

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Docket No. 50-282
50-306

REQUEST FOR AMENDMENT TO
OPERATING LICENSE NOS. DPR-42 & DPR-60

License Amendment Request Dated December 21, 1984

Northern States Power Company, a Minnesota corporation, requests authorization for changes to the Technical Specifications as shown on the attachments labeled Exhibit A, Exhibit B and Exhibit C. Exhibit A describes the proposed changes along with reasons for the change. Exhibit B is a set of Technical Specification pages incorporating the proposed changes. Exhibit C is a report prepared by Quadrex Corporation, entitled "Licensing Report for Prairie Island Nuclear Generating Plant Units 1 and 2 Spent Fuel Cask Drop Evaluation".

This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By

David Musolf
David Musolf
Manager - Nuclear Support Services

On this 21st day of December, 1984 before me a notary public in and for said County, personally appeared David Musolf, Manager - Nuclear Support Services, and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Northern States Power Company, that he knows the contents thereof and that to the best of his knowledge, information and belief, the statements made in it are true and that it is not interposed for delay.

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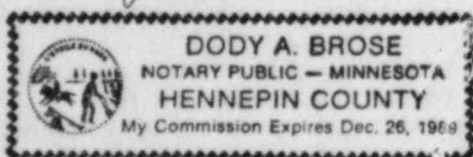


EXHIBIT A

Prairie Island License Amendment Request Dated December 21, 1984

Proposed Changes to the Technical Specifications, Appendix A, of Operating Licenses DPR-42 and DPR-60

Pursuant to 10 CFR Section 50.59 and 50.90, the holders of Operating Licenses DPR-42 and 60 hereby propose the following changes to Appendix A, Technical Specifications:

1. FUEL HANDLING OPERATIONS

Proposed Changes (Section 3.8.B & 5.6)

The changes described here are associated with the removal of the temporary restriction on transporting over or placing a spent fuel shipping cask (i.e., a heavy load) in the southeast corner of spent fuel pool No. 1. Proposed changes to section 3.8.B.1 contain new conditions which, when satisfied, will safely allow the introduction of a spent fuel shipping cask into the spent fuel pool area and pool No. 1. These conditions include a minimum boron concentration of 1800 ppm in the spent fuel pools whenever the cask is being placed in pool No. 1, an energy absorbing device which has the capability of absorbing the impact energy of a cask drop, crane interlocks and mechanical stops which limit cask travel to the defined load path, and the requirement that fuel in the small pool, during the time the cask is being moved, be out of the reactor for at least 50 days. For other heavy loads which are moved through the spent fuel pit enclosure by the auxiliary building crane main or auxiliary load block, written procedures define the safe load path.

These procedures and changes or deviations to these procedures will be reviewed by the Plant Operations Committee. This review will ensure that the criteria of NUREG-0612, "Control of Heavy Loads At Nuclear Power Plants", are satisfied.

The applicable sections, 5.6.A, "Criticality Consideration," 5.6.B, "Spent Fuel Storage Structure", and 5.6.C, "Fuel Handling" have been revised to include those design features necessary to ensure the safety of placing a spent fuel shipping cask in pool No. 1. The restrictions on placing spent fuel in pool No. 1 contained in Section 5.6.D, "Fuel Storage Capacity" have been eliminated.

Refer to Exhibit B for proposed wording changes. Page TS.5.6.3 is deleted by these changes.

Reason for Change

This change is being requested to permit the use of Pool No. 1 for spent fuel storage. The proposed conditions of Section 3.8.B.2 are the result of a review performed against the four evaluation criteria contained in NUREG-0612, Section 5.1. The conditions we have proposed satisfy the objectives contained in these four evaluation criteria. These changes permit the removal of the restriction on placing a spent fuel shipping cask in pool No. 1. The removal of this restriction is necessary so that 266 existing spent fuel storage spaces in pool No. 1 can be utilized. This change will extend the capability of the spent fuel storage pools at Prairie Island from May, 1991 until August, 1995.

Significant Hazards Evaluation

To support removing the restriction on storing spent fuel in the 266 existing spaces in spent fuel in Pool No. 1, an evaluation was performed using the four criteria contained in NUREG-0612, Section 5.1. In performing the evaluation the following points were considered:

- 1) The possibility of the cask impacting fuel and the subsequent crushing of the spent fuel rack and the fuel contained therein.
- 2) The capability of the fuel pool structure to withstand the impact of a dropped cask, resulting in leakage less than the makeup capability to the pool so that the spent fuel would always remain covered.
- 3) The capabilities of structures along the defined load path if the potential existed for damage to safety related equipment.

The proposed design features and conditions for fuel handling which resulted from this review will meet all criteria of NUREG-0612 as described below:

- 1) By specifying a minimum of 1800 ppm of boron concentration in the pool during cask handling, a maximum K_{eff} of 0.949 would be seen at the worst case UO_2 to water ratio of 2.0 should the fuel be impacted and crushed.
- 2) By allowing only fuel which has been discharged from the reactor a minimum of 50 days to be stored in pool No. 1, the radiation dose resulting from fission product release will not exceed 25% of the 10 CFR Part 100 guidelines (without taking credit for charcoal filters) in the event of a cask drop accident.

- 3) By requiring that an impact limiter or crash pad be installed that can absorb energy of a cask drop, no structural damage will result to the pool structure which results in significant leakage from the pool.
- 4) By requiring the cask to travel on a defined load path, it will travel over no safety related equipment except pool No. 1. The consequences of dropping the cask in pool No. 1 are acceptable upon imposition of the conditions described in (1) through (3) above. The fuel pool cooling inlet line, whose failure was addressed in FSAR Section 9.3.1 (USAR Section 10.2.2), was considered in the design basis for that system.

The assumptions used in the structural analysis of the pool floor in our evaluation differ from those contained in Section 9.5.2 of the FSAR in that NUREG-0612 does not permit the assumption that energy is absorbed by deformation of the cask. This has resulted in the need for an impact limiter or crash pad to absorb the additional amount of energy to be considered.

For smaller loads, the analysis of the cask drop in the areas of spent fuel criticality and fission product release bound the consequences of any drop. The Operations Committee at the plant will be responsible for review and approval of procedures for handling of the smaller loads to ensure that the criteria of NUREG-0612 are satisfied with respect to structural considerations.

The restriction on the use of the 266 existing spent fuel storage spaces in pool No. 1 was imposed in 1981 during reracking of the spent fuel pools at Prairie Island because of a concern over the ability to safely insert and withdraw a cask into pool No. 1 while it contained spent fuel. The criteria to be applied in evaluating the safe operation of inserting and withdrawing a heavy load (e.g., spent fuel shipping cask) in a fuel pool have been established by the NRC in NUREG-0612. Our request for approval to insert and withdraw a cask into pool No. 1 while spent fuel is present and the removal of the restriction on use of the 266 existing spent fuel storage spaces is based upon demonstration of compliance with the four evaluation criteria of NUREG-0612. Therefore the proposed amendment does not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

Refer to Exhibit C for a detailed report of the evaluation performed to support this request.

EXHIBIT B

Prairie Island Nuclear Generating Plant

License Amendment Request - Dated December 21, 1984

Proposed Changes to the Technical Specifications
Appendix A of Operating Licenses DPR-42 and 60

Exhibit B consists of revised pages of Appendix A Technical Specifications as listed below:

Pages

TS.3.8.1
TS.3.8.2
TS 3.8.2a (deleted)
TS.3.8.3
TS.3.8.4
TS.3.8.5 (new page)
TS.5.6.1
TS.5.6.2
TS.5.6.3 (deleted)