February 9, 2006

Mr. Randall K. Edington
Vice President-Nuclear and CNO
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - REQUEST FOR ADDITIONAL INFORMATION RE: FOURTH 10-YEAR INTERVAL PUMP AND VALVE INSERVICE TESTING PROGRAM RELIEF REQUESTS (TAC NO. MC8837)

Dear Mr. Edington:

Nebraska Public Power District (the licensee) requested the Nuclear Regulatory Commission (NRC) staff's approval for relief from certain inservice testing requirements in Part 50 of Title 10 of the *Code of Federal Regulations* for the Cooper Nuclear Station.

The NRC staff has reviewed the information provided in the October 19, 2005, submittal and has determined that the additional information identified in the attached enclosure is required in order for the NRC staff to complete its review. The licensee requested NRC staff approval of the subject relief requests by March and September 2006. To meet those target dates, the NRC staff requests that the licensee provide its responses to the questions, other than those pertaining to RP-07, RV-02, and RV-05, no later than February 15, 2006. The answers to questions regarding RP-07, RV-02, and RV-05, should be provided by March 30, 2006.

Sincerely,

/RA/

Brian Benney, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION (RAI)

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ISSUES RELATED TO INSERVICE TESTING

COOPER NUCLEAR STATION (CNS)

DOCKET NO. 50-298

OPERATING LICENSE NO. DPR-46

1. Relief Request RP-01:

RAI RP-01-01

The licensee requests relief from the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code requirement of ISTB-3510(b)(1), i.e., the full-scale range of each analog instrument shall not be greater than three times the reference value. The installed suction pressure gauge range of the core spray pumps is 30" Hg - 30.0 psig which is 7.5 times (versus three times as required by the ASME Code) the actual values for the suction pressure. It appears that the equation, 0.0066 x 45 psig = ± 0.3 psi, is used by the licensee to justify that the proposed alternative of using the installed suction pressure gauge provides an acceptable level of quality and safety. However, there is no detailed discussion nor explanation as to why the cited equation demonstrates the acceptability of the proposed alternative. The licensee should discuss or explain:

1. The basis for 0.0066 and its relation to the instrument accuracy,

2. The basis for 45 psig and its relation to the suction pressure, and

3. The implication of ± 0.3 psi and its relation to the Code required accuracy.

2. Relief Request RP-02

RAI RP-02-01

The licensee requests relief from the ASME OM Code requirement of ISTB-3510(b)(1), i.e., the full-scale range of each analog instrument shall not be greater than three times the reference value. The installed suction pressure gauge range of the residual heat removal pumps is 30" Hg - 150.0 psig which is 30 times (versus three times as required by the ASME Code) the actual values for the suction pressure. It appears that the equation, 0.006 x 165 psig = ± 1.0 psi, is used by the licensee to justify that the proposed alternative of using the installed suction pressure gauge provides an acceptable level of quality and safety. However, there is

no detailed discussion nor explanation as to why the cited equation demonstrates the acceptability of the proposed alternative. The licensee should discuss or explain:

1. The basis for 0.006 and its relation to the instrument accuracy,

2. The basis for 165 psig and its relation to the suction pressure, and

3. The implication of ± 1.0 psi and its relation to the Code required accuracy.

3. Relief Request RP-03:

RAI RP-03-01

The licensee requests relief from the ASME OM Code requirement of ISTB-3510(b)(1), i.e., the full-scale range of each analog instrument shall not be greater than three times the reference value. The installed suction pressure gauge range of the high pressure injection main and booster pumps is 30" Hg - 150.0 psig which is 10 times (versus three times as required by the ASME Code) the actual values for the suction pressure. It appears that the equation, 0.006 x 165 psig = ± 1.0 psi, is used by the licensee to justify that the proposed alternative of using the installed suction pressure gauge provides an acceptable level of quality and safety. However, there is no detailed discussion nor explanation as to why the cited equation demonstrates the acceptability of the proposed alternative. The licensee should discuss or explain:

1. The basis for 0.006 and its relation to the instrument accuracy,

2. The basis for 165 psig and its relation to the suction pressure, and

3. The implication of ± 1.0 psi and its relation to the Code required accuracy.

4. Relief Request RP-04:

RAI RP-04-01

The licensee requests relief from the ASME OM Code requirement of ISTB-3510(b)(1), i.e., the full-scale range of each analog instrument shall not be greater than three times the reference value. The installed suction pressure gauge range of the reactor core isolation cooling main pump is 30" Hg - 150.0 psig which is 10 times (versus three times as required by the Code) the actual values for the suction pressure. It appears that the equation, 0.006 x 165 psig = ± 1.0 psi, is used by the licensee to justify that the proposed alternative of using the installed suction pressure gauge provides an acceptable level of quality and safety. However, there is no detailed discussion nor explanation as to why the cited equation demonstrates the acceptability of the proposed alternative. The licensee should discuss or explain:

1. The basis for 0.006 and its relation to the instrument accuracy,

2. The basis for 165 psig and its relation to the suction pressure, and

3. The implication of ± 1.0 psi and its relation to the Code required accuracy.

5. Relief Request RP-05:

RAI RP-05-01

Describe the procedures for defining/determining the equipment loop accuracy and the calibration loop accuracy and explain why the calibrated loop accuracy will meet or exceed the code tolerances. An instrument loop is defined in the ASME OM Code as two or more components working together to provide a single output.

6. Relief Request RP-07

RAI RP-07-1

The relief request includes an evaluation by the pump manufacturer indicating that the vibration is coming from the hydraulic disturbance found in the piping and that the motor and pump can operate with those levels of vibration with no impairment of operating life. To demonstrate that there is a sufficient margin with the new proposed alert limit, the licensee is requested to identify the levels of vibration in terms of peak-to-peak velocity that are acceptable to the pump manufacturer for the required operating period.

RAI RP-07-2

Item C of the relief request includes a statement to the effect that the only negative impact is on vibration levels relative to a generic standard. It is not clear if other industry standards were reviewed to determine alternative acceptance criteria. Industry standards, such as American National Standards Institute/Hydraulic Institute 9.6.4-2000, Centrifugal and Vertical Pumps for Vibration Measurements and Allowable Values, and ISO 10916-3-1998, identify allowable pump field vibration values and these vibration values are to be used as general acceptance criteria with the understanding that vibration levels in excess of these values may be acceptable by mutual agreement (between manufacturer and customer) if they show no continued increase with time and there is no indication of damage, such as an increase in bearing clearance or noise level. The licensee is requested to identify if there is an alternative industry acceptance criteria that may be applied to the alert limits and to identify if other indications of damage, such as bearing temperature or noise level, are monitored.

RAI RP-07-3

The relief request is limited to Core Spray Pump B with no mention of Core Spray Pump A. The licensee is requested to describe why high vibration levels are unique to pump B and not Pump A. For example, clarify if Pump A is different in any way or if the discharge piping is of a different configuration. If there are no differences in piping configuration, explain the basis for the difference in vibration levels.

RAI RP-07-4

The relief request references a previous CNS relief request as the only precedence for this type of relief. The licensee does include a comprehensive maintenance history for the CNS pump, but no industry-wide experience is included. In addition to maintenance history at CNS,

operating experience with similar equipment at other facilities and utilities should be considered. If this level of vibration and cause is unique to CNS, the licensee is requested to so clarify or to include other industry-wide operating experience and explain the cause and resolution.

7. Relief Request RV-01

RAI RV-01-01

Please clarify when the enhanced maintenance on the valves will be performed, i.e., will the maintenance be performed during a refueling outage? If the maintenance will be performed on-line please address the risk implications, work window time frame and administrative requirements for performing the activity on-line. Please verify that the maintenance activity will be scheduled on a refueling cycle frequency (18 or 24 months depending on the fuel cycle length), if maintenance will not be performed during refueling.

8. Relief Request RV-02

RAI RV-02-1

The relief request references the Boiling-Water Reactor (BWR) Owners Group Topical Report B21-00658-01, "Excess Flow Check Valve Testing Relaxation," as a basis for the relaxation. By letter dated March 14, 2000, the NRC submitted comments on this topical report concerning generic application of excess flow check valve (EFCV) testing relaxation to the BWR Owners Group and requested that the report be revised accordingly. General Electric NEDO-32977-A dated June 2000 submitted in response to the NRC comments concluded that individual licenses will develop their own EFCV performance criteria. This conclusion considered that the lead plant, Duane Arnold Energy Center, has included the EFCVs as a subset within the Maintenance Rule. As identified in the March 14, 2000, letter to the BWR Owners Group, the EFCV performance criteria should be based on sound reliability modeling that is consistent with generally expected performance of the EFCVs. Further, the corrective action program must evaluate equipment failures and establish appropriate corrective actions to comply with the performance criteria. Such performance criteria and the basis, once developed, will be subject to staff review. Due to the plant-specific nature of the performance criteria, it is considered expeditious and appropriate to review this testing relaxation as a plant-specific relief request, rather than an ASME Code Case. However, the relief request should reference this NEDO report to clarify that this testing relaxation, although generic in nature, applies plant-specific evaluation criteria. To clarify current guidance from the BWR Owners group, the licensee is requested to reference NEDO-32977-A as a basis for this relief request and clarify that the evaluation, including performance criteria and Maintenance Rule inclusion, are plant-specific commitments.

RAI RV-02-2

The basis for the relief request does not address recent industry-wide experience with the EFCVs and the NEDO report identifies confidence levels presumably based on testing prior to the year 1998. The NEDO report includes conservatism to account for a potentially unknown

change in the valve's failure rate. The licensee is requested to either confirm that recent EFCV testing trends are within bounds of the analysis or revise the analysis to consider recent test data.

RAI RV-02-3

Section 4.1 of NEDO-32977-A speculates that most EFCVs fail to close due to sticking and Attachment A testing data identifies 21 failures on BFN-2 and 5 failures on BFN-3 due to crud buildup and sticking after extended outages. Table 4-1 of NEDO-32977-A does not identify EFCVs for CNS. The licensee is requested to identify the type of information included in Table 4-1, including the valve manufacturer and failure rates. The licensee is also requested to clarify the type of preventive maintenance, if any, performed on the EFCVs to prevent sticking and, if no maintenance is performed, explain why failures reported with similar-make valves are not expected in the future when the valves are not exercised as frequently.

RAI RV-02-4

Attachment B to NEDO-32977-A includes the radiological analysis of the consequences of a unisolable instrument line break. The consequences of several EFCVs sticking open following potential damage to multiple instrument lines caused by postulated high energy line breaks outside containment have not been evaluated in the relief request. The licensee is requested to discuss the consequences of such common cause failures on multiple instrument lines that depend upon closure of excess flow check valves for isolation.

9. Relief Request RV-03

RAI RV-03-001

Please describe the test frequency associated with the diagnostic testing conducted in accordance with Generic Letter 96-05 for valves SW-MOV-M089A and B. The NRC staff expectation is that the testing is performed every refueling outage. The ASME Code allows testing of valves during refueling, if they cannot be tested at power or cold shutdowns. Please provide justification for any test frequency that exceeds the ASME OM Code required test frequency.

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