



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

October 15, 2009

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 PROBLEM IDENTIFICATION  
AND RESOLUTION INSPECTION REPORT 05000334/2009008 AND  
05000412/2009008**

Dear Mr. Harden:

On September 3, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Beaver Valley Power Station Units 1 and 2. The enclosed report documents the inspection results, which were discussed on September 3, 2009, with Mr. Roy Brosi and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, and compliance with the Commission's rules and regulations and the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel.

Based on the samples selected for review, the inspection team concluded that FirstEnergy Nuclear Operating Company (FENOC) was generally effective in identifying, evaluating and resolving problems. FENOC personnel identified problems at a low threshold and entered them into the Corrective Action Program (CAP). FENOC personnel screened issues appropriately for operability and reportability, and prioritized issues commensurate with the safety significance of the problems. Root and apparent cause analyses appropriately considered extent of condition, generic issues, and previous occurrences. Corrective actions addressed the identified causes and were typically implemented in a timely manner. However, the inspectors noted several examples for improvement in the identification of plant issues, and examples where evaluations lacked rigor to fully explore the corrective actions needed to address the issue.

This report documents one NRC-identified finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your CAP, the NRC is treating this finding as a non-cited violation (NCV), in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this NCV, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear

Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the Beaver Valley Power Station. In addition, if you disagree with the characterization of 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, its enclosure, 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Raymond J. Powell, Chief  
Technical Support & Assessment Branch  
Division of Reactor Projects

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

Enclosures: Inspection Report 05000334/2009008; 05000412/2009008  
w/Attachment: Supplemental Information

cc w/encls: Distribution via ListServ

copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the Beaver Valley Power Station. In addition, if you disagree with the characterization of 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, its enclosure, 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,  
**/RA/**  
Raymond J. Powell, Chief  
Technical Support & Assessment Branch  
Division of Reactor Projects

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

Enclosures: Inspection Report 05000334/2009008; 05000412/2009008  
w/Attachment: Supplemental Information

**Distribution w/encl: (via e-mail)**

S. Collins, RA (R1ORAMAILRESOURCE)  
M. Dapas, DRA (R1ORAMAILRESOURCE)  
D. Lew, DRP (R1DRPMAILRESOURCE)  
J. Clifford, DRP (R1DRPMAIL RESOURCE)  
R. Bellamy, DRP  
G. Barber, DRP  
C. Newport, DRP  
J. Greives, DRP  
D. Werkheiser, DRP, SRI

D. Spindler, DRP, RI  
P. Garrett, DRP, OA  
L. Trocine, RI OEDO  
RIDSNNRRPMBEAVERVALLEY RESOURCE  
[ROPreportsResource@nrc.gov](mailto:ROPreportsResource@nrc.gov)  
Region I Docket Room (with concurrences)

**SUNSI Review Complete:** tcs (Reviewer's Initials) **ML092920008**

DOCUMENT NAME: G:\DRP\BRANCH TSAB\Inspection Reports\Beaver Valley PI&R 2009\BV PIR IR2009008rev0.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:	TSetzer/tcs	RBellamy/rjp for	RPowell/rjp
DATE:	10/13/09	10/14/09	10/15/09

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. 50-334, 50-412

License Nos. DPR-66, NPF-73

Report Nos. 05000334/2009008 and 05000412/2009008

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station, Units 1 and 2

Location: Post Office Box 4  
Shippingport, PA 15077

Dates: August 17 through September 3, 2009

Team Leader: Thomas Setzer, PE, Senior Project Engineer  
Division of Reactor Projects (DRP)

Inspectors: Jeffery Bream, Project Engineer, DRP  
Elizabeth Keighley, Reactor Inspector, DRP  
David Spindler, Beaver Valley Resident Inspector, DRP

Approved by: Raymond J. Powell, Chief  
Technical Support & Assessment Branch  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000334/2009008, IR 05000412/2009008; 08/17/2009 - 09/03/2009; Beaver Valley Power Station, Units 1 & 2; Biennial Baseline Inspection of the Identification and Resolution of Problems. One finding was identified in the area of prioritization and evaluation of issues.

This team inspection was performed by three NRC regional inspectors and one resident inspector. One finding of very low safety significance (Green) was identified during this inspection and was classified as a non-cited violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspect was determined using IMC 0305, "Operating Reactor Assessment Program." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, December 2006.

### Identification and Resolution of Problems

The inspectors concluded that FENOC was, in general, effective in identifying, evaluating, and resolving problems. Beaver Valley personnel identified problems at a low threshold and entered them into the Corrective Action Program (CAP). The inspectors determined that Beaver Valley personnel screened issues appropriately for operability and reportability, and prioritized issues commensurate with the safety significance of the problems. Root and apparent cause analyses appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors determined that corrective actions addressed the identified causes and were typically implemented in a timely manner. However, the inspectors noted one NCV of very low safety significance in the area of prioritization and evaluation of issues. This issue was entered into FENOC's CAP during the inspection.

FENOC's audits and self-assessments reviewed by the inspectors were thorough and probing. Additionally, the inspectors concluded that FENOC adequately identified, reviewed, and applied relevant industry operating experience (OE) to the Beaver Valley Power Station. Based on interviews, observations of plant activities, and reviews of the CAP and the Employees Concerns Program (ECP), the inspectors did not identify any concerns with site personnel willingness to raise safety issues, nor did the inspectors identify conditions that could have had a negative impact on the site's safety conscious work environment (SCWE).

### **Cornerstone: Mitigating Systems**

Green. The inspectors identified an NCV of very low safety significance (Green) of 10 CFR 50.65(a)(2), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," due to FENOC personnel's failure to demonstrate that the 10 CFR 50.65(a)(2) performance of the containment isolation valve limit switches was effectively controlled through the performance of appropriate preventive maintenance. Specifically, as evidenced by repeat dual position indications of containment isolation valves in the control room between 2007 and 2009 resulting in 21 unplanned entries into Technical Specification 3.6.3, the containment isolation valve system 10 CFR 50.65(a)(2) performance demonstration was no longer justified in accordance with Maintenance Rule

implementing procedure guidance. This should have resulted in placement of the containment isolation valve system in 10 CFR 50.65(a)(1) for goal setting and monitoring. FENOC entered this issue into the CAP (CR 09-64040).

The inspectors determined the finding was more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance (Green) because the finding did not involve a design or qualification deficiency resulting in loss of operability or functionality, did not result in a loss of system safety function, and did not screen as potentially risk significant due to external initiating events. The inspectors determined that this finding had a cross-cutting aspect in the "Corrective Action Program" component of the Problem Identification and Resolution cross-cutting area because FENOC did not take appropriate corrective actions to address safety issues and adverse trends associated with faulty containment isolation valve limit switches in a timely manner, commensurate with their safety significance and complexity [P.1(d)]. (Section 4OA2.1c)

## REPORT DETAILS

### 4. OTHER ACTIVITIES (OA)

#### 4OA2 Problem Identification and Resolution (PI&R) (71152B)

##### .1 Assessment of the Corrective Action Program Effectiveness

###### a. Inspection Scope

The inspectors reviewed FENOC's procedures that describe the CAP at the Beaver Valley Power Station. FENOC personnel identified problems by initiating condition reports (CRs) for conditions adverse to quality, plant equipment deficiencies, industrial or radiological safety concerns, and other significant issues. Condition reports were subsequently screened for operability and reportability, and categorized by significance, which included levels SR (significant condition adverse to quality, root cause), AR (adverse condition, root cause), AA (adverse condition, full apparent cause), AL (adverse condition, limited apparent cause), AF (adverse condition, fix), and AC (adverse condition, close). CRs were assigned to personnel for evaluation and resolution or trending.

The inspectors evaluated the process for assigning and tracking issues to ensure that issues were screened for operability and reportability, prioritized for evaluation and resolution in a timely manner commensurate with their safety significance, and tracked to identify adverse trends and repetitive issues. In addition, the inspectors interviewed plant staff and management to determine their understanding of, and involvement with, the CAP.

The inspectors reviewed CRs selected across the seven cornerstones of safety in the NRC's Reactor Oversight Process (ROP) to determine if site personnel properly identified, characterized, and entered problems into the CAP for evaluation and resolution. The inspectors selected items from functional areas that included physical security, emergency preparedness, engineering, maintenance, operations, and radiation safety to ensure that FENOC appropriately addressed problems identified in these functional areas. The inspectors selected a risk-informed sample of CRs that had been issued since the last NRC Problem Identification and Resolution (PI&R) inspection conducted in April 2007. Insights from the station's risk analyses were considered to focus the sample selection and plant walkdowns on risk-significant systems and components. The corrective action review was expanded to five years for evaluation of identified concerns within CRs relative to radiation monitors.

The inspectors selected items from various processes at Beaver Valley to verify that they were appropriately considered for entry into the CAP. Specifically, the inspectors reviewed a sample of Maintenance Rule functional failure evaluations, operability determinations, system health reports, work orders (WOs), and issues entered into the Employee Concerns Program (ECP). The inspectors inspected plant areas including the turbine buildings, safeguards buildings, intake structure, emergency diesel generator buildings, yard areas, security areas, and control room.

The inspectors reviewed CRs to assess whether FENOC personnel adequately evaluated and prioritized issues. The CRs reviewed encompassed the full range of evaluations, including root cause analyses, full apparent cause evaluations, limited apparent cause analyses, and common cause analyses. A sample of CRs that were assigned lower levels of significance which did not include formal cause evaluations (AF and AC significance levels) were also reviewed by the inspectors to ensure they were appropriately classified. The inspectors' review included the appropriateness of the assigned significance, the scope and depth of the analysis, and the timeliness of resolution. The inspectors assessed whether the evaluations identified likely causes for the issues and identified appropriate corrective actions to address the identified causes. As part of this review, the inspectors interviewed various station personnel to fully understand details within the evaluations and the proposed and completed corrective actions. The inspectors observed management review board (MRB) meetings in which FENOC personnel reviewed new CRs for prioritization and assignment. Further, the inspectors reviewed equipment operability determinations and extent-of-condition reviews for selected CRs to verify these specific reviews adequately addressed equipment operability and the extent of problems.

The inspectors' review of CRs also focused on the associated corrective actions in order to determine whether the actions addressed the identified causes of the problems. The inspectors reviewed CRs for adverse trends and repetitive problems to determine whether corrective actions were effective in addressing the broader issues. The inspectors reviewed FENOC's timeliness in implementing corrective actions and effectiveness in precluding recurrence for significant conditions adverse to quality. Lastly, the inspectors reviewed CRs associated with NRC non-cited violations (NCV) and findings since the last PI&R inspection to determine whether FENOC personnel properly evaluated and resolved the issues. Specific documents reviewed during the inspection are listed in the Attachment to this report.

b. Assessment

Effectiveness of Problem Identification

Based on the selected samples reviewed, plant walkdowns, and interviews of site personnel, the inspectors determined that, in general, FENOC personnel identified problems and entered them into the CAP at a low threshold. For the issues reviewed, the inspectors noted that problems or concerns had been appropriately documented in enough detail to understand the issues. Approximately 19,000 CRs had been written by FENOC personnel since January 2007. The inspectors noted that the Security department had generated significantly less CRs when compared to the rest of the site. Interviews with Security personnel revealed that they had received adequate training, displayed a willingness to raise issues, and had ample access to computers; however, there was a reliance on the shift Captain to enter issues into the CAP.

The inspectors observed managers and supervisors at MRB meetings appropriately questioning and challenging CRs to ensure clarity of the issues. The inspectors determined that FENOC personnel trended equipment and programmatic issues, and CR descriptions appropriately included reference to repeat occurrences of issues. The

inspectors concluded that personnel were identifying trends at low levels.

The inspectors toured plant areas including the turbine buildings, safeguards buildings, intake structure, emergency diesel generator buildings, yard areas, security areas and control room to determine if FENOC personnel identified plant issues at the proper threshold. Housekeeping in all areas, with the exception of the Unit 2 intake structure, was noted to be improved since the 2007 NRC PI&R inspection. During the plant walkdown, the inspectors identified three examples of adverse conditions that had not been identified by FENOC. The following issues were entered into the CAP for evaluation and resolution:

- During an inspection of the east end of the main intake structure, the inspectors identified an oxygen bottle strapped to an Appendix R ladder (a ladder used by plant personnel for implementing the site fire protection program). Restraining the oxygen bottle and Appendix R ladder together in this fashion represented a minor procedure violation of Beaver Valley procedure, 1/2-PIP-G01, "Securing Transient/Temporary/Stored Equipment in Safety-Related Areas." This issue is minor because there was no adverse impact to plant safety equipment, and there was only minimal impact on operator fire response times. FENOC entered this into the CAP (CR 09-63536).
- During an inspection of the 'D' intake structure cubicle, the inspectors identified rigging scaffolding with a chainfall that had been left draped over a safety related component. Scaffold contacting plant equipment represented a minor procedure violation of Beaver Valley procedure, 1/2-ADM-0810, "Scaffold Erection and Tagging." The component was not damaged nor had any reduced capability as a result of the contact with the chainfall. This issue is minor because there was no loss of operability or adverse impact to the safety related component. FENOC entered this into the CAP (CR 09-63532).
- During an inspection of the Unit 2 Safeguards Building, the inspectors identified four plastic buckets filled with lubricating oil totaling 20 gallons. The unattended oil in a safety related fire area represented a minor procedure violation of Beaver Valley procedure, 1/2-ADM-1906, "Control of Transient Combustible and Flammable Materials." This issue is minor because the increase in combustible loading in the room as a result of the unattended oil did not violate the plant fire hazard analysis. FENOC entered this into the CAP (CR 09-63441).

In accordance with NRC Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," the above issues constitute violations of minor significance that are not subject to enforcement action in accordance with the NRC's Enforcement Policy.

#### Effectiveness of Prioritization and Evaluation of Issues

The inspectors determined that, in general, FENOC personnel appropriately prioritized and evaluated issues commensurate with their safety significance. CRs were screened for operability and reportability, categorized by significance, and assigned to a department for evaluation and resolution. The CR screening process considered human performance issues, radiological safety concerns, repetitiveness and adverse trends. The inspectors observed managers and supervisors at MRB meetings appropriately questioning and challenging CRs to ensure appropriate prioritization.

Enclosure

CRs were categorized for evaluation and resolution commensurate with the significance of the issues. Based on the sample of CRs reviewed, the guidance provided by the FENOC implementing procedures appeared sufficient to ensure consistency in categorization of the issues. Operability and reportability determinations were performed when conditions warranted and the evaluations supported the conclusions. Causal analyses appropriately considered extent of condition, generic issues, and previous occurrences. During this inspection, the inspectors noted that, in general, FENOC's root cause analyses were thorough, and corrective and preventive actions addressed the identified causes. Additionally, the identified causes were well supported. An NCV was identified for FENOC's failure to demonstrate that the 10 CFR 50.65(a)(2) performance of the containment isolation valve limit switches was effectively controlled through the performance of appropriate preventive maintenance. This NCV is discussed in the findings section of this assessment area. The inspectors identified the following two examples of issues that were not fully evaluated or prioritized for corrective action:

- A root cause evaluation (CR 08-39835) associated with a 2.5 inch drain down of the Unit 2 reactor coolant system during refueling outage 2R13 did not identify all corrective actions necessary to address all failed barriers. The inspectors noted that the root cause evaluation had not included corrective actions to address the communication failure within operations shifts, and the work management scheduling issues which contributed to a component tagout/clearance being inappropriately implemented. The issue is minor because while corrective actions were not assigned to address all failed barriers, FENOC had discussed communication expectations with each operating crew and there have not been any repeat issues. FENOC entered these issues into the CAP (CR 09-63454 and 09-63479).
- The inspectors identified three CRs describing component mispositioning events (CR 09-59541, CR 09-58355, and CR 09-57224) that were prioritized as CR level "AF." The failure to prioritize these CRs as a limited apparent cause (CR level "AL") represented a minor procedure violation of Beaver Valley procedure, NOBP-OP-0004, "Component Mispositioning." The inspectors reviewed NRC Inspection Manual Chapter 0612, Appendix E, "Minor Examples," and determined this issue was minor because there was no loss of operability or safety impact. FENOC entered this issue into the CAP (CR 09-64004 and CR 09-63975).

In accordance with NRC Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," these issues constitute violations of minor significance that are not subject to enforcement action in accordance with the NRC's Enforcement Policy.

#### Effectiveness of Corrective Actions

The inspectors concluded that corrective actions for identified deficiencies were generally timely and adequately implemented. For significant conditions adverse to quality, corrective actions were identified to prevent recurrence. The inspectors concluded that corrective actions to address NCVs and findings since the last PI&R inspection were timely and effective. The inspectors identified the following example where corrective actions were not fully effective in addressing an issue:

- The inspectors reviewed corrective actions taken in response to an NCV documented in NRC report 05000334/05000412 2007004. CR 07-24074 was written to ensure bearing temperatures would be monitored when performing surveillance testing on the turbine driven auxiliary feedpumps (TDAFWP). The inspectors found that the comprehensive surveillance tests for Unit 1 and Unit 2 (Beaver Valley procedures 1OST-24.9 and 2OST-24.4A, respectively) did not have a precaution stating that this surveillance was not suitable to be used for post maintenance testing as there is no guidance prescribed to monitor and achieve steady bearing temperatures. The inspectors determined that the issue was minor because the preventive maintenance work order had contained the appropriate guidance. FENOC entered this issue into the CAP (CR 09-64015).

c. Findings

Introduction: The inspectors identified an NCV of very low safety significance (Green) of 10 CFR 50.65(a)(2), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," due to FENOC personnel's failure to demonstrate that the 10 CFR 50.65(a)(2) performance of the containment isolation valve limit switches was effectively controlled through the performance of appropriate preventive maintenance. Specifically, as evidenced by repeat dual position indications of containment isolation valves in the control room resulting in 21 unplanned entries into Technical Specification 3.6.3, the containment isolation valve system 10 CFR 50.65(a)(2) performance demonstration was no longer justified in accordance with Maintenance Rule implementing procedure guidance.

Description: The containment isolation valve system is a risk-significant system that is scoped within the Maintenance Rule because it is a system, structure, or component (SSC) required to mitigate accidents/transients and is identified in emergency operating procedures. The primary Maintenance Rule function of the containment isolation valve system is to provide a containment isolation function during an event to prevent offsite radiological release. Additionally, limit switches associated with each containment isolation valve are scoped within the Maintenance Rule because they provide a function to indicate valve position in the control room for operators to use during emergency operating procedures.

In February 2009, during stroke-time testing, an air-operated containment isolation valve displayed dual indication in the control room, causing the stroke times of the valve to be indeterminate and causing an unplanned entry into Technical Specification 3.6.3. Additionally, between January 2007 and July 2009, Technical Specification 3.6.3 had 21 unplanned entries as a result of faulty limit switches on similar containment isolation valves. This resulted in the FENOC established containment isolation valve system Maintenance Rule condition monitoring criteria being exceeded, which required FENOC to perform a Maintenance Rule 10 CFR 50.65(a)(1) evaluation. The Maintenance Rule (a)(1) evaluation was completed in February 2009 and concluded that the containment isolation valve system should continue to be monitored in accordance with Maintenance Rule 10 CFR 50.65(a)(2). This reinforced a similar decision made in 2007 based on a Maintenance Rule (a)(1) evaluation recommendation to keep the system in (a)(2) despite

the condition monitoring criteria being exceeded due to multiple dual indications in the control room. The basis of the decision was that the dual indication issue was a result of faulty limit switches, and that this did not affect the valve's safety related function to close during an event to prevent offsite radiological release. Site personnel determined the direct cause was the limit switch being out of adjustment due to a problem with the required torque. Despite the repeat failures, FENOC failed to implement or revise preventive maintenance practices for these limit switches. Subsequently, the Maintenance Rule Steering Committee approved a revision to clarify the monitoring criteria for the containment isolation valve system, which would exclude future indication problems that did not affect the valve's ability to isolate containment. However, it failed to take into account the limit switches' Maintenance Rule function in emergency operating procedures, specifically, the ability to accurately indicate valve position in the control room during an event. Following the change to the condition monitoring criteria, the site had seven valves display dual indication in the control room between February 2009 and June 2009 that FENOC concluded did not affect valve operability.

The inspectors concluded that the numerous dual indications of the limit switches should have been evaluated against FENOC's Maintenance Rule condition monitoring criteria and should have resulted in placement of the containment isolation valve system in 10 CFR 50.65(a)(1) for goal setting and monitoring. FENOC performed an extent of condition review on two other valves of the same model, and determined that the torque on the limit switch fasteners needed to be adjusted. FENOC corrected the torque issue and has implemented plans to install a button tab on the limit switches to minimize misalignment causing dual indications.

Analysis: The inspectors determined that the failure to demonstrate that the 10 CFR 50.65(a)(2) performance of the containment isolation valve limit switches was effectively controlled through the performance of appropriate preventive maintenance was a performance deficiency within FENOC personnel's ability to foresee and correct and should have been prevented. Traditional Enforcement did not apply, as the issue did not have actual or potential safety consequence, had no willful aspects, nor did it impact the NRC's ability to perform its regulatory function.

A review of NRC Inspection Manual Chapter (IMC) 0612, Appendix E, "Minor Examples," revealed that no minor examples were applicable to this finding. The inspectors determined the finding was more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the dual indication of containment isolation valves in the control room due to faulty limit switches presents a challenge to the operators during event response while implementing emergency operating procedures, and has resulted in 21 unplanned Technical Specification entries. The numerous dual indication instances should have caused the containment isolation valve system to be placed in 10 CFR 50.65(a)(1) for goal setting and monitoring. The inspectors determined the significance of the finding using IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because the finding did not involve a design or qualification deficiency resulting in loss of operability or functionality, did not result in a loss of system

safety function, and did not screen as potentially risk significant due to external initiating events.

The inspectors determined that this finding had a cross-cutting aspect in the "Corrective Action Program" component of the Problem Identification and Resolution cross-cutting area because FENOC did not take appropriate corrective actions to address safety issues and adverse trends associated with faulty containment isolation valve limit switches in a timely manner, commensurate with their safety significance and complexity [P.1(d)].

Enforcement: 10 CFR 50.65(a)(1) requires, in part, that holders of an operating license shall monitor the performance or condition of SSCs within the scope of the monitoring program as defined in 10 CFR 50.65(b) against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions. 10 CFR 50.65(a)(2) states, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventative maintenance, such that the SSC remains capable of performing its intended function.

Contrary to the above, between 2007 and 2009, FENOC personnel failed to demonstrate that the 10 CFR 50.65(a)(2) performance of the containment isolation valve limit switches was effectively controlled through the performance of appropriate preventive maintenance. FENOC has performed an extent of condition review and has initiated corrective actions to install a button tab on the limit switches to minimize misalignment causing the dual indications. Because this violation was of very low safety significance and has been entered into the CAP (CR 09-64040), this violation is being treated as an NCV, consistent with the NRC Enforcement Policy (**NCV 05000314, 412/2009008-01: Containment Isolation Valve System 10 CFR 50.65 (a)(2) Performance Demonstration Not Met**).

## .2 Assessment of the Use of Operating Experience

### a. Inspection Scope

The inspectors selected a sample of CRs associated with the review of industry Operating Experience (OE) to determine whether FENOC personnel appropriately evaluated the OE information for applicability to Beaver Valley and had taken appropriate actions, when warranted. The inspectors reviewed CR evaluations of OE documents associated with a sample of NRC Generic Letters and Information Notices to ensure that FENOC adequately considered the underlying problems associated with the issues for resolution via their CAP. The inspectors also observed plant activities to determine if industry OE was considered during the performance of routine activities. Specific documents reviewed during the inspection are listed in the Attachment to this report.

### b. Assessment

The inspectors determined that, in general, FENOC appropriately considered industry OE information for applicability, and used the information for corrective and preventive actions

to identify and prevent similar issues when appropriate. The inspectors determined that OE was appropriately applied and lessons learned were communicated and incorporated into plant operations. The inspectors observed that industry OE was routinely discussed and considered during the performance of plant activities.

The inspectors reviewed a fleet-level focused self-assessment of OE performed in May 2008. The self-assessment identified a number of weaknesses, specifically:

- OE was not discussed in system health reports;
- Roles and responsibilities of Section OE Coordinators were not clearly defined;
- Familiarization with SAP, the database used to manage OE, was low at the Management and Section OE Coordinator levels; and
- Procedures describing the requirements to process OE were in need of revision to add clarity.

Although the inspectors noted that corrective actions were not completed until June 2009, since that time Beaver Valley has made progress in addressing OE program needs. This has included clearly defining the roles and responsibilities of Section OE Coordinators. Procedures have been revised and a familiarization guide has been completed with guidance on how to use SAP efficiently. Training has been completed for Section OE Coordinators and the backlog of unreviewed OE items has decreased (currently at 2 unreviewed items as compared to over 12 items previously). Finally, a higher level of accountability has been placed on each department to report backlogged OE items at weekly plant meetings. With respect to incorporating OE in system health reports, the inspectors identified that OE continued not to be incorporated in the 2008 and 2009 reports. FENOC entered this issue into the CAP (CR 09-63999).

c. Findings

No findings of significance were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed a sample of snapshot self-assessments, focused self-assessments, fleet-level assessments, and a variety of self-assessments focused on various plant programs. These reviews were performed to determine if problems identified through these assessments were entered into the CAP, and whether corrective actions were initiated to address identified deficiencies. The effectiveness of the assessments was evaluated by comparing audit and assessment results against self-revealing and NRC-identified observations made during the inspection. A list of documents reviewed is included in the Attachment to this report.

b. Assessment

The inspectors concluded that QA audits and self-assessments were critical, thorough, and effective in identifying issues. The inspectors observed that these audits and self-

assessments were completed by personnel knowledgeable in the subject areas and were completed to a sufficient depth to identify issues that were then entered into the CAP for evaluation. Corrective actions associated with the issues were implemented commensurate with their safety significance. FENOC managers evaluated the results and initiated appropriate actions to focus on areas identified for improvement.

c. Findings

No findings of significance were identified.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

The inspectors performed interviews with station personnel to assess the safety conscious work environment (SCWE) at Beaver Valley. Specifically, the inspectors interviewed personnel to determine whether they were hesitant to raise safety concerns to their management and/or the NRC. The inspectors also interviewed the station Employee Concerns Program (ECP) coordinator to determine what actions were implemented to ensure employees were aware of the program and its availability with regard to raising concerns. The inspectors reviewed the ECP files to ensure that issues were entered into the CAP when appropriate. The inspectors reviewed site SCWE surveys from 2007 and 2008 to assess any adverse trends in department and site safety culture. A list of documents reviewed is included in the Attachment to this report.

b. Assessment

During interviews, plant staff expressed a willingness to use the CAP to identify plant issues and deficiencies, and stated that they were willing to raise safety issues. All persons interviewed demonstrated an adequate knowledge of the CAP and ECP. Based on these limited interviews, the inspectors concluded that there was no evidence of SCWE concerns and no significant challenges to the free flow of information.

SCWE surveys in 2007 and 2008 showed that the overall SCWE health at Beaver Valley remained positive. The surveys indicated the staff understands and accepts expectations and responsibilities for identifying concerns. The surveys indicated FENOC personnel feel free to approach management with issues and management expectations on safety and quality are clearly communicated. The surveys indicated lower than average scores for Radiation Protection, Chemistry, Security, and Site Projects departments. CRs were generated to help promote improvement in the safety culture of these departments, and corrective actions were implemented. The inspectors noted that when compared to the 2007 survey, the Operations department had an increase in negative responses in the 2008 survey. This trend had not been entered into the CAP for evaluation since the negative score averages did not exceed a ten percent cutoff "trigger" for CR generation. The inspectors questioned this cutoff in that it appeared to potentially limit FENOC's ability to fully explore year-to-year trends in departments that may not exceed ten percent negative responses, but decline significantly from the previous survey. FENOC entered this issue into the CAP (CR 09-63998).

As a result of the survey review, the inspectors completed additional SCWE interviews with operators to determine if there was a reluctance to raise safety issues. No individuals expressed any fear to raise issues.

c. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On September 3, 2009, the inspectors presented the inspection results to Mr. Roy Brosi, Director of Site Performance Improvement, and other members of the Beaver Valley staff. The inspectors verified that no proprietary information was documented in the report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee personnel

Harold Szklinski, Staff Nuclear Specialist  
Fulton Schaffner, Staff Nuclear Specialist  
Daniel Butor, Staff Nuclear Specialist  
Robert Lubert, Supervisor, Nuclear Electrical System Engineering  
Francy Mantine, Staff Nuclear Engineer  
David Jones, Staff Nuclear Engineer  
Philip Slifkin, Staff Nuclear Engineer  
Giuseppe Cerasi, Senior Nuclear Specialist  
Brian Goff, Supervisor, Nuclear Work Planning  
Michael Kienzle, Nuclear Engineering  
Pat Pauvlinch, Supervisor, Nuclear Plant System Engineering  
Robert Williams, Staff Nuclear Engineer  
Joann West, Staff Nuclear Engineer  
John Kaminskis, Nuclear Engineer  
David Hauser, Superintendent Shift Operations, Unit 2  
Christopher Makowka, Root Cause Evaluator  
Michael Mitchell, Superintendent Nuclear Work Planning  
John Bowden, Superintendent Nuclear Operations Services  
Jim Mauck, Senior Nuclear Specialist  
Brian Sepelak, Supervisor, Nuclear Compliance  
Karl Wolfson, Supervisor, Nuclear Performance Improvement  
Colin Keller, Manager, Site Regulatory Compliance  
Rich Dibler, Security Support Supervisor  
Sue Vincinie, Performance Improvement Senior Consultant  
Darrel Batina, Employee Concerns Program Representative  
Dutch Chancey, Manager, Employee Concerns (Fleet)  
Wayne McIntire, Beaver Valley Site Safety Specialist  
Gary Shildt, Supervisor, Nuclear Projects Engineering  
Jack Patterson, Staff Nuclear Engineer  
Thomas King, Plant Engineer  
Robert Lubert, Plant Engineering Supervisor

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

Opened and Closed

05000334, 412/2009008-01

Containment Isolation Valve System 10 CFR 50.65  
(a)(2) Performance Demonstration Not Met.

**LIST OF DOCUMENTS REVIEWED**Condition Reports

08-38146	09-60763	09-55789	08-50881	08-47439	08-46291
08-45288	08-42054	08-36772	07-26862	08-32856	07-14885
07-14208	09-62156	09-62106	09-61128	09-60432	09-59875
09-56773	09-54230	09-52736	08-39941	08-48160	09-57390
09-52275	08-49681	08-33109	07-28371	07-15761	09-61333
08-42790	09-62268	09-59641	09-58307	09-57580	09-57463
09-55267	09-52029	08-48296	09-57822	09-61026	09-60359
09-56525	09-61753	09-57743	08-51000	07-23937	09-59057
09-53803	08-41802	08-32965	03-01371	09-61679	09-62681
09-57726	08-39835	07-18191	07-21962	08-48581	08-50283
09-52719	09-61026	09-63451	09-61453	08-48268	08-44941
08-44947	08-37921	08-44960	07-24074	07-30275	09-63317
08-48482	09-52857	09-63269	09-57857	09-56402	08-34526
08-33776	09-55350	09-52043	07-28809	07-12360	07-14181
07-14185	07-14530	07-14761	07-14934	09-61430	09-61631
09-61878	09-62202	09-62810	07-15636	07-17006	07-17236
07-20147	07-20158	07-22189	07-24552	07-25283	07-28203
07-22004	07-29608	07-30073	09-57198	09-57688	09-57815
09-58598	09-60492	09-60672	09-59088	09-60547	09-61017
07-31483	07-28809	07-12120	08-35376	08-49694	08-43202
08-43205	09-62787	08-48664	08-49518	09-53081	09-53243
09-53762	09-54051	09-55146	09-55719	09-56851	09-56874
09-57268	09-57784	09-58142	07-26688	09-54051	08-48664
07-25046	07-30273	08-38146	07-13076	08-48581	09-60218
04-09895	07-30390	07-32095	08-40472	08-48688	09-60450
06-11217	07-30430	08-32447	08-40490	08-49073	09-60763
07-13021	07-30431	08-32887	08-40519	08-49368	09-61744
07-15001	07-30447	08-33126	08-40575	08-49750	09-62348
07-15444	07-30484	08-33306	08-40579	08-49983	09-62705
07-18894	07-30575	08-33398	08-40587	08-50137	08-37743
07-20907	07-30677	08-33725	08-40753	08-50151	08-37925
07-22891	07-30823	08-35048	08-40867	08-51024	08-38276
07-23543	07-30847	08-35517	08-40932	08-51136	08-38687
07-23933	07-30911	08-35674	08-40970	08-51385	08-38750
07-26020	07-30912	08-36383	08-41330	09-52096	08-39233

A-3

07-26065	07-30988	08-36471	08-41450	09-52351	08-39304
07-26326	07-30999	08-36539	08-41691	09-53214	08-39946
07-27423	07-31040	08-37026	08-41723	09-53275	08-46995
07-27469	07-31083	08-37250	08-41801	09-53803	08-47282
07-28007	07-31107	08-37304	08-42046	09-53938	08-47455
07-28012	07-31110	08-37318	08-42627	09-54227	08-47767
07-28471	07-31112	08-37320	08-42847	09-54737	09-58483
07-28724	07-31221	08-37330	08-43510	09-54836	09-58878
07-29217	07-31350	08-37373	08-44047	09-55439	09-58985
07-30075	07-30383	08-37405	08-45833	09-56328	09-59541
07-30318	08-37676	08-37450	08-46143	09-57224	09-58355
07-30362	08-46883	08-37646	08-46662	09-57244	07-22603
07-28652	08-38049	08-41776	08-47368	08-47539	08-48966
09-53197	09-53372	09-53569	09-55916	09-57165	07-12368
07-16667	07-17938	07-19218	07-20942	07-23163	07-23960
07-24034	07-25474	07-27222	07-28474	08-34940	08-35010
08-36384	08-37168	08-37252	08-40090	08-40292	08-47830
08-48144	08-48160	08-49360	08-49836	09-51664	09-54128
09-54942	09-55267	09-56250	09-56291	09-56315	09-57553
09-57617	09-58071	09-58215	09-58481	09-58495	09-59460
09-59654	09-60890	*09-63801	*09-63391	*09-63416	*09-63982
*09-63532	*09-63546	*09-63536	*09-63454	*09-63479	*09-63441
*09-63916	*09-63975	*09-63998	*09-63999	*09-64004	*09-64015
*09-64040					

\*CR written as a result of NRC inspection

Audits and Self-assessments

BV-SA-08-086, "BVPS Inservice Testing (IST) Program Snapshot Self-Assessment Plan."

BV-SA-08-007, "CAP Effectiveness."

Fleet Self-assessment of Use of Operating Experience at Beaver Valley, Perry and Davis Berry, May 2008.

BV-SA-08-009, "Focused Self-Assessment of Beaver Valley Work Management Performance Indicators"

BV-SA-08-080

Operating Experience

OE 28133

OE 24688

OE 24689

IN 2008-06

SEN 274, "Multiple Reactor Coolant Pump Seal Failures During Cooldown"

Procedures

NOP-LP-2001, Corrective Action Program, Rev. 22  
 NOBP-LP-2011, FENOC Cause Analysis, Rev. 9  
 1/2-EPP-IP-7.1, Emergency Equipment Inventory and Maintenance Procedure, Rev. 22  
 1/2-EPP-IP-7.1, Emergency Equipment Inventory and Maintenance Procedure, Rev. 23  
 1/2-EPP-IP-7.1.F09, Emergency Inventory Checklist – Primary Assembly Areas, Rev. 4  
 1/2-EPP-IP-7.1.F09, Emergency Inventory Checklist – Primary Assembly Areas, Rev. 5  
 EPP-PLAN-SECTION-6, Emergency Measures, Rev. 25  
 EPP-PLAN-SECTION-7, Emergency Facilities and Equipment, Rev. 25  
 NOP-LP-5004, Equipment Important to Emergency Response, Rev. 0  
 BVRM-EP-5003, Equipment Important to Emergency Response, Rev. 1  
 1/2-EPP-IP-7.2, Administration of Emergency Preparedness Plan Drills and Exercises, Rev. 13  
 1/2-EPP-IP-3.2, Site Assembly and Personnel Accountability, Rev. 18  
 1OST-15.1, [1CC-P-1A] Quarterly Test, Rev. 19  
 1OST-15.1, [1CC-P-1A] Quarterly Test, Rev. 20  
 1OST-15.1, [1CC-P-1A] Quarterly Test, Rev. 23  
 2OST-11.1, Low Head Safety Injection Pump [2SIS\*P21A] Test, Rev. 25  
 2OM-11.2.B, Setpoints, Rev. 4  
 2CMP-11SIS-P-21A-B-1M, Low Head Safety Injection Pump Overhaul, Issue 4, Rev. 9  
 1OST-24.4, Steam Turbine Driven Auxiliary Feed Pump Test [1FW-P-2], Rev. 42  
 1OST-24.9, Turbine-Driven AFW Pump [1FW-P-2] Operability Test, Rev. 40  
 2OST-24.4, Steam Driven Auxiliary Feed Pump [2FWE\*P22] Quarterly Test, Rev. 64  
 2OST-24.4A, Steam Driven Auxiliary Feed Pump [2FWE\*P22] Full Flow Test, Rev. 20  
 NOBP-LP-1107, Security Operating Experience Guidelines, Rev. 0  
 2OM-53A.1.A-0.11, Beaver Valley Power Station Unit 2 Verification of Automatic  
 Actions, Rev. 6  
 2OM-53A.1.A-0.11, Beaver Valley Power Station Unit 2 Containment Isolation Phase A  
 Checklist, Issue 1C Rev. 0  
 NOP-MS-4001, Warehousing, Rev. 6  
 NOBP-OM-2031, Outage Management Scheduling Process, Rev. 3  
 NOBP-OP-0004, Component Mispositioning, Rev. 2  
 NOP-OP-1001, Clearance/Tagging Program, Rev. 11  
 BVBP-OPS-0004, Operations Clearance Coordinator, Rev. 7  
 1/2-ADM-2017.F01, Beaver Valley Power Station Vendor Technical Information Review Form –  
 Low Head Safety Injection Pump Instruction Manual, Rev. 5  
 NOBP-CC-7003, Structured Spare Parts List, Rev. 5  
 BVPM-ER-3004, Maintenance Rule (MR) Program Supplemental Guidance, Rev. 0  
 BVBP-OPS-0008, Supplemental Instructions For the Control of Operating Manual Procedures.  
 BVPS-OPS-0022, Operating Procedure Development and Revision, Rev. 0  
 NOP-ER-3004, FENOC Maintenance Rule Program, Rev. 1

SAP Orders/Notifications

600556345  
 600544389  
 200287486  
 600519950  
 200221237

200309431  
200287583  
200276981  
200042681  
200172902  
200371419  
200310030  
200254994  
600375319  
600422084  
600423831  
200283954

Non-Cited Violations and Findings

NCV 05000334/2008003-01, Inadequate Maintenance Procedure Results in Unexpected Terry Turbine Speed Increase  
NCV 05000334/2007004-02, Inadequate Procedure and Monitoring Program for Turbine Driven Auxiliary Feedwater Pump Turbine 1FW-T-2  
NCV 05000334/2008002-01, Incorrect Jumper Placement during Testing Renders Quench Spray Chemical Addition Inoperable  
NCV 05000334/2007005-05, Inadequate Inspection led to a subsequent failure of a Fuel Transfer Up-Ender Cable  
FIN 05000412/2008003-02, Deficient Control of Clearance Posting Interrupts Reactor Coolant Charging Path while Vessel Water Level Drained Below the Flange

Surveillance Tests

2OST-11.1, Low Head Safety Injection Pump [2SIS-P21A] Test, Rev. 24, 07/28/08  
2OST-11.1, Low Head Safety Injection Pump [2SIS-P21A] Test, Rev. 24, 10/20/08  
2OST-11.1, Low Head Safety Injection Pump [2SIS-P21A] Test, Rev. 24, 06/30/09  
1OST-24.9, Turbine-Driven AFW Pump [1FW-P-2] Operability Test, Rev. 36, 10/23/07  
1OST-24.9, Turbine-Driven AFW Pump [1FW-P-2] Operability Test, Rev. 40, 05/11/09

Vendor Manual

2502.290-001-001, Low Head Safety Injection Pump Instruction Manual, Rev. S  
2502.290-001-001, Low Head Safety Injection Pump Instruction Manual, Rev. T

Other

WO 200287486  
Feedback Form #2008-1448  
PM Change Request BV-REV.-08-4731  
SAP Report – Bill of Materials for Low Head Safety Injection Pump 2SIS-P21A  
SAP Report – Bill of Materials for Low Head Safety Injection Pump 2SIS-P21B  
2SIS-P21A Vibration Trend Data 03/24/1998 – 06/30/2009  
Beaver Valley System Health Report 2008-1  
Beaver Valley System Health Report 2008-2  
Beaver Valley System Health Report 2008-3  
Beaver Valley System Health Report 2008-4

Beaver Valley System Health Report 2009-1  
 Weekly Operating Experience Summary – August 3, 2009  
 Maintenance Rule System Basis Document Unit 2 System 47, Rev. 5  
 Maintenance Rule System Basis Document Unit 2 System 47, Rev. 6  
 Licensing Requirements Manual, Rev. 52  
 Protective Tagout 2BVP-CYC-013-1 2R13-07-EDS-008  
 Unit 2 Shift Narrative Logs May 5, 2008 to May 7, 2008  
 Beaver Valley Unit 2 System Health Report 2009-2, “System 43 – Unit 2 Radiation Monitoring System”  
 Beaver Valley Unit 1 System Health Report 2009-2, “System 43 – Unit 1 Radiation Monitoring System”

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
BV	Beaver Valley
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DRP	Division of Reactor Projects
ECP	Employee Concerns Program
FENOC	FirstEnergy Nuclear Operating Company
IMC	Inspection Manual Chapter
IR	Inspection Report
IST	Inservice Test
MRB	Management Review Board
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OA	Other Activities
OE	Operating Experience
PARS	Publicly Available Records System
PI&R	Problem Identification and Resolution
ROP	Reactor Oversight Process
SCWE	Safety Conscious Work Environment
SDP	Significance Determination Process
TDAFWP	Turbine Driven Auxiliary Feedwater Pump
WO	Work Order