November 26, 2003

Mr. Clay C. Warren
Vice President of Nuclear Energy
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - REQUEST FOR ADDITIONAL INFORMATION REGARDING REVISION OF TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT 3.3.2.1.4 AND TABLE 3.3.2.1-1 FOR MATHEMATICAL SYMBOLS AND USE OF ALLOWABLE VALUES IN THE PLACE OF ANALYTICAL LIMITS (TAC NO. MC0629)

Dear Mr. Warren:

In letter dated August 25, 2003, Nebraska Public Power District (NPPD or the licensee) requested the NRC staff approve a proposed amendment to revise the Technical Specification (TS) Surveillance Requirement 3.3.2.1.4 and TS Table 3.3.2.1-1 for mathematical symbols and use of Allowable Values in the place of Analytical Limits. In a letter dated October 2, 2003, the NRC staff requested additional information, which was provided in supplemental letter dated October 31, 2003.

The staff has reviewed the information provided in the August 25, and October 31, 2003 submittals, and determined that additional information is required in order to complete the review and approval of the changes. The request for additional information is enclosed. Based upon discussions with NPPD staff, a mutually agreeable date for your response is within 45 days of receipt of this letter.

Sincerely,

/RA/

Michelle C. Honcharik, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosure: As stated

cc w/enclosure: See next page

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ACCESSION NO: ML033300338 *RAI input via e-mail dated

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REQUEST FOR ADDITIONAL INFORMATION
ISSUES RELATED TO REVISION OF TECHNICAL SPECIFICATIONS
SURVEILLANCE REQUIREMENT 3.3.2.1.4 AND TABLE 3.3.2.1-1
COOPER NUCLEAR STATION

The following items are based upon the licensee's submittal dated August 25, 2003, and the supplemental letter dated October 31, 2003, in particular, to Attachment 2 to the supplemental letter, Calculation 98-024, Revision 3, "APRM [Average Power Range Monitor]-RBM [Rod Block Monitor] Setpoint Calculation."

1. The Technical Specification (TS), Table 3.3.2.1-1 and associated TS Bases, define several separate "zones" of percent rated thermal power (%RTP) and minimum critical power ratio (MCPR), in which various trip functions are enabled or suppressed. The functional zones are defined by Conditions a, b, c, and d. Condition e overlaps Conditions a, b, and c. The associated TS Bases define "no-trip" zones (i.e., zones not requiring any trip function) at power levels below 30 percent for all MCPRs, at all power levels for MCPRs of 1.7 or greater, and at power levels above 90 percent for MCPR greater than or equal to 1.4. The proposed Allowable Values (AVs) protect against errors in determining which zone is in effect at any given time. The margin applied to the 30 percent limit ensures that an underestimation of thermal power when operating just above 30 percent will tend to result in the application of the Condition a setpoints rather than in the assumption of "low power no-trip" zone and the suppression of all trips. This is clearly conservative. But it is not clear whether Condition a setpoints or Condition b setpoints are more conservative for thermal power estimation errors when operating near 65 percent. Similarly for Conditions b and c near 85 percent. The inverse relationship of setpoint to power regime further confuses this matter (the low power trip setpoints are higher than the high power trip setpoints). In addition, the "high power no-trip" zone for power greater than or equal to 90 percent with MCPR greater than or equal to 1.4 seems to indicate, counter intuitively, that operation is safer above 90 percent than below 90 percent.

   For all RBM Functions in TS Table 3.3.2.1-1 and for the "no-trip" zones in the TS Bases for the RBM (B3.3.2.1, page B3.3-45), please indicate whether overestimation or underestimation of thermal power is more conservative and provide the reasoning behind each determination. Show that the proposed margins are on the correct side (i.e., where the margins produce, rather than detract from, conservatism) of each zone boundary. Explain why no margin is needed at the 90 percent power level.

2. If the estimated MCPR were above 1.7, but the actual MCPR were less than 1.7, then Functions 1a, 1b, 1c, and 1e would be suppressed when in fact they should be active. This would be a non-conservative condition. A similar situation exists for the MCPR limit of 1.4 for power levels of 90 percent and above, associated with Function 1d. Please explain how this condition is to be avoided, given that the proposed TS changes do not include the addition of margin to the MCPR limits.

3. The mark-up for page B3.3-45 of the TS Bases shows the 30 percent limit changed to 27.5 percent. The description in the TS Bases should show the objectives of the TS settings, not necessarily the TS settings themselves. The TS value is proposed to be

changed from 30 percent to 27.5 percent to ensure that the power-related adjustment in trip setpoint does indeed occur at or below 30 percent despite anticipated uncertainty in the power estimation. As far as the bases are concerned, the objective is to establish a limit at 30 percent. It would seem the TS Bases should not be changed here. Please explain the proposed change.

4. Please show that the margin between each proposed AV and the corresponding Analytical Limit (AL) is adequate to include all uncertainties remaining in the instrument sensor and channel following calibration. Confirm that the AVs are not affected by the "LER Avoidance Evaluation" or by any other setpoint adjustment based upon operational considerations.

5. Calculation Section 2.2: The units for the RAM Trip Function ALs are not specified. We presume these to be %RTP. The units for the ALs for the various Trip Setpoint (SPs) are also not specified. Since the Low Trip SP values are higher than the High Trip SP values, these cannot be %RTP. Since they are above 100 percent, they cannot be %Calibrated Span. Please describe the units and scaling, and provide a brief explanation as to how the associated trip signals are derived. For example: Is there a separate comparator for each of the three neutron monitors, with one of the three comparators enabled on the basis of power level? Is there just one comparator with analog input selected from among the three neutron monitors on the basis of power level?

6. Calculation Section 2.2 note "**": The TSs show the limit as 90 percent, not 89 percent. Please explain.

7. Calculation Section 2.2 note "**": There appears to be missing text between the final two lines. Please clarify.

8. Calculation Section 2.2 note "***": TS Table 3.3.2.1-1 Function 1e, Condition e, indicates that an MCPR limit (less than 1.7) does apply to the Downscale Trip Setpoint. Please resolve this apparent conflict between the calculation and the T.S.

9. Calculation Assumption 3.2: Please justify the claim that seismic effects are insignificant. Note that the zero period acceleration (ZPA) is a property of the mounting location, not of the device itself; and must be at least equal to the floor ZPA, which is likely greater than the ground ZPA. It is not clear that this is an inconsequential value.

10. Calculation Assumption 3.3: Uncertainties are usually two-sigma values. The assumption that the standard deviation is only 1/3 – rather than 1/2 – of the uncertainty seems non-conservative. This is especially true since the accuracy of the calibration standard is assumed to be only as good as the test equipment that it is used to calibrate. In addition, it is not clear how the fact that "100 percent testing" is implemented relates to the question of whether the associated uncertainties are two-sigma or three-sigma values. Please clarify and justify Assumption 3.3.

11. Calculation Assumption 3.9: The important quantity is the expected variation in current with the design basis variation in voltage, not necessarily just a 1 percent variation in

voltage. Is this effect not already addressed in the overall accuracy specification for the detection system?

12. Calculation Assumption 3.11: This addresses a fundamental design issue that seems too important to be covered in an assumption, and it begs the question of why such an assumption should be required. Is the installed equipment the same as that originally provided by General Electric or not? If it is not actually the same equipment, in what sense is it "the same?" Why is the calculation not simply based explicitly upon the actually-installed equipment?

13. Calculation Assumption 3.14: Please show that the temperature and humidity effects are negligible, based upon the design conditions at the equipment locations and upon the anticipated limiting effects of temperature and humidity upon the equipment.

14. Calculation Assumption 3.16: Flow element uncertainty would normally be expressed in terms of uncertainty in the differential pressure produced for a given flow rate. The actual flow measurement uncertainty includes uncertainty in the measurement of that differential pressure as well as in the behavior of the venturi itself. Please confirm that the assumed 2 percent uncertainty is the composite flow measurement channel uncertainty, not just the element uncertainty. Please explain how the uncertainty in this specific application is known to be bounded by the analyses in the referenced documents.

15. Calculation Assumption 3.18: Please clarify. The uncertainty in the output of the summer would be equal to the combination of the uncertainties in the input signals combined with the additional uncertainty introduced by the summer itself. It is not clear that the summer uncertainty is included here.

16. Calculation Assumption 3.20: Show that the design basis limits on control room temperature are bounded by the temperature variation assumed in the derivation of the accuracy specification.

Cooper Nuclear Station

cc:

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