 1R05: Fire Protection

Procedures
1/2 ADM-1900, Fire Protection Program, Revision 34
2PFP-AXLB-735-Auxiliary Building General Area Fire Area PA-3, Revision 1
2PFP-AXLB-773-Primary Auxiliary Building Fire Area PA-5, Revision 2

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1PFP-SFGB-756-MCC Room and Main Steam Valve Room Fire Area MS-1, Revision 0

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Unit 1 Updated Fire Protection Appendix R Review, Revision 31

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Section 1R06: Flood Protection Measures

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8700-DMC-3443, BVPS Intake Structure Cubicles Internal Flood Analysis, Revision 2
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BVPS-2 UFSAR

Section 1R07: Heat Sink Performance

Procedures
NOP-ER-2006, Service Water Reliability Management Program, Revision 2
1OM-30.4BF, BV-1 Train B Asiatic Clam and Zebra Mussel Chemical Treatment Program, Revision 7
1/2-ADM-2106, River/Service Water System Control and Monitoring Program, Revision 5

Condition Reports
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Miscellaneous
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Unit 1 River Water System Health Report 2013-2
2CCP-E21A Heat Exchanger Inspection Report, May 27, 2014

Section 1R11: Licensed Operator Requalification Program

Procedures
2OST-13.6, Recirculation Spray Pump [2RSS*P21D] Dry Test, Revision 13
2OST-13.6A, Recirculation Spray Pump [2RSS*P21D] Automatic Start Circuit Test, Revision 3
1/2-ADM-1351, Licensed Operator Continuing Training Program, Revision 12
NOP-TR-1010, Licensed Operator Requalification Exam Development, Revision 2
1/2-ADM-1362, Security Provisions for Licensed Operator Examinations, Revision 11
NOP-LP-1020, Health Assessment, Revision 4

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2014U1C2E2 2014U1C2E3

Simulator Scenarios

FR-H.1.007	FR-S.1.010	E-2.006	FR-S.1.001	E-2.009

Condition Reports

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Simulator Performance Tests

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Complete Loss of Reactor Coolant Flow, 4/30/13
DBA LOCA with Loss of Offsite Power, 4/30/13
DBA Steam Line Rupture in Containment, 4/30/13
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Unit 1 Simulator Evaluation of Plant Trip due to Main Transformer Differential Protection Trip 06 January 2014, 1/06/14
Unit 1 Simulator Evaluation of Rapid Plant Shutdown for Main Transformer Repairs 31 January 2014, 1/31/14

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Unit 2 Narrative Logs dated September 5, 2014
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Section 1R12: Maintenance Effectiveness

Procedures

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1OM-29.3.C, Power Supply and Control Switch List, Revision 8

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Section 1R13: Maintenance Risk Assessments and Emergent Work Control

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1/2-ADM-2021, Control of Penetrations (including HELB Doors), Revision 8
1/2OM-53C.4A.75.1, Acts of Nature-Tornado or High Wind Condition, Revision 15
1BVT1.39.17, Station Battery Charger [BAT-CHG1-4A and BAT-CH1-4B] Load Test, Revision 5
1OM-39.4.A, 125VDC Control System Startup, Revision 8
1OST-30.06B, Reactor Plant River Water Pump 1C Test on Train B Header, Revision 38
2OM-39.4.O, Spare Battery Charger Operations for BAT*2-1, Revision 1
NOP-ER-2007, Underground Piping and Tank Integrity Program, Revision 5
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NOP-WM-4007, Excavation & Trenching Controls, Revision 2
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1MSP-36.09-1C-E, 1C Reactor Coolant Pump 4kV Bus Undervoltage Relay 27-VC100 Calibration, Revision 18
1OST-30.3, Reactor Plant River Water Pump 1B Test, Revision 56
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Engineering & Excavation Action Plans, dated July 31, 2014 through August 28, 2014
Engineering Evaluation Report, Phase 2 Excavation of Unit 2 Service Water Line for Inspection/Repair while Online, dated August 6, 2014
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BVPS Unit 2 Shift Operating Logs dated July 30 through August 8, 2014
Weekly Maintenance Risk Summary for the Week of July 28, 2014, Revision 1
Weekly Maintenance Risk Summary for the Week of August 18, 2014, Revision 1
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Section 1R15: Operability Determinations and Functionality Assessments

Procedures
1BVT 1.1.1, Rod Position Indication System Calibration Verification and Control Rod Drop Test, Revision 5
1MSP-1.21-I, Rod Position Indication System Calibration, Revision 12
1/2-ADM-2021, Control of Penetrations (including HELB Doors), Revision 8
1/2OM-53C.4A.75.1, Acts of Nature-Tornado or High Wind Condition, Revision 15
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EM 200880, SPEAP 1.13 Response to Steam Presence in the Unit 1 Terry Turbine in the Standby Condition, September 12, 2000
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Section 1R19: Post-Maintenance Testing

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BVBP-SITE-0053, Post Maintenance Test Requirements, Revision 8
2OST-36.2, Emergency Diesel Generator [2EGS*EG2-2] Monthly Test, Revision 68
1OST-15.2, Reactor Plant Component Cooling Water Pump Operating Surveillance Test, Revision 35
1OST-7.5, Centrifugal Charging Pump Test [1CH-P-1B] Operating Surveillance Test, Revision 44
1OST-7.6 Centrifugal Charging Pump Test [1CH-P-1C] Operating Surveillance Test, Revision 43
1/2OST-44A.12B, Train B CIB Actuation of Control Room Isolation/CREVS System Test, Revision 13
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2MSP-6.35-I, Pressurizer Pressure Loop 2RCS-P455 Protection Channel I Calibration, Revision 13
1MSP-1.05-I, Reactor Protection System Train B Test, Revision 50
1PMP-1RP-SSPS-B, Solid State Protection System Train B Shutdown Checks, Revision 5

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Section 1R22: Surveillance Testing

Procedures

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2OM-7.4A, Placing a Charging/HHSI Pump in Standby or In-service, Revision 28
1OST-11.1, Safety Injection Pump [1SI-P-1A] Operating Surveillance Test, Revision 24
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Section 1EP6: Drill Evaluation

Procedures
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Section 4OA1: Performance Indicator Verification

Procedures
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Procedures
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NOP-LP-2001, Corrective Action Program, Revision 35
NOP-SS-8001, FENOC Activity Tracking, Revision 02
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IP-SA-BV-2014-0075, 2014 first 6 months IPAT, Site Protection
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IP-SA-BV-2014-0078, 2014 first 6 months IPAT Rollup
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Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

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2OM-22A.4.A, Condensate System Startup, Revision 11
2OM-22A.4.AAD, Condensate Pump Discharge/Suction Pressure Low, Revision 1
2OM-22A.4.C, Placing a Second Condensate Pump in Service, Revision 7
2OM-22A.4.H, Placing a Condensate Pump in Standby, Revision 4
2OM-24.4.AAF, Stm Gen Feedpump 21A/B Suction Press Low, Revision 8
2OM-24.4.D, Placing a Steam Generator Feed Pump in Service, Revision 27
2OM-52.4.A, Raising Power from 5% to Full Load Operation, Revision 77

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Miscellaneous
Beaver Valley Operations Improvement Plan, March 3, 2014
Root Cause Analysis Report, Unit 2 Manual Reactor Trip due to High Steam Generator Level, July 11, 2014

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
BFRV	bypass feed water regulating valves
BVPS	Beaver Valley Power Station
CFR	Code of Federal Regulations
CR	condition report
DC	direct current
EDG	emergency diesel generator
FENOC	FirstEnergy Nuclear Operating Company
IMC	Inspection Manual Chapter
IPAT	integrated performance assessment and trending
IST	in-service test
JPM	job performance measure
LER	licensee event report
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PM	preventative maintenance
PRA	probabilistic risk/safety assessment
Psig	pounds per square inch gage
RCP	reactor coolant pump
SCFD	standard cubic feet per day
SDP	Significance Determination Process
SG	steam generator
SSC	structure, system, or component
UFSAR	Updated Final Safety Analysis Report