July 26, 1999

Mr. G. R. Horn
Sr. Vice President of Energy Supply
Nebraska Public Power District
1414 15th Street
Columbus, NE 68601

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT RE: AVERAGE POWER RANGE MONITOR (APRM) NEUTRON FLUX-HIGH (FLOW BIASED) CHANNEL CALIBRATION FREQUENCY (TAC NO. MA4882)

Dear Mr. Horn:

The Commission has issued the enclosed Amendment No. 179 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station. The amendment consists of changes to the Technical Specifications in response to your application dated March 1, 1999, as supplemented by letters dated March 10, June 8, and June 23, 1999.

The amendment changes the calibration interval for the recirculation loop flow transmitters from 184 days to 18 months. These flow transmitters provide input to the flow-biased APRM reactor trip instrumentation.

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,
Original signed by:

Lawrence J. Burkhart, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosures: 1. Amendment No. 179 to DPR-46
2. Safety Evaluation

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

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Office of Nuclear Reactor Regulation

Docket No. 50-298

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2. Safety Evaluation

cc w/encls: See next page

Cooper Nuclear Station

cc:

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

NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 179
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 March 1, 1999, as supplemented by letters dated March 10, 1999, June 8, 1999, and June 23, 1999, 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.

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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. 179 , are hereby incorporated in the license. The licensee 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

Robert A Gramm

Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 26, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 179

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	Insert
3.3-4	3.3-4
3.3-6	3.3-6

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR 3.3.1.1.6	----------NOTE---------- Only required to be met during entry into MODE 2 from MODE 1. ---------- Verify the IRM and APRM channels overlap.	7 days
SR 3.3.1.1.7	Adjust the channel to conform to a calibrated flow signal.	31 days
SR 3.3.1.1.8	Calibrate the local power range monitors.	1000 MWD/T average core exposure
SR 3.3.1.1.9	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.1.1.10	----------NOTES---------- 1. Neutron detectors and recirculation loop flow transmitters are excluded. 2. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL CALIBRATION.	184 days

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux — High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.5 SR 3.3.1.1.6 SR 3.3.1.1.12 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 121/125 divisions of full scale
	5[a]	3	H	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.12 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 121/125 divisions of full scale
b. Inop	2	3	G	SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.13	NA
	5[a]	3	H	SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.2.2.13	NA
2. Average Power Range Monitors					
a. Neutron Flux — High (Startup)	2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 14.5% RTP
b. Neutron Flux-High (Flow Biased)	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.12 SR 3.3.1.1.13 SR 3.3.1.1.15	≤ 0.58 W + 61.0% RTP and ≤ 119.0% RTP[b]

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) 0.58 W + 61.0% - 0.58 ΔW RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating."

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 179 TO FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letters dated March 1, 1999 (Reference 1) and June 23 , 1999 (Reference 2), Nebraska Public Power District (NPPD, the licensee) requested an amendment to the Technical Specifications (TSs) appended to Facility Operating License No. DPR-46 for the Cooper Nulcear Station (CNS). The proposed change to the TSs would revise the channel calibration interval of the recirculation loop flow transmitters from the current 184-day interval to an 18-month interval (refueling outage). The recirculation loop flow transmitter provides flow bias to the Average Power Range Monitors (APRMs) for Hi-Flux reactor trip and Surveillance Requirement (SR) 3.3.1.1.10 requires calibration of both instruments (the APRMs and the flow transmitters) on a 184-day interval.

CNS was licensed with the calibration interval of once per refueling outage for both the APRMs and recirculation loop flow transmitters. When CNS TSs were converted to new improved Standard Technical Specifications (iSTS) in August 1998, the calibration intervals for both functions were changed to 184 days in accordance with the standard. The proposed change revises the flow transmitters calibration frequency to once every 18 months, which will permit the flow transmitters calibration to be performed during a refueling outage.

The current TS SR for the flow-biased APRM instrumentation (SR 3.3.1.1.10) includes within its scope the calibration of the APRMs and the associated recirculation loop flow transmitters on a 184-day interval. This SR has a note to exclude the neutron detectors from the calibration requirement. The proposed TS change adds flow transmitters in the exclusion note of SR 3.3.1.1.10 and adds SR 3.3.1.1.12 to the list of applicable SRs to flow-biased APRM SRs in the reactor protection system (RPS) instrumentation Table 3.3.1.1-1. SR 3.3.1.1.12 requires calibration of the applicable instrumentation channels at an 18-month interval.

The licensee submitted a copy of calculation No. 98-024, "APRM-RBM Setpoint Calculation" by letter dated March 10,1999 (Reference 3). Following review of the licensee's submittals, the staff requested additional information by letter dated May 17, 1999 (Reference 4). The licensee responded by letter dated June 8, 1999 (Reference 5), in which the licensee provided an 8 year's record of the site-specific recirculation loop flow transmitters drift data and provided additional information regarding the flow transmitters setpoint calculations.

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The March 10, June 8, and June 23, 1999, letters provided additional clarifying information and updated TS pages. This information was within the scope of the original *Federal Register* notice and did not change the staff's initial proposed no significant hazards consideration determination.

2.0 EVALUATION

Calibration of an instrumentation channel is defined as an adjustment of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. It is a complete check of the instrument loop and the sensor, and leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant-specific setpoint methodology. The channel calibration encompasses the entire channel, including the sensor, alarm, display, and trip functions.

The recirculation loop flow transmitters are process sensors that provide flow bias to the APRM trip function. There are two flow transmitters in each of the two recirculation loops. One transmitter from each loop provides a trip signal to its associated flow unit. One flow unit provides trip signals to trip system "A" APRMs, while the other flow unit provides trip signals to the trip system "B" APRMs. The calibration of a flow transmitter during plant operation requires bypassing the associated flow unit for the duration of the calibration of the flow transmitter, which typically takes several hours. This results in disabling the flow-biased APRM reactor trip and requires a deliberate insertion of a half scram. Consequently, the flow transmitters calibration during plant operation (as would be required at the 184-day interval), increases the probability of an inadvertent full scram. The licensee stated in Reference 1 that this additional risk is not justified given that these transmitters are not subject to significant drift over an 18-month period. The current TS basis for the flow-biased APRM instrumentation SR (SR 3.3.1.1.10) states that the SR frequency is based upon the assumption of a 184-day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. Therefore, this unnecessary risk of an inadvertent reactor trip can be avoided if the flow transmitters are calibrated during the refueling outage and the instrumentation setpoints allowable values (AVs) include instrument drift of 18 months instead of 184 days.

The licensee performed a setpoint analysis for the flow-biased APRM and provided the results in Reference 3. In this calculation, NPPD considered a 6-month calibration interval (current TS calibration frequency) for the APRM detectors and an 18-month calibration interval for the flow transmitters. The analysis also considered a 25-percent grace period which increased the 6-month interval to 7.5 months and the 18-month interval to 22.5 months. Since General Electric Company (GE), the instrumentation supplier did not specify flow transmitter setpoint drift, the licensee derived it from the GE-specified instrument accuracy for 6 months and extrapolated the derived value for a 22.5-month interval. The instrumentation setpoint drifts, nominal trip setpoint, and the trip setpoint AVs were calculated in accordance with the staff-approved GE instrumentation setpoint methodology, NEDC-31336P-A, "General Electric Instrument Setpoint Methodology" (Proprietary information. Not publicly available.), and NRC Regulatory Guide 1.105, "Instrument Setpoints For Safety-Related Systems." The calculation results indicated that the flow-biased APRM trip setpoint AVs based on an 18-month instrument setpoint drift of the flow transmitters remained unchanged from the current TS value which is based on a 6-month drift of the flow transmitter setpoint. In Reference 5, the licensee submitted site-specific, 18-month calibration interval, instrument setpoint drift data for each of the four flow transmitters that was collected from April 1989 through November 1998

(128 months of data). This data indicated an insignificant drift of the flow transmitter setpoints during the18-month calibration interval. Based on the calculation results and the site-specific instrument setpoint drift data, the licensee stated that the expected drift of the flow transmitter setpoint is insignificant and the calculation supports a calibration interval of 18 months for the flow transmitters.

The staff audit review of the licensee's analysis indicated that the flow-biased APRM reactor trip setpoint and allowable value calculations used conservative values of instrument accuracy and error factors. The calculated AV for the flow-biased APRM setpoint is found to be the same as the current TS value. This is indicative of an insignificant effect of the change in the flow transmitters calibration interval. It is, therefore, determined that the calculation and the drift data support an 18-month calibration interval for the recirculation loop flow transmitters and the proposed TS change is found acceptable.

Based on the above review and justifications for TS changes, the staff concludes that the licensee's proposed TS revision to change the calibration interval of the recirculation loop flow transmitters, from the current requirement of 184 days to 18 months, is 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 surveillance requirement. 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 (64 FR 17027). 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.

Principal Contributor: I. Ahmed

Date: July 26, 1999

REFERENCES

1. J. H. Swailes, NPPD, letter to NRC, March 1, 1999, "Proposed Change to CNS Technical Specifications."

2. L. Newman, NPPD, letter to NRC, June 23, 1999, "Revised Technical Specification Pages."

3. L. Newman, NPPD, letter to NRC, March 10, 1999, "Submittal of Calculation NEDC 98-024."

4. L. J. Burkhart, NRC, letter to G.R.Horn, NPPD, May 17, 1999, "Request for Additional Information on CNS TS Change."

5. J. H. Swailes, NPPD, letter to NRC, June 8, 1999, "Response to Request for Additional Information."