

July 22, 2002

Mr. David L. Wilson
Vice President of Nuclear Energy
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT RE: CHANGES
TO TECHNICAL SPECIFICATIONS 3.7.2 AND 3.7.3 FOR ULTIMATE HEAT
SINK AND EQUIPMENT COOLING WATER TEMPERATURES
(TAC NO. MB5123)

Dear Mr. Wilson:

The Commission has issued the enclosed Amendment No. 193 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station (CNS). The amendment consists of changes to the CNS's Technical Specifications (TSs) 3.7.2 and 3.7.3 regarding temperature limits for ultimate heat sink (UHS) and reactor equipment coolant (REC) water.

By letter dated May 20, 2002, as supplemented by letters dated June 19, July 3 (2 letters), and July 12, 2002, Nebraska Public Power District (NPPD), the licensee, requested changes to TSs Section 3.7.2, "Service Water (SW) System and Ultimate Heat Sink (UHS)," and Section 3.7.3, "Reactor Equipment Cooling (REC) System."

By letter dated June 19, 2002, the licensee requested that its request dated May 20, 2002, be processed exigently. The licensee provided the following two-fold rationale for exigent processing of its request: (1) NPPD determined that an exigent review is warranted due to lower than expected river flows resulting from drought conditions and low upstream reservoir levels; and (2) it understood that a 30-day public comment period requirement would push the earliest date for issuance of an amendment to July 25, 2002. The licensee concluded that a combination of natural phenomena and the standard regulatory process for providing 30 day prior public comment period could result in an unwanted plant shutdown.

The NRC staff determined that for safe continued operation of CNS, the licensee and the Commission must act quickly, and time does not permit the Commission to wait for the 30 day period for prior public comment. Accordingly, the staff issued an exigent notice on June 24, 2002, for a 14 day prior public comment according to its process outlined in 10 CFR 50.91(a)(6).

The notice was published in the *Federal Register* on June 28, 2002 (67 FR 43688), the exigency requirement of 14 days of prior public comment period ended on July 12, 2002. No public comments were received.

D. Wilson

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A copy of our related safety evaluation is also enclosed. The Notice of Issuance is being published in *the Federal Register*.

Sincerely,

/RA/

Mohan C. Thadani, Senior 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. 193 to DPR-46
2. Safety Evaluation

cc w/encls: See next page

D. Wilson

- 2 -

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Mohan C. Thadani, Senior Project Manager, Section 1
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NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 193
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 May 20, 2002, as supplemented by letters dated June 19, July 3 (2 letters), and July 12, 2002, 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. 193, 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 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by William D. Reckley for/

Robert A. Gramm, 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: July 22, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 193

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

3.7-4
3.7-7
B 3.7-7
B 7.7-13

INSERT

3.7-4
3.7-7
B3.7-7
B 7.7-13

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 193

TO FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

In a letter dated May 20, 2002, the Nebraska Public Power District (NPPD or the licensee), requested Nuclear Regulatory Commission (NRC) approval to increase the cooling water temperature limits of Technical Specification (TS) 3.7.2, "Service Water (SW) System and Ultimate Heat Sink (UHS)," and TS 3.7.3, "Reactor Equipment Cooling (REC) System." The amendment request would increase the UHS temperature limit from 90 °F to 95 °F, and increase the REC system temperature limit from 95 °F to 100 °F. The licensee provided additional information in response to questions that were asked by the NRC in letters dated June 19, July 3 (2 letters), and July 12, 2002. The supplemental information did not expand the application beyond the scope of the *Federal Register* notice or affect the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

The Missouri River is the UHS for the Cooper Nuclear Station (CNS). NPPD has noted that the temperature of the river has been slowly trending upward since 1994. During recent summers, the temperature has increased to very near the current limit of 90 °F. In addition to this, the U.S. Army Corps of Engineers is considering various alternatives for managing the flow of the Missouri River. Several of the alternatives under consideration would result in reduced river flow during the summer months, which would tend to make the situation worse. The licensee expects the UHS temperature limit of 90 °F to be exceeded at some time in the future, and an increase in the temperature limit is desired in order to avoid costly shutdowns of the CNS at times when electrical demands are typically at peak conditions.

Because the REC system is cooled by water from the UHS, the temperature of the REC system will increase as the UHS temperature increases. Consequently, an increase in the REC system temperature limit is also required.

NPPD has evaluated the impact of increased cooling water temperature on safety-related and on nonsafety-related equipment, as well as on plant events. The guidance provided by the following documents was also considered and implemented as appropriate:

- NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4"
- NUREG-0783, "Suppression Pool Temperature Limits for BWR Containments"
- Technical Specification Task Force (TSTF) - 330, Revision 3

3.0 TECHNICAL EVALUATION

Review of the licensee's request was focused primarily on the completeness of the evaluation that was performed by NPPD and on any significant changes that were made with respect to the analytical methodologies and assumptions that were used. Specific calculations that were completed by NPPD were not reviewed by the NRC staff, and this may be the subject of a future NRC inspection.

The licensee's evaluation, as described in the May 20 and July 3, 2002 submittals, considered the full impact of increased cooling water temperatures on plant operation and appeared to be complete in all respects. The assumptions that were used, as reflected in Table 1 of the May 20 submittal and in the response to Question 1 of the July 3 submittal, are consistent with or conservative relative to previous analyses that have been completed with the exception that reactor power was assumed to be at 102 percent instead of 104 percent. Assuming 102 percent reactor power is typical and consistent with what the NRC considers to be acceptable for design-basis applications, we consider this assumption to be acceptable. Also, use of the General Electric SHEX computer program for evaluating the long-term design basis loss-of-coolant accident (LOCA) analysis has been accepted previously by the NRC for this type of analysis at other facilities and its use at CNS is acceptable to the staff. Performance testing of the REC and residual heat removal (RHR) heat exchangers in accordance with GL 89-13 program requirements assure that the heat transfer capabilities of these heat exchangers are maintained consistent with the assumptions that were used in the licensee's evaluation. Periodic inspection and cleaning of the emergency diesel generator heat exchangers, trending of data, and engineering assessment are relied upon to assure that heat transfer assumptions remain valid for the emergency diesels. The information submitted by NPPD indicates that sufficient margin is available to support the requested increase in cooling water temperature limits.

Based on the evaluation results, NPPD determined that it was necessary to revise the environmental qualification (EQ) temperature profile to encompass the higher drywell temperatures that could be experienced following postulated accident conditions. The qualification packages of affected components were reviewed and adjustments were made as appropriate to account for the slightly higher temperatures that could be experienced. It is also our understanding that:

- The proposed increase in cooling water temperature limits will not cause containment or equipment design limitations to be exceeded during normal plant operation or during postulated event scenarios, and the effects on long-term containment cooling are inconsequential.

- Reanalysis of the Appendix R Safe Shutdown capability indicates that cold shutdown is achieved in less than 20 hours for the most limiting case, which is well within the 72 hour regulatory requirement.
- The shutdown cooling mode of RHR remains capable of bringing the plant to Mode 4 well within the 36 hour time limit required by TS 3.7.2, Condition B.
- The proposed increase in cooling water temperature limits will result in slightly higher equipment operating temperatures for nonsafety-related equipment, but these slight increases will have no adverse effects which would result in a plant shutdown.

In order to assure that the proposed cooling water temperature limits are not exceeded, the licensee will account for measurement uncertainties when completing the required periodic surveillances in accordance with procedural requirements. Based on our review and understanding of the information that was provided, we agree that the requested increase in cooling water temperature limits will not adversely affect the performance of plant equipment, and that public health and safety will not be degraded by this action. Therefore, the proposed increase in cooling water temperature limits should be approved.

The licensee has provided revised TS pages 3.7-4, and 3.7-7, reflected the proposed increased limits of UHS and REC water temperatures. The proposed changes are acceptable. The licensee has also provided updated bases pages B 3.7-7 and B 7.7-13 reflecting the UHS and REC water temperatures limit changes. The revised bases pages should be incorporated in the Bases of the TS.

We recognize that implementation of this amendment is contingent upon issuance of another amendment in response to a separate submittal dated July 30, 2001. In that submittal, NPPD requested NRC approval to: (a) change the licensing basis for crediting containment overpressure for satisfying emergency core cooling system pump net positive suction head requirements, and (b) eliminate the local suppression pool temperature limit. The licensee's request with respect to these actions was not included within the scope of this evaluation, but has been addressed in a separate evaluation under Amendment No. 192, dated July 19, 2002.

4.0 EXIGENT CIRCUMSTANCES

By letter dated June 19, 2002, the licensee requested that its request dated May 20, 2002, be processed exigently. The licensee provided the following two-fold rationale for exigent processing of its request: (1) NPPD determined that an exigent review is warranted due to lower than expected river flows resulting from drought conditions and low upstream reservoir levels; and (2) it understood that a 30-day public comment period requirement would push the earliest date for issuance of an amendment to July 25, 2002. The licensee concluded that a combination of natural phenomena and the standard regulatory process for providing 30 day prior public comment period could result in an unwanted plant shutdown.

The NRC staff determined that for safe continued operation of CNS, the licensee and the Commission must act quickly; and, due to the increasing Missouri River temperatures, time does not permit the Commission to wait for the 30 day period for prior public comment.

Accordingly, the staff issued an exigent notice on June 28, 2002, for a 14 day prior public comment according to its exigent process outlined in 10 CFR 50.91(a)(6).

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

Pursuant to 10 CFR 50.91(a)(6), for amendments to be granted under exigent circumstances, the NRC staff must determine that the amendment request involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The effects of the proposed increase in the SW and REC water temperatures on the likelihood of postulated accidents have been considered. These temperature parameters are not precursors or initiators of any analyzed Design-Basis Events (DBEs). Furthermore, there are no plant hardware changes or new operator actions associated with this proposed change that could serve to initiate a DBE. Accordingly, there is no increase in the probability of an accident previously evaluated.

The potential impact of the proposed increase in the SW and REC temperatures on the ability of the plant to mitigate postulated accidents has been analyzed by the licensee. This includes analysis of the following fourteen (14) areas: (1) the ability of the containment to provide adequate long-term (greater than 10 minutes) cooling following a design basis LOCA; (2) the ability to safely shutdown the plant from outside the control room after a fire; (3) the ability of the plant to mitigate an Anticipated Transient Without Scram event; (4) the adequacy of the water source at the suction of the ECCS pumps [i.e., the availability of adequate NPSH]; (5) the ability of the suppression pool to provide a source of water for the ECCS pumps without allowing ingestion of steam bubbles by the pumps; (6) small steam line break; (7) diesel generator cooling; (8) ability of SW to remove heat from REC and ability of REC to provide ECCS area cooling; (9) SW as a source of backup water to REC; (10) ability to meet requirements of EQ of electrical equipment; (11) the adequacy of the water source (i.e., availability of adequate NPSH) at the suction of the SW and REC pumps; (12) impact on ECCS piping; (13) impact on the seals in the RHR and Core Spray pumps; and (14) common mode failure analysis on SW pump room maximum allowed temperature. Based on the above analyses, the licensee concluded the following:

- (a) These analyses demonstrate that adequate cooling can be achieved and postulated accidents can be properly mitigated with the SW and REC systems at the proposed increased temperatures. In some analyzed accidents the proposed increased SW and REC temperature limits result in a minimal increase in the temperature of the suppression pool. However, the resulting temperature is less than the containment design temperature specified in the updated safety analysis report [USAR].
- (b) The calculation of dose consequences reflected in the USAR does not utilize SW or REC temperature as inputs. Therefore, these dose consequences are not impacted by the increased SW and REC temperature limits.

Based on its technical evaluation presented above (Section 3.0), the NRC staff confirms that the proposed increased temperature limits do not involve a significant increase in the probability or consequences of an accident or transient previously evaluated in the safety analysis report.

The licensee stated that the increased limits do not introduce any new mode of plant operation and will not result in a change to the design function or the operation of any structure, system, or component (SSC) that is used for mitigating accidents. The proposed increases in the temperature limits do not result in any credible new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing bases. An increase in the maximum allowable cooling water temperature does not introduce new failure mechanisms for any SSC evaluated in the safety analysis report.

Based on its technical evaluation above (Section 3.0), the NRC staff confirms that the proposed changes do not create the possibility of a new or different kind of accident or transient from any previously evaluated.

The licensee determined that the proposed changes do not involve a significant reduction in the margin of safety. The UHS/SW System and the REC System temperatures are input assumptions for analyzing mitigation of the design-basis accidents, and are utilized to verify adequate cooling capability without quantifying system design capability limits. The ability of the SW and the REC systems to provide adequate cooling and proper mitigation of accident consequences at the proposed increased temperature have been evaluated. These evaluations have demonstrated that the proposed increased cooling water temperatures do not have a significant impact on the capability of the affected systems to perform their safety-related post-accident cooling functions and to mitigate accident consequences.

The safety margins related to containment pressure and temperature later than 10 minutes following a LOCA were shown to experience limited reductions with the increased SW and REC temperatures. However, both of these parameters continue to have sufficient resulting margin to the design pressure and temperature.

The operating license specifies safety limits involving reactor power level with pressure and flow below specified values, critical power ratio, water level in the reactor pressure vessel, and reactor coolant system (RCS) pressure. The SW and REC systems have safety functions that are related to cooling of various essential (safety-related) components for accident mitigation. The proposed increases in the license limits for UHS and REC temperature will not have any impact on reactor power, critical power ratio, reactor vessel water level, or RCS pressure.

Based on its technical evaluation presented above (Section 3.0), the NRC staff confirms that the margins of safety are not significantly reduced by the proposed TS changes.

The NRC staff concludes that, as required by 10 CFR 50.91(a), the proposed TS changes satisfy the three standards of 10 CFR 50.92(c). Accordingly, the NRC staff has determined that the proposed amendment involves no significant hazards considerations.

6.0 STATE CONSULTATION

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

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes the operational limits and surveillance requirements with respect to the 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 June 28, 2002 (67 FR 43688). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Part 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.

8.0 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.

Principal Contributor: James Tatum

Date: July 22, 2002

Cooper Nuclear Station

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