



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

April 23, 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 05000334/2010002 AND 05000412/2010002

Dear Mr. Harden:

On March 31, 2010, the United States 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 April 12, 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 characterization of the finding or the cross-cutting aspect of the 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

P. Harden

2

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,

/RA/

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 05000334/2010002; 05000412/2010002  
w/ Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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

Distribution w/encl:

- S. Collins, RA
- M. Dapas, DRA
- D. Lew, DRP
- J. Clifford, DRP
- D. Roberts, DRS
- P. Wilson, DRS
- R. Bellamy, DRP
- G. Barber, DRP
- C. Newport, DRP

- J. Greives, DRP
- D. Werkheiser, DRP, SRI
- D. Spindler, DRP, RI
- E. Bonney, DRP, RI
- P. Garrett, DRP, Resident OA
- L. Trocine, RI OEDO
- RidsNrrPMBeverValleyResource
- [ROPreportsResource@nrc.gov](mailto:ROPreportsResource@nrc.gov)

**ML101130145**

**SUNSI Review Complete: RRB (Reviewer's Initials)**

DOCUMENT NAME: G:\DRP\BRANCH6\+++BEAVER VALLEY\BV INSPECTION REPORTS & EXIT NOTES\BV INSPECTION REPORTS 2010\BV REPORT IR2010-002 REV1.DOC

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

|        |              |              |               |  |
|--------|--------------|--------------|---------------|--|
| OFFICE | RI/DRP       | RI/DRP       | RI/DRP        |  |
| NAME   | DWerkheiser/ | CNewport/ CN | RBellamy/ RRB |  |
| DATE   | 04/20/10     | 04/23 /10    | 04/ 23 /10    |  |

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Docket Nos. 50-334, 50-412

License Nos. DPR-66, NPF-73

Report Nos. 05000334/2010002 and 05000412/2010002

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Post Office Box 4  
Shippingport, PA 15077

Dates: January 1, 2010 through March 31, 2010

Inspectors: D. Werkheiser, Senior Resident Inspector  
D. Spindler, Resident Inspector  
E. Bonney, Resident Inspector  
T. Moslak, Health Physicist

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

## TABLE of CONTENTS

|  |     |
|--|-----|
| SUMMARY OF FINDINGS .....  | 3   |
| REPORT DETAILS.....  | 4   |
| 1. REACTOR SAFETY.....   | 4   |
| 1R01 Adverse Weather Protection .....                            | 4   |
| 1R04 Equipment Alignment .....                                   | 5   |
| 1R05 Fire Protection .....                                       | 5   |
| 1R06 Flood Protection Measures .....                             | 6   |
| 1R11 Licensed Operator Requalification Program .....             | 6   |
| 1R12 Maintenance Rule Implementation .....                       | 7   |
| 1R13 Maintenance Risk Assessment and Emergent Work Control.....  | 7   |
| 1R15 Operability Evaluations .....                               | 8   |
| 1R18 Plant Modifications .....                                   | 8   |
| 1R19 Post-Maintenance Testing .....                              | 9   |
| 1R22 Surveillance Testing .....                                  | 10  |
| 1EP6 Drill Evaluation .....                                      | 10  |
| 1EP7 Force-On-Force (FOF) Exercise Evaluation .....              | 11  |
| 2. RADIATION SAFETY.....   | 11  |
| 2RS01 Radiological Hazard Assessment and Exposure Controls ..... | 11  |
| 2RS02 Occupational ALARA Planning and Controls .....             | 13  |
| 2RS04 Occupational Dose Assessment .....                         | 15  |
| 4. OTHER ACTIVITIES [OA].....                                    | 15  |
| 4OA1 Performance Indicator Verification .....                    | 15  |
| 4OA2 Problem Identification and Resolution .....                 | 16  |
| 4OA6 Management Meetings .....                                   | 19  |
| SUPPLEMENTAL INFORMATION .....                                   | A-1 |
| KEY POINTS OF CONTACT .....                                      | A-1 |
| LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED.....                 | A-1 |
| LIST OF DOCUMENTS REVIEWED .....                                 | A-2 |
| LIST OF ACRONYMS .....   | A-8 |

## SUMMARY OF FINDINGS

IR 05000334/2010002, IR 05000412/2010002; 01/01/2010 - 03/31/2010; Beaver Valley Power Station, Units 1 & 2; Problem Identification and Resolution

The report covered a 3-month period of inspection by resident inspectors and a regional health physics inspector. One (GREEN) finding was identified. The significance of most findings are 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 self-revealing finding was identified for FENOC's failure to properly implement a station procedure. Specifically, work order instructions were not properly followed, as specified in NOP-WM-4006, "Conduct of Maintenance", causing leads to be inadvertently lifted for an alarm to the main control room control board. This annunciator is used by operators in the "Loss of Main Feedwater" Abnormal Operating Procedure. The leads were reconnected and this issue was entered into the licensee's corrective action program as CR 10-72654.

The finding is more than minor because it is similar to example 2.f in IMC 0612, Appendix E. 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. 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.

The cause of this finding relates to the cross-cutting aspect of Human Performance, Work Practices, in that FENOC personnel did not follow procedures, resulting in a control room annunciator's leads being inadvertently lifted. [H.4.(b)] (Section 40A2.1)

## REPORT DETAILS

### Summary of Plant Status:

Unit 1 operated at 100 percent full power the entire inspection period.

Unit 2 operated at 100 percent full power nearly the entire inspection period. On January 13, the unit was reduced to 98 percent power to repair a heater drain system flow-control valve. The unit returned to full power the same day.

### 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)

##### External Flooding Readiness

On January 25, the inspectors evaluated FENOC's preparation and protection from the effects of external flooding conditions for Unit 1 and Unit 2. This evaluation included a review of the Updated Final Safety Analysis Report (UFSAR) and applicable flood-related procedures to determine the readiness of protection for applicable safety-related structures, systems, and components. The inspectors performed walkdowns of the Unit 1 and Unit 2 external structures to verify the adequacy of protection from the most probable flood, as well as actions to address seasonal Ohio River water levels that could potentially impact safety-related equipment. Specifically, the inspectors reviewed licensee actions on multiple occasions following entry into the abnormal operating procedure (AOP) 1/2OM-53C.4A.75.2, "Acts of Nature - Flood," which included backwash of river water strainers that supply cooling to the Unit 1 and Unit 2 safety-related charging pumps. Additionally, the inspectors reviewed recent FENOC inspection results, including flood barrier inspections, and verified that previously identified deficiencies had been entered into the corrective action program for resolution.

##### b. Findings

No findings of significance were identified.

##### .2 Adverse Weather

##### a. Inspection Scope (2 samples)

##### January 25 through 31 – Extreme Cold Weather

The inspectors evaluated FENOC's preparation, protection, and actions from the effects of cold weather experienced at Unit 1 and Unit 2 during prolonged cold weather conditions. This evaluation focused on review of specific unit actions based on actual environmental conditions. The inspectors performed walkdowns of each of the affected

units' external structures to verify the adequacy of protection from cold weather that could be susceptible to freezing and potentially impact emergency response facilities and safety-related equipment.

#### February 5 and 6 – Significant Snow Fall/Accumulation

The inspectors evaluated FENOC's preparation, protection, and actions from the effects of a significant snowfall (approximately 20 inches) experienced over a period of 24 hours.

The inspectors performed walkdowns of external structures to verify the adequacy of protection from snow and that suction and exhaust pathways were clear for the emergency diesel generators, control rooms, and other safety-related pathways.

#### b. Findings

No findings of significance were identified.

### 1R04 Equipment Alignment (71111.04)

#### Partial System Walkdowns (71111.04Q)

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

The inspectors performed three 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:

- Unit 1, on February 4, 'B' Quench Spray during surveillance testing on 'A' Quench Spray pump;
- Unit 1, on March 1, 1-2 125VDC system during relay (X304) testing on Battery Charger No.1 (BAT-CHG.1-1-B); and
- Unit 2, on March 22, 'B' Component Cooling (Primary) system while 'A' Component Cooling (Primary) system was out of service for planned testing.

#### b. Findings

No findings of significance were identified.

### 1R05 Fire Protection (71111.05)

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

- Unit 1/2, Pump Cubicle A (Fire Area IS-1);
- Unit 1/2, Pump Cubicle B (Fire Area IS-2);
- Unit 1/2, Pump Cubicle C (Fire Area IS-3);
- Unit 1/2, Pump Cubicle D (Fire Area IS-4); and
- Unit 2, Alternate Shutdown Panel Room (Fire Area ASP).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope (1 sample – cables susceptible to submergence)

The inspectors reviewed a sample of internal flood protection measures regarding cables located in underground manholes. The inspectors selected a FENOC inspection and repair of the dewatering pump of manhole 8A that contains Unit 1 and Unit 2 safety-related power and control cables near the intake structure and are located underground. There were indications of an apparent failure of the installed dewatering pump as documented in CR 10-73092.

This review was conducted to evaluate FENOC's protection of the enclosed safety-related systems from internal flooding condition. The inspectors performed a walkdown of the area, reviewed the UFSAR, related internal flooding evaluations, and other related documents. The inspectors examined the as-found equipment and conditions to ensure that they remained consistent with those indicated in the design basis documentation, flooding mitigation documents, and risk analysis assumptions. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope (1 sample)

The inspectors observed one sample of Unit 2 licensed operator simulator training on March 4. 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 of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope (2 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.

- January 4, Emergency Response Facility diesel generator preventive maintenance review as documented in CR 10-70247; and
- March 15, Review of Unit 2 diesel-powered air compressor unavailability time as documented in CR 10-73486.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope (5 samples)

The inspectors reviewed the scheduling and control of five 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.

- On January 11, Unit 2 risk to replace level indicator 2-LI-RC461;
- On January 19, Unit 1 risk associated with diesel-powered air-compressor unavailability;
- On February 5, Unit 2 Yellow on-line risk for planned maintenance;
- On March 3, Unit 1 Yellow on-line risk during a planned emergency diesel generator test while the dedicated auxiliary feedwater pump was out of service for planned maintenance; and
- On March 10, Review of on-line risk error documented in CR 10-73098.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (5 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. Other documents reviewed are listed in the Attachment.

- On January 26, Unit 2, Safeguards protection train 'B' auxiliary relay contact resistance inconsistencies documented in CR 10-70496;
- On February 1, Unit 1, Control rod C-9, in Shutdown Bank 'A', indicating 219 steps while the control rod bank indicated 230 as documented in CR 10-70906;
- On February 3, Unit 2, fire dampers exceeding their maintenance limit dates as documented in CR 10-71050;
- On February 22, Unit 2, failure of the 'E' in-core detector to fully insert as documented in CR 10-70356; and
- On March 2, Unit 1, through wall leak upstream of 1FP-221 and underside of pipe as documented in CR 10-71848.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope (1 sample)

The inspectors reviewed the following temporary modification (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. 11. Other documents reviewed are listed in the Attachment.

- On March 4, Unit 2, TMOD ECP 10-0082, Rev. 1, Lift Lead to defeat BV2 Turbine Anti-Motoring Trip.

b. Findings

No findings of significance were identified.

.2 Permanent Plant Modifications

a. Inspection Scope (2 samples)

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.

- On February 17, Unit 1, Modification ECP-10-0010, Replace Containment Sump Discharge Flow Transmitter; and
- On March 2, Unit 2, ECP 09-0687, Replacement for Obsolete ATC Co. Model 365A Timing Relays BV-162-EGSBA, BV-162-EGSBAX1.

b. Findings

No findings of significance 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. Other documents reviewed during the inspection are listed in the Attachment:

- On January 25, Unit 1, repair and restoration of the #1 rod drive motor generator set;
- On January 27, Unit 2, 2OM-36.4.AL, Rev. 2, "Preparing EDG 2-2 Sequencer for Functional Testing," after replacement of safeguards relay K618XB per WO200335066;
- On January 30, Unit 2, rate bistable circuit board replacement for power range channel N44;
- On March 11, Unit 2, WO 200359279 after repairs to 'A' atmospheric steam dump controller;
- On March 15, Unit 2, 2OST-34.08 after relay replacement and calibration on the Standby Diesel-Driven Air Compressor (21AS-C21); and
- On March 23, Unit 2, 2OST-15.1 after planned maintenance of the 'A' component cooling (primary) pump motor.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (6 samples: 1 isolation valve, 1 in-service testing, and 4 routine)

The inspectors witnessed the performance of or reviewed test data for the following six Operation Surveillance Test (OST) 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.

- On January 28, Unit 1, 1MSP-21.08-I, Rev. 13, "P-1MS486, Loop 2 Steam Line Pressure Protection Channel IV Test;"
- On January 30, Unit 2, 2MSP-2.06-I, Rev. 27 "Power Range Neutron Flux Channel N44 Refueling Calibration;"
- On February 4, Unit 1, 1OST-13.1, Rev. 32, "Quench Spray Pump [1QS-P-1A] Test;"
- On February 16, Unit 2, 2OST-11.2, Rev. 25, "Low Head Safety Injection Pump [2SIS\*P21B] Test;"
- On March 8, Unit 2, 2OST-36.2, "Emergency Diesel Generator [2EGS\*EG2-2] Monthly Test;" and
- On March 10, Unit 1, BV-MOV-1RS-156A motor operator GL 89-10 testing.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope (1 sample)

The inspectors observed a Unit 2 licensed-operator annual simulator evaluation conducted on March 4. Senior licensed-operator performance regarding event classifications and notifications were specifically evaluated. The inspector 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. 2, "NRC EPP Performance Indicator Instructions;"
- 1/2-ADM-1111.F01, Rev. 2, "Emergency Preparedness Performance Indicators Classifications/Notifications/PARS;"
- EPP/I-1a/b, Rev. 11, "Recognition and Classification of Emergency Conditions;"
- 1/2-EPP-I-2, Rev. 30, "Unusual Event;"
- 1/2-EPP-I-3, Rev. 28, "Alert;"
- 1/2-EPP-I-4, Rev. 28, "Site Area Emergency;" and
- 1/2-EPP-I-5, Rev. 29, "General Emergency."

b. Findings

No findings of significance were identified.

1EP7 Force-On-Force (FOF) Exercise Evaluation (71114.07)

a. Inspection Scope (1 sample)

On February 3, the inspector observed the licensee's performance during the site emergency preparedness exercise/drill conducted in conjunction with a FOF exercise evaluation. The inspector observed communications, event classification, and event notification activities by the simulated shift manager and supporting staff. The inspector reviewed the emergency preparedness-related corrective actions from previous inspections conducted by the NRC's Office of Nuclear Security and Incident Response to determine whether they had been completed and adequately addressed the cause of any previously-identified weakness. The inspector verified that the licensee correctly utilized the security response procedures and classified the event appropriately and that all time requirements were met. The inspector also observed the post-drill critique to determine whether any observed deficiencies were also identified by the licensee evaluators and that issues identified during this evaluation were entered into the licensee's corrective action program.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

Cornerstone: Occupational Radiation Safety [RS]

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

A. Inspection Scope

During the period March 1 - 4, the inspector conducted the following activities to verify that the licensee was evaluating, monitoring, and controlling radiological hazards for work performed in locked high radiation areas (LHRA) and other radiological controlled areas, and that workers were adhering to these controls when working in these areas. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, TS, and the licensee's procedures.

### Radiological Hazards Control and Work Coverage

The inspector identified exposure significant work areas in Unit 1 and Unit 2. The inspector reviewed radiation survey maps and radiation work permits (RWP) associated with these areas to determine if the associated controls were acceptable. The inspector interviewed selected workers to determine if the workers were informed of the radiological conditions at the job site, electronic dosimeter alarm set points, and actions to be taken if a dosimeter alarms. Specific work activities observed included an entry into the Unit 2 containment building to replace the "D" incore detector, RWP 210-2026, and manipulate a pressurizer spray bypass valve (2RCS-51), RWP 210-2015.

The inspector toured the accessible radiological controlled areas in both units, including the auxiliary buildings, fuel handling buildings, and waste processing building, and with the assistance of a radiation protection technician, performed independent surveys of selected areas to confirm the accuracy of survey data and the adequacy of postings. During this tour, the inspector verified that selected locked high radiation areas (LHRA) were properly secured and posted.

In evaluating the RWPs, the inspector reviewed electronic dosimeter dose/dose rate alarm set points to determine if the set points were consistent with the survey indications and plant policy. The inspector verified that workers were knowledgeable of the actions to be taken when the dosimeter alarms, or malfunctions, for tasks being performed under selected RWPs.

### Problem Identification and Resolution

A review of Nuclear Oversight field observation reports, related Condition Reports, and an audit report (No. MS-C-09-10-03) was conducted to determine if identified problems and negative performance trends were entered into the corrective action program and evaluated for resolution.

Relevant Condition Reports (CR), associated with radiation protection control access, initiated between November 2009 through February 2010, were reviewed and discussed with the licensee staff to determine if the follow up activities were being conducted in an effective and timely manner, commensurate with their safety significance.

### High Radiation Area and Very High Radiation Area Controls

Procedures for controlling access to High Radiation Areas (HRA) and Very High Radiation Areas (VHRA) were reviewed to determine if the administrative and physical controls were adequate. The inspector also reviewed the physical and procedural controls for securing and removing highly contaminated/activated materials stored in the spent fuel pools. The inspector discussed with radiation protection management, the adequacy of current LHRA/VHRA controls, including prerequisite communications and authorizations, and verified that any changes made to relevant procedures did not substantially reduce the effectiveness and level of worker protection. The inspector conducted an inventory of LHRA keys to verify that these keys were accounted for.

### Radiation Worker Performance and Radiation Protection Technician Performance

The inspector observed and questioned radiation workers and radiation protection technicians regarding radiological controls applied to various tasks, including a Unit 2 containment entry and various maintenance tasks. The inspector determined that the workers were aware of current RWP requirements, radiological conditions, access controls, and that the skill level was appropriate with respect to the potential radiological hazards and the work being performed.

The inspector attended the Radiation Protection Department daily planning meetings to assess the level of detail provided to workers regarding planned work activities and attended the pre-job briefings conducted by supervision regarding daily technician assignments.

The inspector reviewed Condition Reports, related to radiation worker and radiation protection technician errors, and personnel contamination event reports to determine if an observable pattern traceable to a similar cause was evident.

### Contamination and Radioactive Material Control

At the Radiological Controlled Area (RCA) control point, the inspector observed workers surveying and releasing potentially contaminated materials for unrestricted use. The inspector verified that the counting instrumentation was located in a low background area and that the instrument sensitivity was appropriate for the type of contamination being measured.

The inspector reviewed the licensee's procedures for storing, issuing, and inventorying sealed radioactive sources. The inspector toured plant areas where sealed sources were stored. During this tour, the inspector conducted spot checks of various radioactive sealed sources to verify their presence. Through this review, the inspector determined that sources were properly tested for possible leaks, all sources were appropriately accounted for, and that the storage containers were properly secured and labeled.

The inspector verified that transactions involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

## B. Findings

No findings of significance were identified.

## 2RS02 Occupational ALARA Planning and Controls (71124.02)

### A. Inspection Scope

During the period March 1 - 4, the inspector conducted the following activities to verify that the licensee was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) for tasks performed during 2009 and in performing ongoing activities. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures.

### Radiological Work Planning

The inspector reviewed pertinent exposure information regarding the fall 2009, 2R14 refueling outage, current exposure trends, and ongoing activities to assess ALARA performance. A review of 2009 outage dose was conducted to compare actual exposures with forecasted estimates to determine if differences were properly addressed in Work-In-Progress and Post-Job ALARA reviews.

The inspector evaluated the departmental interfaces between radiation protection, operations, maintenance crafts, and engineering to identify missing ALARA program elements and interface problems. The evaluation was accomplished by attending an ALARA briefing for a Unit 2 reactor containment building entry; reviewing 2R14 outage post-job ALARA reviews, a root cause evaluation for the Unit 2 reactor head repair emergent dose, ALARA Manager's Committee meeting minutes, and a Nuclear Oversight audit/field observations; and interviewing the site Radiation Protection Manager.

### Verification of Dose Estimates

The inspector reviewed the assumptions and basis for the annual (2010) site collective dose, exposure projections and actual exposure data for the 2R14 fall outage, and for routine power operations. The inspector evaluated in detail 2R14 projects whose dose exceeded 5 person-rem. The inspector reviewed the effectiveness of initial job planning measures and the licensee's efforts in monitoring and controlling dose, during job completion, by the ALARA Manager's Committee. Projects reviewed included sump modifications/chemical remediation (GSI-191 actions), replacement of Kerotest valves, and emergent dose resulting from reactor vessel head repairs.

The inspector reviewed the licensee's procedures associated with monitoring and re-evaluating dose estimates when the forecasted cumulative exposure for tasks differed from the actual exposure received. The inspector reviewed the dose/dose rate alarm reports, personnel dose extensions, an internal dose evaluation, work-in-progress evaluations, post-job ALARA reviews, and exposure data for selected individuals receiving the highest Total Effective Dose Equivalent (TEDE) for 2009, to confirm that no individual exposure exceeded the regulatory limit, or met the performance indicator reporting guideline.

### Jobs-In-Progress

The inspector observed a job-in-progress to evaluate the effectiveness of dose and contamination control measures. The job observed was a Unit 2 reactor containment building entry to replace the "D" incore detector. As part of this evaluation, the inspector attended the pre-job ALARA briefing, reviewed the RWP and associated survey maps, evaluated contamination control measures, and attended the post-job critique conducted by the I&C Department.

### Problem Identification and Resolution

The inspector reviewed elements of the licensee's corrective action program related to implementing ALARA program controls, including condition reports, Nuclear Oversight field observation reports, audits and dose/dose rate alarm reports, to determine if

problems were being entered at a conservative threshold and resolved in a timely manner.

B. Findings

No findings of significance were identified.

2RS04 Occupational Dose Assessment (71124.04)

A. Inspection Scope

During the period, March 1 – 4, the inspector conducted the following activities to verify that the licensee's methods for determining total effective dose equivalent were accurate and that occupational dose was appropriately monitored for Declared Pregnant Workers.

Special Dosimetric Situations:

Declared Pregnant Workers

The inspector reviewed the implementing procedure for processing, monitoring, and limiting the exposure of personnel who are Declared Pregnant Workers (DPW). The monitoring records were reviewed for two (2) DPWs and determined to be in compliance with the regulatory criteria.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

The inspector reviewed the licensee's procedure for measuring personnel exposure using the effective dose equivalent method. The inspector confirmed that the method was approved by the NRC and that the implementing procedure appropriately specified the placement of whole body and extremity dosimeters on the worker.

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 January 2009 through December 2009. The inspectors reviewed Licensee Event Reports, condition reports, portions of various plant operating logs and reports, and PI data developed from monthly 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.

.1 Cornerstone: Initiating Events

- Unit 1 and Unit 2 Unplanned Scrams per 7000 Critical Hours;
- Unit 1 and Unit 2 Unplanned Transients per 7000 Critical Hours; and
- Unit 1 and Unit 2 Unplanned Scrams with Complications.

4OA2 Problem Identification and Resolution (71152 – 2 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

Introduction: A Green, self-revealing finding (FIN) was identified in that technicians failed to properly implement a station procedure. Specifically, Work Order (WO) 200399938 instructions were not followed, as expected by NOP-WM-4006, "Conduct of Maintenance", causing leads to be inadvertently lifted for an annunciator to the main control room control board.

Description: On March 4, technicians were directed to remove an instrument rack that was being modified utilizing WO 200399938. The instrument rack was used to support a junction box (2JB-7241) and conduits that carry 2 spare cables. On a previous shift, the junction box hardware was disconnected from the instrument rack.

After attending a pre-job brief with the supervisor, work commenced after midnight, and the instrument rack and junction box 2JB-7241 were removed by the technicians. A review of the work order was not completed by the technicians, as expected by NOP-WM-4006, "Conduct of Maintenance". The work order specifically stated that junction box 2JB-7241 was not to be removed. At 0515, on March 4, the control room received an unexpected, intermittent alarm, Steam Generator Feed Pump Discharge Equalizing Pressure Low. This alarm is used by operators in the "Loss of Main Feedwater" Abnormal Operating Procedure. An operator was dispatched to investigate. No apparent cause for the alarm was identified.

A maintenance department prompt investigation revealed that the junction box 2JB-7241 had been removed, contrary to the work order instructions. An immediate corrective action was to reinstall the junction box and reconnect the leads to the annunciator. A maintenance stand down was conducted for three days. A root cause analysis is in progress.

Analysis: Failure to properly implement a station procedure resulting in the inadvertent lifting of leads of a control room annunciator is considered a performance deficiency. 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 performance deficiency is more than minor because it is similar to example 2.f in IMC 0612, Appendix E and affects the mitigating systems cornerstone.

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 function.

The cause of this finding relates to the cross-cutting aspect of Human Performance, Work Practices, in that FENOC personnel did not follow procedures, resulting in a control room annunciator's leads being inadvertently lifted. [H.4.(b)]

Enforcement: Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. FENOC took immediate action to reconnect the annunciator, document the issue in CR 10-72654, conduct a maintenance stand down, and perform a root cause analysis. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as finding (FIN) **05000412/2010002-01, Human Performance Error Results in Disabling a Control Room Annunciator.**

.2 Semi-Annual Trend Review (71152)

a. Inspection Scope (1 sample)

The inspectors reviewed site trending results that were complete and available for the time frame July through December 2009, to determine if trending was appropriately identified and evaluated by FENOC. This review covered FENOC's trending program, as well as other programs such as self-assessments, quality assurance reports, activity tracking reports, and other program reports that provide useful information, to verify that existing trends were appropriately captured and scoped by applicable departments, consistent with the inspectors' assessment from the daily condition report (CR) and inspection module reviews, and not indicative of a more significant safety concern. Additionally, the inspectors verified the performance of site trending against NOP-LP-2001, "Corrective Action Program," and NOBP-LP-2018, Rev. 04, "Integrated Performance Assessment /Trending."

b. Findings and Observations

No findings of significance were identified.

.3 Annual Sample: Review of Equipment Status Control and Protective Tagging

a. Inspection Scope (1 sample)

The inspectors reviewed FENOC's CRs related to Equipment Status Control and Protective Tagging, excluding equipment failures, from July 8, 2008 to February 15,

2010. These CRs were evaluated for trends in human performance and corrective action effectiveness.

Twenty-seven CRs associated with components found to be out of their normal system arrangement (NSA) position were included in this sample. These condition reports were evaluated against NOBP-OP-0004, Revision 2, "Component Mispositioning" and the new procedure that replaced this procedure, NOBP-OP-004, Revision 3, "Plant Status Control and Clearance Events."

Thirty-two CRs associated with protective tagging were included in this sample. Four phases of the protective tagging were evaluated for trends which included:

- Preparation – creation of the protective tagouts based on the scope of work requiring protection.
- Installation – the process of hanging and verifying of protective tags
- Use – the work being performed under that protective tagout including operation of protective tagged components
- Removal – the process of tagout restoration and component repositioning to the NSA condition.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that both the Equipment Status Control and Protective Tagging processes were adequately implemented. However, this review revealed that fifteen CRs were not reviewed by the Mispositioning Review Committee, the Plant Status Control, or the Clearance Event Review Committee, which fit the criteria in NOBP-OP-0004. This was discussed with the licensee and documented in CR 10-73193.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

Plant Event Review

a. Inspection Scope (1 sample)

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.

- Unit 1 and 2: On February 6, the power station and surrounding community experienced a severe snow storm. The storm affected the power supporting the event notification system sirens, causing 38 of 119 sirens to be without power, and six sirens to operate on battery back-up. The licensee implemented appropriate compensatory measures and notified the NRC (EN# 45683). All sirens were returned to service within 72 hours. This issue was documented in CR 10-71234.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exposure Control, ALARA Planning and Control, and Occupational Dose Assessment

The inspectors presented the inspection results of 2RS01, 2RS02, and 2RS04 to Mr. Ray Lieb, Director of Site Operations, and other members of FENOC staff, at the conclusion of the inspection on March 4.

.2 Quarterly Inspection Report Exit

On April 12, the inspectors presented the normal baseline inspection results to Mr. Paul Harden, Site Vice President, and other members of the licensee staff.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee personnel

|                |   |
|----------------|---|
| S. Baker       | Radiation Protection Manager            |
| D. Batvinskias | Senior Radiation Protection Technician  |
| R. Bisbee      | Staff Nuclear Specialist                |
| A. Burger      | Supervisor, Nuclear Reactor Engineering |
| S. Checketts   | Operations Staff, Shift Manager         |
| D. Gibson      | Unit 1, Shift Manager                   |
| P. Harden      | Site Vice President                     |
| R. Harris      | Emergency Response Staff                |
| G. Hackett     | Supervisor, Radiation Protection        |
| J. Hall        | Senior Radiation Protection Technician  |
| K. Kimmerlee   | Supervisor, Radiation Protection        |
| R. Lieb        | Director, Site Operations               |
| J. Mancini     | Staff Nuclear Engineer                  |
| J. Mauck       | Compliance Engineer                     |
| D. Murcko      | Staff Nuclear Engineer                  |
| D. Murry       | Director, Maintenance                   |
| M. Patel       | Staff Nuclear Engineer                  |
| B. Sepelak     | Supervisor, Regulatory Compliance       |
| J. West        | System Engineer                         |
| R. Williams    | Maintenance Rule Coordinator            |
| M. Wimmel      | System Engineer                         |

Other Personnel

|         |  |
|---------|--|
| L. Ryan | Inspector, Pennsylvania Department of Radiation Protection |
|---------|--|

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Open/Closed

|                     |     |   |
|---------------------|-----|---|
| 05000412/2010002-01 | FIN | Human Performance Error Results in Disabling a Control Room Annunciator. (Section 40A2.1) |
|---------------------|-----|---|

**LIST OF DOCUMENTS REVIEWED**

Section 1R01: Adverse Weather Protection

Procedures

½ AOP-75.2, Acts of Nature - Flood  
½-ADM-1900, Fire Protection Program

Conditions Reports

10-71598  
10-70645  
10-70901  
10-71242  
10-70826  
10-71169  
10-71277  
04-09800

Other

BV1 & BV2 Operations Shift Logs Dated January 8, 25-31; February 4-9, 2010

Section 1R04: Equipment Alignment

Condition Reports

10-74048

Drawings

RM-0413-001, Rev. 23 "Valve Oper No Diagram-Containment Depressurization System"  
8700-RE-1V, Rev. 27

Technical Specifications

ITS 3.5.2, 3.7.4, 3.8.3

Section 1R05: Fire Protection

Pre-Fire Plans

1PFP-1NTS-705, Rev. 1, Pump Cubicles (Fire Areas IS-1, 2, 3, 4)

Condition Reports

03-09026      08-46154      09-62745      10-72965

Other

BVPS Unit 1 Appendix R Report, Chapter 3  
Fire Protection Safe Shutdown Report  
RTL#A1.080J, Addendum 28  
RTL#A9.210X, Rev. 1

Section 1R06: Flood Protection

Condition Reports

10-73089      09-68419

Section 1R12: Maintenance Rule Implementation

Other

MR Scoping Documents for 2IAS-C21  
NOTF 600592789

Condition Reports

10-73486  
10-70247  
09-69495  
09-61881

Section 1R13: Maintenance Risk Assessment and Emergent Work Control

Work Orders

WO 200336681

Condition Reports

10-73098      10-70175

Other

PRA-BV2 Wk 3.08.10 Rev. 2 / U2 030810.DAT  
BV1 Weekly Maintenance Risk Summaries  
BV2 Weekly Maintenance Risk Summaries

Section 1R15: Operability Evaluations

Drawings

8700-RB-0016B, Rev. 16, Flow Diagram Fire protection

Procedures

1/2RCP-1A-PC Rev. 8, Calibration of Auxiliary Relays  
2RST-3.3, Rev. 8, Determination of Limit Switch Setpoints for Incore Detectors (At Power)

Work Orders

200350637      200373094

Condition Reports

10-73648      10-73227      10-72114      10-71845      09-53560      09-61619

Notifications

600594098      600604800      600594524

Other

Unit 1 Control Room Logs 1/31-2/5  
Beaver Valley Unit 2 System Health Report 2009-4, dated 1/28/10  
Beaver Valley Unit 2 Station Instrument Air Unavailability Sensitivity, dated 3/15/10  
Fire Protection Program Change Evaluation (10-011) for CR 10-71050, dated 2/3/10

Section 1R18: Plant ModificationsCondition Reports

10-70496      09-61619      07-18537      06-01302

Drawings

12241-E-9A sh1, Rev. 10, Elementary Diagram Turbine Controls  
 10080-RE-3FM, Rev. 11, Wiring Diagram Aux Relay Panel 262 (R)  
 10080-E-12B sh1, Rev. 20, Elementary Diagram Diesel Gen. 2-2 Auto Loading  
 10080-E-12B sh2, Rev. 20, Elementary Diagram Diesel Gen. 2-2 Auto Loading  
 10080-E-12B sh3, Rev. 19, Elementary Diagram Diesel Gen. 2-2 Auto Loading

Other

Engineering White Paper for Defeating BV2 Turbine Anti-Motoring Trip (CR 10-70887)

Section 1R19: Post-Maintenance TestingProcedures

1/2 PMP-1RDS-MG-1E, Rev. 4, Rod Drive M.G. Set Inspection  
 1/2 CMP-01RDS-MG-01E, Rev. 5, Instructions for Generator, Bearing, Flywheel, Fanwheel, and  
 Rotating Exciter Assembly Replacement  
 2OST-34.8, Rev. 5, Standby Diesel-Driven Air Compressor [21AS-C21] Test  
 BVBP-SITE-0053, Rev. 1, Post Maintenance Test Requirements

Work Orders

200354447      200397849      200399585      200335066      20038518

Condition Reports

10-70496      10-73129      10-73161      10-73024      10-73132      10-73165  
 10-73163      10-73176      10-69666

Other

PO# 47258994  
 ECP 09-0687-001  
 EER 600570714  
 Vendor Tech. Automatic Timing & Controls Company Inc, 365A Long Range Timer

Section 1R22: Surveillance TestingProcedures

2MSP-2.06-I, Rev. 27, Power Range Neutron Flux Channel N44 Refueling Calibration  
 2MSP- 2.14-I, Rev. 19, Power Range Neutron Flux Channel N44 Channel Operational Test  
 1/2 PMP-E-75-020, Rev. 13, Limitorque MOV Inspection and Test  
 1/2 CMP-E-75-021, Rev. 7, Testing of Motor Operated Valves

Drawings

8700-RM-4132, Rev. 9, Containment Depressurization System

Work Orders

200354447      200222933      200255053

Condition Reports

09-31474      09-61452      09-56250      09-52274      09-59105      07-29081

Other

1BVP-CYC-020-1 Clearance  
 BVPS Unit 1 Operator Logs, dated March 9/10, 2010  
 Primavera Schedule, MOV-IRS-156A Online Testing, March 8, 2010

Section 1EP7: Force-On-Force Exercise Evaluation:Condition Reports

07-25577      10-71285      10-71283      10-71271      10-71645

Procedures

EPP-I-1a, Rev. 13, "Recognition and Classification of Emergency Conditions"  
 1/2-EPP-IP-1.1, Rev. 43, "Notifications"  
 1/2-OM-53C.4A.100.1, Issue 1, Rev. 2, "Security Threat"  
 1/2-OM-53C.4A.100.2, Issue 1, Rev. 2, "Land-Based Threat"  
 1/2-OM-53C.4A.100.3, Issue 1, Rev. 2, "Airborne Threat"  
 1/2-OM-53C.4A.100.4, Issue 1, Rev. 1, "Spent Fuel Pool"  
 1/2-OM-53C.4A.100.5, Issue 1, Rev. 0, "Grid Threat"  
 1/2-OM-53C.4A.100.6, Rev. 1, "Extreme Damage Mitigating Guides"

Other

1/2-EPP-IP-1.1.F01, "Initial Notification Form", exercise dated February 3, 2010  
 1/2-EPP-IP-4.F01, "Site Area Emergency Page Announcement", exercise dated February 3, 2010  
 FOF Daily Exercise Schedule, February 2010  
 Operations Evaluation Checklist, filed February 03, 2010

Sections 2RS1, 2RS2, 2RS4PROCEDURES:Radiological Hazard Assessment/ALARA Planning & Controls (71124.01/02)

|                  |   |
|------------------|---|
| 1/2-ADM-1601     | Radiation Protection Standards                      |
| 1/2-ADM-1611     | Radiation Protection Administrative Guide           |
| 1/2-HPP-3.01.001 | Radioactive Source Accountability                   |
| 1/2-HPP-3.05.001 | Exposure Authorization                              |
| 1/2-HPP-3.07.002 | Radiation Survey Methods                            |
| 1/2-HPP-3.07.013 | Barrier Checks                                      |
| 1/2-HPP-3.08.003 | Radiation Barrier Key Control                       |
| 1/2-HPP-3.08.006 | Shielding   |
| BVBP-RP-0003     | Dosimetry Practices                                 |
| BVBP-RP-0013     | Radiation Protection Risk Assessment Process        |
| BVBP-RP-0020     | RP Job Coverage General Guidance                    |
| NOP-OP-4206      | Bioassay Administration                             |
| NOP-OP4005       | ALARA Program                                       |
| NOP-OP-4005      | Operational ALARA Program                           |
| NOP-OP-4107      | Radiation Work Permit                               |
| NOP-WM-7017      | Contamination Control Program                       |
| NOP-OP-4101      | Access Controls for Radiologically Controlled Areas |

NOP-OP-4102 Radiological Postings, Labeling, and Markings  
NOP-OP-4204 Special External Exposure Monitoring  
NOP-OP-4202 Declared Pregnant Workers

CONDITION REPORTS (Access Control/ALARA related (71124.01/02))

09-67463, 10-72237, 10-72482, 10-72651, 10-72656, 09-67792, 09-67918, 09-67811,  
09-68671, 10-69576, 10-70134, 10-70554, 10-71140, 10-71404, 09-67725, 09-66811,  
09-66850, 09-66920, 09-66916, 09-67081, 09-66873, 09-66818, 09-66909, 09-66880,  
09-66798, 09-66795,

Radiation Work Permits (RWP)

210-2015, RBC Entry-Leak Search and Troubleshoot  
210-2026, Repair/Replace Incore Detectors

2R14 ALARA Post-Job Reviews:

209-5017, Steam Generator Channel Head  
209-5028, Scaffolding Installation/Removal  
209-5043, Kerotest Valve Replacement  
209-5037, Reactor Head Inspection & Repairs

NUCLEAR OVERSIGHT Audit and Field Observations:

Audit: MS-C-09-10-03, Radiation Protection  
Field Observations Report Nos: BV220093853/54/55/58 and BV320103905/27

MISCELLANEOUS REPORTS:

Dose and Dose Rate Alarm Report for period 11/02/2009 through 03/01/2010  
2R14 Outage ALARA Report  
Root Cause Analysis Report for Addition Indications found on Penetration 57

Section 4OA2: Identification and Resolution of ProblemsCondition Reports

|          |          |          |          |
|----------|----------|----------|----------|
| 10-72654 | 09-52351 | 09-58692 | 09-66027 |
| 09-53938 | 09-66645 | 09-54846 | 09-59541 |
| 09-67581 | 09-66392 | 08-44047 | 09-60755 |
| 09-67668 | 09-66028 | 09-63968 | 09-68001 |
| 09-56328 | 09-64273 | 09-68406 | 09-67705 |
| 09-63717 | 09-63807 | 08-46883 | 09-53214 |
| 10-70175 | 09-62443 | 08-47455 | 08-49368 |
| 09-67273 | 09-62387 | 09-56531 | 08-49073 |
| 09-67085 | 09-62190 | 08-47701 | 10-70178 |
| 09-66167 | 09-55699 | 09-57193 | 10-69555 |
| 09-66015 | 09-53061 | 09-57224 | 10-69509 |
| 09-65317 | 09-52990 | 09-58266 | 09-69114 |
| 09-58364 | 08-51064 | 09-58355 | 09-68152 |
| 09-57737 | 08-50149 | 09-58878 |          |
| 09-56634 | 08-44946 | 09-68527 |          |
| 09-53793 | 08-43076 | 09-68331 |          |

Work Orders

200399938

Procedures

2OM-52C.4.2.24.1, Rev. 4, "Loss of Main Feedwater"  
 NOP-WM-4006, Rev. 4, "Conduct of Maintenance"  
 NOP-LP-2601, Rev. 2, "Procedure Use and Adherence"

Other

NOBP-LP-2602-19, Rev. 0, "Quick Human Error Response Checklist"  
 BVPS Unit 2 Operator Logs, dated March 4, 2010

Section 4OA3: Event ResponseCondition Reports

10-71235      10-71264      10-71234

Procedures

NOP-LP-5003, Communicating Events of Potential Public Interest.

Other

10CFR50.72/73  
 BV1 & BV2 Operations Logs and Crew Roster, dated February 5-8, 2010  
 BVPS EALs  
 Event Notification #45683, dated February 6, 2010  
 NUREG-1022

**LIST OF ACRONYMS**

|       |  |
|-------|--|
| ADM   | Administrative Procedure               |
| AP    | ALARA Plan                             |
| BCO   | Basis for Continued Operations         |
| BVPS  | Beaver Valley Power Station            |
| CFR   | Code of Federal Regulations            |
| CR    | Condition Report(s)                    |
| FA    | Functionality Assessments              |
| FENOC | First Energy Nuclear Operating Company |
| FOF   | Force-on-Force                         |
| GSI   | Generic Safety Issue                   |
| I&C   | Instrumentation and Control            |
| IMC   | Inspection Manual Chapter              |
| IOD   | Immediate Operability Determination    |
| IP    | Inspection Procedure                   |
| ISI   | Inservice Inspection                   |
| LCO   | Limiting Conditions for Operations     |
| LER   | Licensee Event Report                  |
| LHRA  | Locked High Radiation Area             |
| MSP   | Maintenance Surveillance Package       |
| 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               |
| RCA   | Radiological Controlled Area           |
| RWP   | Radiation Work Permit                  |
| TMOD  | Temporary Modification                 |
| TS    | Technical Specification                |
| UFSAR | Updated Final Safety Analysis Report   |
| VHRA  | Very High Radiation Area               |