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Dr. J. Nelson Grace, Director
CRBR Program Office
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Grace:

CONFIRMATORY HIGH TEMPERATURE DESIGN PROGRAMS

The purpose of this letter is to document the agreements made at the Clinch River Breeder Reactor Plant (CRBRP) and Mechanical Engineering Branch (MEB) meeting on February 9, 1983. To resolve MEB finding Number 1, weldment safety evaluation, we commit to undertake the following confirmatory program:

1. Evaluate potential for premature crack initiation at weldments due to thermal fatigue, residual stresses, and damage caused by the welding process.
2. Confirm adequacy of creep-rupture and creep-fatigue damage evaluation procedures at weldment.
3. Assess growth behavior of cracks in the heat affected zone of weldments.
4. Evaluate potential for a consequences of enhanced creep in uncracked ligaments.
5. Assess stability of uncracked ligaments for creep conditions.
6. Define effects of long-term elevated temperature service on crack initiation.
7. Evaluate effects of loading sequence on creep-fatigue behavior.

Similarly, to resolve MEB finding Number 5, notch weakening, we will undertake the following confirmatory program:

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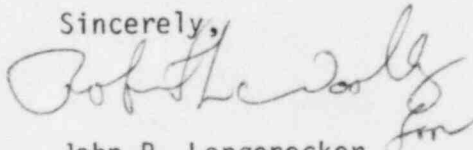
1. Extend elastic constraint damage evaluation method for bending.
2. Implement effects of material ductility in damage evaluation procedure.
3. Extend elastic constraint damage evaluation method to include cyclic loading.
4. Apply the extended method to "worst case" geometric notches in CRBRP components.
5. Compare effects of tensile stress vs. stress intensity on creep rupture.
6. Develop cyclic creep strain concentration factors for notches in creep fatigue and perform trial applications.

Data from the above programs will be available to support the CRBRP operating license review.

I understand that, with the above, the only unresolved high temperature design issue is Number 3, design analysis methods, codes, and standards, which is still under staff review.

The low temperature design information discussed at the meeting will be forwarded under separate cover shortly.

Sincerely,



John R. Longenecker
Acting Director, Office of
Breeder Demonstration Projects
Office of Nuclear Energy

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