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SUBJECT: Responds to NRC Bulletin 88-011, "Presurizer Surge Line Thermal Straification."

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FEB 27 1989

M. A. McDUFFIE
Senior Vice President
Nuclear Generation

SERIAL: NLS-89-050
10CFR50.

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
ALTERNATE SCHEDULE FOR EVALUATION OF
PRESSURIZER SURGE LINE THERMAL STRATIFICATION

Gentlemen:

On December 20, 1988, the NRC issued Bulletin No. 88-11 "Pressurizer Surge Line Thermal Stratification." It requests all addressees to establish and implement a program to confirm pressurizer surge line integrity in view of the occurrence of thermal stratification and requires them to inform the staff of the actions taken to resolve this issue.

Pursuant to satisfying the requirements and schedules of Bulletin 88-11, Carolina Power & Light Company (CP&L) is participating in a program for partial resolution of this issue through the Westinghouse Owner's Group (WOG).

The WOG program was approved at the October 1988 meeting. The objectives of the program are as follows:

- o 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.
- o 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.
- o Evaluate data and identify and prioritize significant parameters contributing to this issue. Categorize (group) plants based on these parameters.
- o Recommend additional monitoring to supplement the existing transient database required to bound all WOG plants.
- o Estimate the effect of thermal stratification on fatigue life as a function of key parameters.
- o Recommended short-term and long-term actions.

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The WOG program is designed to benefit from the experience gained in 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 database. A significant amount of progress has been accomplished toward meeting these objectives.

To date, the WOG has completed approximately 80 percent of the effort of assembling plant-specific design information on all domestic Westinghouse PWRs (55 units total). 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. Significant thermal stratification ($>100^{\circ}\text{F}$) has been measured on all surge lines for which monitoring has been performed and which have been reviewed by the WOG to date (seven 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. Additional monitoring data, representing a wider range of surge line configurations may be needed 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. Therefore, in order to precisely evaluate stratification, additional time is needed.

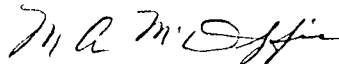
While more time is needed to evaluate the stratification issue in detail, the NDE inspection history at H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2), as well as all other domestic Westinghouse designed PWRs, has not revealed any service induced degradation in the surge line piping that has been attributed to thermal stratification. An inspection was performed at HBR2 in December, 1988 as a result of the Bulletin. In addition, 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 plant life. 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. The WOG expects to complete the grouping evaluation for the purpose of recommending a list of additional plants where thermal monitoring is needed, by March 1, 1989. The time required for this additional monitoring will be dependent on plant outage schedules.

Carolina Power & Light Company hereby requests an alternate schedule to that requested in Bulletin 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 all 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 analysis within two years as stated in Action 1.d of the Bulletin. A Justification for Continued Operation which is currently being developed will be submitted for HBR2 by April 28, 1989.

At this time, CP&L's request for an alternate schedule applies only to Item 1.b of NRC Bulletin 88-11.

Should you have any questions regarding this matter, please contact Mr. L. I. Loflin at (919) 836-6242.

Yours very truly,



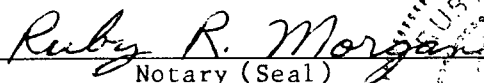
M. A. McDuffie

MAM/DBB/che

cc: Mr. M. L. Ernst
Mr. R. Lo
Mr. L. Garner (NRC - HBR)

M. A. McDuffie, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

My commission expires: 11/27/89


Notary (Seal)

