

Beaver Valley 1 2Q/2016 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2016

Identified By: NRC

Item Type: FIN Finding

Failure to Appropriately Utilize Multiple and Diverse Indications Results in Plant Transient

Green. A self-revealing finding of NOP-OP-1002, "Conduct of Operations," was identified for FENOC's failure to adequately implement operator fundamentals. Specifically, operators did not appropriately utilize multiple and diverse indications when making the decision to isolate electro-hydraulic control (EHC) to a Unit 1 main turbine governor valve. This resulted in an unanticipated reactor power reduction of 2.7 percent. FENOC's immediate corrective actions included re-opening the governor valve, verifying proper system response, and entering this issue into their corrective action program (CAP) as CR 2015-08263.

The performance deficiency is more-than-minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Additionally, example 4.b from IMC 0612 Appendix E details that a performance deficiency is more-than-minor if it causes a reactor trip or other transient. This finding was determined to be of very low safety significance (Green) since it 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 Human Performance, Challenge the Unknown, because individuals did not consult the system expert when confronted with an unexpected condition [H.11].

Inspection Report# : [2016002](#) (*pdf*)

Significance: G Sep 30, 2015

Identified By: NRC

Item Type: FIN Finding

Failure to Correct a Low Oil Level in the Condensate Pump Motor

A self-revealing finding was identified for FENOC's failure to correct a low oil level in the lower motor bearing of the Unit 1 'A' condensate pump in accordance with NOP-LP-2001, "Corrective Action Program." Specifically, FENOC incorrectly cancelled the work order to add oil to the 'A' condensate pump motor and installed a placard on the oil level sight glass with incorrect minimum and maximum oil levels. This led to the motor bearing failure, which caused the pump to trip on overcurrent, and required the operators to insert a manual reactor trip. FENOC entered the issue into their correct action program, condition report (CR) 2015-05256.

The performance deficiency was more-than-minor because it was associated with the human performance attribute of the Initiating Events cornerstone, and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

Specifically, NOP-LP-2001, section 4.2.3, states that condition report/correct action owners should ensure that actions are developed to resolve the primary cause identified in the condition report. Instead of correcting the low oil level in the motor, FENOC cancelled the work order to add oil. This subsequently caused the operators to trip the plant when the condensate pump motor bearing overheated and the motor tripped on overcurrent. The inspectors determined that this finding was of very low safety significance (Green) because it did not cause a reactor trip and the loss of mitigation equipment. This finding has a cross-cutting aspect in the area of Human Performance, Consistent Process,

because FENOC did not seek input from the appropriate work group (engineering) prior to cancelling the work order to add oil to the condensate pump motor. [H.13]

Inspection Report# : [2015003](#) (pdf)

Mitigating Systems

Significance:  Dec 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Maintenance Rule Monitoring of the Auxiliary Feedwater System

Green. The inspectors identified an NCV of Title 10 of the Code of Federal Regulations (CFR) 50.65, “Requirements for monitoring the effectiveness of maintenance at nuclear power plants,” for FENOC’s failure to monitor the performance of the Unit 1 auxiliary feedwater (AFW) system against licensee-established goals. Specifically, FENOC did not identify and properly account for a maintenance preventable functional failure (MPFF) of the turbine driven auxiliary feedwater (TDAFW) pump, which demonstrated that performance of the Unit 1 AFW system was not being effectively controlled through appropriate preventive maintenance. FENOC’s immediate corrective actions included entering this issue into their corrective action program, re-evaluating and classifying the TDAFW pump failure as a MPFF, performing a 10 CFR 50.65 (a)(1) evaluation of the Unit 1 AFW system, and placing the system in (a)(1) status.

The performance deficiency was determined to be more-than-minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, example 7.d from IMC 0612 Appendix E details that a performance deficiency is more than minor if equipment performance problems were such that effective control of performance through appropriate preventive maintenance under (a)(2) could not be demonstrated. This finding was determined to be of very low safety significance (Green) since it was not a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), it did not represent the loss of a system and/or function, it did not represent an actual loss of function of at least a single train or two separate safety systems out-of-service for greater than its technical specifications allowed outage time, and it did not represent an actual loss of a non-technical specification equipment designated as high safety-significant in accordance with the licensee’s maintenance rule program for greater than 24 hours. This finding has a cross-cutting aspect in Human Performance, Avoid Complacency, because FENOC failed to consider the extent of condition and their causes following the failure of the Unit 1 TDAFW pump on January 6, 2014 [H.12].

Inspection Report# : [2015004](#) (pdf)

Significance:  Aug 21, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Unanalyzed Condition Resulting from Unfused Direct Current Control Circuits

On April 30, 2014, FENOC identified a violation of very low safety significance of 10 CFR 50, Appendix R, Section III.G for BVPS Unit 1 in that unfused direct current (DC) control circuits for DC motors were routed from the turbine building through other fire areas. The DC breakers used to protect the motor power conductors were insufficient to protect the control conductors for these circuits and it is postulated that a fire induced short in one fire area could

adversely impact safe shutdown equipment by overheating the cable and causing a secondary fire in other fire areas where the cable is routed. The team identified that FENOC did not establish a fire watch in one of the affected fire areas, the turbine building, as a compensatory measure. Therefore, because FENOC did not initiate immediate corrective action or compensatory measures or both within a reasonable time, enforcement discretion will not be exercised. This violation will be treated as a NRC-identified violation. In response to the NRC finding, FENOC promptly initiated a one hour roving fire watch patrol in the turbine building. The lack of compensatory measures in the turbine building occurred because administrative procedure, 1/2-ADM-1900, Fire Protection Program, used to determine compensatory measures for fire protection program deficiencies, was inadequate in its guidance to plant personnel for review of cable separation issues. For cable separation issues, 1/2-ADM-1900 required fire watches in only one of two affected adjacent fire areas. FENOC entered this issue into its corrective action program as condition report (CR) CR-2015-10546 and planned to revise 1/2-ADM-1900 to ensure fire watches were established in all affected fire areas that involved cable separation issues. FENOC initiated CR-2014-07961 to resolve the DC circuit non-conformance using National Fire Protection Association (NFPA) 805 performance based fire risk evaluations considering the low probability of a secondary cable fire due to overheating of cables associated with the pump motor control circuits during an electrical fault condition with no circuit protection.

This finding was more than minor because it adversely affected the protection against external factors (i.e., fire) attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences.

FENOC reviewed the cable routes and evaluated this issue through use of its fire probabilistic risk assessment (PRA). FENOC determined that the change in core damage frequency attributed to the issue for Unit 1 was $8.5E-7$ per reactor year. NRC staff reviewed this evaluation and concluded that the risk numbers were bounded by conservative assumptions and that this issue would be of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Resources, because FENOC did not ensure that procedures were adequate to support nuclear safety. Specifically, 1/2-1900-ADM was too restrictive for safe shutdown circuit separation issues in that it mandated an hourly fire watch patrol in only one of the two adjacent fire areas and for this issue FENOC did not appropriately establish an hourly fire watch patrol in the Unit 1 turbine building. [H.1]

Inspection Report# : [2015007](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

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