UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

Docket Nos. 50-269
50-270
and 50-287

April 22, 1970

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Duke Power Company
Power Building
422 South Church Street
Charlotte, North Carolina 28201

Attention: Mr. Austin C. Thies
Vice President
Production & Operation

Gentlemen:

As discussed with you in a meeting at Lynchburg, Virginia on March 31 and April 1, 1970, we require additional information to complete our evaluation of your combined loading stress and deflection analyses for fuel assemblies and reactor internals. The information needed is described in the attached enclosure. The requests are in groups which correspond directly to sections in your Final Safety Analysis Report. You will note that request 3.3.4 forwarded to you by our letter of March 3, 1970 has been revised. This revision is based on the above mentioned discussions.

Please contact us if you desire any discussion or clarification of the information requested by this letter.

Sincerely,

/s/

Peter A. Morris, Director
Division of Reactor Licensing

Enclosure:
As stated above

PWR-2/DRL	PWR-2/DRL	PWRs/DRL	DRL	DRL
ASchwencer:pf	CGLong	RCDeYoung	FSchroeder	PAMorris
4/20/70	4/20/70	4/21/70	4/22/70	4/22/70

REQUEST FOR ADDITIONAL INFORMATION

3.8 Reactor Internals (The following requests apply to B&W Report BAW-10008, Part 1)

(1)3.8.4 With respect to the response spectrum/modal analysis method discussed in Section 3.1.6 provide:

a. An engineering sketch of the structural configuration represented by the model.

b. A tabulation of masses and flexibility/stiffness factors, preferably in matrix form.

c. A brief discussion of the program used to compute frequencies, mode shapes, etc.

d. The mode shapes, frequencies, and participation factors developed by the analysis.

e. The criteria used to combine the modal contributions in order to arrive at deformations and/or forces on the reactor internals.

*3.8.13 Provide the following information related to the stress analysis:

a. The mathematical models used, the assumed boundary conditions and representative free body diagrams. Identify the component loads, loading sources and resulting stresses for primary load paths, i.e., bolted joints, plenum cylinder, core grids.

b. Sketches or drawings, to supplement Figure 23, showing all critical areas (such as discontinuites, areas of clearance and bolted connections).

3.8.14 We understand that with combined accident loads some of the bolts joining the core barrel and core support shield will be stressed beyond yield strength. Describe the methods of analysis used for these bolts and justify the bases for exceeding yield strength. Also, discuss how you will be assured that these bolts will retain their preload and strength properties throughout the life of the plant.

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(1) This is a revision of request 3.8.4 made by letter of March 3, 1970

* These are in addition to requests 3.8.1 through 3.8.12 made by the March 3, 1970 letter.

3.8.15 Document typical results from either an experiment or a theoretical analysis that considers the shell bell modes (n=0, n=2, n=4, etc) for the core support shield and core barrel during LOCA conditions. These results should include the effect of shell bell mode deformations on bolted joints.

3.8.16 Document typical results of a stress analysis that considers the effects from the lateral pressure maldistribution that occurs across the core support shield and core barrel during a LOCA.

3.9 (The following requests apply to B&W Report BAW-10008, Part 2.)

3.9.14* With respect to the time history/modal analysis discussed in Section 3.3, provide:

a. The thrust vs time function used as the applied force on the assumed model.

b. A brief description of the analytical program used.

c. The modal damping coefficients used.

d. The manner in which the resultant load is combined (magnitude or phasewise) with other LOCA and seismic loads.

3.9.15 With respect to the fuel assembly horizontal seismic analysis, provide:

a. The mathematical models for the Phase 1 and Phase 2 analyses.

b. The engineering basis for and validity of the decoupling assumed between the Phase 1 and Phase 2 models.

c. The analog diagrams for the two phases with accompanying explanations of symbols used on the diagrams.

d. A discussion of damping coefficients to include the basis for their selection, an engineering assessment of the validity and conservation in the computational method used and an example showing how they have been determined.

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*Requests 3.9.1 through 3.9.13 were made by letter of March 3, 1970.

e. A description establishing the basis for the gap and stiffness coefficient values selected.

f. A copy of one analog run giving necessary data for force balance calculations.

g. A discussion of the criteria for the acceptability of the output results of the seismic analyses, and the bases for these criteria.