

December 21, 1987

Docket No. 50-298

Mr. George A. Trevors, Division
Manager - Nuclear Support
Nuclear Power Group
Nebraska Public Power District
Post Office Box 499
Columbus, Nebraska 68601

Dear Mr. Trevors:

SUBJECT: COOPER NUCLEAR STATION, AMENDMENT NO. 113 , TO FACILITY
OPERATING LICENSE NO. DPR-46 (TAC NO. 66192)

The Commission has issued the enclosed Amendment No. to Facility Operating License No. DPR-46 for the Cooper Nuclear Station. This amendment consists of changes to the Technical Specifications in response to your application dated October 20, 1987 (Change Number-46).

The amendment changes the Technical Specifications relating to design features of the fuel storage facilities.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

¹⁵¹
William O. Long, Project Manager
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 113 to License No. DPR-46
2. Safety Evaluation

cc w/enclosures:
See next page

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Mr. George A. Trevors
Nebraska Public Power District

Cooper Nuclear Station

cc:

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Cooper Nuclear Station
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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. 113
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 October 20, 1987, 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 and paragraph 2.C.(2) of Facility Operating License No. DPR-46 is hereby amended to read as follows:

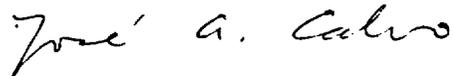
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(2) Technical Specification

The Technical Specifications contained in Appendix A, as revised through Amendment No. 113, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Jose A. Calvo, Director
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 21, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 113

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

Replace the following page of the Appendix A Technical Specifications with the enclosed page. The revised areas are indicated by marginal lines.

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5.4.C (cont'd)

penetrations shall be designed in accordance with standards set forth in Section V-2.3.4 of the SAR.

5.5 Fuel Storage

- A. The new fuel storage vault shall be such that the K_{eff} dry is less than 0.90 and flooded is less than 0.95. These K_{eff} limits are satisfied by maintaining the maximum, exposure-dependent K_{∞} of the individual fuel bundles ≤ 1.29 .
- B. The spent fuel storage racks are designed and shall be maintained with a nominal 6 9/16 inch center-to-center distance between fuel assemblies placed in the storage racks. K_{eff} shall be maintained ≤ 0.95 with the storage pool filled with unborated water. This K_{eff} is satisfied by maintaining the maximum, exposure-dependent K_{∞} of the individual fuel bundles ≤ 1.29 .
- C. The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2366 fuel assemblies.
- D. The fuel handling bridge fuel hoist has a load-limit cell set at no more than 1230 pounds.

5.6 Seismic Design

The seismic design for Class I structures and equipment is based on dynamic analyses using acceleration response spectrum curves which are based on a ground motion of 0.1g. The vertical ground acceleration assumed is equal to $\frac{1}{2}$ of the horizontal ground acceleration. For the design of Class I structures and equipment, the maximum horizontal and vertical accelerations were considered to occur simultaneously. Where applicable, stresses were added directly.

The combined stresses resulting from dead, live, pressure, thermal and earthquake having a ground acceleration of 0.2g are such that a safe shut-down can be achieved.

5.7 Barge Traffic

Barge traffic on the Missouri River past the site has been analyzed to determine that the present size and cargo materials do not create a hazard to the safe operation of the plant. Contact will be maintained with the Corps of Engineers to determine if and when additional analyses are required due to changes in barge size or cargo.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 113 TO FACILITY OPERATING LICENSE NO. DPR-46
NEBRASKA PUBLIC POWER DISTRICT
COOPER NUCLEAR STATION
DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated October 20, 1987 (Change No. 46) the Nebraska Public Power District (the licensee) requested an amendment to Facility Operating License No. DPR-46 for the Cooper Nuclear Station (CNS). The amendment would modify the Technical Specifications (Section 5 "Design Requirements") related to fuel storage. The amendment request resulted from circumstances described in Licensee Event Report 86-034, wherein it was determined that the Technical Specifications had previously, unknowingly, been violated. A later safety analysis determined that the required safety margins had not been violated.

2.0 DISCUSSION AND EVALUATION

Change of nomenclature: The proposed amendment would change the name of the new fuel storage facility to the new fuel storage vault. This change is for editorial consistency only and is of no safety significance. The change is therefore acceptable.

New fuel storage vault: The proposed amendment would add a statement that the new fuel storage vault K-effective limits are maintained when the maximum, exposure-dependent K-infinity of the individual fuel bundles are equal to or less than 1.29. This change would create a new limitation to ensure that no new fuel can be stored in the new fuel storage vault that could not also be permitted to be stored in the spent fuel storage pool. The proposed K-infinity limit of 1.29 was selected to be consistent with the proposed below-described, new limitation for storage of spent fuel in the spent fuel storage pool. The proposed K-infinity limit is less than (more conservative than) the value of 1.31 presently acceptable on the basis of conformance to Standard Review Plan Section 9.1.1 acceptance criteria for new fuel storage facility criticality as shown by analyses using the General Electric MERIT code. Since the margin to criticality would not be reduced and remains consistent with Standard Review Plan acceptance criteria, the proposed change is acceptable. [Note: The MERIT code has been previously accepted by the staff for use in fuel storage criticality calculations (Ref: Dockets 50-321 & 50-366 Safety Evaluation dated April 21, 1980).]

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Spent fuel storage pool: The proposed amendment would add a statement that the spent fuel storage pool K-effective limits are satisfied when the maximum, exposure-dependent K-infinity of the individual bundles is equal to or less than 1.29. Existing limitations that U-235 axial loading of fuel in the spent fuel storage pool not exceed 14.5 grams per axial centimeter and calculated spent fuel pool K-effective not exceed 0.9271 would be deleted. The Standard Review Plan (SRP) acceptance criteria specify that the K-effective of a spent fuel storage pool be less than or equal to 0.95 and that this limit be reflected in the facility Technical Specifications. However, the actual K-effective of spent fuel in a storage pool is not directly measurable by installed instrumentation. Because the K-eff of a fuel pool is not directly measured, it is necessary to use other means to assure that the desired safety margin is available. The method currently specified in the Technical Specifications is to limit the U-235 loading of the stored spent fuel assemblies to 14.5 grams per centimeter. This value corresponds to a worst-case configuration of 2.83 w/o fuel enrichment and a calculated K-effective of 0.9271. An equally effective and more readily implemented method of ensuring spent fuel pool criticality safety is to limit the K-infinity of the individual fuel assemblies in the pool. The latter method allows new fuel designs to be stored in the spent fuel storage pool and allows for manufacturing tolerances, while maintaining the same safety limit K-effective. Analyses using the previously accepted and experimentally verified MERIT program have shown that if the fuel assembly K-infinity is limited to 1.29, the spent fuel pool K-effective value will not exceed the existing 0.95 SRP limit. The proposed change would allow greater flexibility in selection of fuel designs to be stored in the spent fuel pool and would provide greater assurance that the margin to criticality is not inadvertently violated. Based on conformance to Standard Review Plan criteria, the proposed change is acceptable.

3.0 ENVIRONMENTAL CONSIDERATIONS

This 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. The 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. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 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.

4.0 CONCLUSION

We have 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, and (2) such

activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: December 21, 1987

Principal Contributor: W. Long