UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

July 30, 2013

Mr. Eric 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 05000334/2013003 AND 05000412/2013003

Dear Mr. Larson:

On June 30, 2013, 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 July 10, 2013 with Eric Larson, Site Vice President, 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 NRC-identified Severity Level IV non-cited violation (NCV) with an associated Reactor Oversight Process (ROP) finding of very low safety significance (Green). Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance, and because they are entered into your corrective action program, the NRC is treating these findings as NCVs, consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCVs 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 any finding in this report, 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 10 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/

Gordon K. Hunegs, Chief
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000334/2013003 and 05000412/2013003
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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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.:	05000334/2013003 and 05000412/2013003
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Beaver Valley Power Station, Units 1 and 2
Location:	Shippingport, PA 15077
Dates:	April 1, 2013 to June 30, 2013
Inspectors:	D. Spindler, Senior Resident Inspector E. Carfang, Resident Inspector N. Floyd, Reactor Inspector D. Kern, Senior Reactor Inspector P. Kaufman, Senior Reactor Inspector J. Kulp, Resident Inspector T. Moslak, Health Physicist T. Ziev, Reactor Inspector
Approved By:	Gordon Hunegs, Chief Reactor Projects Branch 6 Division of Reactor Projects

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SUMMARY

IR 05000334/2013003, 05000412/2013003; 04/01/2013 – 06/30/2013; Beaver Valley Power Station, Units 1 and 2; Licensed Operator Requalification Program.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one Severity Level IV non-cited violation (NCV) and one associated Finding (FIN) of very low safety significance (Green). 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" (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Cornerstone: Initiating Events

Severity Level IV. The inspectors identified a Severity Level (SL) IV NCV of 10 CFR 50.59, "Changes, Tests and Experiments," and associated Green finding because FENOC did not perform a written 10 CFR 50.59 evaluation to support the adequacy of an abnormal operating procedure (AOP) for response to a security threat. Specifically, FENOC did not adequately implement the requirements of 10 CFR 50.59 and procedure NOBP-LP-4003A, "FENOC 10 CFR 50.59 User Guidelines" for procedure 1/2OM-53C.4A.100.1 "Security Threat Procedure." This procedure prescribed steps to exceed the reactor coolant system (RCS) maximum cooldown rate as described in the updated final safety analysis report (UFSAR) and technical specifications (TS) without a written evaluation supporting the adequacy of the AOP. FENOC generated CR-2013-06122, 06382, and 07557. FENOC revised the abnormal operating procedure (AOP) to comply with TS as part of the immediate corrective actions.

The inspectors evaluated the performance deficiency using traditional enforcement in conjunction with the significance determination process (SDP) because the performance deficiency had the potential to impact the regulatory process. The finding is more than minor because if left uncorrected, could have the potential to lead to a more significant safety concern. Specifically, if the procedure were implemented during a security event, FENOC would exceed cooldown rates assumed in the UFSAR accident analyses, potentially challenging the integrity of the RCS. 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," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency represented a transient initiator that would not cause a reactor trip and loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition. Additionally, in accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as an SL IV because the resulting conditions were evaluated as having very low safety significance (Green) by the SDP. This finding has a cross-cutting aspect in the area of Human Performance, Work Practices because FENOC did not implement its regulatory applicability process which erroneously concluded that 50.59 was not applicable to implementation of procedure 1/2OM-53C.4A.100.1. Although the performance deficiency occurred in

2005, the inspectors determined this performance deficiency is indicative of current performance because subsequent revisions of 1/2OM-53C.4A.100.1 and 100.2 (the most recent revision implemented on December 12, 2012) did not identify the failure to adequately implement the 10 CFR 50.59 User Guidelines [H.4(b)]. (Section 1R11)

Other Findings

One violation of very low safety significance identified by FENOC was reviewed by the inspectors. Corrective actions planned by FENOC have been entered into FENOC's corrective action program. The violation and its corrective action tracking number is listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. The unit remained at or near 100 percent power for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power and operated at or near full power until May 28, 2013, when operators shut down the unit to repair the main unit generator. On June 9, 2013, operators commenced a reactor startup and returned the unit to 100 percent power on June 11, 2013. The unit remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of FENOC's readiness for the onset of seasonal high temperatures. The review focused on the Unit 1 and Unit 2 switchgear chillers. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications, control room logs, and the corrective action program to determine what temperatures or other seasonal weather could challenge these systems, and to ensure FENOC personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including FENOC's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the Unit 1 and Unit 2 switchgear chillers to ensure station personnel identified issues that could challenge the operability of the systems during hot weather conditions. 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:

- 3A and 3B motor driven auxiliary feedwater (AFW) pumps during testing of the steam turbine driven AFW pump on May 2, 2013

- A train river water (RW) supply to 1CH-E-7A and 1CH-E-7B charging pump lube oil coolers with B train RW supply secured on May 14, 2013
- Refueling water storage tank (RWST) silica removal system during initial use on June 18, 2013
- C service water system (SWS) pump with B SWS pump out of service for motor refurbishment on June 20, 2013

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 UFSAR, technical specifications, work orders, condition reports, 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 – 5 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 purge duct and blowdown area (fire area SG/BD) on April 26, 2013
- Unit 1 relay room (fire area CR-3) on May 13, 2013
- Unit 2 control room and computer room (fire areas CB-3 and CB-4) on June 6, 2013
- Battery rooms 2-1 and 2-3 (fire areas SB-6 and SB-7) on June 8, 2013
- Battery rooms 2-2 and 2-4 (fire areas SB-8 and SB-9) on June 8, 2013

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed Unit 2 Safeguards Area 722 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 focused on the AFW pump and low head safety injection (LHSI) pump areas 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 (IP 71111.07 - 3 samples)

a. Inspection Scope

Triennial Heat Sink and Heat Exchanger Sample Selection

Based on the station's risk ranking of safety-related heat exchangers, a review of past triennial heat sink inspections, recent operational experience, and resident inspector input, the inspectors selected one ultimate heat sink sample (Unit 2 - service water system) and two heat exchanger samples (Unit 2 recirculation spray system (RSS) heat exchangers 2RSS-E21A and 2RSS-E21D) for inspection.

For the samples selected the inspectors reviewed program and system health reports, self-assessments, and FENOC's methods (inspection, cleaning, maintenance, and performance monitoring) used to ensure heat removal capabilities for the safety-related heat exchangers and ultimate heat sink and compared them to FENOC's commitments made in response to Generic Letter (GL) 89-13, Service Water System Problems Affecting Safety-Related Equipment.

Unit 2 Service Water System (Ultimate Heat Sink)

The inspectors completed an ultimate heat sink inspection of the Unit 2 SWS in accordance with applicable steps of Inspection Procedure 71111.07, Sections 02.02(d)(4), 02.02(d)(5), 02.02(d)(6) and 02.02(d)(7). The SWS takes suction on Ohio River and removes heat from safety-related plant systems during normal plant operation, plant cooldown, and refueling operations. The SWS pumps supplies river water through two redundant 30 inch diameter piping headers, which provides cooling to essential safeguards equipment in the event of a Design Basis Accident (DBA).

The inspectors reviewed FENOC's SWS pipe inspection and monitoring program to assess the condition and structural integrity of the SWS piping. The inspectors reviewed a sample of SWS pipe nondestructive examination records, intake structure silt

inspections, maintenance history, and associated engineering evaluations to ensure that FENOC appropriately identified and dispositioned any SWS piping or intake structure degradation.

The inspectors reviewed operation of the SWS and ultimate heat sink, which encompassed design changes, procedures, intake structure operation, abnormal SWS operations, loss of the SWS/main intake structure, adverse weather conditions, and SWS leak isolation. The inspectors verified that FENOC maintained design drawings, calculations and procedures consistent with their design and licensing basis and that plant operators could reasonably implement the procedures as written. The inspectors performed walkdowns of the SWS and intake structure to independently verify that the instrumentation that operators rely on for decision making was available and functional.

Based upon the SWS walkdowns, review of SWS health reports, and condition reports the inspectors reviewed FENOC's disposition of active through-wall SWS piping leaks, including structural evaluations and completed or planned corrective actions. The inspectors specifically reviewed ultrasonic test results of the degraded SWS piping and prompt operability determination records to verify structural integrity of the existing SWS piping. The ultrasonic testing (UT) examinations were appropriately performed in accordance with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Case N-513-2, “Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping Section XI, Division 1,” and with the guidance contained in Regulatory Information Summary (RIS) 2005-20, Revision 1.

FENOC’s engineering evaluation of the increasing trend in through-wall leakage of the SWS piping determined the failure mechanism was inside diameter (ID) pitting under deposited corrosion causing pin-hole leaks in the piping which is occurring from microbiological influenced corrosion (MIC) activity. Based on the leakage quantity from the pinhole leaks caused by MIC, the prompt operability determination (POD) evaluations determined that structural integrity was maintained and the piping is structurally acceptable. The inspectors determined that the structural integrity evaluation met Branch Reinforcement Area methodology of ASME Boiler and Pressure Vessel Code, Section III, 1971 Edition and all applicable Addenda up to including Winter 1972 Addenda, Section NC-3643.3.

The inspectors reviewed Beaver Valley Power Station (BVPS) buried piping inspection monitoring program, including the Underground Piping and Tanks Integrity Program procedure, Beaver Valley Underground Piping and Tanks Examination Plan, and sampled completed piping examination records to verify structural integrity, and ensure that any leakage or degradation has been appropriately identified and dispositioned. The inspectors determined that the SWS piping degradation issues and wall thinning/pinhole leaks have been properly addressed to the ASME Code.

The inspectors verified that BVPS has established maintenance and chemistry procedures to control, detect and prevent system degradation due to macro fouling of the SWS. The inspectors reviewed the associated chemistry procedures, macro fouling trending reports, river/service water system control and monitoring program, closed loop and raw water systems strategic water plan, and interviewed responsible chemistry and engineering personnel. Biocide treatments of the SWS are controlled by station chemistry procedures and are in accordance with industry guidelines to maintain low biocide levels to eliminate system fouling from biotic species. The inspectors

determined that SWS biocide treatments are monitored, trended and evaluated to ensure adequate biotic control.

The inspectors reviewed SWS performance testing, in-service testing, results of the Unit 2 SWS pumps (2SWS*P21A, 2SWS*P21B, and 2SWS*P21C), SWS flow balance test results and flow balance calculations to verify that the minimum calculated SWS flow rates were properly maintained to essential safeguards equipment and met the acceptance criteria in UFSAR Table 9.2-2, Service Water System Flow Requirements.

The inspectors performed walkdowns of the intake area (including the trash racks, SWS pumps, SWS traveling water screens, and structural supports), the accessible areas of the safeguards building containing SWS piping to look for indications of piping leakage and/or degradation.

To verify that SWS pump bay silt accumulation is monitored, trended, and maintained at an acceptable level, the inspectors interviewed the responsible engineering personnel, reviewed silt deposition inspection documentation, and reviewed completed bay cleaning work orders from 2010-2013. The inspectors determined that BVPS adequately monitors and controls silting in the intake structure bays by inspections and cleaning during refueling outages.

Heat Exchangers Directly Cooled by Service Water

The inspectors reviewed the programs and procedures for maintaining the safety functions of the Unit 2 recirculation spray system (RSS) heat exchangers (2RSS-E21A and 2RSS-E21D), which are directly cooled by SWS. BVPS Unit 2 recirculation system water is cooled by four recirculation spray heat exchangers (HXs), which use the SWS as a cooling medium. The RSS HXs are monitored by means of cleaning and inspection.

The inspectors reviewed the results from the most recent inspections and cleaning of the 2RSS-E21A and 2RSS-E21D heat exchangers, the trending of tube plugging, and engineering calculations of tube plugging limits. The inspectors walked down and observed conditions of the Unit 2 RSS components, including piping, pumps, valves, and HXs with the system engineer.

The inspectors reviewed the most recently completed inspection/cleaning work orders to verify that the as-found and as-left condition of the RSS HXs was bounded by assumptions in the engineering analyses and provided reasonable assurance of continued operability. The inspectors compared RSS surveillance test data to the established acceptance criteria to verify that the results were acceptable and that operation was consistent with design. The inspectors reviewed the Unit 2 SWS flow balance calculation to verify that the minimum calculated SWS flowrate, in conjunction with the heat transfer capability of the RSS HXs, supported the minimum heat transfer rates assumed during accident and transient conditions described in the UFSAR.

Review of Corrective Action Reports

The inspectors selected and reviewed a sample of corrective action program reports related to the Unit 2 SWS/ultimate heat sink and Unit 2 2RSS-E21A and 2RSS-E21D heat exchangers. The review verified that FENOC is appropriately identifying,

characterizing, and correcting problems related to these systems and components, and that the planned or completed corrective actions for the reported issues were appropriate. Documents reviewed are listed in Attachment 1.

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 licensed operator simulator training on April 18, 2013, which included loss of offsite power and one diesel generator, rapid cool down and depressurization in response to a hostile action, and loss of spent fuel pool level. 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

Introduction: The inspectors identified a Severity Level (SL) IV NCV of 10 CFR 50.59, "Changes, Tests and Experiments," and associated Green finding because FENOC did not perform a written 10 CFR 50.59 evaluation to support the adequacy of an abnormal operating procedure (AOP) for response to a security threat. Specifically, FENOC did not adequately implement the requirements of 10 CFR 50.59 and procedure NOBP-LP-4003A, "FENOC 10 CFR 50.59 User Guidelines" for procedure 1/2OM-53C.4A.100.1, "Security Threat Procedure." This procedure prescribed steps to exceed the reactor coolant system (RCS) maximum cooldown rate as described in the updated final safety analysis report (UFSAR) and technical specifications (TS) without a written, technical evaluation supporting the adequacy of the AOP.

Description: On April 19, 2005, FENOC implemented an AOP for response to a security threat, 1/2OM-53C.4A.100.1, "Security Threat Procedure," to address requirements outlined in NRC Security Advisories SA-04-07 and SA-05-02. A regulatory applicability determination was conducted as required by NOBP-LP-4003A, "FENOC 10 CFR 50.59 User Guidelines." The regulatory applicability determination concluded that 10 CFR 50.59 was not applicable to 1/2OM-53C.4A.100.1 because that procedure was required by NRC SA-04-07 and SA-05-02, and the procedure addressed events beyond the design bases of Units 1 and 2. A number of subsequent revisions in 2005 and 2006 concluded similarly that 10 CFR 50.59 was not applicable to changes to 1/2OM-53C.4A.100.1.

On May 4, 2006, FENOC implemented a revision to 1/2OM-53C.4A.100.1 that revised the procedure into three separate security-related AOPs and made subsequent changes to each of the relevant procedures. The regulatory applicability determination for those changes determined 10 CFR 50.59 was applicable, and a 10 CFR 50.59 screen was conducted. FENOC personnel determined that no written evaluation was required for the changes because the procedure did not constitute a change to a procedure that adversely affects how UFSAR-described design functions are performed or controlled. FENOC's basis for the conclusion was that the conditions addressed by the procedures are beyond the design basis described in the Unit 1 and Unit 2 UFSARs. Later revisions of 1/2OM-53C.4A.100.2 implemented on June 29, 2007, July 21, 2010, and August 8 and December 12, 2012, concluded similarly that no written evaluation was required for the changes made in those revisions.

On April 18, 2013, the inspectors observed FENOC's quarterly emergency preparedness drill for a hostile action based scenario from the Unit 2 control room simulator. During the drill, the control room implemented 1/2OM-53C.4A.100.2 in response to a simulated land-based security threat. The inspectors noted during the drill that the shift manager invoked 10 CFR 50.54(x) shortly after making the drill Alert declaration for simulated hostile action occurring in the owner controlled area. Following termination of the drill, the inspectors reviewed the drill notification to the NRC form and noted that the basis for invoking 10 CFR 50.54(x) was listed as the security event. The inspectors attended the simulator facility critique and post-drill critique and did not observe any discussions related to the use of 10 CFR 50.54(x). Following the critiques, the inspectors asked for clarification, and determined that 1/2OM-53C.4A.100.2 directed the shift manager to invoke 10 CFR 50.54(x) because the procedure directs rapid depressurization and cooldown of the RCS in excess of TS limits. The inspectors questioned FENOC on the appropriateness of creating a procedure directing use of 10 CFR 50.54(x). FENOC documented the inspectors' concern in their corrective action program as CR-2013-06122.

On April 23, 2013, FENOC generated a condition report documenting that there was no evidence of a technical evaluation being conducted to support cooldown in excess of TS limits in 1/2OM-53C.4A.100.2, and created a corrective action to conduct an evaluation. The inspectors questioned the safety of maintaining 1/2OM-53C.4A.100.2 active as written prior to completion of a technical evaluation to demonstrate its safety. FENOC reviewed the concern, did not identify any basis for cooldown in excess of TS limits during a security event, and immediately revised the procedure to adhere to TS cooldown limits.

The inspectors did not identify any regulatory requirements or correspondence allowing cooldown in excess of TS limits for security events. The inspectors reviewed NRC Task Interface Agreement (TIA) 2004-4 "Final Response to TIA 2004-04, Acceptability of Proceduralized Departures from TS at Surry Power Station," and noted that in response to the question of when it is acceptable for a licensee to proceduralize 50.54(x), the Office of Nuclear Reactor Regulation (NRR) concluded that "licensees may generally pre-plan or proceduralize the use of 50.54(x). However, it is incumbent upon a licensee to follow the provisions of 50.59." From this information, the inspectors concluded that implementation of 1/2OM-53C.4A.100.2, and its predecessor 1/2OM-53C.4A.100.1, would have required a 10 CFR 50.59 evaluation in accordance with NOBP-LP-4003A. The inspectors reviewed procedure approval forms (PAF) for these initial implementation and revisions of these procedures, and determined that the procedures were reviewed

using NOBP-LP-4003A. However, the PAFs contained a number of instances where NOBP-LP-4003A guidance was not followed or not applied correctly.

Analysis: The inspectors identified that FENOC's failure to perform a written evaluation for creation of 1/2OM-53C.4A.100.1 as required by 10 CFR 50.59 and NOBP-LP-4003A was a performance deficiency that was within FENOC's ability to foresee and correct, and should have been prevented. The finding is more than minor because if left uncorrected, could have the potential to lead to a more significant safety concern. Specifically, if the procedure were implemented during a security event, FENOC would exceed cooldown rates assumed in the UFSAR accident analyses, potentially challenging the integrity of the RCS.

The inspectors evaluated the performance deficiency using traditional enforcement because the performance deficiency had the potential to impact the regulatory process. This violation is associated with a finding that has been evaluated by the significance determination process (SDP) and communicated with an SDP color reflected of the safety impact of FENOC's deficient performance. The SDP, however, does not specifically consider the regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding.

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," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency represented a transient initiator that would not cause a reactor trip and loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition. In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as an SL IV because the resulting conditions were evaluated as having very low safety significance (Green) by the SDP.

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices because FENOC did not follow their 10 CFR 50.59 User Guidelines. Specifically, FENOC did not appropriately follow the regulatory applicability process, and as a result concluded that 50.59 was not applicable to implementation of 1/2OM-53C.4A.100.1. Although the performance deficiency occurred in 2005, the underlying cause of this performance deficiency is indicative of current performance because subsequent revisions of 1/2OM-53C.4A.100.1 and 100.2 (the most recent revision implemented on December 12, 2012) have not conducted written evaluations due to failure to appropriately follow the 10 CFR 50.59 User Guidelines causing the inaccurate conclusion that either 50.59 was not applicable or a written evaluation was not required [H.4(b)].

Enforcement: 10 CFR 50.59, "Changes, Tests, and Experiments," Section (d)(1) in part, requires that the licensee maintain records of changes in the facility, of changes in procedures, and of tests and experiments. These records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to paragraph (c)(2). Contrary to the above, FENOC failed to perform a written evaluation for creation of an abnormal operating procedure for response to a security threat. Specifically, on April 19,

2005, FENOC created procedure 1/2OM-53C.4A.100.1 “Security Threat Procedure” to cooldown the reactor coolant system (RCS) in excess of the maximum cooldown rate described in the UFSAR and TS without performing a written evaluation to provide the basis for the determination that a license amendment was not required. FENOC’s immediate corrective actions included revising 1/2OM-53C.4A.100.2 on April 23, 2013 to restrict cooldown to the maximum rate specified in the UFSAR and TS, and entering this issue into the corrective action program as CR-2013-06122, 06382, and 07557. Because this violation was of very low safety significance, was not willful, and was entered into the corrective action program (CR-2013-06122, 06382, and 07557), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000334,412/2013003-01, Failure to Perform a Written Evaluation as Required by 50.59)**

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed and reviewed power-operated relief valve (PORV) block valve testing procedure 2OST-6.6, PORV Isolation Valve Test and Position Check on April 9, 2013. The inspectors also observed and reviewed the transfer of 2A and 2B 4Kv busses to the 2A system station service transformer (SSST) and start of the 2-2 emergency diesel generator conducted on Unit 2 on April 17, 2013. 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-100, “Conduct of Operations.” Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, 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.

- 2-1 and 2-2 emergency diesel generators (EDG) the week of May 13, 2013
- 1VS-E-40A and B switchgear chillers on June 25, 2013

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.

- Elevated risk during planned and corrective maintenance on the 2B offsite power transformer on April 16, 2013
- Elevated risk during planned maintenance on the control room air conditioning recirculation temperature control valve on May 8, 2013
- Elevated risk during depressurization of the Unit 2 reactor coolant system (RCS) to fill the B RCS loop on June 4, 2013
- Emergent repairs on solid state protection system demultiplexer unit during the Unit 2 forced outage on June 6 - 8, 2013
- Elevated risk during planned maintenance on 2A offsite power transformer on June 21, 2013

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:

- 3A motor-driven AFW pump excessive packing leakage on April 1, 2013
- Unit 1 electrical penetration design discrepancy between installed designs and UFSAR on April 3, 2013
- Continued wall thinning near the through-wall leak on safeguards air condition unit 2HVR-ACU2007B service water piping on April 9, 2013

- 2A offsite power transformer inoperable due to tap changer failure to adjust voltage on April 16, 2013
- 22 turbine-driven AFW turbine governor low oil level on April 24, 2013
- Bus 2D off-site supply breaker 2ACB-342 failed to close on May 5, 2013
- Rod position detector for Unit 1 control rod P8 failed to zero indication on May 17, 2013

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 – 2 samples)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the refueling water storage tank (RWST) silica removal system installation temporary modification to determine whether the modification 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 modification to verify that the temporary modification did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors evaluated the modification of the rubber expansion joint, REJ-1RW-6A, replacement using reduced thickness hex nuts. 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.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities 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.

- Motor driven fire pump corrective maintenance on April 3, 2013
- 23B motor driven AFW pump motor oil change on April 16, 2013
- Fuse replacement for 21C reactor coolant pump under-frequency and under-voltage alarm on April 16, 2013
- Emergency switchgear area exhaust fire damper corrective repair on April 22, 2013
- Bus 2D supply breaker from the 2B offsite power transformer following troubleshooting and maintenance on May 6, 2013
- Replaced detector interface board [BV-DIB-1RPI-P8] for control rod P8 on May 17, 2013
- Reactor vessel head vent isolation valve control board indication repair on June 4, 2013
- Reactor protection system demultiplexer unit repairs at Unit 2 while in cold shutdown (Mode 5) on June 8, 2013

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 2 forced outage (2FOAC9), which was conducted May 28 through June 9, 2013. The inspectors reviewed FENOC's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown, cooldown and restart processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Performed initial containment entry for boric acid walkdown
- Status and configuration of electrical systems and switchyard activities to ensure that technical specifications were met
- Monitoring of decay heat removal operations
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Fatigue management
- Tracking of startup prerequisites, walkdown of the primary containment to verify that debris had not been left which could block the emergency core cooling system suction strainers, and startup and ascension to full power operation
- Identification and resolution of problems related to forced outage activities

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:

- 2OST-6.6, PORV Isolation Valve Test and Position Check on April 9, 2013
- 1OST-6.2A, Computer Generated Reactor Coolant System Water Inventory Balance on April 2, April 10, April 14, and April 29, 2013 (leak rate)
- 2OST-6.2A, Computer Generated Reactor Coolant System Water Inventory Balance for April 19 through April 29, 2013 (leak rate)
- 1OST-24.4, Steam Turbine Driven Auxiliary Feed Pump Test on May 2, 2013
- 2OST-24.2, A Motor Driven Auxiliary Feedwater Pump Test on May 22, 2013 (in-service test)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

.1 Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for Unit 2 licensed operators on April 18, 2013, which required emergency plan implementation by an operations crew. 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's evaluators noted the same issues and entered them into the corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

Groundwater Protection Initiative Program

During April 1 - 4, 2013, the inspectors reviewed groundwater monitoring results and changes to First Energy's program for identifying, mitigating, and monitoring contaminated spills/leaks to on-site groundwater pathways. The inspectors used the guidance contained in Nuclear Energy Institute (NEI) 07-07, Industry Ground Water Protection Initiative (GPI), to evaluate the licensee's implementation of the GPI.

Walkdowns and Observations

The inspectors walked down the Unit 1 and Unit 2 demineralized water storage tanks' overflow discharge paths. These pathways lead to the site's storm drain system that has degraded concrete that has resulted in tritiated water migrating from the storm drain system into the surrounding soil. The inspectors reviewed FENOC's measures to limit the spread of contamination by lining and installing protective inserts in the storm drains, constructing an extraction well to direct the contamination to a monitored pathway, and installing additional monitoring wells to measure the effectiveness of these contamination control measures.

The inspectors assessed the current on-site ground water sample results to determine the trends in the concentrations of tritiated water in the monitoring wells.

Problem Identification and Resolution

The inspectors assessed whether problems associated with the GPI program are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the station's corrective action program.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07 – 1 sample)

a. Inspection Scope

During April 1 – 4, 2013, the inspectors verified that the radiological environmental monitoring program (REMP) quantifies the impact of radioactive effluent releases to the environment and sufficiently validates the integrity of the radioactive gaseous and liquid effluent release program.

The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50 Appendix A Criterion 60 - Control of Release of Radioactivity to the Environment; 10 CFR 50 Appendix I Numerical Guides for Design Objectives and Limiting Conditions for Operations to Meet the Criterion "As Low as is Reasonably Achievable" (ALARA) for Radioactive Material in Light-Water- Cooled Nuclear Power Reactor Effluents; 40 CFR Part 190 Environmental Radiation Protection Standards for Nuclear Power Operations; 40 CFR Part 141 Maximum Contaminant Levels for Radionuclides; the guidance in RGs 1.23 Meteorological Measurements Program for Nuclear Power Plants, RG 4.1 Radiological Environmental Monitoring Programs for Nuclear Power Plants; RG 4.15 Quality Assurance for Radiological Monitoring Programs; NUREG 1301 Offsite Dose Calculation Manual (ODCM) Guidance: Standard Radiological Effluent Controls; applicable industry standards; and licensee procedures as criteria for determining compliance.

The inspectors reviewed the Beaver Valley Annual Radiological Environmental Operating Reports for 2010 and 2011, and the results of licensee assessments since the last inspection to verify that the REMP was implemented and reported in accordance with the TSs and ODCM. This review included changes to the ODCM with respect to environmental monitoring, sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data. The inspectors reviewed quality assurance audits and technical evaluations performed on the vendor's analytical laboratory program. The inspectors reviewed the Beaver Valley Annual Radioactive Effluent Release Reports and the most recent results from waste stream analyses, to determine if FENOC is sampling and analyzing for the predominant radionuclides likely to be released in effluents.

Site/Environmental Inspection

The inspectors walked down three air sampling stations (Nos. 13, 46.1, 47) and nine thermoluminescent dosimeter (TLD) (Nos. 14, 46.1, 79, 81, 84, 85, 86, 94, 95) monitoring stations to determine whether they are located as described in the ODCM and to determine the equipment material condition.

For the selected air samplers, the inspector reviewed the calibration and maintenance records to verify the operability of the sampler's components. Additionally, the review included observing the calibration verification of four composite water samplers.

The inspectors observed the collection and preparation of three environmental samples from different environmental media that included: drinking water (Nos. 4, 5), surface water (Nos 2.1, 5), and milk (Nos. 25, 96, 113).

The inspectors performed an assessment of whether FENOC has initiated sampling of other appropriate media upon loss of a required sampling station; e.g. establishing vegetation sampling to replace the loss of milk sampling.

Based on direct observation and review of records, the inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with procedures. The inspectors assessed whether the meteorological data readout at the meteorological tower was accurately reflected in the control room. The inspectors confirmed that redundant instrumentation was available and that the annual recovery rate for meteorological data was greater than 90%.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the Annual Radiological Environmental Operating Reports. The inspector selected events that involved a missed sample, inoperable air sampler, lost TLDs, or anomalous measurement to verify that the station has identified the cause and has implemented corrective actions.

The inspectors assessed the controls to the Unit 1 and Unit 2 turbine building demineralized water storage tanks that involve a credible mechanism for radioactive material to reach ground water. The inspector assessed whether FENOC has implemented a monitoring program to provide early detection of leakage from these components and has implemented mitigation measures to limit the migration of tritiated groundwater.

The inspectors reviewed any significant changes made by FENOC to the ODCM as the result of changes to the land census, long-term meteorological conditions or modifications to the sampler stations. The inspectors reviewed technical justification for any changed sampling locations.

The inspectors assessed whether the detection sensitivities for environmental samples were below the lower limits of detection specified in the ODCM. The inspectors reviewed the results of the FENOC inter-laboratory and intra-laboratory comparison programs to verify the accuracy of environmental sample analyses performed by the licensee.

Identification and Resolution of Problems

The inspectors assessed whether problems associated with the REMP are being identified by station personnel at an appropriate threshold and appropriate corrective actions are assigned for resolution in the licensee's corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (2 samples)

a. Inspection Scope

The inspectors sampled FENOC's submittals for the Safety System Functional Failures performance indicator for both Unit 1 and Unit 2 for the period of April 1, 2012, through March 31, 2013. To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed FENOC's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, condition reports, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Reactor Coolant System (RCS) Specific Activity and RCS Leak Rate (4 samples)

a. Inspection Scope

The inspectors reviewed FENOC's submittal for the RCS specific activity and RCS leak rate performance indicators for both Unit 1 and Unit 2 for the period of April 1, 2012, through March 31, 2013. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements of RCS leakage, and compared that information to the data reported by the performance indicator. Additionally, the inspectors observed surveillance activities that determined the RCS identified leakage rate, and chemistry personnel taking and analyzing an RCS sample.

b. Inspection Findings

No findings were identified.

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

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify 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 condition report screening meetings.

b. Findings

No findings were identified.

.2 Annual Sample: NCV 05000334/2012002-03 Expansion Joint Degradation Resulted in River Water Inoperability; Issue Follow-up and Program Review

a. Inspection Scope

The inspectors performed an in-depth review of FENOC's apparent cause analysis and corrective actions associated with the subject non-cited violation (NCV) and of FENOC's rubber expansion joint (REJ) preventive maintenance (PM) program. The NCV addressed FENOC's failure to adequately implement and maintain a replacement program for REJs installed in safety-related systems. Specifically, expansion joint REJ-1RW-24B remained in service beyond its established service life, degraded unacceptably, and resulted in operators declaring the Unit 1 river water system inoperable for 43 hours for REJ replacement. Corrective actions included replacing REJ-1RW-24B and evaluating the REJ PM program to ensure proper implementation and improve reliability. FENOC entered the issue into the licensee's corrective action program under condition reports (CR) 2012-03374, 2012-01440, and 2012-07938.

The inspectors independently reviewed CRs 2012-03374, 2012-01440, and 2012-07938; selected industry operating experience (OpE) documents; FENOC procedures and schedules for periodic REJ inspection and replacement; vendor manuals; drawings; training lesson plans; replacement deferral documents; maintenance histories; procurement, storage, and replacement of selected REJs; and all REJ-related issues entered in the corrective action program database since January 2011. Additionally the inspectors interviewed station personnel and performed Unit 1 and Unit 2 plant walkdowns to evaluate the condition of REJs. The inspectors selected 20 REJs for visual inspection including 10 which engineers had previously identified as having minor degradation. The inspectors assessed FENOC's problem identification threshold, documentation of the issues, causal 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. The inspectors also assessed whether FENOC had identified associated lessons learned and communicated the results to appropriate staff. The inspectors compared the actions taken to the requirements of FENOC's corrective action program and 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

Station personnel initiated 49 CRs during the period January 2011 through March 2013 related to REJs which reflected both the marginal quality of the REJ PM program early in the subject period, and implementation of a lower threshold for identifying and

documenting problems later in the period. The inspectors determined that FENOC engineers had thoroughly evaluated the REJ PM program, understood the primary and contributing causes of the REJ-1RW-24B degradation, established and implemented timely and appropriate corrective actions, and effectively communicated the results to plant staff. Corrective actions implemented through the end of this assessment period improved the REJ PM program, and consequently, overall REJ reliability. In addition, the inspectors determined that the REJ PM program matrix was a valuable tool for managing the REJ PM program. The matrix was up-to-date, contained key information for each REJ, and was generally accurate.

Notwithstanding overall REJ PM program improvement, the inspectors identified several deficiencies. For example:

- CR 2012-01440 recommended lessons learned training for engineers regarding REJ service life extensions, but the training was not performed.
- Some replacement dates in the REJ PM program matrix were incorrect because they were based on “field complete” work order signoffs, rather than the actual date of REJ installation.
- Procedures for implementing PM frequency changes did not properly address components for which PMs were already scheduled.
- Procedures for deferral of outage-related replacement PMs did not assure timely review.
- Procedures for deferral of PMs beyond the grace period did not address industry or vendor recommended interim compensatory measures.
- The in-situ configuration of REJ-1RW-102 for the turbine building ventilation chiller booster pump common discharge was outside of manufacturer design specifications and the REJ was degraded.

The inspectors discussed each of these issues with engineers and management personnel. These issues above were determined to be minor because no equipment operability or functionality was significantly affected and the component remained capable of performing the intended function. In accordance with IMC 0612, "Power Reactor Inspection Reports," the above issues constituted violations of minor significance that are not subject to enforcement action in accordance with the Enforcement Policy. FENOC entered the inspectors’ observations into their corrective action program (CRs 2013-05914, 05915, 05916, 05924, 05925, and 05926).

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

.1 Plant Events

a. Inspection Scope

For the plant event listed below, the inspectors observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, “Reactive Inspection Decision Basis for Reactors,” for consideration of potential reactive inspection activities. As applicable, the inspectors verified that FENOC made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR

Parts 50.72 and 50.73. The inspectors reviewed FENOC's follow-up actions related to the events to assure that FENOC implemented appropriate corrective actions commensurate with their safety significance.

- Unit 2 Unusual Event declaration due to a spurious carbon dioxide system discharge in the turbine building on June 14, 2013

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On July 10, 2013, 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.

4OA7 Licensee-Identified Violations

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

- 10 CFR 50, Appendix B, Criterion V "Instructions, Procedures and Drawings" requires, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings." Contrary to the above, on February 6, 2013 and March 6, 2013, FENOC failed accomplish the requirements of procedure NOBP-OP-1009, Prompt Operability Determination and Functionality Assessment Preparation Guide, which requires, in part, if at any time it is discovered that the operability of an SSC is impacted, notify the control room. Specifically, FENOC failed to notify the control room that the service water pipe minimum wall thickness for the prompt operability determination (POD) CR-2012-17604 had been exceeded. CR-2012-17604 required a minimum wall thickness of 0.046 inches and the February and March non-destructive testing identified minimum wall thickness of 0.044 and 0.042 inches respectively, with no update to the POD to verify that adequate structural integrity of the pipe existed. FENOC entered this issue into their corrective action program as CR 2013-05358 and verified that adequate wall thickness remained. The inspectors determined this finding to be of very low safety significance (Green) in accordance with IMC 0609, Attachment 4, Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," because the finding was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of a safety function of a single train for greater than its technical specification allowed outage time, and did screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

E. Larson	Site Vice President
D. Benyak	Manager, Regulatory Compliance
R. Bologna	Director, Site Operations
D. DiGiovanni	Plant Chemistry
R. Dinello	Environmental Field Specialist
K. Farzan	Regulatory Compliance
B. Furdak	Chemistry Supervisor
D. Gibson	Operations Superintendent, Unit 1
S. Hovanec	Manager, Plant Engineering
D. Jones	System Engineer, In-service Testing
M. Kienzle	Senior Nuclear Engineer
J. Kinest	Supervisor, Work Management
J. Kunz	Superintendent, Instrument & Controls
B. Matty	Operations Manager
D. Meskel	Component Engineer
J. Meyers	System Engineer
K. Mitchel	System Engineer
J. Miller	Fire Marshall
D. Price	Engineering Supervisor
A. Reardon	System Engineer
L. Renz	Advanced Nuclear Specialist
D. Salera	Manager, Chemistry
B. Sepelak	Supervisor, Regulatory Compliance
T. Steed	Manager, Radiation Protection
J. Tanyone	Ventilation Engineer
D. Wacker	Engineer, Regulatory Compliance
N. Walker	Supervisor, Component Engineering

Other Personnel

L. Ryan	Inspector, Pennsylvania Department of Radiation Protection

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000334/412/2013003-01	NCV	Failure to Perform a Written Evaluation as Required by 50.59 (Section 1R11)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Condition Reports
2103-06782 2013-05598 2013-07196 2013-08779

Work Orders
200497906 200497907 200497908 200497909 200497910 200501451
200501452 200501455 200452325 200468644 200500753 200502337

Section 1R04: Equipment Alignment

Procedures
2OM-13.4.N, RWST Silica Removal, Revision 1

Notifications
600709362 600694419 600674878 600436270 600826352

Drawings
8700-RM-0430-002 Piping and Instrument Diagram-River Water System, Revision 20
10080-RM-430-1, VOND-Service Water Supply and Distribution, Revision 32

Section 1R05: Fire Protection

Procedures
1PFP-SFGB-756-767 Purge Duct & SGBD Area Fire Area SG/PD, Revision 0
1PFP-SRVB-713-Relay Room Fire Area CR-3, Revision 0
2PFP-CNTB-735-Control Room & Computer Room Fire Areas CB-3 & CB-4, Revision 3
2PFP-SRVB-730-Battery Rooms 2-1 & 2-3 Fire Area SB-6 & SB-7, Revision1
2PFP-SRVB-730-Battery Rooms 2-2 & 2-4 Fire Area SB-8 & SB-9, Revision 0

Section 1R06: Flood Protection Measures

Condition Reports
2010-84223 2010-85658 2011-95646 2012-13533 2012-17171 2013-02517

Calculations
8700-DMC-3812, PRA Internal Flooding Scenarios for the Unit 1 River Water System, Revision 0
8700-DMC-2412, BVPS-1 Flood Calculations for PRA, Revision 0

Section 1R07 - Triennial Heat Sink Performance

Procedures:
1/2-ADM-2106, River/Service Water System Control and Monitoring Program, Revision 5
2BVT 01.13.05, Recirculation Spray Pump Test, Revision 16
2OM-30.4.M, BV-2 Asiatic Clam and Zebra Mussel Chemical Treatment Program -Train SWS, Revision 41
2OM-53C.4.2.30.1, Service Water/Main Intake Structure Loss, Revision 9
1/2-OST-30.19D, Main Intake Structure ‘D’ Bay Silt Check and Bay Cleaning
2OST-30.13A, Train A Service Water System Full Flow Test, Revision 31

NOP-ER-2007, Underground Piping and Tanks Integrity Program, Revision 04
NOP-OP-3602, Microbiologically Influenced Corrosion Monitoring Program, Revision 0

Miscellaneous:
ASME Boiler and Pressure Vessel Code Case N-513-2, Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping Section XI, Division 1
Beaver Valley Response to Generic Letter 89-13, January 29, 1990
Beaver Valley Underground Piping and Tanks Examination Plan, Revision 1, April 16, 2013
BVPM-CHEM-0003, Closed Loop and Raw Water Systems Strategic Water Plan, Revision 0
Benchmarking Report, MIC Program BV-SA-07-026, July 2007
Beaver Valley Program Manual, Closed Loop and Raw Water Systems Strategic Water Plan, Revision 0
EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, December 1991
EPRI TR-103403, Service Water System Corrosion and Deposition Sourcebook, December 1993
EPRI TR-1025318, Open Cooling Water Guideline, September 17, 2012
EPRI TR-107397, Service Water Heat Exchanger Testing Guidelines, March 1998
EPRI NP-5580, Sourcebook for Microbiologically Influenced Corrosion in Nuclear Power Plants
GL 89-13 Program Health Reports 2010-4, 2011-4, and 2012-02
Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment, July 18, 1989
Generic Letter 89-13, Supplement 1, Service Water System Problems Affecting Safety-Related Equipment, April 4, 1990
Prompt Operability Determination for CR 2012-16770, Service Water Piping Leak on BV-2-WS-004-191-3, October 26, 2012
Prompt Operability Determination for CR 2013-02671, Service Water Piping Leak on BV-2 SWS-012-188-3, February 22, 2013
2BVT 01.13.05, Recirculation Spray Pump Test, Revision 16, completed on October 18, 2012
Regulatory Guide 1.27, Ultimate Heat Sink for Nuclear Power Plants, Revision 2, January 1976
River Water/ Service Water Action Plan, Revision 1, February 5, 2013
Snap Shot Assessment of Beaver Valley Piping Integrity Maintenance in Support of GL 89-1Program SN-SA-2012-0268, February 8, 2012
UT Erosion/Corrosion Examination Report, BOP-UT-12-137, 2-SWS-024-127-3, 24-inch service water pipe, June 18, 2012
UT Erosion/Corrosion Examination Report, BOP-UT-12-158, 2-SWS-008-128-3, 8-inch service water pipe, May 2, 2012
UT Erosion/Corrosion Examination Report, BOP-UT-12-269, 2-SWS-012-185-3, 12-inch service water pipe, September 6, 2012

Engineering Calculations:
10080-N-831, Revision 1, Service Water Proto-Flo Model Benchmark
10080-DMC-0080, Revision 0, Heat Exchanger Performance at River Water Temperature of 89 °F
NP(B)-235-FIA, Revision 4, Pressure & Velocity Time History at Heat Exchanger Inlet Opening in RSS System
NP(B)-302-FA, Revision 5, Water Hammer Analysis of the RSS Test Lines & Impact Loads on Orifice Plates RSS-RO102A/D
NP(B)-310-FA, Revision 1, Water Hammer Analysis of Recirculation Spray System due to Flow Elements (FE157A, B, C, D)
NP(B)-317-FA, Revision 1, Supplement to the Recirculation Spray Piping System Water Hammer Forcing Function

Condition Reports:
2011-02562 2011-90430 2011-91787 2011-96084 2012-07658 2012-07937
2012-14003 2012-14082 2012-15471 2012-16770 2012-17032 2012-17234
2012-17793 2013-01381

Work Orders:
200453132 200453039 200465778 200465779 200499044 200530184

Section 1R11: Licensed Operator Requalification Program

Procedures
2OM-36.4.C, Transferring 4kV System from US Serv TFMR to SS Serv TFMR, Revision 12
2OM-35.5.A.35, Figure 35-35- Main Unit Generator MW-MVAR Unit with an SSST in Service, Revision 1
2OST-36.7, Offsite to Onsite Power Distribution System Breaker Alignment Verification, Revision 16
2OST-36.2, Emergency Diesel Generator [2EGS*EG2-2] Monthly Test, Revision 66

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2013-05627 2013-05687 2013-06122 2013-05010 2013-05905

Miscellaneous
ODMI, Operation with a Loss of Heat Trace for 2RCS-PCV456 PORV,

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Procedures
NOP-ER-3004, FENOC Maintenance Rule Program, Revision 1

Condition Reports
2011-90570 2011-91738 2013-01117 2011-01294 2012-06940 2012-11454
2012-11685 2012-19886 2012-19923 2012-19026 2013-09679 2013-09678
2013-09619 2013-08779 2013-09200 2013-08688 2012-08401 2012-08384
2012-00666 2012-05840 2012-00492

Miscellaneous
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Maintenance Rule (a)(1) Evaluation Form 2013-0117 dated 1/24/2013
Maintenance Rule (a)(1) Evaluation Form 2011-90570, 2011-91738 dated 3/25/2011
BV Unit 1 System Health Report 2013-1
BV Unit 1 Operations Log, dated 6/4/13

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2OM-6.4.AF, Returning the 'B' RCS Loop to Service-Filling From VCT/PRZR, Revision 8
2OM-52.4.R.2.F, Station Shutdown Mode 5 Activities, Revision 15
BVBP-OPS-0012, Guidance for Protected Equipment During Normal Operations, Revision 7
NOP-OP-1007, Risk Management, Revision 16
1/2-PIP-M08, Category I, II, II and Bolting Program, Revision 5

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2013-08749 2013-08702 2013-08708

Work Orders/ Notifications
200565768 200565637 600655267

Miscellaneous
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ECP 10-0784-002, Reference Documents for ECP-10-0784- Replace Control Room AC System Temperature Control Valves TCV-1RW-101A&B,
Unit 2 weekly Maintenance Risk Summary, dated 4/16/13, Revision 2
BVPS Unit 2 Operating Logs, dated 4/16/13
BVPS Unit 2 Operating Logs, dated 6/21/13

Section 1R15: Operability Determinations and Functionality Assessments

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1OST-24.2, Motor-Driven Auxiliary Feed Pump Test [1FW-P3A], Revision 48
1OST-49.1, Shutdown Margin Calculation (Plant Critical)(Updated for Cycle 21), Revision 20
1OM-53C.4.1.1.7, Rod Position Indication Malfunction, Revision 11
1OST-2.4A, Quadrant Power Tilt Ratio Manual Calculation
2OST-36.7, Offsite to Onsite Power Distribution System Breaker Alignment Verification, Revision 16

Condition Reports
2013-06613 2013-04364 2013-04798 2012-11528 2012-06833 2013-04390
2012-17604 2012-17722 2012-17793 2013-05358 2013-07761 2013-07104
2013-07495 2013-05989

Drawings
8700-RV-1E Reactor Containment Electrical Penetrations, Revision 7

Miscellaneous
Failure Mode Analysis: “U2 TDAFW Pump Governor Oil Level Indicating Low”
Unit 1 UFSAR Figure 5.2-24, Typical Electronic Penetration
N-513-2, Cases of ASME Boiler and Pressure Vessel Code, dated 2004
UT Erosion/Corrosion Examination BOP-UT-12-410
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Unit 2 Operating Logs, dated 4/17/13

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Procedures
2OM-13.4.N, RWST Silica Removal, Revision 0

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2013-04780 2013-01115

Work Orders/Notifications
200498217 600825544 600809029

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ECP 12-0390-00, Reference Documents for ECP-12-0390- BV-2 RWST Silica cleanup, Revision 1
ECP 12-0390-01, Implementation document for ECP-12-0390- BV-2 Temporary Modification for RWST Silica Cleanup, Revision 1
Drawing 10080-RM-413-12, Quench Spray System, Revision 13

Section 1R19: Post-Maintenance Testing

Procedures
2PMP-1RP-SSPS-A, Solid State Protection System Train A Shutdown Checks, Revision 2
2PMP-1RP-SSPS-B, Solid State Protection System Train B Shutdown Checks, Revision 2
BVBP-SITE-0053, Post Maintenance Test Requirements, Revision 8
2PMP-I-75-001, Modulating Target Rock SOV and Controller Check/Calibration, Revision 1
1MSP-1.21-I, Rod Position Indication System Calibration, Revision 11
2MSP-36.11A-E, 21C Reactor Coolant Pump 4KV Bus Undervoltage Relay 27-VC3200 Functional Test, Revision 15
2OST-24.3, Motor-Driven Auxiliary Feed Pump [2FWE-P23B] test, Revision 40
1OST-33.7, Motor-Driven Fire Pump Operation Test, Revision 17
1/2OM-36.4A.A, Racking 4KV Breakers, Revision 14

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2013-08596 2013-07104 2013-06227 2013-06229 2013-06362 2013-04816
2013-04963 2013-04689

Work Orders/Notifications
200565637 200565768 200535720 200563902 200562674 200482363
600718155 200559849 200500096 200488860 200558306 600838131

Miscellaneous
NOP-ER-3001-2, Failure Mode Analysis, Revision 0
NOP-ER-3001-03, Simple Troubleshooting Template, Revision 2

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2OM-50.4.L, RCS Startup, Revision 16
2OST-47.2B, Containment Closeout Inspection, Revision 12

Condition Reports
2013-08606 2013-08597 2013-08593 2013-08676 2013-08176 2013-08742
2013-08739 2013-08738 2013-08737

Section 1R22: Surveillance Testing

Procedures
NOBP-OP-0007, Conduct of Infrequently Performed Tests or Evolutions, Revision 5
2OST-24.2, Operating Surveillance Test, Motor Driven Auxiliary Feed Pump [2FWE*P23A] Test, Revision 38

2OST-6.2A, Computer Generated Reactor Coolant System Water Inventory Balance, Revision 30
1OST-6.2A, Computer Generated Reactor Coolant System Water Inventory Balance, Revision 25
1/2ADM-0710, RCS Integrated Leakrate Plan, Revision 4

Miscellaneous
BVPS-2 UFSAR, Ch 10.4.9, Auxiliary Feedwater System, Revision 8
BVPS-2 UFSAR, Figure 10.4-24, Auxiliary Feedwater System, Revision 12

Condition Reports
2013-07163 2012-13024 2012-02428 2012-12967 2012-07593 2012-10963
2012-14784 2013-05368 2013-05519 2013-05454 2013-05120 2013-04598
2013-05010

Work Orders/Notifications
600772919 600479851 600724266 600750201 600724236 200330805
200486539 200507838 200486538 200499104

Section 1EP6: Drill Evaluation

Condition Reports
2013-06110 2013-06543 2013-06130 2013-06134 2013-06540 2013-06111
2013-06360

Miscellaneous
BVPS Green Team Mini Drill, 4/18/13

Sections 2RS6/2RS7: Radioactive Gaseous and Liquid Effluent Treatment and Radiological Environmental Monitoring Program

Procedures
1/2-ODC-01.01, ODCM: Index, Matrix, and History of ODCM Changes, Revision 17
1/2-ODC-02.01, Overall Environmental Monitoring Program, Revision 13
1/2-ODC-02.03, ODCM: Radiological Environmental Monitoring Programs, Revision 4
1/2-ODC-03.02, ODCM: Bases for ODCM Controls, Revision 2
1/2-ODC-03.03, ODCM: Controls for RETS and REMP Program, Revision 11
1/2- ADM-0606, Effluent Control Program, Revision 4
1-CHM-SAM-3.100R, Unit No.1 Pump Station, Revision 4
2-CHM-SAM-3.80L, Unit 2 Pump Station, Revision 4
1/2-CHM-ANA-5.11, Tritium, Revision 11
1/2-ENV-02.01, Description of Overall Radiological Environmental Monitoring Program, Revision 11
1/2-ENV-03.01, Environmental Sampling, Revision 8
1/2-ENV-03.02, Maintenance & Calibration of Automatic Water Sampling Equipment, Revision 3
1/2-ENV-03.03, Maintenance and Calibration of AVS-28A Environmental Sampler, Revision 2
1/2-ENV-04.01, Liquid Dose Assessment, Revision 1
1/2-ENV-04.02, REMP Calculations, Revision 4
1/2- ENV-04.03, Gaseous Dose Assessment, Revision 3
1/2- ENV-05.26, Catch Basin Sampling, Revision 5
1MSP-45.17-1, Primary Meteorological Monitoring System Calibration, Revision 31
1MSP-45.17A-1, Redundant Meteorological Monitoring System Calibration, Revision 31

Sampling Sites
Milk: Nos. 25, 96, 113
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Drinking Water: Nos. 4, 5
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Thermo-luminescent Dosimeters: Nos 14, 46.1,79, 81, 84, 85, 86, 94, 95

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Condition Reports
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2012-14996 2012-16275 2012-00720 2011-92974 2011-91196 2011-97518
2011-97531 2011-02332

Calibration Records
Air Sampler Nos. 6117, 6127, 6115, 6121, 6116, 6118, 6122, 6114, 6119, 6125
Meteorological Primary & Redundant Instrumentation calibrated 3/13/2013

Miscellaneous Reports
2010 and 2011 Annual Radioactive Effluent Release Reports/Annual Environmental Operating Reports
2012 Land Use Census and Evaluations for ODCM Controls
Environmental Cross Check Samples 1st, 2nd, and 3rd Quarter 2012
Interlaboratory Comparison Program Results – 1st, 2nd, 3rd, and 4th Quarter 2012

Section 4OA2: Problem Identification and Resolution

Procedures
1 / 2-ADM-2046, Rubber Expansion Joint Inservice Inspection Program, Revision 0
1 / 2-ADM-2046, Rubber Expansion Joint Inservice Inspection Program, Revision 1
1OM-53C.4.1.30.3, River Water / Main Intake Structure Loss, Revision 8
2OM-53C.4.2.30.1, Service Water / Main Intake Structure Loss, Revision 9
NDE-VT-507, Visual Examination of Rubber Expansion Joints, Revision 10
NOBP-ER-3901, Component Classification ER Workbench Module 1, Revision 5
NOP-WM-3001, Work Management PM Process, Revision 11
NORM-ER-3413, Piping Expansion Joints, Revision 4

Drawings
8700-RM-0431-001, Unit 2 Circulating Water System, Revision 15
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CP03B002, 8420 Expansion Joint with 316SS Internal Arch Ring, Revision 2
CP96B007, 204HP Expansion Joint with Lateral Offset & Control Units, Revision 3
CS99A286, Garlock Engineered Expansion Joint REJ-RW-102, Revision 3

Condition Reports
2011-00771 2011-91736 2011-96541 2011-97847 2012-01451 2012-02461
2012-02613 2012-16417 2013-04779

Work Orders/Notifications
02-001484 200436572 200473302 200498217 200498218 600286038

Miscellaneous
Beaver Valley Expansion Joint Survey (Garlock Sealing Technologies) dated August 22, 2012
Beaver Valley Rubber Expansion Joint Report dated March 26, 2013
EPRI Technical Report 1008035, Expansion Joint Maintenance Guide, Revision 1
Maintenance Schedule Change Request 1R22-0315
Non-Destructive Evaluation Report BOP-VT-12-035
Non-Destructive Evaluation Report BOP-VT-12-270
Non-Destructive Evaluation Report BOP-VT-12-271
Non-Destructive Evaluation Report BOP-VT-13-017
Non-Destructive Evaluation Report BOP-VT-13-022
Repetitive Maintenance Deferral Form BV-DF-12-0114
Repetitive Maintenance Revision Request Form BV-REV-06-0442
Repetitive Maintenance Revision Request Form BV-REV-10-0520
Repetitive Maintenance Revision Request Form BV-REV-12-0454
Repetitive Maintenance Revision Request Form BV-REV-12-0615
Repetitive Maintenance Revision Request Form BV-REV-12-1604
Repetitive Maintenance Revision Request Form BV-REV-12-1707
VM 06.030-0021, Garlock Expansion Joint Installation and Maintenance Manual, Revision D

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Condition Reports
2013-09359 2013-09304 2013-09360 2013-09235 2013-09338 2013-09320

Section 4OA7: Licensee Identified Violations

Condition Reports
2013-17604

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AFW	auxiliary feedwater
ALARA	as low as is reasonably achievable
AOP	abnormal operating procedure
ASME	American Society of Mechanical Engineers
BVPS	Beaver Valley Power Station
CFR	Code of Federal Regulations
CR	condition report
EAL	emergency classification and action level
EDG	emergency diesel generator
FENOC	FirstEnergy Nuclear Operating Company
GL	[NRC] Generic Letter
GPI	Ground Water Protection Initiative
HX	heat exchangers
ID	inside diameter
IMC	Inspection Manual Chapter
IP	[NRC] Inspection Procedure
KV	kilovolt
LHSI	low head safety injection
MIC	microbiologically induced corrosion
NCV	non-cited violation
NDE	non-destructive evaluation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
ODCM	Offsite Dose Calculation Manual
OPE	operating experience
PAF	procedure approval form
PARS	publicly available records
PM	preventive maintenance
POD	prompt operability determination
PORV	power-operated relief valve
RCS	reactor coolant system
REJ	rubber expansion joint
REMP	radiological environmental monitoring program
RIS	Regulatory Information Summary
RSS	recirculation spray system
RW	river water
RWST	refueling water storage tank
SDP	significance determination process
SSC	structure, system, or component
SWS	service water system
TIA	Task Interface Agreement
TLD	thermoluminescent dosimeter
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing