

## Beaver Valley 1 2Q/2014 Plant Inspection Findings

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### Initiating Events

**Significance:** G Mar 31, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Main Transformer Failure Due to Static Electrification**

A self-revealing, Green finding was identified because FirstEnergy Nuclear Operating Company (FENOC) did not evaluate technical information provided in a vendor report as required by FENOC procedures: 1/2-ADM-2017, "Control of Vendor Technical Information" and NOP-CC-1003, "Vendor Manuals and Vendor Technical Information." Specifically, FENOC did not take action to address the recommendation in the ABB Inc. "Life Assessment Report," dated September 2, 2008, to prevent the running of all the main transformer oil pumps when the oil temperature is below 50°C. As a result on January 6, 2014 the Beaver Valley main transformer failed resulting in a reactor trip. Following the trip FENOC conducted an apparent cause evaluation and determined the transformer failure resulted from static electrification caused by improper cooling system operation. FENOC subsequently performed corrective actions included a review of engineering training and updating the operating procedures for the main transformer at both units. The inspectors determined the actions to be reasonable.

The inspectors determined the performance deficiency is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and adversely impacted the cornerstone objective to limit the likelihood of events that

upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the main transformer faulted due to improper guidance on transformer cooling bank operation which resulted in a plant trip. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigating equipment. This finding has a cross-cutting aspect in the area of Human Performance, Design Margin, in that FENOC did not ensure that equipment margin was carefully guarded and changed through a systematic and rigorous process. Specifically, FENOC did not ensure that the vendor technical review process implemented main transformer operating margin guidance that resulted in the failure of the transformer.

Inspection Report# : [2014002](#) (*pdf*)

**Significance:** G Dec 31, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Moisture Separator Reheater Valve Misposition Results in Plant Transient**

A self-revealing, Green NCV of TS 5.4.1 "Procedures" was identified when an operator did not correctly implement procedure 1OM-52.4.A, Raising Power from 5% to Full Load Operation, Revision 68, during the warm up the moisture separator reheaters. Specifically, a human performance error resulted in a main steam valve being mispositioned that subsequently caused a plant power transient. FENOC entered this issue into the corrective action program under CR 2013-17848 and reviewed the transient under the Reactivity Management Program. The site

performed a limited apparent cause evaluation and plans to update the procedure.

The finding is more than minor because it is associated with the Human Performance attribute of the Initiating Events cornerstone and affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, a human performance error resulted in a main steam valve being mispositioned that subsequently caused a plant power transient. The finding is also similar to the more than minor example 4.b in IMC 0612, Appendix E, Examples of Minor Issues. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant to a stable shutdown condition. This finding has a cross-cutting aspect in the area of Work Practices, Human Performance because FENOC did not ensure personnel work practices support human performance. Specifically, FENOC operators did not use an appropriate self-check and peer check during an activity with the potential to affect reactivity [H.4(a)].

Inspection Report# : [2013005](#) (*pdf*)

## Mitigating Systems

**Significance:**  Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Post Maintenance Testing Procedures Resulted in TDAFW Pump Inoperability**

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified because FENOC did not establish appropriate post maintenance test procedures for the Turbine Driven Auxiliary Feedwater (TDAFW) pump following trip/throttle valve maintenance that required the removal and reinstallation of the governor. Specifically, FENOC identified in their apparent cause evaluation that vendor technical information regarding the verification of stable governor operating temperature following governor compensating needle valve adjustment was not incorporated into surveillance and post maintenance testing procedures. Because of this omission FENOC did not identify an incorrect governor compensating needle valve adjustment during post maintenance testing on November 1, 2103 and declared the TDAFW pump operable when it was not able to perform its safety function. As a result, the TDAFW pump tripped on overspeed following a reactor trip on January 6, 2014. Following the event, FENOC entered the issue into the corrective action program (CR-2014-0177), performed an apparent cause evaluation, and took corrective actions to update TDAFW pump surveillance and maintenance procedures to ensure the establishment of a stable governor temperature during post maintenance testing runs. The inspectors determined the actions to be reasonable.

The inspectors determined the performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate post maintenance testing procedure resulted in the inoperability of the TDAFW pump. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that a detailed risk evaluation was required because the finding represented an actual loss of function of a single train of auxiliary feedwater (AFW) for greater than its Technical Specification allowed outage time. The detailed risk evaluation determined that the finding was of very low safety significance (Green). This finding did not have a cross-cutting aspect because the most recent opportunity for FENOC to include the appropriate vendor information in the

post maintenance testing procedure was in 2009 and is not indicative of current performance.

Inspection Report# : [2014002](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Apr 17, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **REMOVAL OF MISSILE BARRIER RENDERS CONTAINMENT INOPERABLE**

The inspectors identified a Green non-cited violation of TS limiting condition for operation (LCO) 3.6.1, "Containment." Specifically, the inspectors determined that FENOC removed the missile barriers for the unit 1 and unit 2 containment equipment hatches while in a mode when containment was required to be operable. As a result FENOC did not have adequate tornado protection for containment and then did not take the actions directed by the LCO action statement when the LCO was not met. FENOC entered the issue into their corrective action program, CR 2014-11878, and placed the procedures to remove the missile barriers on administrative hold.

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

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

Inspection Report# : [2014003](#) (*pdf*)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Insufficient VHRA Control Under Vessel**

The inspectors identified a Green non-cited violation involving the failure to properly ensure that a device used to control access to a Very High Radiation Area was adequate to prevent an unauthorized entry into the area.

Specifically, the licensee used a pliers-style locking device that did not provide a robust locking mechanism to prevent

unauthorized access into a VHRA. In response to the concern, FENOC entered the issue into the corrective action program as CR 2013-18743 and changed the VHRA locking device at the Unit 2 reactor keyway.

The finding is more than minor because it is associated with the Program and Process attribute of the Occupational Radiation Safety Cornerstone and affects the cornerstone objective of ensuring the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine reactor refueling operations. The finding is also similar to the more-than-minor example 6.g in IMC 0612, Appendix E, "Examples of Minor Issues" issued August 11, 2009. In accordance with IMC 0609.04, "Initial Characterization of Findings," issued June 19, 2012 and IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," issued August 19, 2008, the finding was determined to have very low safety significance (Green), because the finding was identified during a routine test and no unauthorized entry occurred, did not result in an ALARA Planning or work control issue, did not result in an overexposure nor was there a substantial potential for an overexposure, and the ability to assess dose was not compromised. The finding has a cross-cutting aspect in the area of Corrective Action Program, Problem Identification and Resolution, in that FENOC did not identify that the locking device was inadequate for the reactor keyway VHRA, and consequently, did not plan to replace the same type of device in place at Unit 2, even after replacing the failed reactor keyway VHRA locking device at Unit 1 [P.1(c)].

Inspection Report# : [2013005](#) (*pdf*)

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

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