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SUBJECT: Advises that ASME Class I stress & fatigue analyses of
 pressurizer surge line for effects of thermal stratification
 & striping performed, per NRC Bulletin 88-011. Results
 discussed.

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 TITLE: Bulletin 88-11 Pressurizer Surge Line Thermal Stratification

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Carolina Power & Light Company

P.O. Box 1551 • Raleigh, N.C. 27602

JAN 30 1992

G. E. VAUGHN
Vice President
Nuclear Services Department

SERIAL:NLS-92-035

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

H. B. ROBINSON STEAM ELECTRIC POWER PLANT, UNIT No. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSE TO NRC BULLETIN 88-11,
"PRESSURIZER SURGE LINE THERMAL STRATIFICATION"

References: 1) NRC Bulletin 88-11, dated December 20, 1988
2) CP&L Letter NLS-89-050 dated February 27, 1989,
M. A. McDuffie (CP&L) to NRC Document Control Desk
3) CP&L Letter NLS-89-100 dated May 30, 1989,
A. B. Cutter (CP&L) to NRC Document Control Desk
4) CP&L Letter NLS-90-238 dated December 7, 1990,
A. B. Cutter (CP&L) to NRC Document Control Desk
5) CP&L Letter NLS-91-159 dated July 3, 1991,
G. E. Vaughn (CP&L) to NRC Document Control Desk
6) NRC Letter dated August 28, 1991, R. H. Lo (NRC)
to L. W. Eury (CP&L)

Gentlemen:

The purpose of this letter is to inform you that an analysis performed in accordance with the requirements of NRC Bulletin 88-11 has been completed for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2) and that actions in support of, and as a result of, that analysis are continuing.

On December 20, 1988, the NRC issued Bulletin 88-11 which requested addressees to establish and implement a program to confirm pressurizer surge line integrity. Licensees were requested to demonstrate that the pressurizer surge line meets applicable design codes and other FSAR and regulatory commitments for the licensed life of the plant, considering the phenomena of thermal stratification and thermal striping in the fatigue and stress evaluations.

In accordance with the Bulletin's reporting requirements and subsequent correspondence identified in the references above, Carolina Power & Light Company (CP&L) herein submits notification that the reanalysis of the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2) surge line has been completed.

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The CP&L Nuclear Engineering Department in association with Westinghouse performed the ASME Class I stress and fatigue analyses of the HBR2 Pressurizer Surge Line accounting for the effects of thermal stratification and striping. Westinghouse utilized profiles and transients approved through the Westinghouse Owners Group work with all work closely monitored and reviewed by CP&L. The analysis shows that the pressurizer surge line piping meets applicable code requirements for the design life of the plant including maximum allowable component stress and cumulative usage factors.

The stress analysis also shows that three of the surge line spring cans may experience loads and/or displacements in excess of their rated allowable values when the effects of thermal stratification and striping are taken into account concurrently with other design loadings. As a result CP&L is modifying the design of these supports. Modifications to the spring cans are scheduled to be completed in the next refueling outage (Refueling Outage 14) anticipated to commence in March 1992. However, there is some uncertainty as to the availability of the materials to modify one of the spring cans. If the material cannot be acquired in a time frame that would allow installation during the upcoming outage, the spring cans would then be installed during refueling outage 15. Both the stress and fatigue analyses remain valid should this extension occur.

In accordance with the Bulletin's requirements, CP&L has pursued mechanisms to demonstrate applicability of the Beaver Valley and Diablo Canyon surge line profile data used in the analysis for HBR2. The only method of showing data applicability has been determined to be surge line instrumentation and subsequent plant specific data collection. Instrumentation of the HBR2 Pressurizer Surge Line is scheduled to be installed in the upcoming refueling outage. As previously described in Reference 5, data for at least one heatup and one cooldown must be collected. After collection of a full cycle of data an additional three months would be necessary to complete the applicability determination. Therefore, the applicability determination should be completed no later than three months after entering Refueling Outage 15.

Sufficient margin remains within the bounds of the existing Justification for Continued Operation (JCO) pending implementation of the modifications and applicability determination (Reference 3). The JCO documented the acceptability of the pressurizer surge line design in the absence of plant specific detailed reanalysis, for at least ten additional heatup and cooldown cycles from the date of the bounding evaluation, i.e., June 1989. HBR2 has experienced two heatup and cooldown cycles since the issuance of the JCO. The above described actions should require no more than one-and-one half additional cycles for a total cumulative of three-and-one half cycles.

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In summary, the integrity of the HBR2 pressurizer surge line has been confirmed in accordance with Bulletin requirements. Inspection of the stress and fatigue analyses can be coordinated through CP&L's Nuclear Engineering Department. Three spring can surge line supports will be modified as a result of increased loads and/or displacements due to thermal stratification and striping. These modifications are anticipated to be completed during the next refueling outage. Data applicability will be accomplished through instrumentation of the HBR2 Pressurizer Surge Line, and should be completed no later than 3 months after commencement of Refueling Outage 15. Resolution of the support design and data applicability determination will complete the actions required by the Bulletin with regard to HBR2 Pressurizer Surge line integrity.

Please refer any questions regarding this submittal to Mr. Steven Chaplin at (919) 546-6623.

Yours very truly,



G. E. Vaughn

GEV/SDC

cc: Mr. R. Lo
Mr. S. D. Ebnetter
Mr. L. Garner

G. E. Vaughn, 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.

Eleanor C. Chappell
Notary (Seal)

My commission expires: 2/6/96

