



Nebraska Public Power District

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NLS2015066

June 9, 2015

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Response to Nuclear Regulatory Commission Request for Additional Information for High Pressure Coolant Injection (HPCI) Solenoid Operated Drain Valve Testing for Fifth Ten-Year Interval Valve IST Program Relief Request RV-01 Cooper Nuclear Station, Docket No. 50-298, DPR-46

- References:**
1. Email from Siva Lingam, U.S. Nuclear Regulatory Commission, to Jim Shaw, Nebraska Public Power District, dated May 12, 2015, "Cooper - HPCI Solenoid Operated Drain Valve Testing for Fifth Ten-Year Interval Valve IST Program Relief Request RV-01 (TAC No. MF5925)"
 2. Letter from Oscar A. Limpias, Nebraska Public Power District, to the U.S. Nuclear Regulatory Commission, dated March 19, 2015, "Fifth Ten-Year Interval Pump and Valve Inservice Testing Program Relief Requests"

Dear Sir or Madam:

The purpose of this letter is for the Nebraska Public Power District to respond to the Nuclear Regulatory Commission's Request for Additional Information (RAI) (Reference 1) related to the Cooper Nuclear Station Fifth Ten-Year Interval Inservice Testing Relief Request RV-01, "HPCI Solenoid Operated Drain Valve Testing" (Reference 2).

The response to the specific RAI question is provided in the attachment to this letter.

This letter does not contain any new regulatory commitments.

If you have any questions concerning this matter, please contact Jim Shaw, Licensing Manager, at (402) 825-2788.

Sincerely,

Oscar A. Limpias
Vice President - Nuclear
and Chief Nuclear Officer

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Attachment: Response to Nuclear Regulatory Commission Request for Additional Information for High Pressure Coolant Injection (HPCI) Solenoid Operated Drain Valve Testing for Fifth Ten-Year Interval Valve Inservice Testing (IST) Program Relief Request RV-01

cc: Regional Administrator w/ attachment
USNRC - Region IV

Cooper Project Manager w/ attachment
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ attachment
USNRC - CNS

NPG Distribution w/o attachment

CNS Records w/ attachment

Attachment

Response to Nuclear Regulatory Commission Request for Additional Information for High Pressure Coolant Injection (HPCI) Solenoid Operated Drain Valve Testing for Fifth Ten-Year Interval Valve Inservice Testing (IST) Program Relief Request RV-01

Cooper Nuclear Station, Docket No. 50-298, DPR-46

The Nuclear Regulatory Commission request for additional information (RAI) regarding Relief Request RV-01 for HPCI Solenoid Operated Drain Valve Testing is shown in italics. The Nebraska Public Power District (NPPD) response to the request is shown in normal font.

RAI

In lieu of the exercise test requirements of the 2004 edition through 2006 addenda of the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants, Section ISTC, relief request RV-01 proposes an alternative exercise test method for High Pressure Coolant Injection (HPCI) solenoid valves (SOV) HPCI-SOV-SSV64 and HPCI-SOV-SSV87. In addition to the alternative test method, CNS proposes to disassemble, inspect, and refurbish on a periodic basis each solenoid valve per the Preventive Maintenance Program. This maintenance activity shall be performed at an optimized frequency not to exceed 48 months (2 cycles). Please explain how the frequency of the preventive maintenance task of disassembly, inspection, and refurbishment is developed, maintained, monitored, and optimized.

NPPD Response:

The frequency of the preventative maintenance (PM) task was developed after reviewing the maintenance and test histories for these two solenoid valves and after reviewing the Electric Power Research Institute (EPRI) recommendations for PMs on solenoid valves. The maintenance history for these valves since 2005 is documented in Table 1 located at the end of this response. A review of this data demonstrates that each valve has had two examinations that resulted in minor issues resulting in the replacement of parts (March of 2011 and April of 2014 for HPCI-SOV-SSV64; April of 2012 and April of 2014 for HPCI-SOV-SSV87). For these cases, the PM was doing its job by identifying parts that had minor issues and replacing them prior to them becoming a major issue and impacting the safety function of the valve. The exercise testing performed prior to and after these examinations was completed with acceptable results. As long as the exercise testing of the valves continues to demonstrate acceptable performance and the examination PMs do not identify any major issues that could have impacted the closure safety function, then the maximum frequency of 48 months may be utilized for these HPCI PMs.

The maximum frequency of 48 months (2 cycles) is conservative when comparing this frequency to the EPRI PM recommendations. The EPRI recommended task for elastomer replacement and internal inspection of a solenoid valve is 5 years for a severe environment and up to ten years for a mild environment. Cooper Nuclear Station (CNS) considers the location of these valves to be a

severe environment, so the maximum frequency allowed by CNS would be one year less than what is recommended by EPRI.

The frequency will be maintained through the CNS work management system and the PM process. A maintenance plan has been established with the necessary tasks required to satisfy the PM. A PM work order with these required tasks is automatically created well ahead of the scheduled due date and is scheduled based on the CNS work schedule process. Any frequency changes must be approved by the IST Engineer.

The monitoring of these valves will be done by tracking the proposed six month exercise testing and the results of the internal examinations. As was described in the relief request, CNS has had excellent results with the exercise tests. Based on internal valve degradation, October of 2001 was the last time one of these valves (HPCI-SOV-SSV64) failed its closure acceptance criteria. For clarification purposes, however, there was a system issue in June of 2002 in which foreign material was causing HPCI-SOV-SSV64 to leak. An internal examination identified that there was foreign material found under the valve disc of HPCI-SOV-SSV64, but the valve itself, was examined and found to be in an acceptable condition. The CNS corrective action program addressed the issue and no other foreign material issues have impacted the closure function of these valves since then. Therefore, no internal valve degradation issue has impacted the closure function of these components since October of 2001 and no system issue has impacted the closure function of these components since June of 2002.

The frequency of the PMs is optimized by balancing the component reliability with the correct PM frequency. The goal is to ensure that the solenoid valves continue to perform their closure function in a reliable manner without performing the internal examination PMs too frequently. As long as the PM ensures that any minor issue is taken care of prior to it becoming an issue with the closure function of the valve meeting its acceptance criteria, then the frequency is set at an acceptable duration. This, in conjunction with acceptable exercise tests, justifies the acceptability of the frequency.

If the exercise testing results in a failure of the closure acceptance criteria of one of the solenoid valves, or the examination PM of one of the solenoid valves identifies a significant component issue that may have resulted in the respective valve not being able to perform its closure function, then the examination frequency of both solenoid valves shall be moved from 48 month frequencies to 24 month frequencies. From this point, two periodic examinations would have to be performed and completed satisfactorily at the 24 month frequency prior to returning the frequency to the 48 month frequency.

In conclusion, the PM was developed based on a review of the maintenance and test history results, and review of EPRI recommendations. The existing frequency will be monitored as acceptable as long as the exercise testing is completed satisfactory and the internal examinations are either satisfactory or identify parts for replacement prior to when the parts issue would have caused a failure with the closure exercise testing. The frequency of internal examinations will be reduced from 48 months to 24 months for both valves if one valve were to fail its acceptance criteria for the closure exercise testing or if the findings of an internal examination of one of the

valves results in the determination that it would not have met its closure function. Two successful examinations at the 24 month frequency would be required in order to return the PM(s) to a 48 month frequency. This is how the frequency of the preventive maintenance task of disassembly, inspection, and refurbishment was developed, and how it will be maintained, monitored, and optimized, if approved.

Table 1: Maintenance histories for HPCI-SOV-SSV64 and HPCI-SOV-SSV87	
HPCI-SOV-SSV64	HPCI-SOV-SSV87
02-10-05: Visual exam satisfactory (PM work order #4363336)	02-10-05: Visual exam satisfactory (PM work order #4363336)
N/A	06-21-05: Replaced valve at same time as non-essential valve, HPCI-SOV-SSV88, was replaced. Valves are in close proximity. New valve allows parts to be procured. (Corrective Maintenance [CM] work order #4211944)
11-7-06: Visual exam satisfactory (PM work order #4446767)	11-14-06: Visual exam satisfactory (PM work order #4446767).
03-18-08: Visual exam satisfactory (PM work order #4569097)	03-18-08: Visual exam satisfactory (PM work order #4569097)
08-19-09: Visual exam satisfactory (PM work order #4626047)	08-19-09: Visual exam satisfactory (PM work order #4626047)
03-21-11: Valve replaced for parts reasons with a valve upgrade to match that of HPCI-SOV-SSV87 (CM work order #4791033)	03-22-11: Visual exam satisfactory (PM work order #4750715)
04-24-12: Visual exam satisfactory (PM work order #4803767)	04-25-12: Seat plug on the bottom was found curled around the edges and was replaced. This issue did not impact the valve's closure function as the previous closure testing was performed successfully (PM work order #4803767)
4-23-13: Visual exam satisfactory (PM work order #4895831).	04-23-13: Visual exam satisfactory (PM work order #4895831).
4-22-14: Plunger found slightly corroded and stem assembly was scored in the seating area. Both parts were replaced. Did not impact the valve's closure function as the previous closure testing was performed successfully. (PM work order #4938492)	4-22-14: Insert showed minor erosion/corrosion and plunger/stem has a small groove around seating area. Both parts were replaced. Did not impact the valve's closure function as the previous closure testing was performed successfully. (PM work order #4938492)
2-10-15: Visual exam satisfactory (PM work order 5003464).	2-10-15: Visual exam satisfactory (PM work order 5003464).