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

August 13, 2014

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 NOS. 05000334/2014003 AND 05000412/2014003 AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) REPORT NOS. 07201043/2014001 AND 07201043/2014002

Dear Mr. Larson:

On June 30, 2014, 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 18, 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 two violations of NRC requirements, both of which were 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 violations as non-cited violations, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited violations 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 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 Leonard M. Cline Acting for/

Kevin A. Mangan, Chief (Acting)
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000334/2014003, 05000412/2014003 and 07201043/2014002 w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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 Leonard M. Cline Acting for/

Kevin A. Mangan, Chief (Acting)
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000334/2014003, 05000412/2014003 and 07201043/2014002
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

Distribution w/encl:
W. Dean, RA
D. Lew, DRA
H. Nieh, DRP
M. Scott, DRP
J. Trapp, DRS
P. Krohn, DRS
S. Kennedy, DRP
K. Mangan, Acting DRP
L. Cline, Acting, DRP
C. Roettgen, DRP
B. Bollinger, DRP
J. Krafty, DRP, SRI
J. Nance, DRP, SRI Actg
E. Andrews, DRP, Actg RI
P. Garrett, DRP, Resident AA
A. Bowers, RI OEDO
RidsNrrPMBeaverValley Res
RidsNrrDorlLpl1-2 Res
ROPreports Res

DOC NAME: G:\DRP\BRANCH6\INSPECTION\BASELINE\2014\2ND QTR REPORTS\BV INTEGRATED INSPECTION REPORT 2Q14.DOCX
ADAMS Accession No.: **ML14225A531**

☑ SUNSI Review		☑ Non-Sensitive ☐ Sensitive		☑ Publicly Available ☐ Non-Publicly Available
OFFICE	RI/DRP	RI/DRP	RI/DNMS	RI/DRP
NAME	JNance/ LMC for	LCline/ LMC	PSilva/ PS	KMangan/ LMC for
DATE	08/11/14	08/11/14	08/12/14	08/13/14

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-334, 50-412
License Nos.:	DPR-66, NPF-73
Report No.:	05000334/2014003, 05000412/2014003 and 07201043/2014001, 07201043/2014002
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Beaver Valley Power Station, Units 1 and 2
Location:	Shippingport, PA 15077
Dates:	April 1, 2014 to June 30, 2014
Inspectors:	J. Nance, Acting Senior Resident Inspector, Division of Reactor Projects (DRP) J. Krafty, Senior Resident Inspector, DRP E. Carfang, Resident Inspector, DRP E. Andrews, Acting Resident Inspector, DRP E. Burket, Emergency Preparedness Inspector, Division of Reactor Safety (DRS) N. Floyd, Reactor Inspector, DRS E. Gray, Senior Reactor Inspector, DRS S. Hammann, Senior Health Physicist, DNMS P. Kaufman, Senior Reactor Inspector, DRS R. Rolph, Health Physicist Inspector, DRS A. Turilin, Project Engineer, DRP
Approved By:	Kevin Mangan, Chief (Acting) Reactor Projects Branch 6 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY 3

REPORT DETAILS 5

1. REACTOR SAFETY 5

1R01 Adverse Weather Protection 5
1R04 Equipment Alignment 6
1R05 Fire Protection 8
1R06 Flood Protection Measures 9
1R07 Heat Sink Performance 9
1R08 In-service Inspection - Beaver Valley Unit 2 10
1R11 Licensed Operator Requalification Program 13
1R12 Maintenance Effectiveness 14
1R13 Maintenance Risk Assessments and Emergent Work Control 15
1R15 Operability Determinations and Functionality Assessments 15
1R18 Plant Modifications 16
1R19 Post-Maintenance Testing 16
1R20 Refueling and Other Outage Activities 17
1R22 Surveillance Testing 20
1EP4 Emergency Action Level and Emergency Plan Changes 20
1EP6 Drill Evaluation 21

2. RADIATION SAFETY 21

2RS1 Radiological Hazard Assessment and Exposure Controls 21
2RS2 Occupational ALARA Planning and Controls 23
2RS5 Radiation Monitoring Instrumentation 24

4. OTHER ACTIVITIES 27

4OA1 Performance Indicator Verification 27
4OA2 Problem Identification and Resolution 28
4OA3 Follow-Up of Events and Notices of Enforcement Discretion 29
4OA5 Other Activities 30
4OA6 Meetings, Including Exit 32
4OA7 Licensee-Identified Violations 32

ATTACHMENT: SUPPLEMENTARY INFORMATION 33

SUPPLEMENTARY INFORMATION A-1

KEY POINTS OF CONTACT A-1

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED A-2

LIST OF DOCUMENTS REVIEWED A-2

LIST OF ACRONYMS A-13

SUMMARY

IR 05000334/2014003, 05000412/2014003 & 07201043/2014001, 07201043/2014002; 04/01/2014 – 06/30/2014; Beaver Valley Power Station, Units 1 and 2; Equipment Alignment, Refueling and Other Outage Activities.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified two findings of very low safety significance (Green) that were non-cited violations (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" (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components 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: Mitigating Systems

Green: A self-revealing NCV of technical specification (TS) 5.4.1 was identified because the unit 2 'B' safety injection (SI) accumulator was made inoperable when FENOC operators did not follow procedural requirements to align nitrogen to the accumulator. Specifically, the operators did not align the nitrogen header to the accumulator prior to opening the valve to repressurize the accumulator. The inspectors noted that this resulted in the accumulator pressure falling below the TS pressure limit which required FENOC to declare the accumulator inoperable. FENOC's corrective actions included immediately realigning the system, restoring accumulator pressure and entering the issue into their corrective action program, CR 2014-09260.

The performance deficiency is more than minor because it is associated with the configuration control attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, FENOC did not have reasonable assurance that the nitrogen pressure in the 'B' SI accumulator was sufficient to ensure injection into the core during an accident due to the misalignment of the nitrogen header. This finding is of very low safety significance (Green) because the performance deficiency 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 not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event.

This finding has a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because FENOC operators did not recognize the possibility of mistakes and did not implement appropriate error reduction tools while attempting to re-pressurize the 'B' SI accumulator. (H.12) (Section 1R04)

Cornerstone: Barrier Integrity

Green. The inspectors identified a Green non-cited violation of TS limiting condition for operation (LCO) 3.6.1, "Containment." Specifically, the inspectors determined that FENOC removed the missile barriers for the unit 1 and unit 2 containment equipment hatches while

in a mode when containment was required to be operable. As a result FENOC did not have adequate tornado protection for containment and then did not take the actions directed by the LCO action statement when the LCO was not met. FENOC entered the issue into their corrective action program, CR 2014-11878, and placed the procedures to remove the missile barriers on administrative hold.

The performance deficiency is more than minor because it adversely affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. In accordance with IMC 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” Exhibit 3, “Barrier Integrity Screening Questions,” this finding screens to Green, very low safety significance.

This finding has a cross-cutting aspect in the area of conservative bias where individuals use decision making-practices that emphasize prudent choices over those that are simply allowable and that a proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, FENOC did not adequately consider the containment operability implications of removing the missile barriers for the unit 1 and unit 2 containment equipment hatches while in a mode where containment is required to be operable. (H14) (Section 1R20)

Other Findings

A violation of very low safety significance that was identified by FENOC was reviewed by the inspectors. Corrective actions taken or planned by FENOC have been entered into FENOC’s corrective action program. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power and 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 full power until April 11, when the unit entered end-of-cycle coastdown operations. On April 19, 2014, the unit was shutdown for a planned refueling and maintenance outage (2R17). Following the completion of refueling and maintenance activities, operators commenced a reactor startup on May 19, 2014. On May 20, 2014, the unit was manually tripped from 16 percent power due to feedwater oscillations causing high steam generator water level in the 'A' steam generator. Operators commenced a reactor startup on May 23, 2014, and the unit was returned to 100 percent power on May 25, 2014, and 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 – 2 samples)

.1 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed FENOC's procedures affecting these areas and the communications protocols between the transmission system operator and FENOC. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether FENOC established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system engineer, reviewing condition reports and open work orders, and walking down portions of the offsite and AC power systems including the 345 kilovolt (kV) and 138 kV switchyards.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On June 11, 2014, the inspectors reviewed FENOC's Acts of Nature – Tornado or High Wind Condition Abnormal Operating Procedure (AOP) and walked down the outside

areas within the unit 1 and unit 2 protected areas for impending adverse weather conditions for a tornado watch issued by the National Weather Service for the local area. The inspectors discussed adverse weather preparations and the results of the inspectors' walkdown of the protected area with FENOC personnel.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2 2-2 emergency diesel generator (EDG) cooling water with the 'B' train service water header isolated on April 21, 2014
- Unit 2 boration flow path verification during reactor coolant system draindown on May 8, 2014
- Unit 1 1-2 EDG during corrective maintenance on the 1-1 EDG on June 20, 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, 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

Introduction: A self-revealing, Green non-cited violation (NCV) of TS 5.4.1 was identified because FENOC did not implement the appropriate procedural guidance. Specifically, the unit 2 'B' safety injection (SI) accumulator was made inoperable when FENOC operators did not follow procedural requirements to align nitrogen to the accumulator.

Description: On May 19, 2014, operators determined that the 'B' SI accumulator required an increase in nitrogen cover pressure to ensure the tank remained above technical specifications (TS) required pressure of 611 psig. Operators commenced filling the 'B' SI accumulator in accordance with 2OM-11.4.F, "Pressurizing a Safety Injection Accumulator," Revision 19. While performing the procedure, pressure unexpectedly dropped from 629 psig to 616 psig. Due to instrument uncertainty,

629 psig is the minimum required nitrogen cover pressure to ensure the TS limit of 611 psig is maintained. As a result operators entered the TS action statement and declared the 'B' SI accumulator inoperable. Subsequently, an operator was dispatched to verify the nitrogen system lineup. The operator determined the lineup was incorrect because the nitrogen truck was isolated from the system. System pressure was restored five minutes later when operators realigned the system in accordance with the procedure, and nitrogen cover pressure in the 'B' SI accumulator was raised above the TS limit of 629 psig.

FENOC reviewed the event and determined that operators did not perform step 1 of 2OM-11.4.F, which requires the alignment of the nitrogen header in accordance with 1/2OM-11.4.A, "Placing Nitrogen Trailer in Service at Unit 1 or Unit 2," Revision 2. The failure to perform this step - align the nitrogen trailer - resulted in the loss of pressure in the 'B' SI accumulator and resultant TS entry. FENOC entered the issue into the corrective action program as CR 2014-09260. The apparent cause investigation determined that operators erroneously assumed that the nitrogen truck was already aligned and did not perform the initial step of the procedure. The inspectors reviewed FENOC's evaluation and found the conclusions to be reasonable.

Analysis: The inspectors determined that FENOC's failure to follow procedure 2OM-11.4.F when attempting to fill the 'B' SI accumulator tank with nitrogen was a performance deficiency within FENOC's ability to foresee and correct, and should have been prevented. The finding is more than minor because it is associated with the configuration control attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, due to the misalignment of the nitrogen header, the 'B' SI accumulator was declared inoperable. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 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 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 not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event.

This finding has a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because FENOC operators did not recognize the possibility of mistakes and did not implement appropriate error reduction tools while re-pressurizing the 'B' SI accumulator. Specifically, the operator was not solely focused on the assigned task due to other startup related activities resulting in the initial procedure step to align the nitrogen header not being performed. (H.12)

Enforcement: TS 5.4.1, "Procedures," states, in part, that written procedures shall be established, implemented and maintained in accordance with Regulatory Guide (RG) 1.33. RG 1.33 identified that procedures should be written to provide directions for operating emergency core cooling systems (ECCS) per Section 3.d, "Emergency Core Cooling System." Contrary to the above, on May 20, 2014, FENOC failed to adequately implement 2OM-11.4.F. Specifically, the step to align the nitrogen header to refill the accumulator was not performed and resulted in the 'B' SI accumulator being declared inoperable for five minutes. FENOC's immediate corrective actions were to restore the

'B' safety injection accumulator pressure to within TS requirements. Because this violation was of very low safety significance (Green), and FENOC entered this issue into their corrective action program (2014-09260), this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000412/2014003-01, Failure to Follow Procedure Results in Inoperable SI Accumulator)**

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

a. Inspection Scope

On May 21, 2014 and June 4, 2014, the inspectors performed a complete system walkdown of accessible portions of the unit 2 auxiliary feedwater system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, 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, 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 condition reports and work orders to ensure FENOC appropriately evaluated and resolved any deficiencies.

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 2 waste handling building (Fire Area WH-1) on April 16, 2014
- Unit 1 turbine building (Fire Area TB-1) on May 1, 2014
- Unit 1 cable spreading room (Fire Area CS-1) on May 1, 2014
- Unit 2 reactor containment building (Fire Area RC-1) on May 14-15, 2014
- Unit 2 safeguards (Fire Area SG-1S and SG-1N) on May 21, 2014

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 2 samples)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed unit 2 safeguards building to assess susceptibilities involving internal flooding. The inspectors 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 verified 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 to determine if the material condition and capabilities of the equipment met the design requirements.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could affect risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manhole 8A containing 4160 volt, safety-related cables from the river water and service water pumps, to determine if the cables were submerged in water, if the cables appeared intact, and also to determine if the material condition of the cable support structures was adequate.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the 2-1 EDG intercooler heat exchanger (2EGS-E21A) and jacket water heat exchanger (2EGS-E22A) to determine their readiness and availability to perform their safety functions. The inspectors reviewed the design basis for the components and verified FENOC's commitments to NRC Generic Letter 89-13. The inspectors reviewed the results of inspections of the 2-1 EDG intercooler and jacket water heat exchangers to determine whether the as-found condition of the heat exchangers met the design requirements. Additionally, the inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that FENOC initiated appropriate corrective actions for identified deficiencies. The inspectors also verified

that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R08 In-service Inspection - Beaver Valley Unit 2 (71111.08 – 1 sample)

a. Inspection Scope

The inspectors conducted a review of FENOC's implementation of in-service inspection (ISI) program activities for monitoring degradation of the reactor coolant system boundary, risk significant piping and components, and containment systems during the Beaver Valley Power Station (BVPS), unit 2, refueling outage (2R17). The sample selection was based on the inspection procedure objectives and risk priority of those pressure retaining components in these systems where degradation would result in a significant increase in risk. The inspectors observed in-process non-destructive examinations (NDE), reviewed documentation, and interviewed licensee personnel to verify that the non-destructive examination activities performed as part of the BVPS unit 2 ISI program were being conducted during BVPS-2 Interval 3, Period 3 inservice inspection schedule in accordance with the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, 2001 Edition, 2003 Addenda.

Nondestructive Examination and Welding Activities (IMC Section 02.01)

The inspectors performed direct observations of NDE activities in process and reviewed records of the nondestructive examinations listed below:

ASME Code Required Examinations

- Observed manual Ultrasonic Test (UT), volumetric inspection, 14-inch diameter reactor coolant system, pressurizer surge line, ASME Class 1, pipe weld 2RCS-084-2-2 and record review of the associated UT examination report
- Observed remote bare metal visual (VT-2) examination of the reactor vessel upper closure head (RVUCH) and control rod drive mechanism (CRDM) nozzles penetrations
- Observed portions of the remote automated UT inspection and eddy current testing of the 66 RVUCH penetration nozzle welds and reviewed the data records
- Observed a sample of remote automated UT examination of reactor vessel hot and cold leg nozzle dissimilar metal safe-end welds and elbow to safe-end stainless steel welds from the nozzle inside diameter bore, (2RCS*REV21-N23, 24, 25, 26, 27, 28 and 2RCS*001-F01, 2RCS*004-F01, 2RCS*007-F01, 2RCS*003-F04, 2RCS*006-F04, 2RCS*009-F04) and record review of the data records
- Independent general visual inspection of the containment liner coating
- Record review of liquid penetrant (PT) examinations of the RVUCH penetration weld overlays of J-groove welds on CRDM penetrations #16, #41, #44, #49, #51, #56, #57, and #61
- Visual inspection documentation record and photo review of (VT-2) inspection results of reactor vessel lower head bottom penetration nozzle welds

The inspectors reviewed certifications of the NDE technicians performing the examinations. The inspectors verified that the inspections were performed in accordance with approved procedures and that the results were reviewed and evaluated by certified Level III NDE personnel.

Other Augmented or Industry Initiative Examinations

The inspectors reviewed inspections conducted to implement an industry initiative in accordance with the MRP-146, “Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines,” to verify the inspections were conducted in conformance with the management guidelines. The inspectors reviewed UT examinations of hot and cold leg safety injection system 6 inch diameter piping welds to verify that the activities were performed in accordance with applicable examination procedures and industry guidance.

Review of Originally Rejectable Indications Accepted by Evaluation

There were no samples available for review during this inspection that involved examinations with recordable indications that had been accepted for continued service.

Repair/Replacement Consisting of Welding Activities

The inspectors reviewed the weld overlay of the RVUCH CRDM penetration #41 J-groove weld to verify that the welding and applicable NDE activities were performed in accordance with ASME Code requirements.

PWR Vessel Upper Head Penetration (VUHP) Inspection Activities (IMC Section 02.02)

The inspectors observed portions of the remote bare metal visual examination (VT-2) of the exterior surface of the unit 2 VUCHP to confirm appropriate inspection coverage was achieved and to verify that no boric acid leakage or wastage had been observed.

The inspectors observed portions of in-process VUCHP CRDM nozzle J-groove weld UT examinations and supplementary eddy current testing (ECT) examinations to verify that they were being performed in accordance with requirements of 10 CFR 50.55a(g)(6)(ii)(D) and ASME Boiler and Pressure Vessel Code Case N-729-1, “Alternative Examination Requirements for PWR Reactor Vessel Upper Heads,” to ensure the structural integrity of the reactor vessel head pressure boundary.

During ultrasonic testing of the VUCHP J-groove welds, a flaw/indication was identified in penetration #41 J-groove weld on May 1, 2014 (NRC event notification 50079). The inspectors reviewed the flaw determination (axial flaw 0.56 inches long and 1.55 inches from the bottom edge of the tube, total through-wall was 0.215 inches). The inspectors reviewed and evaluated the examination data records and evaluated the automated UT data scans, eddy current data scans, and PT examination photos of the flaw identified on the outside diameter of the CRDM penetration #41 J-groove weld.

The inspectors reviewed the weld overlay repair activities to ensure that the indication in penetration #41 J-groove weld was mitigated by repair, and weld overlay was conducted in accordance with approved procedures. The inspectors reviewed the certifications of

the welders performing the weld overlay and the NDE technicians performing the PT examinations and verified that the weld repair activities were satisfactorily completed prior to returning the unit 2 VUCHP to service.

During PT examinations performed on two previously installed weld overlay repairs on the VUHP #44 and #57 J-groove welds, FENOC identified that the results did not meet the applicable “PT White” acceptance criteria. The 1/8-inch rounded indications in the weld overlays on these two penetrations only required minor buffing and grinding to remove the indications; no weld repairs were required. The inspectors reviewed the PT data records/photographs of the indications and verified that the PT activity was in accordance with the approved procedures.

Boric Acid Corrosion Control (BACC) Inspection Activities (IMC Section 02.03)

The inspectors reviewed the BACC program, which was performed in accordance with BVPS procedures, discussed the program with the boric acid program owner, and sampled photographic inspection records of boric acid found on safety significant piping and components inside the containment structure during walkdowns conducted by licensee personnel and directly observed by the NRC resident inspectors during Mode 3 on April 19, 2014. The inspectors observed the identification and documentation of non-conforming conditions of boric acid leaks in the corrective action program with a focus on areas that could cause degradation of safety significant components.

The inspectors verified the adequacy of VT-2 visual examination results of the bare metal inspection of the unit 2 reactor pressure vessel lower head penetration nozzle welds that was performed by licensee NDE personnel during 2R17. The inspectors reviewed a sample of photos and visual inspection documentation records to verify that no boric acid leakage was identified.

The inspectors verified that potential deficiencies identified were entered into the licensee’s corrective action program and reviewed evaluations of the more significant deficiencies documented in condition reports (CR 2014-07105, CR 2014-07092, CR 2014-07327), to verify that the corrective actions were consistent with the requirements of the ASME Code and 10 CFR 50, Appendix B, Criterion XVI. The inspectors also reviewed the associated engineering evaluations for the above condition reports to verify that equipment or components that were wetted or impinged upon by boric acid solutions were properly analyzed for degradation that might impact their function.

Steam Generator (S/G) Tube Inspection Activities (IMC Section 02.04)

The inspectors directly observed a sample of the BVPS S/G eddy current tube examinations, which consisted of full length bobbin inspection of 100 percent of the in-service tubes in each of the three S/Gs (except rows 1 and 2, U-bends), plus-point inspection of 100 percent of row 1 and 2, U-bends, plus-point inspection of 100 percent of the bobbin special interest I-codes. The inspectors reviewed a sample of the indications identified in the S/Gs during the eddy current inspections to verify that they were consistent with the potential degradation mechanisms as documented in the Steam Generator Degradation Assessment Report.

The inspectors verified that the S/G eddy current tube examinations were performed in accordance with unit 2 Technical Specification 5.5.5.2 and the Steam Generator Program. The inspectors reviewed the S/G tube eddy current test results to verify that no primary-to-secondary leakage occurred over the operating cycle, in-situ pressure testing was properly performed, and tubes which exhibited degradation which did not meet the acceptance criteria were properly plugged using the alternate repair criteria per Generic Letter 95-05, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking." The inspectors verified that the S/G tube examination screening criteria was in accordance with the Electric Power Research Institute (EPRI) Steam Generator Guidelines and flaw sizing was in accordance with the EPRI examination technique specification sheet.

The inspectors participated in an outage conference call between NRC and FENOC on May 1, 2014 to discuss unit 2 steam generator examination results obtained and the status of eddy current inspections up to that time. The inspectors reviewed the outside diameter stress corrosion cracking (ODSCC) flaw that was detected within a free-span area of the U-bend region in one of the tubes in the 'B' S/G. The flaw was an axial crack associated with a 6.0 volt ding in the (Row 25, Column 45) tube. The tube was in-situ pressure tested the entire length of the tube because the flaw is located in the U-bend region of the tube. It successfully passed the pressure leakage test on May 3, 2014.

During 2R17 refueling outage, FENOC pulled 2 S/G tubes (Row 19, Column 38 - cut just below the third tube support plate (TSP) and Row 24, Column 41 - cut just below the fifth TSP) in S/G 'C'. This activity was previously discussed in a teleconference between FENOC and NRR during 2R16 refueling outage on October 11, 2012, in order to meet the Generic Letter 95-05 requirements/NRC Letter from Jack R. Strosnider to David J. Modeen, Director Engineering, Nuclear Generation Division, Nuclear Energy Institute (NEI) dated January 31, 2000. The inspectors confirmed the steam generator eddy current inspections, in-situ pressure testing, tube plugging, tube pulls were conducted in accordance with unit 2 steam generator examination guidelines, station and vendor procedures and EPRI guidelines.

Identification and Resolution of Problems (IMC Section 02.05)

The inspectors reviewed a sample of condition reports, which identified NDE indications, deficiencies and other nonconforming conditions since the previous refueling outage. The inspectors verified that nonconforming conditions were properly identified, characterized, evaluated, corrective actions identified and dispositioned, and appropriately entered into the corrective action program.

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 June 9, 2014, which included a loss of station air, coincident with a loss of station service transformer, a loss of offsite power, a turbine trip, and an isolable leak off of the RCS 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 unit 2 reactor draining to the vessel flange on April 25, 2014. The inspectors observed evolution briefings and reactivity control briefings to verify that the briefings met criteria specified in 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.

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.

- Unit 1 and unit 2 repetitive maintenance preventable functional failure in standby diesel-driven air compressors a(1) evaluation the week of April 7, 2014

- Unit 1 rod position indication the week of June 16, 2014

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.

- Unit 1 and unit 2 elevated risk for planned bay cleaning of the auxiliary intake structure during the week of March 31, 2014
- Unit 2 initial refueling outage planned elevated risk for reactor coolant system (RCS) depressurization on April 22, 2014
- Unit 2 crediting gravity feed to maintain shutdown safety risk (RCS Inventory Control) green on April 30 and May 2, 2014
- Unit 2 planned elevated safe shutdown risk during cavity draindown to RCS pressurization on May 8-13, 2014
- Unit 2 risk evaluation per limiting condition for operation (LCO) 3.0.4.b for 'A' atmospheric dump valve failure to close on May 18, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Unit 2 '2C' recirculation spray heat exchanger reduced flow during full flow testing on March 27, 2014
- Unit 2 degraded service water piping on discharge of 2HVR-2ACU cooler due to pinhole leak on April 4, 2014

- Unit 2 steam generator level instrumentation tubing to 2FWS-LT485 found bent on May 3, 2014
- Unit 2 unsealed equipment access plug required for flood protection above service water pump, 2SWS-P21B on June 24, 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 – 2 samples)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated the following plant modifications. 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. Inspectors observed post-installation performance of the valve from the control room to ensure the valve provided adequate flow control.

- Unit 2 2CHS-FCV122 upgraded trim installation, engineering change package (ECP) 13-0245
- Unit 2 BV-2SIS-P21B low head safety injection pump rotating assembly replacement, pump casing drain modifications, and piping restoration, ECP 14-0305

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 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 high voltage power supply replacement for N31 source range nuclear instrument on April 24, 2014
- Unit 2 low head safety injection impeller replacement on May 5-6, 2014
- Unit 2 2-2 EDG post engine inspection testing on May 6, 2014
- Unit 1 motor-driven fire pump relief valve RV-1FP-201 replacement on May 12, 2014
- Unit 2 2-3 battery replacement testing on May 15, 2014
- Unit 1 EDG #1 speed sensing relay replacement on June 20, 2014

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 maintenance and refueling outage (2R17), which was conducted April 19 through May 23, 2014. 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 and cooldown 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
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- 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
- Maintenance of secondary containment as required by technical specifications
- Refueling activities, including fuel handling and fuel receipt inspections
- 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 refueling outage activities

b. Findings

Introduction. The inspectors identified a Green non-cited violation of TS limiting condition for operation (LCO) 3.6.1, "Containment." Specifically, the inspectors determined that FENOC removed the missile barriers for the unit 1 and unit 2 containment equipment hatches while in a mode when containment was required to be operable. As a result FENOC did not have adequate tornado protection for containment and did not take the actions directed by the LCO Required Action Statement when the LCO was not met.

Description. On April 17, 2014, the day before FENOC began removing the unit 2 containment equipment hatch missile barrier in preparation for refueling outage 2R17, the inspectors questioned why FENOC could remove the missile barrier while in Mode 1 and consider containment operable. FENOC Engineering Department at Beaver Valley provided the inspectors with documentation that had been previously developed to address containment operability during this evolution. FENOC informed the inspectors that the Engineering evaluation was based on the guidelines of NRC Regulatory Information Summary (RIS) 2001-09, "Control of Hazard Barriers." FENOC stated in the Regulatory Applicability Determination (RAD) document, dated, June 28, 2003, that there was no technical specification requirement that specifically applied to the equipment hatch missile shield and, therefore, while the missile shield was removed the TS LCOs applicable to containment, Containment (3/4.6.1.1 and 3/4.6.1.6) and the Containment Air Lock (3/4.6.1.3), were met.

The inspectors reviewed the RAD and determined that the containment equipment hatch missile barrier, the containment equipment hatch, and the equipment hatch personnel escape air lock were not specifically described in TS 3.6.1; however, the inspectors review of UFSAR section 3.8.4.1.12 determined that these components were described as structures, systems, or components (SSCs) that support the operability of containment during a tornado. The inspectors found that the UFSAR credited the missile barrier to meet these design requirements. Therefore, the inspectors determined that each of these components must be operable for containment to be considered operable in order to conclude that TS 3.6.1 LCO requirements are met. TS 3.6.1 requires that in Modes 1, 2, 3, and 4, containment shall be operable.

The inspectors then reviewed the NRC RIS 2001-09, "Control of Barriers" and determined that the guidance provided for barrier controls was applicable to the containment equipment hatch missile barrier. The inspectors determined the guidance requires that when tornado protection was removed without implementing the applicable TS LCO action statements as stated above, equivalent protection must be provided prior to the event occurring. The inspectors determined that the equivalent protection actions taken by FENOC when the missile barrier was removed – placing a sea-van in front of the affected containment penetration – did not provide equivalent protection for the containment equipment hatch. Specifically, the inspectors observed that portions of the equipment hatch were exposed to potential missiles when the sea-van was in place. Without equivalent protection, the containment equipment hatch was not capable of withstanding the damage caused by missiles postulated during a tornado event and, consistent with the guidance provided in Generic Letter (GL) 91-18, Revision 1,

"Information to Licensee's Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," the TS 3.6.1 would not be met and the action statement must be completed.

The inspectors determined that on April 18, 2014, between 0800 and 1200, while in Mode 1, FENOC removed the unit 2 containment equipment hatch missile shield and failed to comply with the TS 3.6.1 to restore containment to operable status within one hour or place the unit in Mode 3 within the allowed six hour completion time. FENOC subsequently entered Mode 3 for the 2R17 refueling outage at 0031, on April 19, 2014 which restored compliance with the LCO. The inspectors concluded that between January 2, 2003, and April 18, 2014, FENOC had improperly established and implemented procedures to remove the unit 1 and unit 2 containment equipment hatch missile barriers up to 72 hours prior to entering Mode 5, where containment is not required to be operable, in preparation for the applicable unit's refueling outage. FENOC entered the issue into their Corrective Action Program for resolution and placed an administrative hold on the implementing procedure.

Analysis. The failure of the FENOC staff to provide adequate tornado protection for the equipment hatch within the LCO action statement time period was a performance deficiency and was reasonably within their ability to foresee and correct. This finding is more than minor because it adversely affected the configuration control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. In accordance with IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 3.B, "Barrier Integrity Screening Questions- Reactor Containment," this finding screens as very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment and did not affect the function of hydrogen igniters.

This finding has a cross-cutting aspect in the area of conservative bias where individuals use decision-making practices that emphasize prudent choices over those that are simply allowable and that a proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, FENOC did not adequately consider the containment operability implications of removing the missile barriers for the unit 1 and unit 2 containment equipment hatches while in a mode where containment is required to be operable (H14).

Enforcement. Technical Specification LCO 3.6.1, Containment, required the licensee to either restore containment to operable status in one hour or be in Mode 3 in six hours. Contrary to the above, on several occasions between January 2, 2003, and April 18, 2014, FENOC did not restore containment to operable status in one hour or be in Mode 3 in six hours after the removal of the unit 1 and 2 containment equipment hatch missile barrier in preparation for an upcoming refueling outage. Specifically, FENOC did not provide tornado protection equivalent to the removed missile barriers, and did not take the actions directed by the LCO action statement when the LCO was not met. Because this violation was of very low safety significance (Green), and because FENOC entered this issue into their corrective action program (2014-11878), this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. (NCV 05000412/2014003-02, NCV 05000337/2014003-01; Removal of Missile Barrier Renders Containment Inoperable)

1R22 Surveillance Testing (71111.22 – 8 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-11.16, Leakage Testing RCS Pressure Isolation Valves on April 20, 2014
- 2OST-36.4, Emergency Diesel Generator [2EGS*EG2-2] Automatic Test on April 20, 2014
- 2BVT-1.47.5, Type C Leak Test (containment isolation valve testing) on April 20, 2014
- 2BVT-1.13-5, Recirculation Spray Pump Test on May 2, 2014
- 2OST-36.1, Emergency Diesel Generator 18 Month Test on May 15, 2014
- 2OST-24.4A, Steam Driven Auxiliary Feed Pump Full Flow Test on May 18, 2014 (in-service test)
- 2OST-49.2, Shutdown Margin Calculation (Plant Shutdown) on April 24, 2014
- 1OST-36.22A, Diesel Gen. No. 1 Simulated Undervoltage Start Signal on June 18, 2014

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (IP 71114.04 – 1 Sample)

a. Inspection Scope

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

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

inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria. The specific documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

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 June 16, 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 and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that FENOC evaluators noted the same issues and entered them into the corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – one sample)

Inspection Scope

During May 5 – 9, 2014, the inspectors reviewed and assessed FENOC performance in assessing the radiological hazards and exposure control in the workplace. The inspectors used the requirements in 10 CFR Part 20 and guidance in Regulatory Guide (RG) 8.38, "Control of Access to High and Very High Radiation Areas for Nuclear Plants," TSs, and the FirstEnergy procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed 2013 performance indicators for the occupational exposure cornerstone for Beaver Valley.

Radiological Hazard Assessment

The inspectors selected the following unit 2 radiologically significant work activities.

Primary Side Steam Generator Work
Reactor Disassembly, Reassembly, and Inspection
Scaffolding in the Reactor Building Containment
Reactor Head Inspection
Decontaminate the Transfer Canal, Replace, Repair the Transfer Cart

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if radiological hazards were properly identified.
The inspectors observed work in a potential airborne radioactivity area and evaluated whether the air samples from under the reactor head were representative of the breathing air zone and were properly evaluated. The inspectors evaluated continuous air monitors for adequacy of alarm settings and use for monitoring actual work areas. The inspectors reviewed the contamination monitoring program in areas of the plant with the potential for airborne radioactivity.

Contamination and Radioactive Material Control

The inspectors observed one location where equipment/personnel are monitored for radioactive material leaving the radiological controlled area and inspected the methods used for control, survey, and release of equipment/personnel from these areas. The inspectors observed the performance of personnel surveying and release from the unrestricted area. The inspectors assessed whether the radiation monitoring instrumentation used for equipment release and personnel contamination surveys had appropriate sensitivity for the type(s) of radiation present.

The inspectors selected two sealed sources from license inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with10 CFR Part 20 requirements.

Radiological Hazards Control and Work Coverage

The inspectors assessed whether personnel dosimetry were placed on the individual's body in the location of highest expected dose. The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients.

The inspectors reviewed the following Radiation Work Permits (RWPs) for work within airborne radioactivity areas.

214-5017, Primary Side Seam Generator Work, 2R17 refueling Outage
214-5050, Reactor Head Inspection (Under Head), 2R17 refueling Outage
214-5079, Decontaminate Transfer Canal /Replace/Repair Transfer cart, 2R17 refueling Outage

For these RWPs, the inspectors evaluated airborne radioactivity monitoring and controls. The inspectors assessed applicable containment barrier integrity and the operation of temporary high-efficiency particulate air ventilation systems.

Radiation Worker Performance

The inspectors observed the performance of radiation workers based on radiation protection (RP) work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the RWP controls/limits in place. The inspectors reviewed three radiological condition reports since the last inspection in order to determine whether there were any repetitive causes.

RP Technician Proficiency

The inspectors observed the performance of the RP technicians with respect to controlling radiation work. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace and the RWP controls/limits.

The inspectors reviewed one radiological condition report since the last inspection that attributed the cause of the event to a FENOC RP technician error.

Problem Identification and Resolution

The inspectors assessed FENOC's process for applying operating experience to their plant.

a. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

During May 5 – 9, 2014, the inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, RG 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Plants will be As Low As Is Reasonably Achievable," RG 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposure As Low as Is Reasonably Achievable," TSs, and FENOC procedures required by TSs as criteria for determining compliance.

Radiological Work Planning

The inspectors compared the results achieved with the intended dose established in ALARA planning for the above listed work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the RP group actual person-hours for the work activity, and evaluated the accuracy of these time estimates. The inspectors assessed the reasons for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted to identify lessons learned. For problems identified, the inspectors verified that recommendations for improving dose and contamination reduction techniques were entered into the corrective action program.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors evaluated the measures to track, trend, and reduce occupational dose for work activities. The inspectors assessed whether dose threshold criteria were established to prompt additional reviews and additional ALARA planning and controls.

The inspectors evaluated the method of adjusting exposure estimates or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates were based on sound RP and ALARA principles.

Radiation Worker Performance

The inspectors observed radiation worker and RP technician performance during work activities being performed in radiation areas, airborne radioactivity areas, and HRAs. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice and whether there were any procedure or RWP compliance issues.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with ALARA planning and controls are being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the corrective action program. The inspectors assessed the licensee's practice for applying RP operating experience to their plant.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05 – 1 sample)

a. Inspection Scope

During June 9 – 12, 2014, the inspector verified that FENOC is assuring the accuracy and operability of radiation monitoring instruments that are used to protect occupational workers and to protect the public from nuclear power plant operations. The inspector used the requirements in 10 CFR Part 20, 10 CFR Part 50 Appendix A - Criterion 60 Control of Release of Radioactivity to the Environment and Criterion 64 Monitoring Radioactive Releases, 10 CFR 50 Appendix I Numerical Guides for Design Objectives and Limiting Conditions for Operation to meet the Criterion "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents, 40 CFR Part 190 Environmental Radiation Protection Standards for Nuclear Power Operations, NUREG 0737 Clarification of Three Mile Island Corrective Action Requirements, TSs/Offsite Dose Calculation Manual (ODCM), applicable industry standards, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspector reviewed the Beaver Valley Units 1 and 2 UFSAR to identify radiation instruments associated with monitoring area radiation, airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspector reviewed

the associated TS requirements for post-accident monitoring instrumentation. The inspector reviewed a listing of in-service survey instrumentation including: air samplers, small article monitors (SAM), radiation monitoring instruments, personnel contamination monitors, portal monitors, and whole-body counters. The inspector assessed whether an adequate number and type of instruments were available to support operations.

The inspector reviewed FENOC and third-party evaluation reports of the radiation monitoring program since the last inspection including evaluations of offsite calibration facilities or services.

The inspector reviewed procedures that govern instrument source checks and calibrations, including instruments used for monitoring transient high radiological conditions and for performing underwater surveys. The inspector reviewed area radiation monitor (ARM) alarm set-point values and bases as provided in the TSs and the UFSAR. The inspector reviewed effluent monitor alarm set-point bases and the calculation methods provided in the ODCM.

Walkdowns and Observations

The inspector walked down five effluent radiation monitoring systems, including one liquid and one gaseous effluent system. This review included flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors. The inspector assessed whether the effluent/process monitor configurations align with those described in the UFSAR and ODCM.

The inspector selected five portable survey instruments in use or available for issuance and assessed calibration and source check stickers for currency, as well as, instrument material condition and operability.

The inspector observed FENOC staff demonstrate source checks for three different types of portable survey instruments. The inspector assessed whether high-range instruments are source checked on all appropriate scales.

The inspector walked down five ARMs and five continuous air monitors (CAMs) to determine whether they are appropriately positioned relative to the radiation sources or areas they were intended to monitor. The inspector compared monitor response with actual area radiological conditions for consistency.

The inspector selected three personnel contamination monitors three portal monitors, and two SAMs and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and FENOC procedures.

Process and Effluent Monitors

The inspector selected five effluent monitor instruments and evaluated whether channel calibration and functional tests were performed consistent with Beaver Valley TSs/ODCM. The inspector assessed whether FENOC calibrates effluent monitors using National Institute of Standards and Technology (NIST) traceable sources;) primary calibrations adequately represent the plant radionuclide mix; secondary calibration sources used are verified by comparison with the primary calibration source; and channel calibrations encompass the instrument's alarm set-point range. The inspector

assessed whether the effluent monitor alarm set-points are established as provided in the Beaver Valley ODCM and station procedures. For changes to effluent monitor set-points, the inspector evaluated the basis for those changes.

Laboratory Instrumentation

The inspector assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicate that the frequency of the calibrations is adequate and there were no indications of degraded performance. The inspector assessed whether appropriate corrective actions were implemented in response to indications of degraded performance.

Whole Body Counter (WBC)

The inspector reviewed calibration records for the WBC and the methods and sources used to perform functional checks on the WBC before daily use and assessed whether calibration and check sources were appropriate and align with the plant's radionuclide mix and that appropriate calibration phantom(s) were used. The inspector looked for anomalous results or other indications of instrument performance problems.

Post-Accident Monitoring Instrumentation

Inspector reviewed calibration documentation for the containment high-range monitors. The inspector assessed whether an electronic calibration was completed for all range decades and were also calibrated using an appropriate radiation source. The inspector assessed whether calibration acceptance criteria are reasonable, considering the large measurement range and the intended use of the instrument.

The inspector selected one effluent/process monitor that is referenced in emergency operating procedures as a basis for initiating emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspector evaluated the calibration and availability of this instrument.

The inspector reviewed FENOC capability to collect high-range, post-accident effluent samples. The inspector observed electronic and radiation calibration of those instruments associated with the post-accident radiation monitoring to verify conformity with calibration and test protocols.

Portal Monitors, Personnel Contamination Monitors, and SAMs

The inspector selected one of each type of these instruments and verified that the alarm set-point values are reasonable under the circumstances to ensure that licensed material is not released from the site. The inspector reviewed calibration documentation for each instrument selected and reviewed the calibration methods to determine consistency with the manufacturer's recommendations.

Portable Survey Instruments, ARMs, Electronic Dosimetry, and Air Samplers/CAMs

The inspector reviewed calibration documentation for at least one of each type of portable instrument in use. For portable survey instruments and ARMs, the inspector

reviewed detector measurement geometry and calibration methods and reviewed the use of its instrument calibrator.

The inspector discussed the licensee's process to evaluate the possible consequences associated with the use of an instrument that is "out-of calibration" since the last successful calibration or source check.

Instrument Calibrator

The inspector reviewed the current radiation output values for the licensee's portable survey and ARM instrument calibrator units. The inspector assessed whether the licensee periodically verifies calibrator output over the range of the exposure rates/dose rates using an ion chamber/electrometer.

The inspector assessed whether the measuring devices had been calibrated by a facility using NIST traceable sources and whether decay corrective factors for these measuring devices were properly applied by the licensee in its output verification.

Calibration and Check Sources

The inspector reviewed the licensee's waste stream characterization per 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

Problem Identification and Resolution

The inspector evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program. The inspector assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

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 (PI) for both unit 1 and unit 2 for the period of April 1, 2013 through March 31, 2014. To determine the accuracy of the PI 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," Revision 3. The Inspectors reviewed FENOC's operator narrative logs, operability assessments,

maintenance rule records, condition reports, and event 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 PIs for both unit 1 and unit 2 for the period of April 1, 2013 through March 31, 2014. To determine the accuracy of the PI 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 PI.

b. Inspection Findings

No findings were identified.

.3 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the occupational exposure control effectiveness PI for the period from the January 1, 2013 through December 31, 2013. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, to determine the accuracy of the PI data reported.

To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff, the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors also conducted walk-downs of numerous locked high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

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

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by 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: Review of the Operator Workaround Program

a. Inspection Scope

The inspectors reviewed the cumulative effects of the existing operator workarounds, operator burdens, existing operator aids and disabled alarms, and open main control room deficiencies to identify any effect on emergency operating procedure operator actions, and any impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel had identified, assessed, and reviewed operator workarounds as specified in BVPS procedure NOBP-OP-0012, “Operator Work-Arounds, Burdens, Control Room Deficiencies, and Operations Aggregate Assessment.”

The inspectors reviewed FENOC’s process to identify, prioritize and resolve main control room distractions to minimize operator burdens. The inspectors reviewed the system used to track these operator workarounds and recent FENOC self-assessments of the program. The inspectors also toured the control room and discussed the current operator workarounds with the operators to ensure the items were being addressed on a schedule consistent with their relative safety significance.

b. Findings and Observations

No findings were identified.

The inspectors determined that the issues reviewed did not adversely affect the capability of the operators to implement abnormal or emergency operating procedures. The inspectors also verified that FENOC entered operator workarounds and burdens into the corrective action program at an appropriate threshold and planned or implemented corrective actions commensurate with their safety significance.

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

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating

systems. The inspectors communicated the plant events to appropriate regional 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 manual plant trip due to steam generator water level oscillations on May 20, 2014

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000334/2014-001-00: Beaver Valley Unit 1 Reactor Trip due to Main Transformer Failure

On January 6, 2014, unit 1 tripped from 100 percent power due to a main transformer failure caused by an internal fault in the B phase winding. FENOC performed a root cause evaluation and determined the most likely cause of the fault was static electrification based on plant operation of the transformer cooling system. The enforcement aspects of this issue are discussed in IR 05000334/2014002. The inspectors did not identify any violations of regulatory requirements during the review of the LER. This LER is closed.

.3 (Closed) Licensee Event Report (LER) 05000334/2014-002-00: Beaver Valley Unit 1 Turbine Driven Auxiliary Feedwater Pump Governor Oscillations Results in Pump Trip

On January 6, 2014, the steam driven auxiliary feedwater pump automatically started in response to a reactor trip from 100 percent power, then tripped after 1 hour and 49 minutes of running due to oscillations in the governor valve. The cause of the governor valve oscillations was due to an incorrect setting of the governor needle valve. The enforcement aspects of this issue are discussed in IR 05000334/2014002 and in Section 4OA7. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA5 Other Activities

.1 Operation of an ISFSI at Operating Plants (IP 60853)

a. Inspection Scope

From May 14 to 15, 2014, the inspectors conducted an inspection and review of FENOC and AREVA TRANSNUCLEAR construction activities, including management and quality control (QC)/ quality assurance (QA) oversight, of the fabrication of the Nutech Horizontal Modular Storage (NUHOMS®) horizontal storage modules (HSM) as part of the independent spent fuel storage installation (ISFSI) program at BVPS. The inspectors verified that individuals performing quality-related activities were trained and qualified, and that on-site fabricators were familiar with the specified design, fabrication

techniques, and QC associated with the HSM construction. The inspectors reviewed non-conformance reports and verified that corrective actions were initiated and resolved in a timely manner. The inspectors also verified that the fabrication procedures, drawings, and purchase orders of the HSMs were consistent with design commitments and requirements contained in the final safety analysis report (FSAR).

The inspectors reviewed the pre-placement activities for two outlet vent cover components (BV-OVC-05 and BV-OVC-06). The inspectors walked down the fabrication area; examined the rebar and embed installation; and verified that the rebar size, spacing, splice length, and concrete coverage on the top, side, and bottom complied with licensee-approved drawings and specifications. The inspectors also evaluated the concrete formwork installation for depth, straightness, and horizontal bracing and verified the overall dimensions and orientation for compliance to the licensee-approved drawings. The inspectors interviewed licensee and contract personnel to verify knowledge of the ongoing work and appropriate oversight of the construction activities. The inspectors performed a documentation review associated with the concrete placement for one base module (BV-B-ES-2) and one end wall (BV-EW-1A) to verify that QA/QC hold points were performed and to verify that tests for concrete slump and air content, temperature measurements, and the collection and preparation of cylinder samples for compression tests met the acceptance criteria in the licensee-approved specification. The inspectors also reviewed the concrete truck batch tickets to verify that the concrete delivered to the site met code and specification requirements. For review of post-placement activities, the inspectors observed the QC performance of visual examination and dimensional checks for a base module (BV-B-ES-1) as well as the physical test fitment of the closure door-to-base on two modules, BV-B-ES-1 and BV-V-ES-2.

The inspectors performed tours of the ISFSI pad to assess the material condition of the pad and also reviewed final compressive strength tests for the completed pad. Finally, inspectors reviewed condition reports for the pad construction, and the associated follow-up actions associated with ISFSI operations to ensure that issues were entered into the corrective action program, prioritized, and evaluated commensurate with their safety significance.

.2 Preoperational Testing of Independent Spent Fuel Storage Installations at Operating Plants (IP 60854.1)

a. Inspection Scope

From June 23 to June 26, 2014, the inspectors conducted an inspection and review of FENOC's new 125 ton, single failure proof crane to determine if it met the single failure proof criteria of NUREG 0554 for use in dry cask storage operations.

The inspection of the new unit 1 crane, CR-15, were performed to determine the acceptability and readiness of the crane to meet the requirements of the Certificate of Compliance and FSAR. The inspectors observed the crane as installed in the FSB area, the performance of the crane load tests using the site load test procedure, the involvement of FENOC quality control personnel in the crane testing process, and operator and maintenance staff training on the crane controls. Additionally, the inspectors reviewed condition reports generated to assess if they have been properly evaluated and appropriate actions taken. The crane factory test activities and site

functional test procedure were reviewed by the inspectors to confirm their scope was adequate and to verify the crane capability, applicability and extent of review by project engineering. During the crane load test, the inspectors noted the actual weights totaled the loading requirement for both the 100% and 125% load tests. The inspectors also reviewed the compliance matrix for NUREG 0554/0612 and the NOG-1 compliance matrix that have comparisons of requirements for a single failure proof crane to the crane characteristics and discussed the requirements with the responsible engineering staff.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Radiation Safety Inspection Debrief: On May 9, 2014, the inspectors presented the inspection results to Eric Larson, Site Vice President and other members of his staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

Independent Spent Fuel Storage Inspection Exit: On May 15, 2014, the inspectors presented the inspection results to K. McIntyre, ISFSI Project Manager, and other members of the Beaver Valley Power Station staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

Radiation Safety Inspection Debrief: On June 12, 2014, the inspectors presented the inspection results to Eli Crosby, Radiation Protection Manager (acting) and other members of his staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

Preoperational Testing of Independent Spent Fuel Storage Installations at Operating Plants Exit: On June 26, 2014, the inspectors presented the inspection results to Carmen Mancuso, Design Engineering Manager, and other members of the Beaver Valley Power Station staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

Resident Inspectors Quarterly Inspection Report Exit: On July 18, 2014, the inspectors presented the inspection results to Eric Larson, Site Vice President and other members of his 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 meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

Technical Specification 5.7.2, “High Radiation Area”, requires, in part, that locked doors be provided for each high radiation area in which the intensity of radiation exceeds 1000 millirem per hour. Contrary to the above, on April 26, 2014, for approximately 2.5 hours, the door to the Regenerative Heat Exchanger room was not locked. FENOC’s

immediate corrective action included placing chains and padlocks on this door and all similar style entrances to locked high radiation areas, entering this issue into their corrective action program (CR-2014-07646), and performing a root cause evaluation. The finding is of very low safety significance, Green, because it did not involve ALARA, there was no overexposure, there was no substantial potential for an overexposure, and the ability to assess dose was not compromised.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

E. Larson	Site Vice President
G. Alberti	Steam Generator Project
R. Bologna	Director, Site Operations
G. Buck	ISI/NDE, Level III Contractor
W. Cothen	Manager, Regulatory Assurance
E. Crosby	Superindentent, Radiation Protection
A. Crotty	Supervisor, Electrical System Engineer
K. Farzan	Licensing
J. Fontaine	ALARA Supervisor
J. Gallagher	Maintenance Rule Coordinator
J. Gazdacko	Engineer, Crane Installation
D. Gibson	Superintendent, Operations
D. Grabski	ISI Coordinator
R. Green	Manager, Fukushima Actions
T. Heimel	ISI/NDE, Level III Contractor
S. Kubis	Electrical Engineer
R. Linden	ISI/NDE Level III Contractor
B. Lubert	Supervisor, Design Engineering
E. Jones	Radiation Protection Technician
R. Kekelis	Radiation Protection Technician
K. Kimmerle	Radiation Protection Supervisor
T. King	System Engineer
C. Mancuso	Manager, Design Engineering
K. McIntyre	ISFSI Project Manager
J. Miller	Fire Marshall
D. McBride	System Engineer
D. Murray	BVPS Performance Improvement
L. Musgrave	Staff Nuclear Engineer, ISI
J. Patterson	System Engineer
M. Piotrowski	Nuclear Engineer
E. Richardson	Quality Control Inspector
G. Ritz	ISFSI Oversight
S. Sawtschenko	Emergency Preparedness Manager
B. Sepelak	Supervisor, Regulatory Compliance
J. Sheetz	PRA Engineer
J. Snyder	System Engineer, Electrical
T. Steed	Radiation Protection Manager
J. Tanouye	System Engineer
W. Tobac	Electrical and Controls Engineer, Crane Capability Testing
Z. Warcoal	Supervisor, Engineering
L. Weaver	Quality Oversight Supervisor
J. Welsh	Radiation Protection Technician
G. Westbrook	Design Engineering
W. Williams	Staff Nuclear Engineer, Technical Services
R. Wolfe	ISFSI Project Manager, Field Lead

Other Personnel

S. Bostic	On-site Project Coordinator
J. Peterson	On-site QC
L. Ryan	Inspector, Pennsylvania Department of Radiation Protection
J. Seals	Director, Reactors and Services
D. Sudduth	On-site QA
W. Sutherland	QA Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000412/2014003-01	NCV	Failure to Follow Procedure Results in Inoperable SI Accumulator (Section 1R04)
05000334&05000412/2014003-02	NCV	Removal of Missile Barrier Renders Containment Inoperable (Section 1R20)

Closed

05000334/2014-001-00	LER	Beaver Valley Unit 1 Reactor Trip due to Main Transformer Failure (Section 4OA3)
05000334/2014-002-00	LER	Beaver Valley Unit 1 Turbine Driven Auxiliary Feedwater Pump Governor Oscillations Results in Pump Trip (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
1/2OM-53C.4A.35.1, Degraded Grid, Revision 7
NOP-OP-1003, Grid Reliability Protocol, Revision 6

Condition Reports
2014-08802 2014-10273 2014-10275

Miscellaneous
Unit 1 and Unit 2 Narrative Logs, dated June 11, 2014

Section 1R04: Equipment Alignment

Procedures
2OM-30.3.B.1, Valve List – 2SWS, Revision 44
2OM-24.3.B.2, Valve List-2FWE, Revision 11
1OM-36.3.B.1, Valve List-1DA, Revision 7
1OM-36.3.B.2, Valve List-1DCW, Revision 4

1OM-36.3.B.3, Valve List-1DLO, Revision 5
1OM-36.3.B.4, Valve List-1EE, Revision 4
1OM-36.3.B.5, Valve List-1FO, Revision 9
2OM-11.4.F, Pressurizing a Safety Injection Accumulator, Revision 19
1/2OM-11.4.A, Placing Nitrogen Trailer in Service at Unit 1 or Unit 2, Revision 2

Drawings
10080-RM-436-48, Diesel Cooling Water, Revision 12
10080-RM-0430-002, Service Water Primary Cooling, Revision 42
10080-RM-0424-003, Auxiliary Feedwater, Revision 16
8700-RM-436-1, Emergency Diesel Generator (EDG) Air Start System, Revision 11
8700-RM-436-2, EDG Fuel Oil System, Revision 11
8700-RM-436-3, Lube Oil System, Revision 6
8700-RM-436-4, Water Cooling System, Revision 5

Miscellaneous
Defense in Depth Report, 2R17-009 Contingency, Revision 1
Unit 2 Safe Shutdown Status Sheet, dated May 8, 2014
BVPS Unit 2 Operator Logs, dated May 19, 2014
2OM-54.3.L5, Surveillance Verification Log, Revision 79
10080-SIS-7-0-C, Accumulator Pressure Uncertainties for Technical Specification High and Low Limits Containment Conversion to Atmosphere, Revision 3
CR-2014-09260

Section 1R05: Fire Protection

Procedures
2PFP-WHBX-722, Waste Handling Building Fire Area WH-1, Revision 0
2PFP-WHBX-735, Waste Handling Building Fire Area WH-1, Revision 0
1PFP-TRBB-693, Turbine Building Basement West Fire Area TB-1, Revision 2
1PFP-TRBB-693, Turbine Building Basement East Fire Area TB-1, Revision 1
1PFP-TRBB-713, Turbine Mezzanine Fire Area TB-1, Revision 2
1PFP-TRBB-735, Turbine Operating Deck Fire Area TB-1 &TG-1, Revision 1
1PFP-SRVB-725, Cable Tray Mezzanine Fire Area CS-1, Revision 2
2PFP-RCBX-692, Reactor Containment Building Fire Area RC-1, Revision 1
2PFP-RCBX-718, Reactor Containment Building Fire Area RC-1, Revision 1
2PFP-RCBX-738, Reactor Containment Building Fire Area RC-1, Revision 2
2PFP-RCBX-767, Reactor Containment Building Fire Area RC-1, Revision 1
1/2-ADM-0407, Installation and Inspection of Permanent and Temporary Penetration Seals, Revision 6
2PFP-SFGS-737, Safeguards Fire Area SG-1S, SG-1N, Revision 3

Condition Reports
2014-06985 2000-2863 2014-07642

Miscellaneous
10080-RE-37BU, Concealed Conduit and Sleeves Condensate Polishing Building, Sheet 1, Revision 5
10080-RE-37CE, Sleeve Designations Condensate Polishing Building, Revision 8
10080-RE-37Y, Concealed Conduit and Sleeves Waste Handling Building, Sheet 2, Revision 16

Analysis No. 10080-B-085 (WH-1) Waste Handling Building, Revision 14
Unit 2 Engineering Release & Inspection Report, dated September 5, 1986
Unit 2 Engineering Release & Inspection Report, dated March 2, 1987
Unit 2 Engineering Release & Inspection Report, dated May 6, 1987
WO 200584746

Section 1R06: Flood Protection Measures

Condition Reports
2010-81382 2014-08186

Miscellaneous
Calculation 211-N-265, Flood Analysis Outside Containment, Revisions 0 and 6

Section 1R07: Heat Sink Performance

Condition Reports
2014-08702 2014-08705

Miscellaneous
WO 200542990
Heat Exchanger Performance Monitoring Guidelines, Final Report, dated December 1991

Section 1R08: In-service Inspection

Procedures
NDE-VT-502, Leakage Examination Requirements, Revision 10
NDE-VT-510, Visual Inspection for Evidence of Boric Acid, Revision 17
NDE-VT-513, Visual Examination of the Reactor Vessel Bottom Mounted Instrumentation (BMI) Nozzles, Revision 3
1/2-ADM-2096, Alloy 600/690 Management Program, Revision 12
NOP-ER-2001, Boric Acid Control Program, Revision 11
1/2-ADM-2039, BVPS ISI Ten-Year Plans, Revision 13
1/2-ADM-2099, Primary Containment ISI Program, Revision 2
NOP-CC-5703, FirstEnergy Nuclear Operating Company ASME Section XI Repair/Replacement (R/R) Program, Revision 1
ISIE-ECP-2, Steam Generator Examination Program, Revision 23
PCI Energy Services Procedure Specification 43 MN-GTAW/SMAW, Revision 8
WDI-SSP-1236, Reactor Vessel Head Penetration Remote Visual Inspection for Beaver Valley Unit 2, Revision 0
WDI-STD-1040, Procedure for Ultrasonic Examination of Reactor Vessel Head Penetrations, Revision 11
PDI-ISI-254-SE-NB, Remote Inservice Examination of Reactor Vessel Nozzle to Safe End, Nozzle to Pipe and Safe End to Pipe Welds Using the Nozzle Scanner, Revision 2
WDI-STD-146, ET Examination of Reactor Vessel Pipe Welds Inside Surface, Revision 12
WDI-STD-1041, Reactor Vessel Head Penetration Ultrasonic Examination Analysis, Revision 10
WDI-SSP-1237, Liquid Penetrant Examination of CRDM Penetration Nozzle Weld Overlays at Beaver Valley, Revision 0

NDE Records

UT Pipe Weld Examination Report No. UT-14-1006, 14-inch diameter Reactor Coolant System, Pressurizer Surge Line, dated May 1, 2014

UT Pipe Weld Examination Reports No. UT-14-1001, UT-14-1002, UT-14-1003, UT-14-1004, and UT-14-1005, 6-inch diameter Safety Injection System, dated May 1, 2014

Automated UT Scanner Erosion/Corrosion Examination Report, UT-14-1007, Random Unit 2 Containment Liner 2RN63, dated May 1, 2014

Remote Automated UT Examination Reports, BVPS Unit 2 Reactor Vessel Inlet and Outlet Nozzle Dissimilar Metal and Safe-End Weld Examinations of 2RCS*REV21-N23, 24, 25, 26, 27, 28 and 2RCS*001-F01, 2RCS*004-F01, 2RCS*007-F01, 2RCS*003-F04, 2RCS*006-F04, 2RCS*009-F04, dated May 1, 2014

Remote Automated UT Report, DMW-R17-CP02-41-01, Vessel Upper Head Penetration #41, dated May 1, 2014

Visual Inspection (VT-2), VT-14-1031, Unit 2 Reactor Pressure Vessel Lower Head Penetration Nozzle Welds, dated May 1, 2014

Remote Visual Examination of Reactor Vessel Head Penetrations, Component 2REV-HEAD Outside Diameter (OD) Surface Report, dated May 2014

Liquid Penetrant Examination Reports, Unit 2 Reactor Vessel Head CRDM J-Weld Overlay & Tube Weld OD Overlays Report, CRDM Penetrations #16, #44, #49, #51, #56, #57, and #61, dated May 3-4, 2014

2BVT 1.47.1, Containment Structural Test, Revision 11, completed May 15, 2014

Miscellaneous

ASME Boiler and Pressure Vessel Code Case N-729-1, Alternative Examination Requirements for PWR Reactor Vessel Upper Heads

FENOC Letter L-13-027, BVPS Unit 2 Sixteenth Refueling Outage Inservice Inspection Summary Report, dated February 1, 2013

FENOC Letter, BVPS Unit 2 Request for Relief Relating to 10 CFR 50.55a Alternative Examination for Reactor Vessel Safe-End Welds, March 11, 2013

BVPS Unit 2 Steam Generator Degradation Assessment for 2R17 Refueling Outage, dated March 18, 2014

BVPS Beaver Valley Power Station 2R16 Steam Generator Operational Assessment, Westinghouse SG-SGMP-13-5, dated January 23, 2013

Westinghouse MRS-SSP-1511, Reactor Vessel Head CRDM Penetration Repair at Beaver Valley Unit 2 (DMW), Revision 6

Westinghouse WCAP-15987-P, Technical Basis for the Embedded Flaw process for Repair of Reactor Vessel Head Penetrations, Revision 2, dated December 2003

Westinghouse WCAP-16158-P, Technical Basis for Repair Options for Reactor Vessel Head Penetration Nozzles and Attachment Welds: Beaver Valley Unit 2, Revision 0

Condition Reports

2014-07092 2014-07105 2014-07327 2014-08078 2014-08408

Section 1R11: Licensed Operator Requalification Program

Miscellaneous

Unit 2 Narrative Logs, dated April 25, 2014

2DRLS-FR-H.1.002, Revision 3

Section 1R12: Maintenance Effectiveness

Procedures
BVPM-ER-3004, Maintenance Rule (MR) Program Supplemental Guidance, Revision 01
NOP-ER-3004, FENOC Maintenance Rule Program, Revision 2

Condition Reports

2014-01092	2014-01153	2014-03277	2013-00919	2013-13922	2013-07740
2013-02244	2013-15906	2013-11696	2013-11694	2011-04610	2013-02020
2013-02427	2013-07761	2013-18848	2013-14683	2014-06337	2014-06853
2014-02493	2014-01970	2014-08889	2012-07668	2012-19571	2012-19464
2013-00512					

Work Orders
20058570 200585709 200594476 200594477

Miscellaneous
Maintenance Rule System Basis Document, Unit 1 System 1, Revision 13
Maintenance Rule System Basis Document, Unit 1 System 34, Revision 9
Maintenance Rule System Basis Document, Unit 2 System 34, Revision 7
Unit 1 Reactor Control and Protection System Health Report 2nd Half 2013

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
NOP-OP-1007, Risk Management, Revision 8

Condition Reports
2014-09135

Miscellaneous
Unit 1 Weekly Maintenance Risk Summary for the week of March 31, 2014, Revision 0
Unit 1 Weekly Maintenance Risk Summary for the week of March 31, 2014, Revision 2
Unit 2 Weekly Maintenance Risk Summary for the week of March 31, 2014, Revision 0
Unit 2 Weekly Maintenance Risk Summary for the week of March 31, 2014, Revision 1
Defense-in-Depth Schedule Change #2R17-001, dated April 25, 2014
Unit 2 weekly Maintenance Risk Summary for the week of May 19, 2014, Revision 1

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
1/2OM-53C.4A.75.2, Acts of Nature – Flood, Revision 29
1/2OST-30.21A, Group 1 Flood Door Seal System Operability Check, Revision 8
2OST-30.13A, Train A Service Water Full Flow Test, Revision 36
2OST-49.2, Shutdown Margin Calculation (Plant Shutdown), Revision 21

Condition Reports
2014-05098 2014-05762 2014-06284 2014-08228 2014-10666 2014-10988

Maintenance Orders/Work Orders
600894291

Section 1R18: Plant Modifications

Condition Reports
2014-09145 2014-08451 2014-08241 2014-08256 2012-16908 2012-14958
2012-14773 2012-15662
Work Orders
200539453 200539472 200542037

Miscellaneous
ECP 14-0305, LHSI Pump BV-2SIS-P21B Rotating Assembly Replacement, Pump Casing Drain Modifications, and Piping Restoration, Revision 0
Notification 600653718
Notification 600593686
ECP 13-0245, CHS-FCV122 Upgraded Trim Installation, Revision 0

Section 1R19: Post-Maintenance Testing

Procedures
1OM-36.4.AG, Diesel Generator No. 1 Start-up and Shutdown, Revision 21
1RCP-92E-PC, Calibration of Emergency Diesel Generator SST-2000 Series Speed Switch, Issue 4, Revision 0
2MSP-2.09-I, Nuclear Instrumentation Source Range N31 Calibration, Revision 22
BVBP-SITE, Post Maintenance Test Requirements, Revision 5
2MSP-2.15-I, Nuclear Instrumentation Source Range N31 Neutron Detector Channel Calibration, Revision 18
2OST-36.2, Emergency Diesel Generator [2ESS*EG2] Monthly Test, Revision 68
2OM-36.4.AG, Emergency Diesel Generator [2ESS*EG2] Startup and Shutdown, Revision 21
1OST-33.7, Motor Driven Fire Pump Operation Test, Revision 18
1/2CMP-75-BAT-1E, Station Battery Replacement Procedure, Revision 11
2BVT-1.39.3, Station Battery [BAT*2-3] Service Test, Revision 3
2MSP-39.07-E, Vital Bus Batteries Test and Inspection, Revision 24
1/2CMP-E-39-366, Station Battery Jumper Installation and Restoration, Revision 10
2OST-11-14A, LHSI Full Flow Test, Revision 23
NOP-ER-3001, Problem Solving and Decision Making, Revision 05

Condition Reports
2014-07528 2014-07715 2014-08101 2014-08301 2014-08339 2014-08508
2014-08557 2014-10453 2014-10514

Maintenance Orders/Work Orders
200481945 200600696 200542988 200602475 200598631 200545488
200476089 220600278 200308123 200606300

Notifications
600894915 600894674 600895584 600835252

Section 1R20: Refueling and Other Outage Activities

Procedures
2OM-52.4.R.1.F, Station Shutdown From 100% Power to Mode 5, Revision 28

Condition Reports
2014-07254 2014-08082 2014-11878

Section 1R22: Surveillance Testing

Procedures
2OST-11.16, Leakage Testing RCS Pressure Isolation Valves, Revision 23
2OST-36.4, Emergency Diesel Generator [2EGS*EG2-2] Automatic Test, Revision 38
2BVT-1.47.5, Type C Leak Test, Revision 18
2BVT-1.13.5, Recirculation Spray Pump Test, Revision 17
2OST-36.1, Emergency Diesel Generator 18 Month Test, Revision 69
2OST-24.4A, Steam Driven Auxiliary Feed Pump Full Flow Test, Revision 29

Condition Reports
2014-07139 2014-07752 2014-08948 2014-09138

Miscellaneous
200600283

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures
1/2-EPP-I-2, Unusual Event, Revision 42
1/2-EPP-I-3, Alert, Revision 39
1/2-EPP-I-4, Site Area Emergency, Revision 39
1/2-EPP-I-5, General Emergency, Revision 40
1/2-EPP-IP-4.1, Offsite Protective Actions, Revision 30

Emergency Plan
Beaver Valley Emergency Preparedness Plan, Section 2, Revision 16

Section 1EP6: Drill Evaluation

Miscellaneous
2DRLS-E-3.002, Revision 2

Section 2RSO1: Radiological Hazard Assessment and Exposure Controls

Procedures
NOP-OP-4102, Radiological Postings, Labeling, and Markings, Revision 10
NOP-OP-4502, Control of Radioactive Material, Revision 02

Condition Reports
2013-16337 2013-18358 2013-18383

RWPs / ALARA Reviews
214-5017, Primary Side Steam Generators Unit 2, 14-2-34
214-5018, Reactor Assembly/Disassembly and Inspection Unit 2, 14-2-15
214-5028, Scaffolding in RCB (Reactor Containment Building) Unit 2, 14-2-30
214-5050, Reactor Head Inspection Unit 2, 14-2-45
214-5079, Decon Transfer Canal / Replace/Repair Transfer Cart, 14-2-39

Section 2RSO2: Occupational ALARA Planning and Controls

Procedures
NOP-OP-4005, ALARA Program, Revision 04
NOP-OP-4010, Determination of Radiological Risk, Revision 7
NOP-OP-4107, Radiation Work Permit (RWP), Revision 13

Condition Reports
2014-01353 2014-06878

Section 2RSO5: Radiation Monitoring Instrumentation

Procedures
1MSP-43.18-I, RM-1LW104, Liquid waste Effluent Radiation Monitor Calibration, Revision 9
1MSP-43.22-I, Radiation Process Monitor RM-1GW-108B Gaseous Waste Calibration, Revision 4
1MSP-43.23-I, RM-LW116, Liquid Waste Contaminated Drains Radiation Monitor Calibration, Revision 8
1MSP-43.60-I, RM-VS109, Ventilation Vent Radiation Mon tor Calibration, Revision 19
2MSP-43.15-I, 2CCP-RQI100, Component Cooling Water Radiation Monitor Calibration, Revision 7
2MSP-43.39-I, 2SGC-RQ100, Liquid Waste Effluent Radiation Monitor Calibration, Revision 8
2MSP-43.40-I, In Containment Area – High Range Radiation Monitor 2RMR-DAU206 Calibration, Revision 11

Condition Reports
2014-04220 2014-04321 2014-06395 2014-06937 2014-06776 2014-07023
2014-07542 2014-08025 2014-08504 2014-08937 2014-08940

Radiation Monitor Calibration

Work Orders, Plant Installed Radiation Monitors
200415483 200476603 200450302 200364621 200428313 200387371
200437504 200379290 200461888 200399724 200465526 200378225
200438677

Portable Radiation Monitors

Model	Serial #	Calibration Dates	
RM-14	8448	3/28/2013	9/16/2013
RM-14	8485	3/26/2012	11/11/2013
RM-14	4381	9/30/2010	1/23/2014
RM-25	901	8/29/2013	1/23/2014
RM-25	877	4/2/2014	
RO-2	4631	5/9/2013	3/31/2014

RO-2	4188	1/23/2013	1/6/2014
RO-20	6136	4/25/2013	9/17/2013
RO-20	4193	9/16/2013	2/12/2014
RO-2A	3820	1/11/2012	3/18/2014
RO-2A	3834	9/4/2013	1/10/2014
SAM-11	139	4/29/2013	4/28/2014
SAM-11	140	9/16/2012	9/18/2013
SPM-906	906071	8/15/2011	7/23/2013
SPM-906	906030	4/24/2013	3/20/2014
Telepole	6604-062	9/27/2012	4/29/2014
Telepole	6604-079	10/8/2013	1/13/2014
AMP-100	5005-15	9/12/2012	8/16/2013
AMP-100	5005-60	9/12/2012	8/21/2013
AMP-100	5007-049	2/1/2012	8/16/2013
AMP-50	0910-035	9/12/2012	12/12/2013
AMP-50	0908-017	5/7/2012	12/12/2013
AMS-4	1569	7/24/12	2/24/2014
AMS-4	1552	7/17/2013	2/14/2014
ASP-1	0936	3/25/2013	3/19/2014
ASP-2	1225	7/22/2013	1/20/2014
ASP-2	1224	1/15/2014	
E-140N	806	2/11/2008	
E-140N	0812	8/12/2013	1/15/2014
E-520	4508	3/12/2013	1/14/2014
E-520	4515	8/27/2013	
Fluke 451B	134	1/6/2012	1/13/2014
Fluke 451B	168	8/6/2013	1/11/2014
Gillian3500BZ	2061202002	3/5/2012	3/15/2014
PCM-2	536	1/10/2013	1/22/2014
PCM-2	353	1/7/2013	2/10/2014
RASP	2008	10/20/2011	10/26/2012
RASP	1073	8/20/2012	10/8/2013
REMBALL(PNR-4)	3383	9/1/2010	2/28/2014
REMBALL(ASP-7)	0441	9/2/2010	2/28/2014
REMBALL(PNR-4)	2875	9/1/2010	2/28/2014

Section 4OA1: Performance Indicator Verification

Licensee Event Reports

2014-001-00, Beaver Valley Unit 1 Automatic Reactor Trip Due to Main Unit Transformer Failure

2014-002-00, Beaver Valley Unit 1 Turbine Driven Auxiliary Feedwater Pump Governor Oscillations Result in Pump Trip

Monthly Reports

Unit 1 Safety System Function Failure, January 2014, February 2014, and March 2014
Unit 2 Safety System Function Failure, January 2014, February 2014, and March 2014
Unit 1 Reactor Coolant System Leakage, January 2014, February 2014, and March 2014
Unit 2 Reactor Coolant System Leakage, January 2014, February 2014, and March 2014
Unit 1 Reactor Coolant System Specific Activity, January 2014, February 2014, and March 2014
Unit 2 Reactor Coolant System Specific Activity, January 2014, February 2014, and March 2014

Miscellaneous
Safety Significance Determination LER 1-14-002, Revision 0
CR 2014-09577

Section 4OA2: Problem Identification and Resolution

Condition Reports
2014-07212

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

Condition Reports
2014-09256

Miscellaneous
Unit 2 Operations Log, dated May 20, 2014
Unit 2 Power Operations Trend Graph, 2 points, dated May 20, 2014 from 08:10:55 to 08:46:28
Unit 2 Power Operations Trend Graph 8 points, dated May 20, 2014 from 08:18:31 to 09:56:18

Section 4OA5: Other Activities

Procedures
PTIP 33401-5.21.3, HSM-H Door – Concrete Construction, Revision 0
PTIP 33401-5.21.4, HSM-H Wall – Concrete Construction, Revision 0
PTIP 33401-5.21.5, HSM-H Base – Concrete Construction, Revision 0
PTIP 33401-5.21.9, HSM-H Outlet Vent Cover – Concrete Construction, Revision 0
SPM 5.20.3, Training Requirements for Personnel Assigned to Onsite HSM Projects, Revision 1
SPM 5.21.1, General Construction Requirements and Methods for Onsite Fabrication of HSM-H, Revision 3
REP-21164-008, Site Functional Test Procedure for Crane #3123, 125 Ton SFP Cask Crane for Beaver Valley Unit 1, Revision 1
REP-21164-009, Site Load Test Procedure for Crane #3123, 125 Ton SFP Cask Crane for Beaver Valley Unit 1, Revision 1

Condition Reports
2013-06359 2013-10207 2013-10208 2013-12687 2013-13791 2013-14136
2031-14137 2103-14148 2013-14178 2013-14293

TN Non-Conformance Reports
2014-033 2014-034 2014-070 2014-073 2014-077 2014-084

Calibrations
Calibration Services, Inc., Digital Compression Machine (F-325-VFW Auto), February 13, 2014
Geotechnics, Pressure Meter Calibration, (G1162), April 15, 2014
Geotechnics, Slump Core and Rod Verification, (G1167), November 18, 2013
Geotechnics, Thermometer Calibration, (G1373), May 14, 2013

Miscellaneous
ATNA Hold Point Waiver Approval, HPW-2014-005
Batch Ticket 38059 on May 2, 2014
Batch Ticket 38060 on May 2, 2014
Batch Ticket 38122 on May 9, 2014

Beaver Valley Power Station - ISFSI Pad Concrete Compressive Strength Test Results
Certification of Inspector/Test Qualification, Form 23-1, Revision 2
Project Specification NUH-03-0314 for Concrete Construction of NUHOMS® HSM, Revision 2
Procedure Traveler for BV-B-ES-1
Procedure Traveler for BV-B-ES-2
Procedure Traveler for BV-EW-1A
Updated Final Safety Analysis Report for the Standardized NUHOMS® Horizontal Module Storage System for Irradiated Fuel, Revision 12
American Alloy Steel, Charpy V-Notch Impact Results, File No: 0312-01-02
ASME NOG-1-2004, 4200, Materials and Connections, including Fracture Toughness Requirements
CMAA Specification #70, Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes, Revised 2011
ECP No. 12-0251-000, Operating Experience, Revision 0
Operator Training Manual, Beaver Valley Power Station, Unit 1, 125T Single Failure Proof Cask Handling Crane, Crane # 3123
Calculation - 21164-ME-320, Main Hoist Drive System, BV U1, 125T Top Running Single Failure Proof Trolley, Eq No 3125, Revision 1.
REP-21164-0092, NUREG 0554/0612 Compliance/Safety Analysis Report for the 125 Ton Decon Building/SFP Cask Crane for Beaver Valley Unit 1, Revision 1

Drawings:
NUH-03-7001-SAR, Standardized NUHOMS® ISFSI HSM-H Main Assembly, Revision 4
NUH-03-7105, Walls and Outlet Vent Cover Design Drawing, Revision 6
D-21164-0500-30, Eq NO 3123, 125 Ton Eye Hook & Nut Assembly, Revision 1

Section 4OA7: Licensee Identified Violations

Condition Reports
2014-00177

LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
AFW	auxiliary feedwater
ALARA	as low as is reasonably achievable
AOP	abnormal operating procedure
ARM	area radiation monitor
ASME	American Society of Mechanical Engineers
BACC	Boric Acid Corrosion Control
BVPS	Beaver Valley Power Station
CAM	continuous air monitor
CFR	Code of Federal Regulations
CLB	current licensing basis
CR	Condition Report
CRDM	Control Rod Drive Mechanism
EAL	Emergency Action Level
ECCS	emergency core cooling system
ECT	Eddy Current Testing
ECP	engineering change package
EDG	emergency diesel generator
EPRI	Electric Power Research Institute
FENOC	FirstEnergy Nuclear Operating Company
FSAR	Final Safety Analysis Report
FSB	Fuel Storage Building
HELB	high energy line break
HSM	Horizontal Storage Module
IMC	Inspection Manual Chapter
ISFSI	independent spent fuel storage installation
ISI	inservice inspection
kV	kilovolt
LCO	limiting condition for operation
LER	licensee event report
LERF	large early release frequency
LHSI	low head safety injection
LOOP	loss of offsite power
NCV	non-cited violation
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NUHOMS®	Nutech Horizontal Modular Storage
ODCM	Offsite Dose Calculation Manual
ODSCC	outside diameter stress corrosion cracking
PARS	Publicly Available Records
Psig	pounds per square inch gage
PT	Liquid Penetrant Test
RAD	regulatory applicability determination
RCS	reactor coolant system
RG	Regulatory Guide

RIS	Regulatory Information Summary
RP	radiation protection
RVUCH	reactor vessel upper closure head
RWP	radiation work permit
QA	quality assurance
QC	quality control
SAM	small article monitor
SDP	Significance Determination Process
S/G	Steam Generator
SI	safety injection
SPAR	simplified plant analysis risk
SRA	Senior Reactor Analyst
SSC	structure, system, or component
TN	AREVA Transnuclear
TS	technical specification
TSP	tube support plate
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Test
VT	Visual Test
VUHP	vessel upper head penetration
WBC	whole body counter