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SEP 28 1976

Docket No. 50-298

Nebraska Public Power District
ATTN: Mr. J. M. Pilant, Director
Licensing and Quality Assurance
Post Office Box 499
Columbus, Nebraska 68601

Gentlemen:

The Commission has issued the enclosed Amendment No. 31 to Facility Operating License No. DPR-46 for Cooper Nuclear Station.

The amendment adds, to the Appendix A Technical Specifications, a temporary restriction authorizing modifications designed to improve the functioning of the Low Pressure Coolant Injection System (LPCIS) of the Emergency Core Cooling System (ECCS). This amendment is in partial response to your application for license amendment dated August 9, 1976.

Copies of the related Safety Evaluation Report and the Notice of Issuance also are enclosed.

Sincerely,

Original signed by
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:

1. Amendment No. 31 to License No. DPR-46
2. Safety Evaluation Report
3. Notice

cc w/enclosures:
See next page

OFFICE →	DOR:ORB #2	DOR:ORB #2	OELD 21	DOR:ORB #2	DOR:RS/OT	DOR:PSB/OT
SURNAME →	RMDiggs	MFletcher:ro	DSWANSEN	DLZiemann	RBAer	WButler
DATE →	9 127 76	9 127 76	9 128 76	9 128 76	9 127 76	9 128 76

September 28, 1976

cc w/enclosures:

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Auburn Public Library
118 - 15th Street
Auburn, Nebraska 68305

Mr. William Siebert, Commissioner
Nemaha County Board of Commissioners
Nebraska County Courtroom
Auburn, Nebraska 68305

cc w/enclosures and cy of NPPD
filing dtd. 8/9/76:
Mr. D. Drain, Director
Department of Environmental Control
Executive Building, Second Floor
Lincoln, Nebraska 68509



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

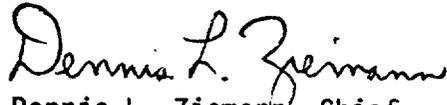
NEBRASKA PUBLIC POWER DISTRICT
DOCKET NO. 50-298
COOPER NUCLEAR STATION
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 31
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 9, 1976, 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 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.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 28, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 31

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

Replace existing page iv of the Appendix A portion of the Technical Specifications with the attached revised page bearing the same numeral. The changed area on the revised page is reflected by a marginal line.

TEMPORARY RESTRICTIONS

1. When the results of the FitzPatrick hot (up to full power) vibration tests are available, they will be evaluated and compared with the results for CNS. In the event that the FitzPatrick tests, or results of startup programs and power operation of Browns Ferry Unit 1, indicate potential problems in areas which could not have been detected in CNS due to differences in instrumentation, appropriate corrective action will be required.
2. Drilling of alternate flow path holes in the lower tie plates of unirradiated fuel bundles at the CNS site is permitted provided the procedures of Section 3 of General Electric Document NEDE 21156 are followed and GE personnel, or personnel properly trained by the General Electric Company, perform the drilling.
3. Machining of alternate flow path holes in the lower tie plates of irradiated fuel bundles by means of electrical-discharge machining at the CNS site is permitted provided that the procedures described in letters from G. C. Ross, GE, to D. G. Eisenhut, NRC, dated April 1, and April 23, 1976 are followed and GE personnel, or personnel properly trained by the General Electric Company, perform the machining.
4. The licensee may perform modifications to the Low Pressure Coolant Injection System as described in the licensee's application for license amendment dated August 9, 1976. The licensee shall not operate the facility following this modification without prior Commission authorization.
5. The above restrictions apply until removed by written instructions of the NRC staff.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 31 TO LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

INTRODUCTION

As part of an application dated August 9, 1976, Nebraska Public Power District (NPPD) requested authorization to modify the Low Pressure Coolant Injection System (LPCIS) of the Emergency Core Cooling System (ECCS) for the Cooper Nuclear Station (CNS). This request was made to improve the ECCS performance and was submitted in conjunction with the licensee's application for a license amendment to permit operation following the initial refueling of CNS.

The proposed modifications to the LPCI system involve:

1. Selection Logic and Cross-tie Valve

Removing the recirculation loop selection logic, key-locking closed the cross-tie valve (10-20) between the two LPCI system discharge piping headers, and providing an annunciator to indicate an open condition of the cross-tie valve;

2. Injection Signals and Valve Operation

Rewiring of the system so that the automatic initiation signals direct both of the normally closed injection valves (10-25 A&B) to open and both of the recirculation pump discharge valves (2-53 A&B) to close upon detection of LOCA conditions;

3. Power Supply

Supplying electrical power to the LPCI injection valve and recirculation pump discharge valve on each recirculation loop from one of the 250 volt DC station batteries; and

4. LPCI Pump Power Supply

Changing the power supplies for LPCI pumps "1B" and "1C" such that LPCI pump "1B" will be assigned as an electrical load in Division I and LPCI pump "1C" will be assigned to Division II electrical loads.

These modifications are designed to increase the reliability and availability of the LPCI system in the event of a postulated loss-of-coolant accident (LOCA), thereby improving the overall performance of the integrated Emergency Core Cooling System. The NRC staff has reviewed and approved similar modifications at Vermont Yankee, Brunswick Unit No. 2, Fitzpatrick, Peach Bottom Unit Nos. 2 and 3, and Hatch Unit No. 1.

As part of the information supporting the licensee's August 9, 1976 license amendment request to permit continued operation of CNS following initial refueling, the licensee submitted General Electric document NEDO-21335 which is an ECCS analysis to demonstrate the continuing conformance of CNS with 10 CFR Part 50, Section 50.46, with a modified LPCIS as described above. The NRC staff is currently reviewing NEDO-21335 and, if acceptable, will issue a license amendment with appropriate Technical Specifications for the revised ECCS analysis and LPCIS modification. This amendment will be issued prior to reactor startup following the refueling outage currently in progress.

EVALUATION

The NRC staff's evaluation of the proposed changes to the LPCIS is as follows:

1. During the review of the removal of the LPCIS recirculation loop selection logic system, the NRC staff compared the ability of the ECCS to deliver adequate cooling water to the core after a loss-of-coolant accident (LOCA) for the worst-case single failure with and without the LPCIS modification. The worst-case single failure for the unmodified LPCIS was failure of the LPCIS injection valve to open so that only the two core spray sub-systems would be available to cool the core following a break in the recirculation line on the suction side of the recirculation pump. The worst-case single failure for the modified LPCIS is also a failure-to-open of the LPCIS injection valve on the unbroken loop. However, with the loop selection logic eliminated, and modifications to direct the opening of both LPCIS injection valves upon detection of LOCA conditions, there will be at least one LPCIS subsystem available in addition to the two core spray subsystems to cool the core. For a break on the suction side of the recirculation pump, the worst-case failure for the modified LPCIS will have two operable LPCIS pumps in the broken recirculation loop on the reactor core side of the break (isolation of the LPCIS flow from the break will be provided by the closure of the recirculation loop discharge valve). Thus, the ECCS with the modified LPCIS will have a minimum "worst-case" capacity of:

(1) two core spray subsystems and; (2) one LPCI subsystem in the broken loop for core cooling. Therefore, for the suction side recirculation line break with LPCI injection valve failure, the capacity of the ECCS to perform its function of core cooling is significantly increased.

For a break in the discharge side of the recirculation loop, the capability of the ECCS to perform its function with the worst single failure (LPCI injection valve) remains unchanged with the LPCI modification. Two core spray subsystems are available to cool the core for both modified or unmodified LPCI systems. This break location is not, however, the limiting break because the blowdown area is smaller.

2. Changing the function of the recirculation loop discharge valves such that they are both required to close at the time of the postulated LOCA was reviewed by the NRC staff to determine the capability of the valve to operate under the accident conditions. For the modified LPCIS to perform its function as designed, the NRC staff required assurance that the discharge valves would not experience a differential pressure of greater than the maximum design of 200 psig during closure. The licensee's proposal to delay discharge valve closure until reactor system pressure has decayed to 335 psig following a postulated LOCA has satisfied the NRC staff that a differential pressure greater than 200 psig will not occur.
3. The NRC staff is reviewing: (1) rewiring of the system for signals to open the LPCIS injection valves and to maintain electrical separation, and (2) the effects of water jet impingement from a postulated recirculation line break on the operability of the recirculation discharge valves. The changes to be made in the instrumentation and electrical system must be made in accordance with appropriate standards. Conformance to the required standards will be determined by the NRC staff prior to authorizing resumption of reactor operation. The results of the jet impingement study will be submitted for review at a future date. The acceptability of the results also will be determined prior to resumption of reactor operation.
4. The NRC staff has reviewed NPPD's proposed method of ensuring that the cross-tie valve between the two LPCIS loops remains closed. The proposed method of key-locking the cross-tie valve closed and providing an annunciator to indicate the valve is not closed is acceptable.

5. The operating modes of the LPCI pumps will be changed such that two pumps discharge into each injection header thereby changing the discharge flow characteristics from that previously established. Prior to reactor startup the licensee will conduct flow tests to establish pump discharge path characteristics from which pump flow curves will be developed. This information will be used to ensure satisfaction of pump net positive suction head and motor rating requirements.
6. The staff has reviewed the proposals to power the LPCIS injection valves and recirculation pump discharge valves from the CNS 250-volt batteries and to change LPCIS pump power supplies such that pump "1B" would be assigned to electrical Division I and pump "1C" would be assigned to electrical Division II. We find these proposals acceptable based on the fact that the station's 250-volt batteries would have adequate capacity to accommodate these additional loads and that the LPCIS pump power supply changes would enhance physical separation and electrical independence between LPCIS subsystems.

Therefore, since the above described modifications would improve the performance of the LPCIS, since the modifications are similar to those previously approved at the Vermont Yankee, Brunswick Unit No. 2, Fitzpatrick, Peach Bottom Unit Nos. 2 and 3, and the Hatch Unit No. 1 facilities, and since Cooper Nuclear Station will not start up until Technical Specifications for the revised ECCS analysis and LPCIS modifications are approved, we have concluded that the installation of the LPCIS modifications at Cooper Nuclear Station is acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 28, 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-298

NEBRASKA PUBLIC POWER DISTRICT

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 31 to Facility Operating License No. DPR-46, issued to Nebraska Public Power District (the licensee), which revised Technical Specifications for operation of the Cooper Nuclear Station (the facility) located in Nemaha County, Nebraska. The amendment is effective as of its date of issuance.

The amendment revised temporary restrictions in the Technical Specifications for the facility to authorize modifications designed to improve the functioning of the Low Pressure Coolant Injection System of the Emergency Core Cooling System.

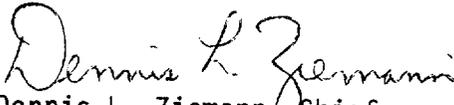
The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated August 9, 1976, (2) Amendment No. 31 to License No. DPR-46, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Auburn Public Library, 118 - 15th Street, Auburn, Nebraska 68305. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 28th day of September, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION


Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

DETERMINATION OF PROPOSED LICENSING AMENDMENT

Licensee: Nebraska Public Power District

Request for: An Operating License amendment for Cooper Nuclear Station to permit operation with certain modifications to the LPCI system, specifically, to install orifice plates to the LPCI pump discharge lines to add sufficient flow resistance to assure adequate net positive suction head exists for the pumps when injecting into a broken recirculation loop.

Request Date: August 9, 1976

Proposed Noticing Action: () Pre-notice Recommended
(X) Post-notice Recommended
() Determination delayed pending completion of Safety Evaluation

Basis for Decision: The modification would assure that the LPCI pumps do not operate with so little net positive suction head that cavitation, and possible pump destruction, might occur. The proposed change would reduce the probability of occurrence of this type of accident and would assure that the LPCI system functions as designed. Therefore, using the guidelines of item 4 of Enclosure 1.b. of RLOP 601, the change would not involve a significant hazards consideration.

A precedent for post-noticing such a change already exists. In a post-noticed action, Amendment No. 31 to the Hatch Unit No. 1 Operating License approved several modifications to the LPCI system including the installation of LPCI pump orifice plates.

Proposed NEPA Action: () EIS Required
() Negative Declaration (ND) and Environmental Impact Appraisal (EIA) Required
(X) No EIS, ND or EIA Required
() Determination delayed pending completion of EIA

Basis for Decision: The proposed change would involve neither a major action significantly affecting the human environment, nor a change in types or amounts of effluents, nor an increase in authorized power level.

Noticing Concurrences:

1. Michael H. Fletcher *MHF* 9/9/76
2. Dennis L. Ziemann *DZ* 9/14/76
3. Karl R. Goller *KRG* 9/20/76
4. OELD DANIEL T. SWANSON *DK* 9/24/76