



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

December 31, 2015

Mr. Michael Mulligan
P.O. Box 161
Hinsdale, NH 03451

Dear Mr. Mulligan:

I am replying to your calls and emails with Richard Barkley of my staff in November 2015. At that time, you expressed concerns with the as-found test results over the last several years of the two-stage Target Rock safety relief valves (SRVs) installed at Hope Creek. As Mr. Barkley discussed with you, the NRC has been aware of this problem for some time as documented in prior NRC resident inspection reports (e.g., see integrated inspection report 50-354/2013-005). PSEG has reported these issues in LERs for Hope Creek in 2012, 2013 and 2015, and following several refueling outages prior to that time. During the resident inspectors' closeout inspections of the LERs issued by Hope Creek for the as-found setpoint drift of the SRVs, it was noted that PSEG engineering evaluations determined that the reactor vessel overpressure protection was not affected by the SRV pilot valve setpoint drift. Thus the SRVs were capable of performing their design safety function even with the setpoint drift noted. In addition, the increase in mechanical stresses on the torus and torus attached piping due to the higher lift setpoints remained within code acceptable limits. These LER closeouts and the inspectors' independent assessment of the safety significance of these events were documented in NRC integrated inspection reports 2012-005 and 2014-003.

The issue of setpoint drift as well as the reliability for Target Rock two and three stage safety relief valves installed in Boiling Water Reactors has been of concern to the NRC for many years, and was the subject of Generic Safety Issue B-55, "Improved Reliability of Target Rock Safety Relief Valves." The resolution of that GSI was published in Regulatory Issue Summary (RIS) 2000-012, a copy of which is available on the NRC website. As noted in that RIS, several actions were taken by the BWR Owners Group and individual BWR licensees to improve the performance of Target Rock SRVs. These actions included: (1) the installation of ion beam implanted platinum or Stellite 21 pilot valve disks, and (2) the installation of additional pressure actuation switches. These changes, coupled with an expanded acceptance range (from +/- 1% to +/- 3%) for SRV setpoint as-found values, have significantly reduced the number of SRV as-found setpoints being outside the specified Technical Specification limit. However, as noted in NRC Information Notice 2006-024 (ML062910111), during offsite vendor testing following refueling outages, SRVs continue to be found with lift setpoints outside the tolerances required by the Technical Specifications for Hope Creek and a number of other BWRs.

In the particular case of Hope Creek, PSEG has taken steps to improve SRV performance, specifically the installation of ion beam implanted platinum or Stellite 21 pilot valve disks, but with limited success to date. PSEG's prior long-term plan to address setpoint drift was to install SRVs from a foreign vendor that had demonstrated better setpoint performance over time.

Unfortunately, that vendor was not able to meet the performance specifications set by PSEG and that plan was abandoned. PSEG then proposed replacing their two-stage Target Rock SRVs with three-stage Target Rock SRVs due to the three-stage valve performance history of less setpoint drift over time. That plan was suspended shortly before the last refueling outage when another plant in the industry experienced performance issues with the opening of their three stage SRVs and subsequent failure to promptly reclose. Going forward, the NRC plans to continue monitoring and independent oversight of the performance of Hope Creek's SRVs consistent with the NRC's Reactor Oversight Process (ROP).

We appreciate your concerns in this matter and recognize that the setpoint drift experienced by the SRVs at Hope Creek continues to recur in spite of prior corrective actions by PSEG. Consistent with ROP guidance and the safety significance of the issue, the NRC will continue to focus inspection resources on this issue to ensure effective, long-term corrective actions are taken by PSEG. Should you have any further questions in this matter, please contact Richard Barkley of my staff at (610) 337-5328.

Sincerely,

/RA/

Fred L. Bower, III, Chief,
Projects Branch 3
Division of Reactor Projects

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Fred L. Bower, III, Chief,
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Division of Reactor Projects

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