



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
2100 RENAISSANCE BLVD., SUITE 100  
KING OF PRUSSIA, PA 19406-2713

February 9, 2016

Paul J. Davison  
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SUBJECT: RESPONSE TO DISPUTED NON-CITED VIOLATION HOPE CREEK  
GENERATING STATION – COMPONENT DESIGN BASES INSPECTION  
REPORT 05000354/2015007

Dear Mr. Davison:

We received your response [ADAMS No. ML15362A564] to our inspection report 05000354/2015007 [ADAMS No. ML15329A157] issued on November 25, 2015, concerning activities conducted at your facility. In your response, you denied a Non-Cited Violation (NCV) contained in the inspection report. Specifically, PSEG contends that “the weaknesses identified in the inspection report regarding classification, evaluation and corrective actions are not more than minor in that PSEG’s conclusion on operability and corrective actions were not impacted.”

The NRC conducted a detailed review of your response and the applicable inspection guidance. Region I staff who were not involved with the initial inspection effort performed this review. After careful consideration of the bases for your denial of the NCV, we determined that the violation and characterization of the finding were properly described in the inspection report. Specifically, the inspection team identified that your staff failed to conduct operability determinations in October 2013 following the improper installation of a service water system valve and a subsequent event where the valve failed to operate due to a high torque condition. In response to the inspection team’s questions, your staff, with support from an external engineering organization, performed an operability review and determined that the valve was able to perform its safety function for a limited number of operating cycles. You subsequently scheduled a maintenance activity to fully restore the valve during the October 2016 refueling outage. Our review determined that this finding was appropriately characterized as “more than minor” as there was a reasonable basis for questioning operability of the valve following the October 2013 events described above. We have provided a summary of our evaluation and conclusions as an enclosure to this letter.

P. Davison

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure and your December 24, 2015, response will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

*/RA/*

Raymond K. Lorson, Director  
Division of Reactor Safety

Docket No. 50-354  
License No. NPF-57

Enclosure: as stated

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## SUMMARY

### **Non-Cited Violation (NCV) 05000354/2015007-02**

#### Restatement of the Violation:

The team identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because PSEG did not provide adequate work order instructions for the installation of service water (SW) pump discharge isolation valve 2198C following planned valve maintenance in October 2013. Specifically, the inadequate work order instructions contributed directly to maintenance technicians installing the valve in the opposite orientation compared to the intended orientation.

#### Licensee Response (Summary):

PSEG denies that the NRC identified any new information that impacted the licensee's conclusions regarding operability or corrective actions. The improper re-installation of the valve EAHV-2198C was promptly identified by the licensee and entered in CAP, and the additional analyses performed in response to NRC questions supported the licensee's initial conclusions.

In addition, PSEG contends the identified weaknesses associated with the classification, evaluation, and corrective actions of EAHV-2198C do not meet the threshold for more than minor.

#### NRC Evaluation:

The NRC Region I staff performed an independent review of the documented NCV in Inspection Report 05000354/2015007, using PSEG's basis for denial for comparison, and made the following observations:

- 1) Notification (NOTF) 20626219 was initiated by the PSEG staff on October 22, 2013, identifying the installation of valve 2198C 180 degrees different than when removed. This NOTF was subsequently updated by the PSEG maintenance staff to reflect inadequacies in the applicable Work Order (60112463-410) as compared to the valve drawing (M-10-1) and the associated vendor manual. The NCV properly refers to 10 CFR 50, Appendix B, Criterion V, as the appropriate violation of regulatory requirements.
- 2) The Component Design Bases Inspection (CDBI) report states (page 6) that "there was no documented evaluation of the impact of this misalignment and configuration error prior to operations declaring the C SW pump operable following the 2198C maintenance on October 23." As stated in the report and further clarified by interview with the inspection team leader, PSEG did not complete an operability evaluation prior to restoration of the C SW pump to service on October 23, 2013, in spite of the improper installation of the outlet valve. Further, PSEG acknowledged this deficiency by initiating NOTF 20705874 (also documented in the report). The inspection report (page 7) identified a second instance where PSEG failed to properly assess a valve operational anomaly, an unexpected high opening torque (compared to the valve's weak link analysis and Limitorque limits) and its potential adverse impact on system operability. This condition was identified during troubleshooting of valve 2198C on October 27, 2013, but no corresponding operability evaluation was documented.

- 3) The team's observations documented in the report and highlighted in 2) above, form the basis for the inspection team's conclusion that the NRC added value to a licensee-identified finding or violation. The absence of an operability evaluation, for either of the above referenced conditions, was documented as a "weakness in the licensee's classification, evaluation, or corrective action" (page 9) and was the basis for the team to conclude there was a reasonable doubt of operability, with respect to the valve being able to function under all design basis conditions. In order to conclude that the valve was operable and to answer questions from the inspection team, PSEG performed an operability determination for the issue of the valve being installed in the wrong orientation (NOTF 20705874), performed a technical evaluation to determine that the valve actuator was capable of opening the valve under all required design basis conditions based upon actual measured data (NOTF 20704783), and contracted with Kalsi Engineering to perform an H4BC gear box torque analysis for the valve actuator. This team conclusion was documented in the Analysis Section of the inspection report (page 9-10) in reference to the basis for the observations (and underlying performance deficiency) being more than minor. The team cites Example 3.j of IMC 0612, Appendix E, as justification of the more than minor determination.
- 4) PSEG's Basis for Denial did not address the Appendix E more than minor example referenced in the CDBI inspection report. Rather, PSEG stated that the weaknesses identified by the team regarding classification, evaluation and corrective action were not more than minor. Further, PSEG contends that the additional analyses performed in response to NRC team questions did not change the original operability determination outcome. Neither the subjective contention of the weaknesses being minor nor the final determination of operability being maintained provide a sufficient basis for denial. The NRC determined that the Appendix E example established the basis for determining that this performance deficiency was of more than minor significance.
- 5) In the Basis for Denial, PSEG opines that the CDBI team's challenge of the operability impact of the above conditions was unfounded without knowledge of the actual operating conditions of the system (system alignment, flowrates, and valve differential pressure were not recorded and were unknown). PSEG contends that without knowing actual system operating conditions, data cannot be extrapolated with any certainty. The NRC considers that the uncertainties associated with the valve operating parameters highlight the reason why PSEG was required to perform an operability determination following improper installation of the valve and its failure to operate due to a high torque condition.
- 6) Additionally, PSEG took exception to the observation in the inspection report that the maintenance work instructions lacked sufficient detail. On page 6 of the inspection report, the inspection team noted that PSEG maintenance personnel identified and documented in NOTF 20626219, that the desired orientation of the 2198 valve was not specified in valve drawing M-10-1 or in the vendor manual. The inspection team also noted that the work order contained several diagrams which depicted the wrong valve orientation. The NRC determined that the maintenance work instructions given to the maintenance staff lacked sufficient detail to ensure that the valve was installed in the proper orientation.

For the above reasons, the staff concludes that the violation occurred as described in Inspection Report 05000354/2015007.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure and your December 24, 2015, response will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

*/RA/*

Raymond K. Lorson, Director  
Division of Reactor Safety

Docket No. 50-354  
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