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Gentlemen:

DOCKET NO. 50-301
BULLETIN NO. 88-11, ALTERNATIVE SCHEDULE FOR EVALUATION OF PRESSURIZER SURGE LINE THERMAL STRATIFICATION

This is in response to NRC Bulletin No. 88-11 "Pressurizer Surge Line Thermal Stratification" which was issued December 20, 1988. The Bulletin requests that all PWR licensees establish and implement a program to confirm pressurizer surge line integrity in view of the occurrence of thermal stratification, and requires that the NRC be informed of actions taken to resolve this issue. Pursuant to satisfying the requirements and schedules of Bulletin 88-11, Wisconsin Electric Power Company (WE), is participating in a program intended to resolve this issue through the Westinghouse Owner's Group (WOG).

The WOG program was approved at the October 1988 meeting and has the following objectives:

- Develop a generic Justification for Continued Operation (JCO) to assure that plant safety is not compromised while the effects of thermal stratification are being determined.

- Collect and summarize relevant design, operational, analytical, and test data for as many WOG plants as possible. In addition, a representative sampling of approximately ten plants will be selected to perform a review of plant records and conduct interviews with operations personnel.

- Evaluate data and identify and prioritize significant parameters contributing to this issue. Categorize (group) plants based on these parameters.

- Recommend additional monitoring to supplement the existing transient data base required to bound all WOG plants.

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- o Estimate the effect of thermal stratification on fatigue life as a function of key parameters.

- o Recommend short term and long term actions.

The WOG program is designed to benefit from the experience gained from the performance of several plant specific analyses on Westinghouse PWR surge lines. These detailed analyses included definition of revised thermal transients (including stratification) and evaluations of pipe stress, fatigue usage factor, thermal striping, fatigue crack growth, "leak-before-break," and support loads. The overall analytical approach used in all of these analyses has been consistent and has been reviewed, in detail, by the NRC staff. A significant amount of surge line thermal monitoring data has been obtained in support of these plant specific analyses. Additional surge line thermal monitoring and plant system data continues to be made available within the WOG, resulting in a steadily increasing data base. Significant progress has been accomplished toward meeting the objectives listed above.

To date, the WOG has completed major portions of the effort to assemble plant specific design information on all domestic Westinghouse PWRs (a total of 55 units). This effort will establish the range of key design parameters and permit grouping of plants based on these parameters.

Based on the information assembled to date, and the experience gained in plant specific analyses and monitoring programs, the WOG evaluation has resulted in the following observations regarding plant similarity and thermal stratification:

1. Thermal stratification ($>100^{\circ}F$) has been measured on all surge lines for which monitoring has been performed and which have been reviewed by the WOG to date (7 plants).

2. The amount of stratification measured and its variation with time (cycling) varies. This variation has been conservatively enveloped and applicability demonstrated for plant specific analyses performed to date. Additional monitoring data representing a wider range of surge line configurations may be needed in order to demonstrate the applicability of these thermal stratification transients to other Westinghouse units.

3. Significant factors which can influence the structural effects of stratification are:

   a. Location and design of rigid supports and restraints
   b. Pipe layout geometry and size
   c. Type and location of piping components

4. Although the material and fabrication techniques for Westinghouse surge lines are reasonably consistent and of high quality, the design parameters listed in Item 3 vary among Westinghouse PWRs. This variation in design is primarily a result of plant specific routing requirements. This variability is currently being examined in order to assess the feasibility of a bounding analysis approach.

These observations developed through the on-going WOG program, indicate that the development of thermal stratification loadings and the evaluation of fatigue, considering these loadings, is a complex process.

Prior to issuance of Bulletin No. 88-11, WE visually inspected the Point Beach Unit 2 surge line piping and support geometry during the fall 1988 refueling outage, and instrumented the surge line at several locations in order to assess the degree of thermal stratification, if any. The visual inspection was conducted by individuals experienced in piping stress analysis and inservice inspection.

No signs of piping or support distress were observed during the inspection. The piping is supported by spring hangers and is provided with pipe whip restraints. The insulation jackets between the pipe whip restraint hardware and the piping showed no signs of either scuffing or denting, indicating that no contact between the piping and the whip restraints has occurred.

Temperature data has been collected during heatup and at steady-state full power operation. Preliminary evaluation of the data indicates that stratification occurs in the Unit 2 surge line. We will continue to monitor the temperature data during this Unit 2 operating cycle.

We plan to instrument Unit 1 during the annual spring refueling outage to monitor surge line temperature profiles. We also plan to perform an ASME Section XI, VT-3 inspection to determine whether there are any indications of piping, support, or whip restraint distress. We intend to provide the collected thermal monitoring data to the WOG in support of the generic bounding analyses for domestic Westinghouse PWRs. In order to precisely evaluate stratification, and allow for the collection and evaluation of the necessary monitoring data to support the WOG program, additional time is needed to satisfy the requirements set forth in the bulletin.

All the plant specific analyses performed to date that have included the loadings due to stratification and striping have validated the "leak-before-break" concept and have substantiated a 40-year design fatigue life for the pressurizer surge line. Thus,

a prudent approach for providing a detailed evaluation of the effects of surge line stratification would be to follow the WOG program grouping evaluation recommendations and monitor as determined to be appropriate. In addition, the NDE inspection history at WE, as well as all other domestic Westinghouse designed PWRs, has not revealed any service induced flaws in the surge line that are attributable to thermal stratification.

To assure that the plant safety is not compromised within the requested period of schedule extension, a JCO will be submitted to the NRC. The JCO, which is currently being developed, will be submitted by WE to the NRC staff by May 5, 1989. The JCO will utilize the information, experience, and monitoring data obtained through the WOG program, and will support the alternate schedule discussed herein.

We hereby request an alternate schedule to that specified in Bulletin No. 88-11. A schedule of two years, from receipt of the Bulletin, is considered sufficient time to obtain the necessary additional monitoring data, define thermal transients, perform required analyses, and update the stress and fatigue analyses to ensure compliance with applicable code and regulatory requirements. This schedule, though different from that requested in action 1.b of Bulletin 88-11, is consistent with the requirement to update the stress and fatigue analyses within two years as stated in Action 1.d of the Bulletin. As previously stated, the JCO currently being developed will be submitted by WE to the NRC by May 5, 1989.

At this time, our request for an alternate schedule applies only to Item 1.b of NRC Bulletin 88-11. We intend to comply with all other requirements of the Bulletin. Please contact us if you have any questions concerning our activities in this matter.

Very truly yours,

C. W. Fay
Vice President
Nuclear Power

Copies to NRC Resident Inspector
NRC Regional Administrator, Region III

Subscribed and sworn to before me
this 3rd day of March, 1989.

Lois J. Hubert
Notary Public, State of Wisconsin

My Commission expires 1/6/91

NOTARY PUBLIC
LOIS J. HUBERT
STATE OF WISCONSIN