

# ENERGY NORTHWEST

P.O. Box 968 ■ Richland, Washington 99352-0968

August 21, 2002  
GO2-02-134

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Subject: **ENERGY NORTHWEST, DOCKET NO. 50-397  
NRC INSPECTION REPORT 50-397/02-05,  
RESPONSE TO NOTICE OF VIOLATION**

- References:
1. Letter dated June 24, 2002, EW Merschoff (NRC) to JV Parrish (Energy Northwest), "Final Significance Determination for a White Finding and Notice of Violation"
  2. Letter dated July 24, 2002, DW Coleman (Energy Northwest) to NRC, "Notice of Violation Response Extension"

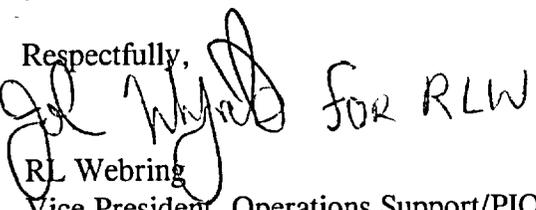
Dear Sir or Madam:

Energy Northwest's response to the referenced Notice of Violation, pursuant to the provisions of Title 10, Code of Federal Regulations Section 2.201, is attached.

Extension of the date for this response was agreed upon in a telephone discussion between Bill Jones (NRC, Region IV, Branch Chief) and Christina Perino (Columbia, Licensing Manager), which was followed by written correspondence referenced.

Should you have any questions or desire additional information regarding this matter, please call Ms. CL Perino at (509) 377-2075.

Respectfully,

  
RL Webring  
Vice President, Operations Support/PIO  
Mail Drop PE08

Attachment

cc: EW Merschoff - NRC RIV  
JB Hickman - NRC NRR  
BJ Bennet - NRC NRR  
JO Luce - ESFEC

NRC Sr. Resident Inspector - 988C  
DL Williams - BPA/MD1399  
TC Poindexter - Winston & Strawn

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## RESTATEMENT OF VIOLATION

10 CFR Part 50, Appendix B, Criterion III, Design Control, states, in part, that measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of structures, systems and components to which Appendix B applies.

10 CFR Part 50, Appendix B, Criterion XVI, Corrective Actions, states, in part that measures shall be established to assure that conditions adverse to quality, such as failure, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. For significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective actions taken to preclude recurrence.

Contrary to the above, in June 2001, the licensee completed Design Modification 99-0140-0, "Breaker Replacement," in which the design control measures established by the licensee were not adequate to assure the suitability of the replacement breakers. Specifically, the licensee failed to incorporate vendor information regarding maintenance of mechanism-operated cell (MOC) switches in these breakers, resulting in breaker failures that affected the safety-related functions of plant systems. For example, on June 29, 2001, the Division II standby service water MOC switch failed to reposition during breaker closure, rendering the standby service water train inoperable. In addition, despite failures of this type occurring on June 29, 2001 and November 19, 2001, the licensee failed to identify the cause of the condition take corrective actions to preclude recurrence of this significant condition adverse to quality. Consequently, on February 13, 2002, a similar failure occurred involving the MOC switch associated with the Division II emergency diesel generator.

This violation is associated with a White Significance Determination Process (SDP) finding.

## RESPONSE TO VIOLATION

Energy Northwest accepts this violation.

## REASON FOR VIOLATION

10 CFR Part 50, Appendix B, Criterion III, Design Control

The reason the design modification did not incorporate vendor information regarding maintenance of MOC switches is attributed to human performance and programmatic problems. The human performance error most directly tied to this problem was the mindset of the founding circuit breaker program engineer and others who were involved in the project. A mindset exists when facts and available evidence (concerning circuit breaker methods of operation, performance and maintenance requirements) are not looked at objectively. In this case, the mindset was that the breakers were electrically and mechanically interchangeable. This mindset was reinforced by Energy Northwest's acceptance of the vendor's assertion of

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interchangeability. Notwithstanding this assertion, the circuit breaker vendor offered a replacement breaker that included a new Sure Close™ mechanism or MOC operator with different mechanical performance properties. The Sure Close™ mechanism is a stored energy device that imparts drive force from the primary breaker mechanism to a MOC switch assembly. Mechanically, the new replacement breakers produce substantially less drive force than the original air magnetic type breaker mechanisms. Energy Northwest relied upon simple endurance testing of the new breaker leading to acceptance of the mechanical performance of the Sure Close™ mechanism as interchangeable with the previous breakers. During project development, electrical performance testing and seismic qualification testing of the new replacement breaker was conducted and reviewed by Engineering. Other mechanical interfaces were also checked including TOC (truck operated cell) switches, MOC switches, and floor tripping devices. An over reliance on the idea of interchangeability resulted in inadequate reviews of MOC switch maintenance requirements. The actual difference in mechanical operation of the Sure Close™ breaker mechanism should have triggered additional technical reviews and design verification testing.

The organizational problem associated with this issue is a lack of commitment to recommendations provided in previous self assessment SA 98-008 and SOER 98-02. While there is currently a preventative program to maintain breakers, additional recommendations included in the self assessment and the SOER, would have brought a broader perspective during project reviews associated with the breaker replacement.

### 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Actions

The initial and subsequent failure of the MOC switches were not initially considered a significant condition adverse to quality. Therefore, the initial two MOC switch failure events did not result in a root cause analysis. The June 29, 2001 failure was not repeatable during troubleshooting and did not receive a cause evaluation. All 22 breakers were inspected and mechanical wear was found in the upper portion of five of the MOC linkages. The evaluation determined this to be the cause and the corrective actions narrowly addressed only the upper MOC switch linkages. This narrow focus resulted in limited corrective actions and did not resolve the problem.

On November 19, 2001 there was a similar non-repeatable failure on the same breaker. Troubleshooting indicated more extensive problems with the MOC linkage. In this case, the pantograph was found to be loose and this was cited as the cause. During investigation of the November event, including vendor assessment, it was determined that additional maintenance was required. Generic corrective actions were established for performing inspection and preventative maintenance on the MOC switch assemblies of the entire population of 4160 safety related breakers. These corrective actions would have prevented the subsequent (February 2002) failure had the scheduled completion date been sooner. The scheduled completion date was considered reasonable based upon an understanding of the data available at that time.

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The failure to identify the cause of the condition and take corrective actions to preclude recurrence was caused by focusing too narrowly on potential failure mechanisms. On April 18, 2002, the Quality department initiated a significant adverse trend PER that identified inadequacies with problem resolutions. This PER included the MOC switch failure event of June 2001 as one of the examples cited. The root cause analysis for this PER examined the decision-making practices that resulted in inadequate problem resolutions and identified improvements to incorporate industry best practices.

### CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

All safety related circuit breaker switchgear of the new design, as well as other 4160 and 6900 volt breaker switchgear that have an active safety function, have had preventative maintenance performed. This maintenance was performed according to the guidance developed by Columbia, Westinghouse, and Cutler-Hammer staff. In addition, the vendor has provided criteria for the force required to activate the MOC assembly, the resistance limitations for the MOC assembly, and an acceptable band of difference between these two parameters. These forces were measured for each of the applicable breakers following the preventative maintenance and were verified to meet the established criteria. Following completion of these tasks the breaker was racked back into the cubicle, and the MOC assembly was observed for full travel and full makeup of the switch contacts as the breakers were closed. The breakers that feed pump motors were tested by operating the associated pump. Operability testing was then performed using the appropriate surveillance procedures. Energy Northwest has established preventative maintenance for MOC switches, and MOC switch linkage and pantograph channels on all 4160 and 6900V circuit breaker cubicles.

### CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

10 CFR Part 50, Appendix B, Criterion III, Design Control

Corrective actions to address the mindset of personnel involved in design modifications to safety related equipment will include training, improvements in methods and review of work practices. In addition, modifications already prepared for the next refueling outage will be reviewed prior to implementation based upon the lessons learned from this event.

Programmatic problems will be addressed by our breaker program to align us with the recommendations of SOER 98-02 and our self assessment.

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### 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Actions

Enhancements to the corrective actions procedure were made to consider elevating the significance of PERs when new equipment is involved. Problems identified from failures of new equipment should result in an apparent cause. (Completed 7/23/02 PTL 187356)

Enhancement to the corrective action procedure was made as to when generic implications should be considered. The generic considerations check box should be checked to indicate that an apparent cause PER should address possible related generic issues. This should be most evident if the issue is recognized as a repeat event. (Completed 7/23/02 PTL 187357)

### DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

#### 10 CFR Part 50, Appendix B, Criterion III, Design Control

Full compliance was achieved when the design safety assessment for the circuit breaker design change was revised to incorporate vendor information regarding maintenance of MOC switches in the breaker cubicles, and final testing to demonstrate operability was completed. This was completed on February 22, 2002.

#### 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Actions

Full compliance was achieved when our corrective action procedure was revised to include guidance for elevating the significance of PERs when new equipment is involved, and to address when generic implications should be considered. This was completed on July 23, 2002.