UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 25, 2016

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

Dear Mr. Mulligan:

This letter is in response to your letter dated February 4, 2016, to Mr. Victor M. McCree, Executive Director for Operations, of the U.S. Nuclear Regulatory Commission (NRC), regarding main steam safety valve (MSSV) failures at both the Indian Point and Shearon Harris nuclear power plant facilities. Your letter addresses multiple licensee event reports (LERs) where surveillance testing identified that the lift settings of MSSVs were found to be outside of the technical specification (TS) allowed tolerance. Your letter asserts that there has been an unexplained increase in the number of MSSVs failures due to setpoint drift since 2009 and that NRC generic communications on this subject are out-of-date and nonresponsive to your perceived industry trends. Specifically, you requested that your concerns be reviewed pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 2.206, "Requests for action under this subpart," and the following actions be taken:

- Perform an immediate special inspection of MSSV failures at Indian Point;
- Issue a new NRC Information Notice on MSSV failures; and
- Require that Indian Point immediately eradicate any problems associated with MSSVs up to, and including, a plant shutdown.

The NRC staff has reviewed your letter against the criteria of NRC Management Directive 8.11, "Review Process for 10 CFR 2.206 Petitions" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML041770328), and concludes that it does not meet the threshold for review under 10 CFR 2.206 because the issues you raised have already been the subject of staff review and have been resolved. Therefore, the staff rejects your request to review your letter pursuant to 10 CFR 2.206.

Since your letter focused on Indian Point, the following discussion is based upon the Indian Point plant design, the LERs identified in your letter, and the associated NRC staff review.

Steam Generator Safety Relief Valves

Each Indian Point unit has 5 safety relief valves installed on piping connected to each of the 4 steam generators. Therefore, there are 20 relief valves to remove steam from the generators during a plant accident or transient event. These valves are installed in a high pressure, high temperature and high vibration (due to steam flow) environment. As a result, testing and adequate maintenance are required to ensure the operability of the valves.

The design of the valves ensures that the steam system, including the secondary side of the steam generators, transient maximum pressure does not exceed 110 percent of the system design pressure during accident or transient events. This is the standard requirement for relief

valve protection per the American Society of Mechanical Engineers (ASME) Code. NRC regulations in 10 CFR 50.55a require following the ASME Code. For Indian Point, the system design pressure is 1170.5 pounds per square inch gauge (psig), resulting in a maximum transient pressure of 1287 psig. Additionally, the relief valves are designed, such that, they together have the capacity to relieve 108 percent of design steam flow, which exceeds the design limit of 102 percent steam flow relief capacity assumed in the plant's safety analysis.

Indian Point steam generator relief valves are nominally set at 1065, 1080, 1095, 1110 and 1120 psig. Valves are set at different pressures to prevent rapid cycling that could occur if multiple valves opened at the same time. The TSs at Indian Point and the ASME Code require that, when the valves are placed in service, they are set within +/- 1 percent of these values. After the valves are in service, they are required to be tested per the ASME Code requirement. The "as found" test limit of +/- 3 percent for each valve, is listed in the TSs, and is an ASME Code requirement. Valves that are found to be outside of this limit are required to be declared inoperable and corrective actions taken to restore them to an operable status. The maximum allowed "as found" + 3 percent limit is 1153.6 psig.

Test Results

A review of the test results discussed in LERs 2009-002 (Unit 3), 2010-002 (Unit 2), 2011-004 (Unit 3), 2012-005 (Unit 2) and 2015-002 (Unit 3) for Indian Point found that there was no safety impact as a result of the MSSV failures. In all cases, although the valves failed the acceptance criteria, all of the valves lifted below the system design pressure limit of 1170.5 psig and well below the transient design limit of 1287 psig. Additionally, in all cases adequate steam relief capacity was maintained.

Corrective Actions

The ASME Code and NRC regulations require that test failures be evaluated and corrective actions taken to address degraded conditions. Entergy Nuclear Operations, Inc., the licensee, has taken multiple short and long term corrective actions to address the failures including:

- Immediate valve disassembly and inspection, expansion of testing to include valves not initially scheduled for testing, and resetting valve setpoints to within +/- 1 percent tolerances.

- Changed preventive maintenance valve overhaul schedules were changed from an 8-year to a 6-year periodicity.

- Changed Unit 3 testing interval so that all valves are tested every 2 years (previously 4 years testing requirement) until modifications are completed. Completed modifications to 7 of the 20 valves.

- Finally, development and implementation of permanent design modifications including installing bronze wear sleeves to limit spindle wear.

Summary

The test data was reviewed and the NRC staff concludes there is no safety concern related to the performance of the MSSVs. Based on the test results, the staff determined the valves would have operated such that the design pressure of the main steam system would not have been exceeded.

The NRC staff has reviewed each of these failures and associated corrective actions as part of the reactor oversight baseline inspection program. Each LER was reviewed and in some cases NRC enforcement action was taken. Licensee identified violations are discussed in inspection reports dated May 11, 2010 (ADAMS Accession No. ML101310350), August 23, 2010 (ADAMS Accession No. ML102240597), and August 9, 2011 (ADAMS Accession No. ML112212055). Severity Level IV violations are discussed in inspection reports dated August 9, 2012 (ADAMS Accession No. ML12222A131) and August 7, 2015 (ADAMS Accession No. ML15222A186). Finally, a non-cited violation is discussed in the inspection dated August 7, 2015 cited above. Corrective actions performed or scheduled by the licensee were found to be acceptable.

If you have any questions, please feel free to contact Douglas Pickett at (301) 415-1364 or by e-mail at Douglas.Pickett@nrc.gov.

Sincerely,

Anne T. Boland, Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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/RA/

Anne T. Boland, Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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