



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

October 27, 2010

Mr. Paul Harden  
Site Vice President  
FirstEnergy Nuclear Operating Company  
Beaver Valley Power Station  
P. O. Box 4, Route 168  
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION - NRC INTEGRATED INSPECTION  
REPORT 05000334/2010004 AND 05000412/2010004

Dear Mr. Harden:

On September 30, 2010, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Beaver Valley Power Station Units 1 and 2. The enclosed integrated inspection report documents the inspection results, which were discussed on October 13, 2010, with you and other members of your staff.

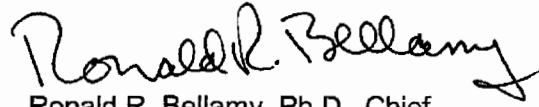
The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, this report documents one finding of very low safety significance (Green). The finding did not involve a violation of NRC requirements. 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 Senior Resident Inspector at the Beaver Valley Power Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosures, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at

<http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). We appreciate your cooperation. Please contact me at 610-337-5200 if you have any questions regarding this letter.

Sincerely,

A handwritten signature in cursive script that reads "Ronald R. Bellamy". The signature is written in dark ink and is positioned above the printed name and title.

Ronald R. Bellamy, Ph.D., Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

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

Enclosures: Inspection Report 05000334/2010004; 05000412/2010004  
w/ Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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Sincerely,  
/RA/  
Ronald R. Bellamy, Ph.D., Chief  
Reactor Projects Branch 6  
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## U. S. NUCLEAR REGULATORY COMMISSION

## REGION I

Docket Nos. 50-334, 50-412

License Nos. DPR-66, NPF-73

Report Nos. 05000334/2010004 and 05000412/2010004

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Shippingport, PA 15077

Dates: July 1, 2010 through September 30, 2010

Inspectors: D. Werkheiser, Senior Resident Inspector  
E. Bonney, Resident Inspector  
P. Kaufman, Senior Reactor Inspector  
J. Krafty, Resident Inspector  
T. Moslak, Health Physicist  
T. O'Hara, Reactor Inspector

Approved by: R. Bellamy, Ph.D., Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000334/2010004, IR 05000412/2010004; 07/01/2010 – 09/30/2010; Beaver Valley Power Station, Units 1 & 2; Operability Evaluation

The report covered a 3-month period of inspection by resident inspectors, regional reactor inspectors, and a regional health physics inspector. One (GREEN) finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within The Cross-Cutting Areas," dated February 2010. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Cornerstone: Mitigating Systems

Green. A Green, self-revealing finding (FIN) was identified in that an inadequate procedure resulted in a failure to adequately retain a 1-1 Emergency Diesel Generator (EDG) room damper after louver adjustment. Specifically, the adjustment of the 1-1 EDG upper damper (1VS-D-22-2A) in April 2010 led to retention hardware not being sufficiently secure to prevent damper failure and resulted in the linkage failing to open the upper dampers. This was self-revealing during a crew investigation for a 1-1 EDG alarm on September 5, 2010. This issue was entered into the licensee's corrective action program under CR 10-82257.

Traditional enforcement does not apply because the issue did not have an actual safety consequence or the potential for impacting NRC's regulatory function, and was not the result of any willful violation of NRC requirements. The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and affects the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609.04 (Table 4a), Phase 1 – Initial Screening and Characterization of Findings, the finding was determined to be of very low safety significance (Green).

The cause of this finding relates to the cross-cutting aspect of Human Performance, Resources, in that FENOC did not provide complete procedures to conduct the damper adjustment and retention. [H.2.(c)] (Section 1R19)

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## REPORT DETAILS

### Summary of Plant Status:

Unit 1 began the inspection period at 100 percent power. On July 23, the unit was down-powered to 98 percent due to hot weather for 4 hours and returned to full power the same day. On July 24, the unit was down-powered to 96 percent due to hot weather for 6 hours and returned to full power the same day. On August 7, the unit was down-powered for planned turbine throttle and governor valve testing and was returned to full power the same day. On September 8, the unit was down-powered to 91 percent for unplanned repairs of the 'A' iso-phase duct cooling fan. The unit was returned to full power the next day. On September 30, the unit was down-powered to 98 percent for planned turbine throttle and governor valve testing, then down-powered to 60 percent for steam generator safety-valve testing, and then continued with a planned unit shutdown for refueling outage 1R20. The unit remained in a refueling outage for the remainder of the inspection period.

Unit 2 operated at 100 percent full power the entire inspection period.

### 1. REACTOR SAFETY

#### **Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity [R]**

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

##### .1 Seasonal Susceptibility

##### a. Inspection Scope (1 sample)

In preparation for summer storm conditions, associated high winds, and hurricane season, the inspectors reviewed the Beaver Valley Power Station (BVPS) design features and FENOC's implementation of procedures to protect risk significant mitigating systems from adverse weather. The inspectors reviewed the corrective action program database, operating experience, the Updated Final Safety Analysis Report (UFSAR), and technical specifications to determine the types of adverse weather conditions to which the site is susceptible, and to verify that the licensee was appropriately identifying and resolving weather-related equipment problems. The inspectors also reviewed and walked down the emergency diesel generators and vital 4160 VAC systems to verify seasonal readiness.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial System Walkdowns (71111.04Q)

##### a. Inspection Scope (3 samples)

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The inspectors performed 3 partial equipment alignment inspections during conditions of increased safety significance, including when redundant equipment was unavailable during maintenance or adverse conditions. The partial alignment inspections were also completed after equipment was recently returned to service after significant maintenance. The inspectors performed partial walkdowns of the following systems, including associated electrical distribution components and control room panels, to verify the equipment was aligned to perform its intended safety functions:

- On July 27, Unit 1, 'A' Low Head Safety Injection seal water line-up during investigation for an indicating light out as documented in CR 10-7991;
- On August 4, Unit 1, 1-1 EDG partial valve line-up during 1-2 EDG testing; and
- On August 24, Unit 1, 'B' train Low Head Safety Injection during 'A' train post maintenance testing.

b. Findings

No findings were identified.

.2 Complete System Walkdown (71111.04S)

a. Inspection Scope (1 sample)

The inspectors completed a detailed review of the alignment and condition of the Unit 1 'A' Train Recirculation Spray System (RSS) prior to the 1R20 refueling outage. The inspectors conducted a walkdown of the system to verify that the critical portions, such as valve positions, switches, and breakers, were correctly aligned in accordance with procedures, and to identify any discrepancies that may have had an effect on operability.

The inspectors also reviewed outstanding maintenance work orders to verify that the deficiencies did not significantly affect the RSS system function. In addition, the inspectors discussed system health with the system engineer and reviewed the condition report database to verify that equipment alignment problems were being identified and appropriately resolved. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Sample Review (71111.05Q)

a. Inspection Scope (5 samples)

The inspectors reviewed the conditions of the fire areas listed below, to verify compliance with criteria delineated in Administrative Procedure 1/2-ADM-1900, Fire Protection, Rev. 23. This review included FENOC's control of transient combustibles and ignition sources, material condition of fire protection equipment including fire detection systems, water-based fire suppression systems, gaseous fire suppression

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systems, manual firefighting equipment and capability, passive fire protection features, and the adequacy of compensatory measures for any fire protection impairments. Documents reviewed during the inspection are listed in the Attachment:

- Unit 2, MCC Cubicles on elevation 755' 6" (Fire Area PA-6/7);
- Unit 1, Main Steam Valve Area (Fire Area MS-1);
- Unit 1, Charging Pump A (Fire Area PA-1f);
- Unit 1, Charging Pump B (Fire Area PA-1g); and
- Unit 1, Charging Pump C (Fire Area PA-1h).

b. Findings

No findings were identified.

.2 Annual Fire Drill Observation (71111.05A)

a. Inspection Scope (1 sample)

The inspectors observed portions of personnel performance during a fire drill for indications of a fire and CO<sub>2</sub> discharge into the Unit 2 EDG Room (Zone 63) on July 21. The inspectors observed fire brigade members using protective clothing, turn-out gear, and self-contained breathing apparatus, and entering the area in a controlled manner. The inspectors observed fire fight direction, command and control, and that the pre-fire plan was used. Appropriate emergency action levels were referenced.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope (1 sample, submerged cables)

The inspectors reviewed internal flood protection measures regarding cables located in manholes 1EMH-15 on July 26 and 1EMH-8A on August 2, located near the intake structure. Various safety-related 480V cables are routed through these manholes. The inspectors observed cable and vault conditions from the open manhole and monitored licensee maintenance activities. The inspectors reviewed the USFAR, licensee internal flooding evaluations, and FENOC's protection of the enclosed systems from flooding.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope (1 sample)

Enclosure

The inspectors observed one sample of Unit 2 licensed operator simulator training on August 12. The inspectors evaluated licensed operator performance regarding command and control, implementation of normal, annunciator response, abnormal, and emergency operating procedures, communications, technical specification review and compliance, and emergency plan implementation. The inspectors evaluated the licensee staff training personnel to verify that deficiencies in operator performance were identified, and that conditions adverse to quality were entered into the licensee's corrective action program for resolution. The inspectors reviewed simulator physical fidelity to assure the simulator appropriately modeled the plant control room. The inspectors verified that the training evaluators adequately addressed that the applicable training objectives had been achieved.

b. Findings

No findings were identified.

1R12 Maintenance Rule Implementation (71111.12Q)

a. Inspection Scope (3 samples)

The inspectors evaluated Maintenance Rule (MR) implementation for the issues listed below. The inspectors evaluated specific attributes, such as MR scoping, characterization of failed structures, systems, and components (SSCs), MR risk characterization of SSCs, SSC performance criteria and goals, and appropriateness of corrective actions. The inspectors verified that the issues were addressed as required by 10 CFR 50.65 and the licensee's program for MR implementation. For the selected SSCs, the inspectors evaluated whether performance was properly dispositioned for MR category (a)(1) and (a)(2) performance monitoring. MR System Basis Documents were also reviewed, as appropriate. Documents reviewed are listed in the Attachment.

- On July 21, Unit 2 maintenance preventable functional failure evaluation after 'B' station air compressor failure as documented in CR 10-79999;
- On August 2, Unit 1 & 2 emergency response facility transformer repairs and work activities accomplished in WO 200387120; and
- On August 20, Unit 2 'B' Station Air Compressor MR a(1) status evaluation as documented in CR 10-81341.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessment and Emergent Work Control (71111.13)

a. Inspection Scope (4 samples)

The inspectors reviewed the scheduling and control of 4 activities, and evaluated their effect on overall plant risk. This review was conducted to ensure compliance with applicable criteria contained in 10 CFR 50.65(a)(4). Documents reviewed during the inspection are listed in the Attachment.

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- On July 21, Unit 2 revised risk profile impact and assessment due to 'B' station air compressor failure;
- On July 26, Unit 2 unplanned entry into Yellow risk due to 'A' system service station transformer pilot wire trouble and secondary protection repairs;
- Week of August 9, Unit 1 risk evaluation that included planned electrical switchyard and turbine-driven auxiliary feedwater maintenance; and
- On August 19, Unit 2 risk for activities including planned 'A' solid state protection system testing, auxiliary feed water throttle valve calibration, and abnormal steam line-up for the turbine-driven auxiliary feedwater pump.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (6 samples)

The inspectors evaluated the technical adequacy of selected immediate operability determinations (IOD), prompt operability determinations (POD), or functionality assessments (FA), to verify that determinations of operability were justified. In addition, the inspectors verified that technical specification (TS) limiting conditions for operation (LCO) requirements and UFSAR design basis requirements were properly addressed. In addition, the inspectors reviewed compensatory measures implemented to ensure the measures worked and were adequately controlled. Documents reviewed are listed in the Attachment.

- On August 9, Unit 2, 'C' service water pump high head-ratio documented in CR 10-79455;
- On July 14 and July 27, Unit 1, power range nuclear instrument (N43) failures as documented in CRs 10-79583 and 10-80321;
- On July 22, Unit 1, 'A' river water pump [1WR-P-1A] during high cubicle temperatures caused by air damper malfunction, as documented in CR 10-80037;
- On July 26, Unit 1, 'C' river water pump [1WR-P-1C] discharge piping leak as documented in CR 10-80179;
- On August 11, Unit 1 and Unit 2, degraded nuclear instrumentation system potentiometers as documented in CR 10-81069 and associated operational decision-making interface dated August 30; and
- On August 30, Unit 1, 'B' quench spray pump [1QS-P-1B] exceeding start-time criteria during 1OST-13.11B as documented in CR 10-81945.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18) (2 samples total)

.1 Temporary Plant Modifications

a. Inspection Scope (1 sample)

Enclosure

The inspectors reviewed the following temporary modifications (TMOD) based on risk significance. The TMOD and associated 10 CFR 50.59 screening were reviewed against the system design basis documentation, including the UFSAR and the TS. The inspectors verified the TMODs were implemented in accordance with Administrative (ADM) Procedure, 1/2-ADM-2028, "Temporary Modifications," Rev. 6. Documents reviewed during the inspection are listed in the Attachment.

- On July 12, Unit 1, WO 200421798 installation of temporary jumper to bypass the overload function on the west hoist of the Spent Fuel Pool Crane while lifting a load of less than 200 pounds.

b. Findings

No findings were identified.

.2 Permanent Plant Modifications

a. Inspection Scope (1 sample)

The inspectors evaluated the design basis impact of the modifications listed below. The inspectors reviewed the adequacy of the associated 10 CFR 50.59 screening, verified that attributes and parameters within the design documentation were consistent with required licensing and design bases, as well as credited codes and standards, and walked down the systems to verify that changes described in the package were appropriately implemented. The inspectors also verified the post-modification testing was satisfactorily accomplished to ensure the system and components operated consistent with their intended safety function. Documents reviewed are listed in the Attachment.

- Units 1 and 2, Manhole Modifications to support level detection and portable pumping: ECPs 09-0460, 09-0723, and 09-0631.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope (6 samples)

The inspectors reviewed the following activities to determine whether the post-maintenance tests (PMT) adequately demonstrated that the safety-related function of the equipment was satisfied given the scope of the work, and that operability of the system was restored. In addition, the inspectors evaluated the applicable acceptance criteria to verify consistency with the design and licensing bases, as well as TS requirements. The inspectors witnessed the test or reviewed test data to verify results adequately demonstrated restoration of affected safety functions. The inspectors also verified that conditions adverse to quality were entered into the corrective action program for resolution. Documents reviewed during the inspection are listed in the Attachment:

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- On July 23, Unit 1, 1OST-13.10A, "Chemical Injection System Valve and Pump Operability Check-Train A" after planned maintenance on Train A Quench Spray Chemical Addition Pump [1QS-P-4C];
- On July 29, Unit 1, WO 200425269 after power range nuclear instrument N-43 potentiometer replacements;
- On August 15, Unit 2, WO 200379493 to replace the 24 VDC secondary process rack 'F' power supply;
- On August 25, Unit 1, WO 200428611 after repair of '2A' Outside Recirculation Spray pump casing drain valve connection [1RS-113];
- On August 27, Unit 2, NOTF 600621092 to replace the in-core instrumentation system B-10 path indexer; and
- On September 5, Unit 1, WO 200429561 to repair the 1-1 EDG ventilation damper.

b. Findings

Introduction: A Green, self-revealing finding (FIN) was identified in that an inadequate procedure resulted in a failure to adequately retain a 1-1 EDG room damper after louver adjustment. Specifically, the adjustment of the upper dampers (1VS-D-22-2A) in April 2010 led to retention hardware not sufficiently secure to prevent damper failure and resulted in the linkage failing to open the upper dampers as discovered on September 5, 2010 when investigating a crankcase pressure alarm.

Description: On September 5, Unit 1 received a control room and local alarm for the 1-1 EDG room. An operator was dispatched and discovered the cause of the alarm was 1-1 EDG crank case pressure. Further investigation led to the discovery that the connecting rod between the damper and its actuator was disconnected, its retention hardware on the floor, with the damper remaining in the closed position. High differential pressure developed in the room with the upper intake damper in the closed position, causing the crank case pressure alarm.

An adjustment to the upper intake damper was previously performed in April 2010 per WO 200412169. The work order directed technicians to adjust the damper to a specific setting, but did not specify a method to assure proper retention of the hardware to prevent subsequent disassembly of the damper linkage. The licensee documented this issue in CR 10-82257.

Upon discovery of the linkage issue in the 1-1 EDG room, the licensee verified the 1-2 EDG damper linkage settings and retention hardware were intact and working by checking for successful operation. Based on a review of engineering calculations, the 1-1 EDG would be provided sufficient cooling air if only one damper failed.

Analysis: An inadequate procedure resulted in a failure to adequately retain a 1-1 EDG room damper after louver adjustment. This is determined to be a performance deficiency. Traditional enforcement does not apply because the issue did not have an actual safety consequence or the potential for impacting the NRC's regulatory function, and was not the result of any willful violation of NRC requirements. The performance deficiency is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone, and affects the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences.

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In accordance with IMC 0609.04 (Table 4a), Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in a loss of safety function.

The cause of this finding relates to the cross-cutting aspect of Human Performance, Resources, in that FENOC did not provide a complete procedure to conduct the damper adjustment. [H.2.(c)]

Enforcement: Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. FENOC took immediate action to return the damper to an operable configuration, documented the issue in CR-10-82257, and performed an apparent cause analysis. Because the finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as (FIN) 05000334/2010004-01, **Inadequate Maintenance Procedure Results in Auto-Disassembly of EDG Intake Damper.**

1R20 Refueling and Outage Activities (71111.20)

Unit 1 Refueling Outage Preparations (1R20)

a. Inspection Scope (1 partial sample)

The inspectors observed the following selected Unit 1 pre-outage activities to determine if licensee readiness regarding shutdown safety functions (e.g. reactor decay heat removal, spent fuel pool cooling, and containment integrity) were appropriately planned. The inspectors reviewed procedures and/or observed selected activities associated with the Unit 1 refueling outage. Documents reviewed during the inspection are listed in the Attachment.

- Pre-Outage Shutdown Safety (Defense-in-Depth) review;
- New fuel elevator cable replacement and initial pre-operational checks;
- Spent fuel pool-side fuel assembly upender cable inspection; and
- New fuel receipt and inspection

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (5 samples: 1 leak rate, 2 in-service testing, and 2 routine)

The inspectors witnessed the performance of or reviewed test data for the five following Operation Surveillance Test (OST), Beaver Valley Test (BVT), Reactor Surveillance Test (RST), and Maintenance Surveillance (MSP) packages. The reviews verified that the equipment or systems were being tested as required by TS, the UFSAR, and procedural requirements. The inspectors also verified that the licensee established proper test conditions, that no equipment pre-conditioning activities occurred, and that acceptance criteria were met.

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- On July 19, 1MSP-6.12-I, Rev. 13, "P-455, Pressurizer Pressure Channel I Test" (routine);
- On August 4, 1OST-36.2, Rev. 54, "Diesel Generator No. 2 Monthly Test" (IST);
- On August 4, 3BVT1.60.8, Rev. 4, "River Depth Measurement" (routine);
- On August 5, 1RST-02.05, Rev. 10, "Moderator Temperature Coefficient Determination" (IST); and
- On September 7, 1OST-6.2, Rev. 25, "Operating Surveillance Test, Reactor Coolant System Inventory Balance" (leak rate).

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness [EP]**

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope (1 sample)

The inspectors observed an emergency preparedness mini-drill and Unit 2 licensed-operator simulator evaluation on August 12. Senior licensed-operator performance regarding event classifications and notifications were specifically evaluated. The inspectors evaluated the simulator-based scenario that involved multiple, safety-related component failures and plant conditions that would have warranted emergency plan activation, emergency facility activation, and escalation to the event classification of Alert. The licensee planned to credit this evolution toward Emergency Preparedness Drill/Exercise Performance (DEP) Indicators, therefore, the inspectors reviewed the applicable event notifications and classifications to determine whether they were appropriately credited, and properly evaluated consistent with Nuclear Energy Institute (NEI) 99-02, Rev. 6, "Regulatory Assessment Performance Indicator Guideline." The inspectors reviewed licensee evaluator worksheets regarding the performance indicator acceptability, and reviewed other crew and operator evaluations to ensure adverse conditions were appropriately entered into the Corrective Action Program. Other documents utilized in this inspection include the following:

- 1/2-ADM-1111, Rev. 4, "NRC EPP Performance Indicator Instructions;"
- 1/2-ADM-1111.F01, Rev. 3, "Emergency Preparedness Performance Indicators Classifications/Notifications/PARS;"
- EPP-I-1a/b, Rev. 14, "Recognition and Classification of Emergency Conditions;"
- 1/2-EPP-I-2, Rev. 35, "Unusual Event;"
- 1/2-EPP-I-3, Rev. 33, "Alert;"
- 1/2-EPP-I-4, Rev. 33, "Site Area Emergency;" and
- 1/2-EPP-I-5, Rev. 34, "General Emergency."

b. Findings

No findings were identified.

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## 2. RADIATION SAFETY

Cornerstones: Occupational and Public Radiation Safety [RS]

### 2RS05 Radiation Monitoring Instrumentation (71124.05)

#### a. Inspection Scope

During the period July 26 - 29, the inspector conducted the following activities to evaluate the operability and accuracy of radiation monitoring instrumentation used to ensure a safe work environment, and to detect and quantify radioactive process streams and effluent releases. Implementation of these programs was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

#### Walkdown of Process and Effluent Monitoring Systems

The inspector, with the assistance of a Plant Systems Engineer, walked down selected portions of Unit 1 and Unit 2 liquid and gaseous effluent monitoring systems to assess material condition and the status of system upgrades. The walk-down in Unit 1 included portions of the recirculation spray heat exchanger river water system (RM-1RW-100-A-D) and gaseous effluent monitors (RM-1VS-109/110/111/112). Monitors walked down in Unit 2 included liquid waste monitor (2SGC-RQ100), steam generator blow-down monitor (2SSR-RQ100), component cooling water monitor (2CCP-RQ100) and fuel building gaseous effluent monitors (2RMF-RQ301A/B).

#### Calibration of Portable Survey Instruments, Area Monitors, Electronic Dosimeters and Air Samplers.

The inspector reviewed the operating procedures, calibration reports, and current source activities/dose rate characterizations for the in-service Shepard Model 89-400 calibrator (No. 8216/9109), and the iDC-HF Electronic Dosimeter Calibrator, used for calibrating survey instruments and electronic dosimeters, respectively. The inspector reviewed the calibration records for the RadCal Electrometers and associated ion chambers used in calibrating the calibrators.

The inspector reviewed the calibration records for selected survey meters, electronic dosimeters, and contamination monitors including small article monitors (SAM-11), personal contamination monitors (PCM-2 & SPM-906), portable instruments (RM-14, E-520, telepole, RO-2 & RO-20), electronic dosimeters (DMC-2000), neutron survey instruments (ASP-1) and airborne monitors (AMS-4)

The inspector observed a technician performing a calibration of a portable survey instrument (E-520), and daily operational checks of various Small Article Monitors (SAM-11). The inspector confirmed that procedural requirements were met. The inspector also observed the technician perform pre-use functional checks on the Shepard 89-400 calibrator, located in the main instrument shop. During walkdowns in various plant areas, the inspector confirmed that available monitoring instruments were calibrated, that daily source checks had been performed, and that the instruments were operational. Instruments checked included handheld survey instruments, electronic dosimeters, air monitors, and contamination monitors.

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The inspector reviewed contamination sampling results (10 CFR 61 radionuclide analyses) used to characterize difficult-to-measure radioisotopes found in Unit 1 and Unit 2, to determine if the calibration sources were representative of the radioisotopes found in the plant source term. Whole body counting system records and contamination monitor set points were reviewed to determine if this data was incorporated in system setup to ensure that difficult-to-measure radioisotopes were accounted for when making measurements.

#### Laboratory Instrumentation:

The inspector reviewed the calibration records, daily source checks and maintenance records for the gamma spectroscopy systems (Detectors Nos 1, 2, 3, 5, 6, and 7) and scintillation counter (LSA Packard 3100 TR) to verify that the instruments were calibrated and properly maintained. The inspector confirmed that the check sources used align with the plant's isotopic mix.

#### Whole Body Counters:

The inspector reviewed the calibration and operating procedure for the FastScan and AccuScan whole body counting systems. The inspector determined that appropriate radioactive sources and phantoms were used in making calibrations and that calibration sources were representative of radioisotopes found in the plant source term.

#### Post-Accident Monitoring Instrumentation

The inspector reviewed the calibration records for the Unit 1 and Unit 2 high range containment radiation monitors, RM-1RM-219A/B and 2RMR-RQ206/207, respectively. The inspector determined that the electronic and radiation source calibrations were appropriately conducted.

The calibration records for various area monitors that would be used to assess in-plant accident conditions were reviewed including control room, auxiliary building and fuel building area monitors.

#### Problem Identification and Resolution:

The inspector reviewed selected Condition Reports (CR), a Nuclear Quality Assessment audit, and field observation reports to evaluate the licensee's threshold for identifying, evaluating, and resolving problems in implementing the radiation monitoring instrumentation. Included in this review were CR's related to radiation worker and radiation protection technician errors to determine if an observable pattern traceable in the maintenance or use of radiation instruments was evident.

#### b. Findings

No findings were identified.

### 2RS08 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage and Transportation (71124.08)

#### a. Inspection Scope (1 sample)

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During the period June 28 - July 1, the inspector conducted the following activities to verify that the licensee's radioactive material processing and transportation programs complied with the requirements of 10 CFR 20, 61, 71; and Department of Transportation (DOT) regulations 49 CFR 170-189.

#### Radioactive Waste Systems Walkdown

The inspector walked down accessible portions of the radioactive liquid processing systems and site solid radwaste storage areas with the Supervisor Nuclear Operations Support and the Supervisor Radwaste/Transportation, respectively. During the tour, the inspector evaluated if the systems and facilities were consistent with the descriptions contained in the UFSAR and the Process Control Program (PCP), evaluated the general material conditions of the systems and facilities, and identified any changes to the systems. The inspector reviewed the current processes for transferring radioactive resin/sludge to shipping containers, and the subsequent de-watering process.

Also during this tour, the inspector walked down portions of radwaste systems that are no longer in service or abandoned in place, and discussed with the Supervisor Nuclear Operations Support, and Shift Manager, the status of administrative and physical controls for these systems including components of the radwaste evaporators and solidification equipment.

The inspector visually inspected various radioactive material storage locations with the Supervisor Radwaste/Transportation, including areas of the Waste Handling Buildings, storerooms, decontamination facilities, outside yard locations within the Protected Area, and the Old Steam Generator Storage Facility to evaluate material conditions and radiological controls.

#### Waste Characterization and Classification

The inspection included a selective review of the waste characterization and classification program for regulatory compliance, including:

- the radiochemical sample analytical results for various radioactive waste streams;
- the development of scaling factors for hard-to-detect radionuclides from radiochemical data;
- the methods and practices used to detect changes in waste streams; and
- the characterization and classification of waste relative to 10 CFR 61.55 and the determination of DOT shipment subtype per 49 CFR 173.

#### Shipment Preparation

The inspection included a review of radioactive waste program records, shipment preparation procedures, and training records, including:

- reviewing radwaste and radioactive material shipping logs for calendar years 2009 and 2010;
- verifying that training was provided to appropriate personnel responsible for classifying, handling, and shipping radioactive materials, in accordance with Bulletin 79-19 and 49 CFR 172 Subpart H;

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- verifying that appropriate NRC (or agreement state) license authorization was current for shipment recipients for recent shipments; and
- verifying compliance with the relevant Certificates-of-Compliance and related procedures for shipping casks and high integrity containers.

#### Shipment Records

The inspector selected and reviewed records associated with five (5) shipments of radioactive material made since the last inspection of this area. The shipments were Nos. B-3901, B-3890, B-3893, B-3778, and B-3898. The following aspects of the radioactive waste packaging and shipping activities were reviewed:

- implementation of applicable shipping requirements including proper completion of manifests;
- implementation of specifications in applicable certificates-of-compliance, for the approved shipping casks/high integrity containers, including limits on package contents;
- verification that dewatering criteria were met;
- classification of radioactive materials relative to 10 CFR 61.55 and 49 CFR 173;
- labeling of containers relative to package dose rates;
- radiation and contamination surveys of the packages;
- placarding of transport vehicles;
- conduct of vehicle checks;
- providing of emergency instructions to the driver;
- completion of shipping papers; and
- notification by the recipient that the radioactive materials have been received.

#### Identification and Resolution of Problems

The inspector reviewed the 2009 Annual Radioactive Effluent Release Report, relevant Condition Reports, a Nuclear Oversight Audit, a self assessment report and recent Yard Area Rad Material Inspection reports. Through this review, the inspector assessed the licensee's threshold for identifying problems, and the promptness and effectiveness of the resulting corrective actions. This review was conducted against the criteria contained in 10 CFR 20.1101(c) and the licensee's procedures.

#### b. Findings

No findings of significance were identified.

### **4. OTHER ACTIVITIES [OA]**

#### **4OA1 Performance Indicator Verification (71151)**

##### a. Inspection Scope (6 samples)

The inspectors sampled licensee submittals for Performance Indicators (PI) listed below for both Unit 1 and Unit 2 to verify accuracy of the data recorded from July 2009 through August 2010. The inspectors reviewed Licensee Event Reports, condition reports, portions of various plant operating logs and reports, and PI data developed from monthly

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operating reports. Methods for compiling and reporting the PIs were discussed with cognizant engineering and licensing personnel. To verify the accuracy of the PI data reported during this period, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 6, were used for each data element.

Cornerstone: Mitigating Systems

- Unit 1 and Unit 2 Auxiliary Feedwater Systems [MS08] - Turbine-driven and Motor-driven Auxiliary Feedwater;
- Unit 1 and Unit 2 Residual Heat Removal Systems [MS09] -Low Head Safety Injection & Recirculation Spray; and
- Unit 1 and Unit 2 Support Cooling Water Systems [MS10] -River Water (Unit 1) & Service Water (Unit 2).

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 samples total)

.1 Daily Review of Problem Identification and Resolution

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into FENOC's corrective action program. This review was accomplished by reviewing summary lists of each CR, attending screening meetings, and accessing FENOC's computerized CR database.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review (71152)

a. Inspection Scope (1 sample)

The inspectors reviewed site trending results for the time period January through June 2010, to determine if trending was appropriately performed and evaluated by FENOC. This review covered the site trending program under FENOC's Integrated Performance Assessment process, and included a sample of self-assessments from the several organizations at Beaver Valley. This review verifies that existing trends were (1) appropriately captured and scoped by applicable departments, (2) consistent with the inspectors' assessment from the daily CR and inspection module reviews (Section 4OA2.1, .3 and .4), and (3) not indicative of a more significant safety concern. Additionally, the inspectors verified the performance of site trending against NOP-LP-2001, "Condition Report Process", and NOBP-LP-2018, "Integrated Performance

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Assessment /Trending." The inspectors also reviewed quarterly Quality Assurance reports and issues captured in the Activity Tracking database to identify issues and trends to evaluate during the inspection.

b. Findings and Observations

No findings were identified. However, an adverse trend was identified that involved various human performance errors that peaked in the mid-summer. This trend was identified by the licensee and entered into the corrective action process. The licensee conducted an apparent cause analysis and conducted various station stand downs to address the identified issues. The inspectors noted a significant reduction in human performance errors by the end of the inspection period.

.3 Annual Sample: Beaver Valley Unit 2 Equipment Operability for Steam Generator Tube Rupture Safety Analysis

a. Inspection Scope (1 sample)

This review was done to evaluate the appropriateness of FENOC's corrective actions to determine if FENOC had promptly corrected adverse conditions when identified. This inspection specifically focused on identification, evaluation, and resolution of an adverse configuration where a combination of two inoperable same-train components could invalidate the Beaver Valley Power Station (BVPS) Unit 2 design basis accident overfill safety analysis for a postulated Steam Generator Tube Rupture (SGTR), even though applicable TS required actions were being met as documented in License Event Report (LER) 05000412/2009-001-00 and CR 09-63451. Review and closure of this LER is documented in NRC inspection report 05000412/2009005.

On August 19, 2009, BVPS Unit 2 identified that if the "A" EDG is not available and one of the four atmospheric dump valves (ADV) is not available, a condition may exist where the steam generator could overfill during a postulated SGTR event. The inspectors reviewed the root cause analysis report as well various condition reports and associated corrective actions with the SGTR design basis overfill equipment operability configuration issue. The corrective actions reviewed included (1) operations standing night order, (2) revised site procedures to prohibit removing one EDG and one ADV from service simultaneously, and (3) revised TS bases for clarity.

The inspectors conducted interviews of design, licensing, and other plant operations personnel. The inspectors conducted plant walk-downs of a sample of manual operator actions, reviewed operator action times for Unit 2 SGTR with malfunctions, reviewed compensatory actions, and reviewed the Beaver Valley TS and UFSAR to assess the potential adverse impact of steam generator overfill and the associated configuration on plant operations. Documents reviewed during the inspection are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

The inspectors determined that the corrective actions were appropriately aligned with the root cause analysis and were implemented in a manner commensurate with the safety significance. In addition, the administrative restrictions documented in site procedures

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1/2-ADM-0804, On-Line Risk Assessment and Management and 1/20M-48.1.1, Technical Specification Compliance, provide appropriate guidance to prohibit removing one EDG and one ADV from service simultaneously during work activities.

4. Annual Sample: Review of Beaver Valley Buried Piping Program

a. Inspection Scope (1 sample)

The inspectors reviewed FENOC's Buried Piping Program for Units 1 and 2.

The inspector reviewed the opportunistic inspections of leaking buried piping in the last 3 years. These opportunistic excavations and inspections were generated by corrective action reports which identified potential leaking buried piping.

The inspector also reviewed five guided wave inspections of buried piping systems conducted without performing excavations. For these inspections, FENOC performed the inspections from non-buried sections of piping, looking at sections of piping which were buried.

The inspector reviewed the FENOC license renewal commitment to conduct one opportunistic or focused inspection of buried piping before entering the period of extended operation for each unit, and one planned inspection within the first 10 years of operation under the revised license on each unit. The period of extended operation for Unit 1 begins in January 2017 and for Unit 2 begins in January 2027.

The inspector reviewed the FENOC "Action Plan to Develop a Strategy for Managing Buried Piping at Beaver Valley Power Station." This plan provides milestones which FENOC intends to complete to meet the License Renewal commitments on inspection of buried piping.

b. Assessment and Observations

The inspectors determined that FENOC is taking action to develop a buried piping inspection program for Units 1 and 2 to meet license renewal commitments and to meet the NEI industry initiative on buried piping inspection.

The inspector communicated the following observations to the Beaver Valley Plant staff:

- FENOC does not have a separate procedure for performing a buried piping inspection at present. Inspections presently are performed via the plant's Work Order process and lacks detail on sample selection and inspection criteria;
- Review of past opportunistic guided wave inspection reports does not indicate what actions FENOC followed to resolve the indications reported;
- The risk classifications of buried piping systems does not include detailed design information on the specific coatings and longevity used to protect the piping; and
- A very small percentage (0.2%) is presently protected by a cathodic protection system. FENOC has plans to re-commission some cathodic protection systems which had been previously abandoned.

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c. Findings

No findings were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 - 3 samples total)

The inspectors performed 3 event followup inspection activities. Documents reviewed during the inspection activity are listed in the Attachment.

.1 Plant Event Review

a. Inspection Scope (3 samples)

For the plant events 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 regional personnel and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of additional reactive inspection activities. The inspectors reviewed FENOC's follow-up actions related to the events to assure that appropriate corrective actions were implemented commensurate with their safety significance. Documents reviewed during the inspection are listed in the Attachment.

- July 21, Unit 2 Loss of 'B' Station Air Compressor [2SAS-C21B] due to a control air line failure and entry into Abnormal Operating Procedure (AOP) 2.34.1, "Loss of Station Instrument Air." The 'A' station air compressor was unavailable due to being cleared for maintenance, but the standby diesel-power air compressor properly responded and carried station air load. The 'A' air compressor was returned to service within six hours. The cause of the air line failure was fatigue failure from vibration (CR 10-79999, 10-82010);
- August 26, Unit 1, identified air void in the charging pump common suction header, and subsequent venting of the void, during maintenance activities associated with the 'A' charging pump. The licensee declared all trains of charging inoperable and entered TS 3.0.3 based on information from void monitoring after a fill and vent of the 'A' charging pump casing during maintenance. The licensee took immediate actions and successfully vented the void. No adverse conditions to the charging system were apparent. The TS 3.0.3 condition existed for 29 minutes. The licensee took additional actions to verify system conditions and initiated a root cause evaluation. The cause evaluation and engineering analysis were in progress at the end of the inspection period. This was reported in event notification (EN) 46208 (CR 10-81835); and
- September 7, Unit 1, In-plant computer out-of-service for an extended timeframe for a planned computer replacement, as reported in EN 46232. Appropriate compensatory measures were established by the licensee for affected computer-supported emergency assessment capabilities.

b. Findings

No findings were identified.

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4OA5 Other.1 Temporary Instruction 2515/179, Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207), (Unit 1 & 2)a. Inspection Scope

During the period June 28 – July 1, the inspector conducted the following activities to confirm the inventories of materials possessed at Beaver Valley were appropriately reported and documented in the National Source Tracking System (NSTS) in accordance with 10 CFR 20.2207.

Inspection Planning

- The inspectors retrieved a copy of the Beaver Valley NSTS inventory from Beaver Valley's NSTS account via Regional staff with NSTS access.

Inventory Verification

- The inspector performed a physical inventory of the sources listed on Beaver Valley's inventory and visually identified each source listed on the inventory;
- The inspectors verified the presence of the nationally tracked sources by having a radiation protection supervisor perform a survey with a radiation survey instrument;
- The inspector examined the physical condition of the source containers, evaluated the effectiveness of the procedures for secure storage and handling, discussed Beaver Valley's maintenance of the device including source leak tests, and verified that the posting and labeling of the source was appropriate; and
- The inspectors reviewed Beaver Valley's records for the source and compared the records with the data from the NSTS inventory. The inspectors evaluated the effectiveness of Beaver Valley's procedures for updating the inventory records.

Determine the Location of Unaccounted-for Nationally tracked source(s)

- The inspector verified that Beaver Valley has no unaccounted-for source(s).

Review of Other Administrative Information

- The inspectors reviewed the administrative information contained in the NSTS inventory printout with Beaver Valley personnel. All administrative information, mailing address, docket number, and license number, were verified to be correct.

b. Findings

No findings were identified.

4OA6 Management MeetingsVerification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System (TI-2515/179)

Enclosure



The inspector presented the inspection results of 2RS08 and TI-2515/179 to Mr. Roy Brosi, Director of Performance Improvement and other members of FENOC staff, at the conclusion of the inspection on July 1. No proprietary information is presented in this report.

Radiation Monitoring Instrumentation and Protective Equipment

The inspector presented the inspection results of 2RS05 to Mr. Ray Lieb, Director of Site Operations and other members of FENOC staff, at the conclusion of the inspection on July 29. No proprietary information is presented in this report.

Problem Identification and Resolution SGTR Safety Analysis Sample

The inspectors presented the inspection results to Mr. Brian Sepelak, Beaver Valley Regulatory Affairs Supervisor and other members of FENOC staff, at the conclusion of the inspection on August 25. No proprietary information is presented in this report.

Quarterly Inspection Report Exit

On October 13, 2010, the inspectors presented the normal baseline inspection results to Mr. Paul Harden, Beaver Valley Site Vice President, and other members of FENOC staff. The inspectors confirmed that proprietary information was not retained at the conclusion of the inspection period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT**Licensee personnel

S. Baker	Manager, Radiation Protection
M. Banko	Environmental Engineering
A. Burger	Engineering Supervisor
C. Burton	Corporate/Fleet Program Manager for Buried Piping
W. Cress	Supervisor, Chemistry Laboratory
E. Crosby	Supervisor, Radiation Protection, ALARA
A. Crella	Supervisor, Radiation Protection, Instruments
K. Deberry	System Engineer
R. Fedin	Regulatory Compliance
J. Fontaine	ALARA Manager
K. Frederick	Senior Consultant Engineer
R. Freund	Supervisor, Radiation Protection Services
J. Krysak	Supervisor, Nuclear Operations Support
W. Garman	Staff Engineer
P. Harden	Site Vice President
S. Hovanec	Manager, Plant Engineering
E. Jarkiewicz	Senior Radiation Protection Technician
D. Jones	System Engineer
K. Kimmerle	Supervisor, Portable Instruments
J. Lebda	Radiation Protection Services Supervisor
R. Lieb	Director, Site Operations
J. Mauck	Compliance Engineer
M. Mauser	Buried Piping Program Owner
D. McBride	Fleet Oversight
A. Oduho	Systems Engineer, Radiation Monitoring System
J. Powell-Campbell	Administrator, RETS/REMP Program
D. Price	Supervisor Design Engineering
M. Ressler	Design Engineering Supervisor
B. Sepelak	Supervisor, Regulatory Compliance

Other Personnel

L. Ryan	Inspector, Pennsylvania Department of Radiation Protection
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## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Open/Closed

05000334/2010004-01      FIN      Inadequate Maintenance Procedure Results in Auto-Disassembly of EDG Intake Damper. (Section 1R19)

### Closed

05000334,412/2515-179      TI      Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10, Code of Federal Regulations, Part 20.2207. (Section 4OA5.1)

## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

#### Procedures

1/2 OM-53C.4A.75.1

#### Conditions Reports

05-01611      06-01008      08-42554

### Section 1R04: Equipment Alignment

#### Procedures

1OM-36.3.B.1 Valve List -1 DA, Rev. 7  
 1OM-36.3.B.2 Valve List -1 DCW, Rev. 4  
 1OM-36.3.B.3 Valve List -1 DLO, Rev. 4  
 1OM-36.3.B.4 Valve List - 1 EE, Rev. 4  
 1OM-36.3.B.5 Valve List - 1 FO, Rev. 9  
 1OM-11.3.B.1 Valve List -1 SI, Rev. 17  
 1OM-11.4.AAA, ARP for, "LHSI PP 1A Seal Water Level Low"  
 1OM-13.1.D, Instrumentation and Controls, Rev. 4  
 1OM-13.3.B.2, Valve List - 1 RS, Rev. 7

#### Drawings

RM-0411-001, Safety Injection System, Rev. 23  
 8700-RM-0413-002, Containment Depressurization Sys, Rev. 12

#### Condition Reports

09-58832      09-67584      10-80291      10-81703      10-81833      10-82962

#### Other

BVPS Operator Logs, Unit 1, dated 8/25/10 and 8/26/10  
 BOP-UT-10-130, 133, 135, 139  
 NOTF 600629942

**Section 1R05: Fire Protection**Other

Unit 2 Emergency Action Level Tabs 4.1

Unit 2 Emergency Diesel Generator Room Pre-Fire Plan

Unit 2 Shift Operating Logs, dated July 21, 2010

10080-B-085, Fire Hazard Analysis, Rev. 14

8700-B-084, Fire Hazard Analysis, Rev. 11

RTL#A9.210X, Unit 1, MCC Room and Main Steam Valve Room, Rev. 0

RTL#A9.210X, Unit 1, Auxiliary Building General Area Fire Area PA-1G, Rev. 1

10080-B-085, Fire Hazard Analysis, Rev. 14

Condition Reports

06-01035      07-18965      09-58440

**Section 1R06: Flood Protection**Procedure

½ MI-75-MANHOLE-1E, Inspection of Manholes for Water Induced Damage

Condition Reports

09-64439	10-80681	10-80851	10-80899	10-81212
10-80223	10-80688	10-80853	10-81160	10-81213
10-80622	10-80848	10-80855	10-81161	10-81717
10-80623	10-80850	10-80856	10-81211	10-81393

Other

Cable list for 1EMH-15

Construction drawing for 1EMH-15

8700-RE-32C

ECP 09-0460 / 0631 / 0723 (Manhole Level and Pumping Modifications)

**Section 1R12: Maintenance Rule Implementation**Drawings

U2 IAS system drawing

Procedures

AOP 2.34.1, "Loss of Station Instrument Air"

Condition Reports

10-79999      10-81341

Other

Clearance FIN-34-SAS-004

WO 200387120

Instrument Air System Health Reports

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

Procedures

2OM-36.4.AAK(ISS1), ARP for A7-7C, "System Station Transformer 2A Pilot Wire Leads Protection Trouble"  
2OST-36.7, "Offsite to Onsite power Distribution Alignment Verification"

Work Orders

200425164

Condition Reports

10-80204

Other

BV2 Shift Operations Logs for July 21, July 26, 2010  
Clearance 2WG-36-MNR-0001  
LCO 3.8.1

**Section 1R15: Operability Evaluations**

Condition Reports

10-79640      10-80512      10-80537      10-80771

Calculations

1OM-44F.4.A Attachment 1 Table 2, Outside Temperature Requirements

Procedures

1OST-13.11B, Rev. 7 LUC PAF 10-02063, "Train B Quench Spray System Operability Test"  
1MSP-2.05-I, Rev. 25, "Power Range Neutron Flux Channel N43 Refueling Calibration"  
2OST-30.6A, Rev. 21, Service Water Pump [2SWS-P21C] Test on Train A Header  
2OST-30.6B, Rev. 22, Service Water Pump [2SWS-P21C] Test on Train B Header  
NOP-OP-1009, Operability Determinations and Functional Assessments

Other

BVPS Unit 1 Operating Logs, July 22, 25 and August 30, 2010  
BVPS Unit 2 Operating Logs, July 27, 2010  
NI FMEA for NI43, dated July 14, 2010 and revised July 27, 29  
ITS 3.6.6, 3.6.7, 3.6.8, 3.7.8,  
NOTF 600628819, to repair damper 1VS-D-57D2  
NOTF 600635683, to replace 1QS-P-1B start relay  
ODMI  
WO 200422775, to troubleshoot and repair N43 on July 14, 15 at Unit 1  
WO 200425269, to troubleshoot and repair N43 on July 28 at Unit 1  
WO 200426997, to inspect NI POTS

**Section 1R18: Plant Modifications**

Condition Reports

10-79380      10-79414      10-80542

Procedures

1/2OM-53C.4A.75.2, Flood  
NOP-LP-4003-01, Rev. 3, Regulatory Applicability Determination  
IRP-3.10, Rev. 6, Refueling Procedures Spent Fuel Bridge Crane

Drawings

RM-0441D-002

Other

NOTF 600625489

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

Work Orders

200368522    200412169    200429561

Condition Reports

97-1893    10-74881    10-81325    10-81209    10-81703    10-82257

Calculations

8700-DMC-2800

Other

ITS 3.6.6  
ITS 3.6.8  
BVPS Unit 1 Operating Logs 9/5/10  
Clearance 1W03-13-QS-008  
ODMI for Unit 2 Secondary Process Rack P/S 'F' Replacement, dated August 17, 2010

**Section 1R20: Refueling and Outage Activities**

Procedures

½-CMP-M-75-044, Rev 0, "Site Receipt and Handling of New Fuel Assemblies and Shipping Containers"  
½-RP-3.11, Rev. 7, "New Fuel Movement"  
1-RP-3.10, Rev. 7, "Spent Fuel Bridge Crane"  
1OM-49.4.O, Rev. 9, "Movement of Spent Fuel Pool Crane Checklist"

Condition Reports

10-80760    10-81814

Other

1R20 Pre-Outage Defense-In-Depth Report, dated September 8, 2010

**Section 1R22: Surveillance Testing**

Procedures

1OST-6.2, Rev. 25, Operating Surveillance Test, Reactor Coolant System Water Inventory Balance

Other

BVPS Unit 1 Operator Logs, dated 9/2/10 and 9/6/10

**Section 2RS05: Radiation Monitoring Instrumentation**

Procedures:

1/2-HPP-4.01.009, Rev 5, Model 89-400, Gamma Calibration System  
1/2-HPP-4.03.015, Rev 2, Portable Ion Chamber Calibration and Use  
1/2-HPP-3.04.002, Rev 8, Bioassay Administration  
1/2-HPP-6.02.002, Rev 8, FastScan Calibration and Routine Operations  
1/2-HPP-6.02.004, Rev 6, AccuScan II Calibration and Routine Operations  
1/2HPP-4.03.004, Rev 1, GM Survey Meter – Model E520  
1/2-HPP-4.02.018, Rev 0, MGP-iDC-HF Calibrator Calibration and Use  
1/2-HPP-4.04.023, Rev 2, Eberline Personnel Contamination Monitor (PCM-2)  
1/2-HPP-3.07.003, Rev 1, Airborne Radioactivity Sampling  
BVBP-RP-0009, Rev 1, Electronic Alarming Dosimeter Control  
1/2-ADM-1601, Rev 18, Radiation Protection Standards

Calibrators:

Shepherd Calibrator Model 89-400  
iDC-HF Electronic Dosimeter Calibrator

Portable Survey Instruments:

E-520, Serial No. 5117  
RM-14, Serial No. 1037, 1060, 7062  
RO-2, Serial Nos. 1173, 1199  
Telepole Serial Nos. 6609-058, 6609-060  
ASP-1 (Rem-Ball), Serial Nos. 463, 999, 440  
AMP-100, Serial Nos. 5001-049, 5001-069, 5007-092

Contamination Monitors:

SAM-11, Serial Nos. 135, 139, 140  
PCM-2, Serial Nos. 536, 355, 288, 357, 588  
SPM-906, Serial Nos. 026, 103, 104, 029, 025, 027, 028  
AMS-4 (Airborne), Serial Nos. 458, 1569, 363

Electronic Dosimeters:

DMC-2000, Serial Nos. 010560, 673798, 673401, 227246

Laboratory Instruments:

Gamma Spectroscopy Detector Nos. 1, 2, 3, 5, 6, 7  
Scintillation Counter LSA Packard 3100 TR

Whole Body Counting Systems:

FastScan whole body counting system  
AccuScan whole body counting system

In-Plant Monitors:

Unit 1 Containment High Range Area Monitor, RM-1RM-219A/B  
Unit 2 Containment High Range Area Monitor, 2RMR-RQ206/207

Unit 1 Liquid Waste Effluent Monitor, RM-1LW-104  
 Unit 2 Liquid Waste Effluent Monitor, 2RMQ-SGC-100  
 Unit 1 Process Vent Monitor, RM-1GW-109  
 Unit 2 SLCRS Filtered Mid-Range Monitors, 2HVS-RQ109B/C/D  
 Unit 1 Control Room Area Monitors, RM-1-218 A/B  
 Unit 2 Control Room Area Monitors, 2RMC-RQ-201/202  
 Unit 1 Incore Instrument Room Area Monitor, RM-1RM-204  
 Unit 2 Incore Instrument Room Area Monitor, 2RMR-RQ204  
 Unit 1 Aux Bldg Area Monitor, RM-1RM-209  
 Unit 2 Aux Bldg Area Monitor, 2RMP-RQ204

Other Documents:

Unit 1 and Unit 2 Radiation Monitoring System Health 1st Quarter Report 2010  
 Action Plans – Unit 1 and Unit 2 Radiation Monitor System Reliability  
 Impact of Atmospheric Containment Conversion, Power Upstate, and Alternate Source Terms on  
 the Alarm Setpoints for the Radiation Monitors at BVPS-1/BVPS-2 (ECP 04-0440/0441)  
 IDC-HF Electronic Dosimeter Calibrator Calibration Summary Report, Shepard Model 81 Beam  
 Calibrator  
 Annual Review Report of the 2009 10 CFR Part 61 Radionuclide Analysis

Condition Reports:

10-78538	10-80020	10-78538	10-80020	10-80178	10-78369
10-74370	10-72024	10-71404	10-71114	10-70196	09-69041
09-68943	09-68264	09-66536	09-66320	09-66170	

Nuclear Oversight Quarterly Assessment Report/Audit:

MS-C-09-10-3, Radiation Protection and RadWaste

Nuclear Quality Assessment Field Observation Reports:

120083453	120083455	120093806	120093808	220093821	320083500
320083513	320083586	320093677			

**Section 2RS08: Radioactive Solid Waste Processing and Radioactive Material Handling, Storage and Transportation & TI-179**

Procedures

1/2-PCP-1.01, Rev 3	Process Control Program
NOP-OP-5201, Rev 1	Shipment of Radioactive Material/Waste
BVBP-RP-0022, Rev 2	Temporary On-Site Storage of Radioactive Waste
1OM-18.4.AF(ISS3), Rev 2	Unit 1 Dewatering of High Integrity Containers
2OM-18.4Y, Rev 6	Unit 2 Dewatering Shipping Containers
1OM-17.4A.H, Rev 0	Unit 1 Resin Transfer of LW Demineralizer (1LW-I-2)
2OM-18.4F, Rev 4	Flushing of any Group III Ion Exchanger Resin to a HIC
BVBP-SITE-0010, Rev 1	Abandoned In Place Equipment
1/2-ENV-05.01, Rev 2	Liquid Waste Holdup Tank Sampling

Nuclear Oversight Field Observation Reports

BV320104002, Control of Radioactive Material at BV-1  
 BV320104043, Radiological Material/ Waste Shipping



Shipping Manifests

Shipment No. B-3901, LSA II  
 Shipment No. B-3890, LSA II,  
 Shipment No. B-3893, LSA II  
 Shipment No. B-3778, LSA II  
 Shipment No. B-3898, LSA II

Condition Reports

10-78925, 10-73175, 10-74677, 10-75827, 10-75824, 10-76399, 10-76564, 10-73170, 10-75504, 10-76109, 09-66751, 10-79052, 10-78628,

Abandon-In-Place/ Out-of-Service Radwaste Systems Tagouts

1BVP-CYC-017-1, Waste Gas Recycle to VCT Pressure Controller  
 BV1-99-01, Liquid Waste Demineralizer  
 2-Retired, Retired Resin Hold Tank Level Transmitter  
 2BVP-CYC-014-1, Spent Resin Booster Pump Unit 1 Cross Connect  
 2-Retired, Caustic Buffering Tank  
 BV1-99-01, Liquid Waste Evaporator

Miscellaneous Documents

RadWaste and Radioactive Material Shipping Logs for 2008, 2009, and 2010  
 2009 Beaver Valley Annual Radioactive Effluent Release Report  
 Radwaste/Transportation Training Records for selected personnel  
 10 CFR 61 Reports for 2009, and 2010  
 Designation of Authorized Radioactive Material Shippers  
 Engineering Change Package Design Report 09-0798-000  
 Waste Storage Facility Inventory

Materials for Bulletin 79-19 Training

GEN-USDOT-FEN-01, Rev 0, Lesson Plan for USDOT Regulations General Awareness  
 RP-RADSHIPPING-FEN, Rev 0 Lesson Plan for Radioactive Material Packaging, Transport, & Disposal

**Section 40A2: Identification and Resolution of Problems**Condition Reports

06-04838	07-31411	09-63451	09-64275	09-65807	10-81743
10-77187	10-78468	08-44515	08-44785	10-81481	10-81405
10-81396	10-79546	10-78925	09-59125	10-78376	10-76798
09-64010	08-47607	08-44835	08-43270	08-39496	08-35719
08-34560	07-37831	07-27729	07-21965	07-13242	06-9306
06-03297	04-06522	04-04310	02-11694	02-06173	01-8122
09-55238					

Semi-Annual Trend Condition Reports

10-75596	10-78369	10-80260	10-80394	10-80448	10-81299
10-78095	10-80276	10-80378	10-80446	10-80602	

Engineering Evaluations

Root Cause Analysis Report CR 09-63451, September 25, 2009

Procedures

2OM-53A.1.E-0, Issue 1C, Reactor Trip or Safety Injection, Rev. 8  
2OM-53A.1.E-3, Issue 1C, Steam Generator Tube Rupture, Rev. 15  
2OM-53A.1.A-1.21, Steam Generator Tube Rupture with Malfunctions, Rev. 2  
1/2-ADM-0804, On-line Risk Assessment and Management, Rev. 8  
1/2OM-48.1.1, Technical Specification Compliance, Rev. 22  
NOP-ER-2007, BURIED PIPE INTEGRITY PROGRAM, Revision 00, 9/23/08

**Action Plan to Develop a Strategy for Managing Buried Piping at Beaver Valley Power Station; 8/10/10**

Other

Operating Experience Report No. 29759  
Operations Night Orders, 8/19/2009  
Beaver Valley Unit 1/Unit 2 Technical Specification  
Beaver Valley Updated Final Safety Analysis Report  
Long-Range Guided Wave Inspection Report, First Nuclear Operating Company, Final Report,  
Project: Beaver Valley Power Station Inspection, 12/3/08  
Letter Report: Results of Hydrologic Testing Activities, Beaver Valley Power Station, Reference  
0065992.5, 3/17/09

Drawings

Duquesne Light Company drawing No. 10080-RC-32A, Revision 10, 2/5/88; Safeguards Area  
Plans, Level 718'6" & 737'6", Beaver Valley Power Station Unit No. 2  
Duquesne Light Company drawing No. 10080-RC-30D, Revision 6, 6/8/89; Misc. Yard Structure  
– Sheet 4, Beaver Valley Power Station Unit No. 2  
Duquesne Light Company drawing No. 10080-RA-21A, Revision 6, 11/4/87; Arr'gt – Operating  
Personnel Access Between Buildings SH-1, Beaver Valley Power Station Unit No. 2  
Duquesne Light Company Unit 1 drawing No. 8700-ISI-0100-A, Revision 1, 9/14/88;  
Demineralized Water System, West Yard Area  
Duquesne Light Company, BVPS Unit 2, drawing No. 10080-ISI-101605-3, Revision 3, 7/5/94;  
Emergency Feedwater System (FEW) Safeguards Bldg., El. 718'-6"  
Duquesne Light Company, BVPS Unit 2, drawing No. 10080-ISI-101602-3, Revision 3, 11/7/99;  
Emergency Feedwater System (FEW) Safeguards Bldg., El. 718'-6"  
Duquesne Light Company, BVPS Unit 2, drawing No. 10080-ISI-101603-2, Revision 3, 9/8/93;  
Emergency Feedwater System (FEW) Safeguards Bldg., El. 725'-0"

UFSAR

BVBP-LRI-0002; Beaver Valley Power Station Unit 1 License Renewal UFSAR Supplement,  
Attachment 3  
BVPS-2, UFSAR, Revision 18; TABLE 19-1; UNIT 2 LICENSE RENEWAL COMMITMENTS

Non Destructive Examination Reports

VT-09-1456

Program Documents

Calculation No. 3201.100-01, Revision A, 10/23/08; Beaver Valley Power Station Buried  
Piping Program Basis Document

Attachment

Calculation No. 3201.100-01, Revision A, 10/23/08; Beaver Valley Power Station Buried Piping Program Basis Document, APPENDIX A, Description of Cathodic Protection Standards

Calculation No. 3201.100-01, Revision A, 10/23/08; Beaver Valley Power Station Buried Piping Program Basis Document, ATTACHMENT A, Buried Piping Database

Calculation No. 3201.100-01, Revision A, 10/23/08; Beaver Valley Power Station Buried Piping Program Basis Document, ATTACHMENT B, Summary Representing Highest Risk Zones

Calculation No. 3201.100-01, Revision A, 10/23/08; Beaver Valley Power Station Buried Piping Program Basis Document, ATTACHMENT C, Summary Representing Current Condition

Calculation No. 3201.100-01, Revision A, 10/23/08; Beaver Valley Power Station Buried Piping Program Basis Document, ATTACHMENT D, Electronic Mark-Up of Plant Drawings

### **Section 40A3: Event Response**

#### **Condition Reports**

10-78918      10-79999      10-81831      10-81969      10-82010

#### **Procedure**

10M-7.4.AN, Rev. 15, LUC-10-01989

20M-34.4.F – Station Air Filter Bypass

3BVT 01-11.04, Issue 1, Rev. 4, Void Monitoring

#### **Drawing**

8700-RM-407-1, Rev. 28, Chemical & Volume Control System

8700-6.24-277-SAT.1.4 – Charging Suction Header Isometric

#### **Calculation**

10080-N-797, Rev 0, Add. 1

FAI/97-134, Charging Suction Analysis Report

#### **Other**

BV1 Station Operations Logs, dated August 26-28, September 7, 2010

BV2 Station Operations Logs, dated June 26, July 21, 2010

CARB 10-19 Report and Min.

Clearance FIN-34-SAS-004

Clearance 2W03-34-SAS-002

EN 46208, dated August 26, 2010

EN 46232, dated September 7, 2010

Problem Solving Plan, Void in Unit 1 HHSI Common Suction, dated 8/27/10

Void UT Report BOP-UT-10-177

WO 200424652

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

For TI-179, see section 2RS208

## LIST OF ACRONYMS

ADM	Administrative Procedure
ADV	Atmospheric Dump Valve
BCO	Basis for Continued Operations
BVPS	Beaver Valley Power Station
CFR	Code of Federal Regulations
CR	Condition Report(s)
DEP	Drill/Exercise Performance
EDG	Emergency Diesel Generator
EN	Event Notification
FA	Functionality Assessments
FENOC	First Energy Nuclear Operating Company
HHSI	High Head Safety Injection (charging system)
IMC	Inspection Manual Chapter
IOD	Immediate Operability Determination
IP	Inspection Procedure
ISI	Inservice Inspection
LCO	Limiting Conditions for Operations
LER	Licensee Event Report
MR	Maintenance Rule
MSP	Maintenance Surveillance Package
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OD	Operability Determinations
OST	Operations Surveillance Test
PI	Performance Indicator
PI&R	Problem Identification and Resolution
POD	Prompt Operability Determination
PMT	Post Maintenance Testing
PCM	Personnel Contamination Monitor
RSS	Recirculation Spray System
SAM	Small Article Monitor
SSC	Structures, Systems, and Components
SGTR	Steam Generator Tube Rupture
TMOD	Temporary Modification
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WOG	Westinghouse Owners Group