

ON G DRIVE

MILLSTONE
G: DRA / 282m w / mile

SUMMARY OF FINDINGS

IR 05000336/2005002, 05000423/2005002;
Unit 2 and Unit 3;

Millstone Power Station,

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a non-cited violation of Millstone Unit 2 Technical Specification 3.7.1.1, "Safety Valves." Millstone Unit 2 failed to properly establish and implement a surveillance procedure for insitu testing and calibration of Main Steam Safety Valves (MSSV, Code Safeties). Specifically, The technical review of the MSSV surveillance procedure did not receive the Dominion requirements for an independent technical review. The MSSV surveillance procedure also included calculations which Dominion was not able to correlate to its design basis and applied corrective actions, from a 1990 part 21 which Dominion did verify to be correct. Finally, the Dominion implemented the surveillance procedure through the use of measuring and test equipment (MT and E) which did not meet its procedural requirements for accuracy and which Dominion could not rigorously trace to national calibration standards.

This finding is greater than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The TS surveillance requirement was established to ensure that the MSSV functioned within pressure bands to prevent unnecessary initiating events resulting from MSSV actuations. Between 1990 and 2004 Millstone Unit 2 experienced routine lifting (actuations) of the MSSV following uncomplicated reactor and turbine trips, while operating at full power. The finding is of very low safety significance since none of the actual MSSV actuations between 1990 and 2004 caused more significant events. (Section 1R22)

DRAFT

B/23

b. Findings

Introduction. Millstone Unit 2 failed to meet the surveillance requirements of TS 3.7.1.1, Safety Valves, in that it did not properly establish and implement a procedure for insitu testing and calibration of Main Steam Safety Valves (MSSV, Code Safeties). Using Appendix A, Phase 1 of Manual Chapter (MC) 0609, the finding was determined to be of very low safety significance (Green) and was characterized as an NCV of TS 3.7.1.1.

Description. In 1990, Dominion received a Part 21 from the Dresser company that identified errors in the data provided from Dresser to Dominion concerning MSSV insitu testing. Dresser provided supplemental data to Dominion which was incorporated into surveillance procedure SP-2730B, Main Steam Safety Valve Testing (IPTE). Surveillance procedure SP-2730B, Main Steam Safety Valve Testing was modified without receiving any documented technical or independent review.

Analysis. The inspectors determined that surveillance procedure was inadequate in that it contained data, an algorithm and a correction factor that were not objectively verifiable by the NRC. The following deficiencies were identified:

- a. The calibration accuracy data provided for the Hydroset MTE equipment did not meet Dominion accuracy requirements (less than 1/4 of the test result accuracy) and was not rigorously traceable to a national standard.
- b. The experimental methodology used by Dresser to determine the K factor for the Millstone MSSV used only one valve to establish the comparison. This approach did not account for manufacturing differences between MSSV, and was not statistically valid.
- c. The calibration data provided for the Hydroset MTE was set for approximately 400 psig when the Hydroset pump pressure range experienced during the insitu testing was approximately 0 to 160 psig. In addition, the Hydroset MTE correction factor established by Dresser was a constant (3 psig), however, the test data was not linear and ranged from 1 to 3 psig.
- d. A special test was conducted of the Hydroset MTE at Wylie laboratories. When compared to "as set" values determined by Wylie Instruments the Hydroset MTE varied up to 0.80% which was 80% of the total MSSV variance allowed by TS (1%). These test comparisons used 80% of the allowable MSSV TS setpoint variance without considering any valve behavior or performance error which are the objects of the TS surveillance.
- e. The Dominion surveillance does not account for the reference elevation of the MTE compared to the MSSV being tested.
- f. The Dominion surveillance includes an acceptable band of ambient temperature but does not account for difference between MSSV ambient testing and ambient operating temperatures and MSSV setpoint testing results.
- g. The Dominion surveillance allows a relatively large variance in valve body temperature without adjusting the expected testing results.
- h. The previous conversion factor had been the subject of a historical vendor part 21 which identified the error and indicated that there was no impact to the licensee. The inspectors determined that the stated error was not linear and could have absorbed the total allowable TS MSSV test variance.

Impact?

Same issue?

- I. The vendor material documented a second conversion factor related to the internals of the M&TE used by Dominion in the performance of its surveillance. The surveillance procedure did not address the development of this second conversion factor nor its impact on testing assurance, variation or error.
- J. Vendor technical materials that were related to the M&TE used in the Millstone Unit 2 surveillance indicated that the M&TE is to be used only for confirming valve set pressure once the valve has been adjusted by the use of full system over pressure ("full lift") testing. Dominion documentation indicates that the M&TE was used on several Main Steam Code Safety Valves following full valve lifts that resulted from plant transients.

Analysis. The inspectors determined that Dominion's failure to properly establish, implement and maintain an adequate Main Steam Code Safety Valve surveillance procedure is a violation of TS 3/4 7.1.1 and constitutes a performance deficiency. This finding is more than minor because it was associated with the Main Steam Code Safety Valve, post accident, equipment performance attribute and it affects the mitigating systems cornerstone objective. The finding was determined to be of very low safety significance (Green) since post trip, Main Steam Code Safety Valve, historical performance has been determined to be adequate by Dominion.

This finding is greater than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The TS surveillance requirement was established to ensure that the MSSV functioned within pressure bands to prevent the number of initiating events resulting from MSSV actuations. Between 1990 and 2004 Millstone Unit 2 experienced routine lifting of the MSSV following uncomplicated reactor and turbine trips while operating at full power. The finding is of very low safety significance since none of the actual MSSV actuations caused more significant events. Therefore, using NRC Manual Chapter 0612, Appendix A

Enforcement. TS 3.7.1.1, "Safety Valves" requires that each main steam line code safety valve shall be demonstrated operable with lift (actuation) settings as shown in Table 4.7.1. Contrary to the above, from 1990 to 2004, Dominion MSSV surveillance procedure was inadequate to ensure TS compliance. Because this finding is of very low safety significance and Seabrook entered this finding into the corrective action program (CR CR-05-03069), this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-442/2005-02-0xx, Failure to Meet the Surveillance Requirements of TS 3.7.1.1.

MSSV Operability As indicated above, the inspectors identified a failure to comply with the surveillance requirement of TS 3.7.1.1. In response to this issue the licensee issued a CR and attempted to develop sufficient data to dispel any MSSV operability concerns. Unresolved item (URI) 05000336/2005002-0x was issued to track NRC evaluation of Dominion's investigation, operability determination and corrective actions associated with the development of design data to verify compliance with TS 3.7.1.1 surveillance requirements.

4. OTHER ACTIVITIES [OA]