



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, ILLINOIS 60532-4352

March 9, 2018

David A. Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
PO Box 15316
Chattanooga, TN 37415

**SUBJECT: NRC RESPONSE TO UNION OF CONCERNED SCIENTISTS COMMENTS
REGARDING QUAD CITIES NUCLEAR POWER STATION, UNIT 2, HIGH
PRESSURE COOLANT INJECTION LICENSEE EVENT REPORT
05000265/2017-001-00**

Dear Mr. Lochbaum:

On July 26, 2017, the Region III office received a letter from you (ML17321A947) providing comments based upon your review of Licensee Event Report (LER) 05000265/2017-001-00 for Quad Cities Nuclear Power Station, Unit 2 (ML17194A817). This licensee event report is related to an event that occurred on May 15, 2017. As stated in the report, the High Pressure Coolant Injection (HPCI) system minimum flow valve did not open as expected during HPCI system testing. Based upon our review of the LER and the specific HPCI system issue, the inspectors concluded that the licensee immediately declared the HPCI system inoperable, entered the appropriate Technical Specification Limiting Condition for Operation, replaced a failed flow switch, and returned the HPCI system to service within the Technical Specification allowed completion time.

As you are likely aware, letters to senior NRC officials are generally placed into ADAMS as publically available documents unless there is a reason to exclude the letter from ADAMS. Several weeks before your letter was received by our prior Regional Administrator, Cynthia Pederson, the Quad Cities HPCI issue was under review by our resident inspectors. Shortly after receiving your email, I and several members of the NRC staff conducted a phone call with you to determine if our understanding of the issue was the same as yours. The result was that we (you and the NRC) had a similar understanding of the issue and you provided no information that would prompt us to modify our inspection of this issue; therefore, your letter was placed in ADAMS as publically available. Ms. Pederson has since retired and Mr. K. Steven West has been appointed as the Region III Regional Administrator. I have discussed your letter with him, and he has authorized me to respond for him. This response will be placed into ADAMS as a publically available document.

In your letter, you raised three concerns:

1. The licensee made two seemingly contradictory statements in the LER related to whether the HPCI system minimum flow valve failure is an event or condition that could have prevented the fulfillment of its safety function. Additionally, you questioned why the licensee did not retract the LER if they determined that the event would not have affected a safety function.

2. The licensee stated that the failure of the minimum flow valve to open did not contribute to an increase in risk since the operation of the minimum flow valve was not modeled in the plant's Probabilistic Risk Assessment (PRA). You referenced NUREG/CR-5934, "High Pressure Coolant Injection System Risk-Based Inspection Guide for Quad-Cities Station, Units 1 and 2," and questioned whether this conclusion was appropriate.
3. The licensee stated that the HPCI system had a 10-minute mission time. You questioned whether it is acceptable for the licensee to consider only one short-duration design basis event and exclude all longer duration events when assessing safety impacts.

The NRC staff has reviewed your concerns and provides our assessment below. We note that the event described in the LER was under review by the NRC resident inspectors at the time we received your letter.

Concern 1 – Contradictions Regarding Loss of Safety Function

The NRC reviewed the information provided in LER 2017-001, including the potential contradictory information regarding the loss of safety function, and discussed this information with the licensee. The NRC determined that the HPCI system was declared inoperable due to a note in the surveillance procedure acceptance criteria. After declaring the HPCI system inoperable, the licensee reported the HPCI system inoperability to the NRC in accordance with the guidance provided in NUREG-1022, "Event Report Guidelines," Revision 3, Section 3.2.7, "Event of Conditions that Could have Prevented the Fulfillment of a Safety Function." After determining the cause of this event, the licensee performed an engineering evaluation as discussed in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," and concluded that this event did not constitute a safety system functional failure because the HPCI system remained available to perform its specified safety function. This conclusion was based upon information provided by General Electric demonstrating that the HPCI system would continue to function even though the HPCI system minimum flow valve was not operating as expected.

The NRC's review of the LER is documented in Section 4OA3 of Integrated Inspection Report 05000254/2017004 and 05000265/2017004 (ML18047A566). The inspectors reviewed the licensee's engineering analysis and agreed with their conclusion that HPCI remained able to perform its safety function. In this instance, despite the conclusion of licensee's engineering assessment, the NRC does not require retraction of LERs if the system is later determined to have always been operable. The inspectors review retracted event notifications to validate the licensee's conclusions and basis for the retraction. In addition, the inspectors review the safety system functional failure performance indicator once per year, and this event would be in the scope of that review.

Concern 2 – Risk Perspectives

As noted in the LER, the licensee stated the HPCI minimum flow valve was not credited in the plant's PRA and therefore did not contribute to an increase in risk. The NRC staff agrees that this statement alone would not be an adequate justification for determining the risk significance of the event. However, the licensee also stated in the LER that the overall safety significance and risk impact of the event was minimal "due to the fact that the HPCI system was available to perform its safety function."

The inspectors reviewed the licensee's evaluation and found it to be in accordance with NUREG/CR-5934. Specifically, Section 6.14 discusses that the medium risk aspect of a HPCI minimum flow valve failure is due to a coincident normally open pump discharge valve failing closed or becoming plugged. With respect to the issue discussed in the LER, the pump discharge valve operated as expected. The NRC staff did not identify any additional concerns with the licensee's risk evaluation.

Concern 3 – Mission Time

As stated previously, the licensee ultimately determined that the HPCI system remained operable and available to inject in the event of a loss of coolant accident. The NRC did not identify any concerns with the licensee's assessment. As part of the LER review, the NRC also noted the statement regarding the HPCI mission time. This event and the condition of the minimum flow valve had no impact on the HPCI system's function or the system's ability to continue to run, and therefore the inspectors did not pursue the mission time statement further, other than noting the 10 minute mission time was as described in the licensee's UFSAR. The 10 minute time is based on a limited set of event scenarios, as described in the licensee's fuel analysis, in which HPCI operates for 10 minutes and then other systems are used to mitigate the postulated event. Finally, the NRC significance determination process generally uses a 24 hour mission time and if HPCI could not meet this mission time successfully due to a performance deficiency, the NRC would assess the significance using this process and mission time.

Thank you for communicating your comments to the Region III office. If you have any questions, please contact me at 630-829-9731 or via e mail at karla.stoedter@nrc.gov.

Sincerely,

/RA/

Karla K. Stoedter
Chief, Branch 1
Division of Reactor Projects

Letter to David A. Lochbaum from Karla K. Stoedter dated March 9, 2018

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