

December 22, 2004

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

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT RE: REVISE  
TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT 3.3.2.1.4 AND  
TABLE 3.3.2.1-1 (TAC NO. MC0629)

Dear Mr. Edington:

The Commission has issued the enclosed Amendment No. 208 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated August 25, 2003, as supplemented by letters dated October 31, 2003, and March 9, September 28, and November 5, 2004.

The amendment would revise TS Surveillance Requirement 3.3.2.1.4 and TS Table 3.3.2.1-1 to correct mathematical symbols and use allowable values in the place of analytical limits.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

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

Enclosures: 1. Amendment No. 208 to DPR-46  
2. Safety Evaluation

cc w/encls: See next page

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ACCESSION NO: ML043630055

\*No substantive changes

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NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 208

License No. DPR-46

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Nebraska Public Power District (the licensee) dated August 25, 2003, as supplemented by letters dated October 31, 2003, and March 9, September 28, and November 5, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. DPR-46 is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendix A, as revised through Amendment No. 208, are hereby incorporated in the license. The Nebraska Public Power District shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Michael K. Webb, Acting Chief, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 22, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 208

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

Replace the following pages of the Appendix A Technical Specifications with the enclosed revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.3-17  
3.3-19

INSERT

3.3-17  
3.3.19

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 208 TO

FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By application dated August 25, 2003 (ADAMS Accession No. ML032450514), as supplemented by letters dated October 31, 2003, and March 9, September 28, and November 5, 2004 (ADAMS Accession Nos. ML033160158, ML040720323, ML042780489, and ML043140195), Nebraska Public Power District (the licensee), requested changes to the Technical Specifications (TSs) for Cooper Nuclear Station (CNS). The supplemental letters dated October 31, 2003, and March 9, September 28, and November 5, 2004, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 30, 2003 (68 FR 56344).

The proposed changes would revise the TS Surveillance Requirement 3.3.2.1.4 and TS Table 3.3.2.1-1 to correct mathematical symbols and use allowable values in the place of analytical limits. Allowable values are based on calculations which account for rod block monitor (RBM) system setpoint margins and instrument calibration tolerances/deviations. Analytical limits are used as part of the calculations which derive the allowable values. Design documentation includes the application of rigorous and conservative setpoint methodologies. Therefore, the licensee states that the proposed TS change will facilitate use of the allowable values for a closer alignment to the RBM nominal trip setpoints with consideration for instrument calibration tolerances and correction of the mathematical symbol errors. The licensee additionally asserts that the proposed TS change does not revise or invalidate any of the existing RBM analytical limits, allowable values, or trip setpoints.

Specifically, the proposed changes would revise the limiting power level for each of the five RBM functions, to ensure that the proper function is in effect for each power level. The TSs are revised to account for uncertainties in the determination of power level, to ensure that the more conservative condition is in effect in the neighborhood of each transition. The power limits assumed in plant analyses are not changed. The TSs are specified so that those limits are not violated.

The setpoints in question for this request are those against which the current power level is evaluated. The RBM setpoints, those by which rod block decisions are made directly, are not addressed in this request. Those setpoints have already been determined and they are programmed according to power level. The setpoints in question govern the transitions in that program.

The supplemental letters addressed requests for additional information from the staff. The March 9, 2004, supplemental letter resulted in a clarification that eliminated one of the proposed changes to the TS Bases (page B3.3-45). The licensee originally proposed changing the 30 percent limit to 27.5 percent, which was recognized as incorrect because the bases are intended to show the objective of the TSs and not the TSs themselves. The TS limit of 27.5 percent is established to ensure that the 30 percent limit is not violated. Additional changes in the supplemental letters to the allowable value calculation are all minor clarifications and do not affect the results of the calculations.

The licensee has established a minimum critical power ratio (MCPR) of 1.32 for the fuel, and has based the RBM setpoints on a presumed MCPR of 1.30. Since the proposed settings are based upon a lower MCPR than is expected to be afforded by the fuel (i.e., the settings presume that the fuel will be closer to critical boiling than it is actually expected to be), the resulting settings are conservative. If a later core design results in a fuel MCPR less than 1.30, then the settings will need to be changed accordingly. Such future considerations are not within the scope of this safety evaluation (SE). This SE addresses the acceptability of the instrumentation aspects of the proposed TS amendment for this modification.

## 2.0 REGULATORY EVALUATION

The staff's SE of the proposed changes is based upon the following:

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36(c)(2)(ii), under "Technical Specifications," provides a list of criteria which establish TS limiting conditions for operation of a nuclear reactor. In particular, 10 CFR 50.36(c)(2)(ii)(C) specifies: "A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier." The RBM system prevents exceeding thermal hydraulic limits in a local region of the core due to a single rod withdrawal error from a limiting control rod pattern. Therefore, it falls under the jurisdiction of the aforementioned CFR criterion. The staff reviewed the amendment request to ensure that the amended TSs remained compliant to 10 CFR 50.36(c)(2)(ii).

The regulation at 10 CFR 50.36(c)(1)(ii)(A) specifies, in part, that: "Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded." In addition, 10 CFR 50.36 requires that the actuation points for instrument channels that initiate safety functions must be controlled by way of the TSs.

The regulation at 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 20 "Protection System Functions" requires, in part, that protection systems be automatically initiated so as to ensure that fuel design limits are not exceeded. It also requires that protection systems sense accident conditions and initiate the operation of systems and components important to safety.

Regulatory Guide (RG) 1.105, Revision 3 “Setpoints for Safety-Related Instrumentation,” Section C.3 interprets 10 CFR 50.36 as requiring that the limiting safety system setpoint must be specified as a TS limit. Section C.4 specifies that the allowable value is the limiting value that the setpoint must not exceed when tested periodically, that the channel must be declared inoperable when the setpoint is beyond this value, and that the TS must specify corrective action to be taken when the channel is declared inoperable.

### 3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee’s regulatory and technical analyses in support of its proposed license amendment. The staff notes that although the subject of this amendment is related to the on-going generic concern regarding instrument channel setpoints and allowable values, the calculational method used in support of the proposed amendment mitigates that concern for this particular submittal. The licensee has indicated that the margin between each proposed allowable value and the associated analytical limit is sufficient to accommodate all identified instrument channel uncertainties other than drift. No allowance for drift is needed in this context, because the test is presumed to be at the end of the test interval and so whatever drift may be applicable will have already occurred. The adequacy of this margin is at the crux of the staff’s concerns, and the licensee’s statement indicates that the margin is adequate. Nevertheless, the licensee may be subject to further actions in the future when the generic concern is resolved.

The licensee has evaluated the uncertainties associated with each of the RBM channels, and has proposed limiting RBM setpoints to values sufficiently conservative to ensure that the RBM transitions among power ranges occur at actual power levels that are conservative relative to the analytical limits. The licensee indicates that it is conservative to apply the setpoint of the next higher region, rather than the setpoint from the region below that of the actual power level. The allowable values and associated setpoint limits are as follows:

<u>Power Range</u>	<u>Analytical Limit</u>	<u>Allowable Value*</u>
Low Power	30% RTP	27.5% RTP
Intermediate Power	65% RTP	62.5% RTP
High Power	85% RTP	82.5% RTP

\*The measured/indicated setting must be less than or equal to this value.

Thus, even if the power level is underestimated due to instrument channel uncertainties, the transition to the RBM setpoint associated with the next-higher power range will always (within acceptable statistical limits) occur before the actual power level exceeds the applicable analytical limit. An actual power level just slightly above the analytical limit at the lower end of one of these power ranges will, even if it is underestimated by the full channel uncertainty, result in an estimated power level in excess of the associated allowable value and therefore the correct power range will be in force.

The licensee stated that the analytical limits for the RBM are not affected by the proposed TS change. Additionally, the licensee stated that the proposed change to the mathematical symbol configuration will provide for an accurate, clear separation of power range upscale trip functions



and alignment with the allowable values for the power ranges at which the RBM upscale trips are in effect. The licensee's proposed revision provides for the low power setpoint (LPSP) to be in effect from  $\geq 27.5$  percent rated thermal power (RTP) to  $< 62.5$  percent, the intermediate power setpoint (IPSP) to be in effect from  $\geq 62.5$  percent to  $< 82.5$  percent, and the high power setpoint (HPSP) to be in effect from  $\geq 82.5$  percent with no peripheral control rod selected. The allowable values are based on calculations which account for setpoint margins and instrument calibration tolerances/deviations.

The licensee identified the mathematical symbol errors during a Design Basis Information/Licensing Basis Information Translation Project. The licensee stated that symbol errors cause the IPSP upscale trip to be in effect at the analytical limit, and do not require the HPSP upscale to be in effect at the analytical limit. The current TS allows the Low Power Upscale trip to be in effect when RTP is 65 percent, while the IPSP analytical limit requires the Intermediate Power Upscale trip to be in effect at 65 percent RTP, and the TS allows the Intermediate Power Upscale trip to be in effect when RTP is 85 percent while the HPSP analytical limit requires the High Power Upscale trip to be in effect at 85 percent RTP.

The licensee performed the setpoint calculations in accordance with CNS Engineering Procedure 3.26.3, "Instrument Setpoint and Channel Error Calculation Methodology," which is based upon topical report NEDC-31336P-A, "General Electric Instrument Setpoint Methodology." The licensee established allowable values from each design or safety analysis limit by combining the errors associated with channel and instrumentation calibration with the calculated nominal trip setpoint using CNS Instrument Setpoint methodology. As a result, the licensee asserts that the allowable values will not exceed design basis and associated safety limits during plant operation.

Using the CNS Engineering Procedure 3.26.3 and CNS Calculation No. 98-024, "APRM - RBM Setpoint Calculation," provided in the October 31, 2003, submittal, the NRC Staff was able to independently verify the application of methodology used by the licensee in calculating the allowable values. Additionally, the NRC staff verified that the licensee used the analytical limits as part of the calculations that derive the allowable values. The licensee did not modify the existing analytical limits, allowable values, or trip setpoints with this proposed TS.

The NRC staff has reviewed the proposed revisions to the TS mathematical symbols and the incorporation of allowable values in place of the analytical limits. The NRC staff finds that the proposed TS changes are acceptable, since they do not adversely affect the RBM system or prevent mitigation of a design basis accident or transient, pursuant to 10 CFR 50.36(c)(2)(ii)(C), 10 CFR 50.36(c)(1)(ii)(A), GDC 20, and RG 1.105. The licensee's proposed changes to the CNS TSs correct the mathematical symbols for the RBM LPSP, IPSP, and HPSP; clarify the power ranges at which the RBM upscale trips are in effect; and incorporate the use of allowable values in place of analytical limits. On the basis of the above regulatory and technical evaluations of the licensee's justifications for TS changes, the staff concludes that the licensee's proposed TS changes are acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Nebraska State official was notified of the proposed issuance of the amendment. The State official had no comments.

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published September 30, 2003 (68 FR 56344). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: December 22, 2004

Cooper Nuclear Station

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