



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated June 28, 1995, Nebraska Public Power District (the licensee) submitted a request for changes to the Cooper Nuclear Station (CNS), Technical Specifications (TS). The requested changes would increase the required reactor pressure vessel (RPV) boron concentration, modify the surveillance frequency for the standby liquid control (SLC) system pump operability testing to make it consistent with the guidelines of NRC Generic Letter (GL) 93-05, and implement administrative changes to correct typographical and editorial errors.

Specifically, the following changes to the CNS TS have been requested:

1. TS Page 107:
  - a. The term "availability" is replaced with "OPERABILITY" or "operation" as applicable.
  - b. Limiting Condition for Operation (LCO) 3.4.A, Normal System Operation, is renumbered as 3.4.A.1.
  - c. The frequency of surveillance requirement 4.4.A.1 is revised per GL 93-05 to a three month periodicity.
  - d. Surveillance requirement 4.4.A.2.c is moved to page 108.
2. TS Page 108:
  - a. In surveillance requirement 4.4.A.2.c, the word "loop" is replaced by "subsystem."
  - b. All of LCO 3.4.C and surveillance requirement 4.4.C are moved to page 109.
3. On TS Page 109, "liquid control tank" is replaced by "SLC Storage Tank" in LCO 3.4.C.1.

4. TS Bases Page 110:

- a. In the first paragraph of 3.4.A, "the reactor core" is changed to "the reactor pressure vessel," the system boron injection concentration in RPV is changed to 660 parts per million (ppm), "liquid control tank" is changed to "SLC storage tank," and "full power" is changed to "RATED POWER." For consistency with the LCOs, the word "squibb" is replaced with "explosive."
- b. In the second paragraph of 3.4.A, "via the Plant Nuclear Safety Operational Analysis (Appendix G)" is changed to "in Limiting Conditions for Operation."
- c. The last three sentences of the Bases in 3.4.B have been changed to reflect the appropriate justification for allowable out of service time of seven days in case one SLC subsystem is inoperable.
- d. Section 3.4.C is moved to page 111.

5. TS Bases page 111:

- a. The second and third paragraphs of Bases 3.4.C are combined. The minimum quantity of 16 percent solution required in the SLC storage tank needed to achieve 660 ppm in the RPV is changed to 3132 gallons; "66 gpm at 13 weight percent" is changed to "66 gpm of 13 weight percent," and "SLC" is changed to "SLC system."
- b. In the first paragraph of Bases 4.4 the monthly test of the SLC pumps is changed to testing once each three months consistent with the changes to surveillance requirement 4.4.A.1. In the second paragraph, references to CNS Final Safety Analysis Report (FSAR) sections are changed to the corresponding CNS Updated Safety Analysis Report (USAR) sections.

6. Figure 3.4.1, Sodium Pentaborate Solution Volume-Concentration Requirements, are revised for the increased minimum concentration required to achieve 660 ppm in the RPV. The overflow volume of the Storage Tank has also been recalculated to be 4565 gallons.

7. The following administrative changes are requested to correct typographical and editorial errors:

- a. On page i, "Normal Operation" is changed to "Normal System Operation" and the page number for Sodium Pentaborate Solution is changed from 108 to 109.
- b. On page 6, the missing words "LIMIT" and "Switch" are being added to specifications 1.1.A and 2.1.A.1.a.(1) respectively as an editorial change. "Thermal" is deleted in 2.1.A.1.a.(1);  $\leq 800$  psia in 1.1.B is changed to  $< 800$  psia. All defined terms on this page are capitalized.

- c. On page 12, in the second paragraph of the Bases 1.1.C, a typographical error in the spelling of "normally" is corrected. Also, "Cooper" is expanded to "Cooper Nuclear Station." The word "tHe" is corrected to "the." All defined terms on this page are capitalized.
- d. On page 30, in the notes for Table 3.1.1, the following changes are being made:
- In Action Statement 1.B, "POWER" has been added;
  - In Action Statement 1.C, 8 has been spelled out as "eight";
  - Action Statement 1.D, "Reduce turbine load and close Main Steam Isolation Valves," is being added. This action statement was deleted in error by Proposed Change Number 17.
  - In Action Statement 7, trip functions a, b, c, and d have been replaced by A, B, C, and D respectively; in Action Statement 7.a, "Mode switch" has been replaced by "Reactor Mode Selector Switch";
  - In Action Statement 7.C, "at" has been inserted;
  - In Action Statement 9, "to be operable" has been inserted;

All defined terms on this page are capitalized.

8. On page 77, the surveillance requirement on Table 4.2.C to test the rod block caused when bypassing the Rod Sequence Control System (RSCS) is being deleted. This deletion was inadvertently omitted in the Proposed Change Number 86. All defined terms on this page are capitalized.
9. On page 152, in the second paragraph of Bases 3.6.H and 4.6.H, the referenced specification is changed from "3.6.H.4" to "3.6.H.3." This specification was renumbered in 1985 by Amendment 92, but the specification number referenced in the Bases was not updated. Also, all defined terms on this page are capitalized, and in the first paragraph, "reactor operation" is changed to the defined term "REACTOR POWER OPERATION."

## 2.0 EVALUATION

### 2.1 Increase in RPV Boron Concentration

The CNS SLC system is currently designed to inject a quantity of boron solution such that a concentration of 600 ppm in the RPV is reached in less than 125 minutes. The boron concentration of 600 ppm ensures the capability to shut down the reactor from full power to a 3 percent  $\Delta k$  subcritical xenon-free cold shutdown condition (per CNS USAR, Chapter 3, Section 9.4) assuming none of the withdrawn control rods can be inserted.

General Electric has recommended in Service Information Letter (SIL) No. 325, a concentration of 660 ppm boron as the minimum bounding concentration of natural boron in the RPV for high energy 18-month cycles and/or equilibrium fuel loadings. Therefore, to avoid having to reduce the core exposure window for future fuel cycles, CNS is proposing to raise the boron concentration in the RPV to 660 ppm from 600 ppm. TS Figure 3.4.1, Sodium Pentaborate Solution Volume-Concentration Requirements, is being revised for the increased minimum concentration required to achieve 660 ppm in the RPV. The licensee has recalculated the overflow volume of the Storage Tank to be 4565 gallons (Nuclear Engineering Design Calculation NEDC 93-142). The values of the curve in Figure 3.4.1 from 11.5 to 16 weight percent sodium pentaborate solution are:

<u>Concentration (Weight %)</u>	<u>Net Volume (Gallons)</u>
11.5	4414
12.0	4223
13.0	3887
14.0	3599
15.0	3350
16.0	3132

The proposed change to increase the required boron concentration from 600 ppm to 660 ppm ensures that a minimum 3 percent  $\Delta k$  xenon-free cold shutdown margin will be maintained for future core reloads, and is therefore acceptable.

## 2.2 Proposed Changes in accordance with GL 93-05

As a part of the NRC Technical Specifications Improvement Program, the staff published NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," in December 1992. GL 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," issued guidance to assist licensees in preparing license amendment requests to implement these recommendations as line-item TS improvements. GL 93-05 recommends two changes to the SLC system TS for Boiling Water Reactors. The first is that the TS surveillance test of pumping demineralized water into the reactor pressure vessel be performed at a frequency once each refueling outage and that both SLC subsystems be tested in any two consecutive refueling outages. CNS TS already conform to the intent of this recommendation in surveillance requirements 4.4.A.2.c and 4.4.A.2.d.

The second recommendation of GL 93-05 is that the SLC pump operability test frequency should be performed quarterly in agreement with the American Society of Mechanical Engineers (ASME) Code. This recommendation will be implemented by revising the surveillance frequency for testing each SLC subsystem specified in surveillance requirement 4.4.A.1 from each month to each three months. The licensee indicated that no problems have been identified in SLC pump performance, based on a review of surveillance data collected since 1974. The licensee has complied with the guidance provided in GL 93-05 and the changes to TS 4.4.A.1 are acceptable.

### 2.3 Changes to Bases Sections 3.4 and 4.4

The Bases Sections 3.4 and 4.4 are being modified to reflect the changes in the boron injection concentration in the RPV identified in 2.1 above. In addition, Bases Sections 3.4 and 4.4 are being modified to reflect wording that is consistent with the limiting conditions for operation or wording that clarifies the intent of the TS section. These changes are acceptable as they only provide an explanation for the changes that are being made to the TS discussed above.

### 2.4 Administrative Changes

The remaining changes as described in Section 1.0 above are being made to correct typographical and editorial errors and to clarify terms being used to make the TS wording more consistent. These changes are administrative in nature in that they are consistent with the intent of the present TSs and are acceptable.

### 3.0 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 comment.

### 4.0 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 and changes surveillance requirements. 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 (60 FR 39441). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 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.

### 5.0 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: November 8, 1995