

March 8, 1995

Mr. Roger O. Anderson, Director
Licensing and Management Issues
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON PROPOSED AMENDMENT TO
TECHNICAL SPECIFICATIONS REGARDING INCORPORATION OF F* AND L*
STEAM GENERATOR TUBE REPAIR ACCEPTANCE CRITERIA PRAIRIE ISLAND
NUCLEAR GENERATING PLANT (TAC NOS. M91122 AND M91123)

Dear Mr. Anderson:

By letter dated January 9, 1995, Northern States Power Company (NSP) submitted a proposed amendment to incorporate the F* and L* alternate steam generator plugging acceptance criteria into the Technical Specifications for Prairie Island. During the review of your submittal, the NRC staff has determined the need for additional information. Enclosed is the list of the questions.

The staff requests that you submit your responses to the enclosed request for additional information within 30 days in order for the staff to complete its review.

This requirement affects fewer than ten respondents and, therefore, is not subject to Office of Management and Budget review under Public Law 96-511.

Sincerely,

ORIGINAL SIGNED BY

Charles R. Thomas, Acting Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosure: As stated

cc w/encl: See next page

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Mr. Roger O. Anderson, Director
Northern States Power Company

Prairie Island Nuclear Generating
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November 1994

REQUEST FOR ADDITIONAL INFORMATION
PRAIRIE ISLAND NUCLEAR PLANT, UNITS 1 AND 2
INCORPORATION OF F* AND L* STEAM GENERATOR
TUBE REPAIR ACCEPTANCE CRITERIA

- A-1 The calculation of the proposed F* distance utilizes a coefficient of friction of 0.2 (Section 2.2.2). This value was determined from results of pullout tests. What level of confidence was employed in determining this final value of 0.2?
- A-2 The proposed changes to the technical specifications define the F* and L* distances as the value calculated in WCAP-14225 plus an additional length to account for eddy current test (ECT) uncertainty. The NRC cannot approve such definitions as they are currently written because of the inherent flexibility within these definitions. Please quantify ECT uncertainty lengths for F* and incorporate these values into the definition for the F* distance.
- A-3 Please show that the maximum postulated accident leakage from cracks that are allowed to remain in service by use of the F* and L* criterion and by the use of other criteria, for example, the interim repair criteria for ODSCC [outside diameter stress cracking and corrosion] at tube support plates, will continue to be within the allowed leakage limits under accident conditions. Such considerations should be discussed in the Bases Section of the plant technical specifications.
- A-4 As currently written, the proposed technical specification change would allow the partially rolled tube to tubesheet joint to be re-rolled in order to create a new undegraded region for application of the F* criteria. For the staff to complete its review of the option of re-rolling, please address the following items: (a) discuss why the original qualification tests should remain valid despite moving the F* distance to a new location by re-rolling, a location containing corrosion products which could affect test results; (b) provide the test data on leakage testing on roll expansion tubes and justify its applicability to the case of re-rolling tubes in tubesheets containing corrosion products; and (c) discuss the effects of corrosion products, such as magnetic magnetite at the tube-to-tubesheet interface on eddy-current testing capability.
- A-5 The staff compared your proposed wording to that approved for the Summer nuclear plant. The licensee for Summer chose an L* distance (0.7 inch) that includes 0.2 inch for eddy current measurement uncertainty. Northern States chose an L* distance of 0.5 inch not including eddy current uncertainty. Please conservatively specify an L* distance that includes eddy current uncertainty.
- A-6 Please reword the first sentence defining an L* tube because it is unclear. Also, explain why your definition of an L* tube appears to be much less conservative than that of Summer. The definition the staff

approved for Summer defines an L* tube as a tube with short (less than 0.5 inch) axially oriented (20 degrees or less from axial) degradation occurring below the undegraded L* distance. An additional minimum of 1.0 inch of sound tube (below the L* distance) separated by no more than two areas of axially oriented degradations must be contained in the top 3.5 inches of tube (within the tubesheet). Each area of degradation is limited to a maximum of five distinct indications. A maximum of 2500 tube ends per steam generator may utilize L*. Tubes qualifying as F* tubes are not classified as L* tubes.

Items previously discussed on the telephone regarding L* criteria:

- L-1 As above, conservatively specify a value that includes eddy current measurement uncertainty and the bases for the value.
- L-2 Please specify the total length of tube you plan to inspect and the inspection techniques.
- L-3 The staff will require that there be a performance demonstration of the adequacy of the inspection method used to characterize the indications to be left in service under the use of the L* criteria.
- L-4 The staff plans to perform an independent evaluation of the stress analysis justifying the L* criteria. This will be conducted by the Mechanical Engineering Branch, NRR. It is anticipated that there will be further requests for additional information.

Items previously discussed on the telephone regarding F* criteria:

- F-1 Please address the tube lock-up issue.
- F-2 Please address questions on Indian Point Docket as applicable. A copy of these questions were faxed earlier.
- F-3 Please address the surface variations in the bore in tube sheet testing, describing the tubesheet hole finish and the tube ID [outside diameter] finish used for qualification.
- F-4 Provide a commitment to reexamine F* tubes for the first two cycles and describe the examination method in detail.
- F-5 Provide the analysis for additional roll expansion.
- F-6 Concerning your qualification of the inspection method for examining samples of rerolled tubes with entrapped sludge, please send your plan for ensuring that samples are representative of those at Prairie Island.
- F-7 The value of the F* distance (1.07 inch) is less conservative than the value the staff approved for the Summer nuclear plant (1.6 inch). Please explain the difference in the degree of conservatism.