UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 17, 1994

Docket No. 50-302

Mr. Percy M. Beard, Jr.
Senior Vice President,
Nuclear Operations
Florida Power Corporation
ATTN: Manager, Nuclear
Licensing (NA2I)
Crystal River Energy Complex
15760 W Power Line Street
Crystal River, Florida 34428-6708

Dear Mr. Beard:

SUBJECT: SAFETY EVALUATION FOR BABCOCK & WILCOX OWNERS GROUP REPORT BAW-2127 AND BAW-2127, SUPPLEMENT 2, "PRESSURIZER SURGE LINE THERMAL STRATIFICATION" (TAC NO. M72127)

By letter dated February 21, 1992, the NRC staff forwarded a safety evaluation (SE) of the Babcock & Wilcox (B&W) Owners Group (BWOG) Report, BAW-2127, on pressurizer surge line (PSL) thermal stratification. In that safety evaluation, the staff concluded that the BWOG methodology used to analyze and evaluate the stress and fatigue effects due to thermal stratification and thermal striping was generally acceptable, with the exception of how secondary and peak stresses in the surge line elbows were calculated. In order to resolve this issue, BWOG reevaluated the surge line elbows using elastic-plastic analysis methods and criteria given in ASME Code, Section III, Subsection NB-3228.4 as documented in B&W report BAW-2127, Supplement 2.

The NRC staff and its contractor, Brookhaven National Laboratory (BNL) have reviewed the BWOG reports BAW-2127, "Final Submittal for Nuclear Regulatory Commission Bulletin 88-11, 'Pressurizer Surge Line Thermal Stratification,'" and BAW-2127, Supplement 2, "Pressurizer Surge Line Thermal Stratification for the B&W 177-FA Nuclear Plants Summary Report, Fatigue Stress Analysis of the Surge Line Elbows," as documented in the BNL Technical Evaluation Report (TER) A-3869(66). The staff has reviewed the TER and concurs with BNL that the methodology used to analyze the effects of thermal stratification and striping in the PSL is acceptable, and concludes that the B&W analyses adequately demonstrate the structural integrity of the lowered loop plant surge lines for the 40-year design life of the plant, while considering the effects of thermal stratification.

Please note that in the staff's SE, the staff concurs with BNL's recommendation for performing enhanced inservice inspection of the PSL elbows. The staff believes the recommendation is prudent due to the fact that an elastic-plastic analysis was necessary to confirm the adequacy of surge lines at BWOG facilities. The staff believes that inservice inspections on the surge line elbows may detect the presence of preexisting

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flaws that may have propagated under the influence of stratification-induced fatigue. The additional examinations are staff recommendations only. As such, you may implement the recommendations on a voluntary basis.

Action 1.d of Bulletin 88-11 requested licensees to update their stress and fatigue analyses to ensure compliance with applicable Code requirements. The staff has concluded that the results of the BWOG analysis may be used as the basis for BWOG licensees to update their plant-specific Code stress reports to demonstrate compliance with applicable Code requirements as requested in Bulletin 88-11. By letter dated June 25, 1992, you confirmed the applicability of BAW-2127, Supplement 2, to Crystal River Unit 3 and confirmed the updating of plant operational guidelines. Based on the June 25, 1992 letter, the staff considers Bulletin 88-11 actions complete for Crystal River Unit 3. You should keep plant-specific analyses and records available, since the staff may audit or inspect the implementation of Bulletin 88-11 at a later date. This completes our activity related to TAC No. M72127.

Sincerely,

(Original Signed By)

Harley Silver, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
Safety Evaluation of BAW-2127
and BAW-2127, Supplement 2,
dated September 16, 1993

cc w/enclosure:
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Generating Plant

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