

JUN 11 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:

In response to your letter dated February 11, 1976, the Commission has issued the enclosed Amendment No. 30 to Facility Operating License No. DPR-46 for Cooper Nuclear Station.

The amendment adds, to the Appendix A Technical Specifications, a temporary restriction concerning drilling alternate flow path holes in unirradiated fuel bundle lower tie plates.

Copies of the related Safety Evaluation Report and the Federal Register 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. 30 to License No. DPR-46
2. Safety Evaluation Report
3. Notice

cc w/enclosures:
See next page

provided a safety evaluation and consideration of channel box cracking is performed prior to loading the drilled fuel, and sent to OELD for concurrence.

OFFICE	DOR:ORB #2	DOR:ORB #2	OELD	DOR:ORB #2		
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DATE	6/12/76	6/12/76	6/12/76	6/11/76		

JUN 11 1976

cc w/enclosures:

Gene Watson, Attorney
Barlow, Watson & Johnson
P. O. Box 81686
Lincoln, Nebraska 68501

Mr. Arthur C. Gehr, Attorney
Snell & Wilmer
400 Security Building
Phoenix, Arizona 85004

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. 2/11/76:

Mr. D. Drain, Director
Department of Environmental Control
Executive Building, 2nd Floor
Lincoln, Nebraska 68509

NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 30
License No. DPR-46

- I. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The letter request by Nebraska Public Power District (the licensee) dated February 11, 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. After weighing the environmental aspects involved, 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 a change 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

Original Signed by:
Dennis L. Ziemann

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

Attachment:
Change to the Technical
Specifications

Date of Issuance: July 1 1976

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ATTACHMENT TO LICENSE AMENDMENT NO. 30

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.

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TEMPORARY RESTRICTIONS

1. On successful completion of Items 1 and 2 above, orderly completion of the startup program may continue. 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. The above restrictions apply until removed by written instructions of the NRC staff.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 30 TO LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

INTRODUCTION

In late 1974, a foreign boiling water reactor observed a change in the characteristics of the readings from certain of the in-core instruments. Subsequent examination of the fuel bundle channel boxes in the foreign reactor revealed significant wear on the corners of channel boxes adjacent to instrument and source tubes. This wear had led to cracking and holes in the channel boxes adjacent to the instrument that had displayed the anomalous readings. The General Electric Company notified the NRC immediately of a possibly similar problem in domestic boiling water reactor plants. The presence of cracks or holes in a channel box is of concern since it would allow part of the cooling water that normally flows through the fuel bundles to flow out of the cracks or holes and bypass the fuel rods. Such a change in flow pattern would decrease the safety margins for the thermal performance of the fuel. These reduced margins could lead to overheating and damage to the fuel in the event of some anticipated operating transients or some postulated accidents. Significant wear and cracking of the channel boxes would also affect their mechanical strength for transients and accidents.

Investigation of the problem revealed that primary coolant crossflow in the bypass region of the core had induced the vibration of in-core instrument and source tubes. The instrument and source tubes were impacting the channel box corners and causing the formation of cracks and holes in the channel boxes. To eliminate significant instrument and source tube vibration, General Electric (GE) has recommended plugging of the one inch diameter bypass holes in the lower core plate and drilling two small holes in each fuel bundle lower tie plate to provide an alternate bypass flow path. This modification was described in a GE report to the NRC, NEDE 21156, "Supplemental Information for Plant Modification to Eliminate Significant In-Core Vibration," (Proprietary) of January 1976. At present, Cooper Nuclear Station (CNS) has the one inch bypass holes in the lower core support plate plugged. This action was approved by the Commission's "Order for Modification of License" (40 F.R. 48554 October 16, 1975). By letter dated February 11, 1976, Nebraska Public Power District (NPPD) requested NRC approval to drill alternate flow

holes in the lower tie plates of the 128 unirradiated fuel bundles at CNS. This safety evaluation is concerned only with the drilling of unirradiated fuel at CNS. The drilling of irradiated fuel bundles and operation of a core containing fuel bundles with alternate flow path holes in the lower tie plates are specifically not considered in this evaluation.

DISCUSSION/EVALUATION

The procedure for drilling the fuel bundle lower tie plates is described in Section 3 of NEDE 21156 and consists of two steps: drilling and deburring. Extensive testing has been done by GE to ensure the reliability of the drilling and deburring equipment. The equipment uses pneumatic drills and clamping devices which hold the fuel bundle in place during drilling. The equipment is designed to operate in air or submerged in about 25 feet of water in the fuel storage pool. Since the unirradiated fuel poses no radiation hazard, drilling and deburring at CNS would be performed in air and the procedure would be closely monitored by quality assurance personnel to assure the proper location and orientation of the bypass holes and the complete removal of drilling chips. GE personnel, or personnel previously trained by the General Electric Company in the use of the equipment, will perform the drilling at CNS.

GE has evaluated the effect of the alternate flow holes on lower tie plate structural strength. The lower tie plate serves to support the weight of the fuel bundle and rests on the fuel support casting. Both components are stainless steel. The thickness of the tie plate wall is approximately 1/2 inch at the holes. A stress analysis, including the stress concentration factor for the holes, indicated that the stress levels are an order of magnitude below the allowable stress when all the expected loads are considered for normal, abnormal and postulated accident conditions.

Based on the above, the NRC staff has concluded that drilling holes in the lower tie plate of unirradiated fuel bundles at CNS using the drilling and deburring procedure as discussed in Section 3 of GE document NEDE 21156 by GE personnel, or personnel trained by GE, 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 statement, negative declaration, or 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 change 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 change 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:

JUN 11 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-298

NEBRASKA PUBLIC POWER DISTRICT

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

Notice is hereby given that the U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 30 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 permit, under certain conditions, the drilling of alternate flow path holes in unirradiated fuel bundle lower tie plates at the Cooper Nuclear Station site.

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 statement, negative declaration

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or 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 February 11, 1976, (2) Amendment No. 30 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 11 day of February 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by:
Dennis L. Ziemann

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