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SUBJECT: Discusses proposed installation of restraints near reactor vessel nozzles to limit break size of LOCA event & limit asymmetric loads to reactor vessel. Restraints will improve safety margin while not presenting hazard.

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WISCONSIN PUBLIC SERVICE CORPORATION



P.O. Box 1200, Green Bay, Wisconsin 54305

April 10, 1980

Mr. Darrell Eisenhut, Director
Division of Project Management
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Reactor Vessel Support Loads

On April 18, 1978, we indicated in our letter to Mr. A. Schwencer that we were participants in the Westinghouse evaluation program. The first stage of that program was a categorization of the plants which clearly indicated that the Kewaunee Plant was unique in that significant reactor coolant system support component stiffness was present. As a result of that evaluation it was obvious that a more direct path toward resolution of the question of asymmetric LOCA loads was possible for the Kewaunee Plant.

The main consideration in that determination was that the Kewaunee Plant had incorporated LOCA related piping loads in the reactor coolant loop vault compartments design and evaluation prior to issuance of an operating license. That evaluation program was similar to the Phase B evaluation program of the Westinghouse Owners Task Group. The review of Kewaunee Plant design and evaluations previously performed indicated that a great similarity existed between Kewaunee's design criteria and the design criteria for reactor coolant system supports in new plants currently being reviewed by the NRC for operating license issuance. One significant difference did exist between the Kewaunee Plant and newer designs in regard to reactor coolant system supports and restraints. That difference was that newer designs included restraints near the reactor vessel nozzles which limit the break size of a LOCA event and, thereby, limit the asymmetric loads to the reactor vessel. Discussions with Westinghouse indicated that such restraints would be necessary to demonstrate acceptable results from an asymmetric LOCA load evaluation of the Kewaunee Reactor Coolant System unless extensive analyses were performed at extreme expense. The potential of an ability to demonstrate the adequacy of the existing system supports to LOCA loads exists, however, such an analysis would not improve safety within the plant. Installation of restraints would

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Mr. Darrell Eisenhut
April 10, 1980
Page 2

certainly be an improvement in safety margins within the plant. Given the choice between extensive analysis to demonstrate existing adequacy or modification which improves safety margin with nearly equal expense to either alternative, we have consistently chosen to improve safety margin.

In late summer, 1978, we directed Fluor Power Services, Inc. to design restraints for the reactor coolant loop piping to performance specifications provided by Westinghouse Electric Corporation. Northern States Power Company, owners of the Prairie Island Plant, joined us in that design effort. In addition, we, with NSP, entered into an evaluation program with Westinghouse performing the analysis to complete the evaluation of LOCA load response within the reactor coolant system assuming the proposed new restraints were installed. That evaluation program is in effect similar to the Westinghouse Owners Task Group Phase C program. That evaluation has progressed nearly on schedule. Westinghouse has completed the evaluation of maximum loads to the restraints and other system supports. The report is currently being reviewed and should be submitted to the NRC on April 11, 1980 (Westinghouse Letter NS-TMA-2230, to D. G. Eisenhut).

Fabrication of the Kewaunee Plant hot and cold leg restraints is near completion and the restraints will be available for an attempt to install them during the upcoming refueling in May of this year. At that time Kewaunee will be years ahead of the majority of other plants of similar vintage in resolving asymmetric loads by implementation of the necessary modifications. To the best of our knowledge, installation of the restraints at the Kewaunee Plant will be the first experience of a backfit of this nature. The restraints must be located between the reactor coolant system pipes and the reactor vessel biological shield, which is an area where the radiation levels are relatively high. The radiation dose commitment to install these restraints is estimated to be in the range of 50 manrem. That commitment is relatively large when compared to the average normal annual total dose commitment of 150 manrem for all activities associated with Kewaunee's operation. Given the delicacy of the work that must be done and complicating this with the fact that it will be done in a relatively high radiation area, reasoned judgment leads to the conclusion that difficulties may arise which could preclude the completion of the installation of the restraints on the first attempt.

Since the restraints will not affect normal pipe thermal growth, they do not present a hazard to the reactor coolant system pipe integrity. Furthermore, they increase safety margins by providing additional protection for upset conditions (such as a LOCA event) at the reactor vessel nozzles. Therefore, the installation of the restraints is allowed by the Regulations per 10 CFR 50.59. The design criteria of the restraints, the analysis which indicates

Mr. Darrell G. Eisenhut

April 10, 1980

Page 3

the adequacy of the restraint design, and the evaluation program are based upon similar activities which have been reviewed and accepted by the NRC staff on recently licensed plants; therefore, we intend to proceed with attempted installation of the restraints in accordance with the provisions of 10 CFR 50.59. We have similarly considered if there would be any detrimental effects from the partial installation of the restraint system. The conclusion of that consideration is that since the new restraints only provide additional load carrying capacity with a negligible additional effect on the total load in comparison to loads for the whole RCS restraint/support system, they will improve safety margin while not presenting a hazard.

Sincerely,

A handwritten signature in cursive script, appearing to read "E. R. Mathews for".

E. R. Mathews, Vice President
Power Supply & Engineering

snf

cc - Mr. Steve Hosford, US NRC