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

SEPTEMBER 19 1979

Docket No. 50-296

Mr. Hugh G. Parris
Manager of Power
Tennessee Valley Authority
500 A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Reference is made to your letter of August 6, 1979 transmitting a reload analyses for operation of Browns Ferry Unit No. 3 in the third fuel cycle. To complete our review, we need the additional information identified in the enclosure to this letter.

Sincerely,

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosure:
Request for Additional
Information

cc w/enclosure:
see next page

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BROWNS FERRY UNIT NO. 3

REQUEST FOR ADDITIONAL INFORMATION

RELOAD FOR CYCLE 3

DOCKET NO. 50-296

1. Your letter of August 6, 1979 (TVA BFNP TS 127) transmitted a reload analysis for operation of Browns Ferry Unit No. 3 (BF-3) in the third fuel cycle. During the current outage, we understand you are modifying the end-of-cycle recirculation pump trip (RPT) system on Unit No. 3 to be the same as the RPT systems on Units Nos. 1 and 2. The transient analyses in your August 6, 1979 submittal, which include credit for the RPT system in establishing operating limits, has been performed with the REDY code. During the past year, there have been a number of discussions and correspondence between the TVA and NRC staffs on whether the REDY Code vs. ODYN Code is the better predictor of plant behavior as transient severity is reduced (by the RPT system). Our position - with which we believe you concur - is that the ODYN Code, which uses a more physically correct model of the plant, is probably a better predictor of changes in critical power ratios. During the previous Unit No. 3 reload submittal, as well as the subsequent reload submittals on Units Nos. 1 and 2, we had requested an ODYN analysis of the limiting pressurization transients to establish operating limit minimum critical power ratios (OLMCPRs). This subject has been discussed at length in our safety evaluations supporting the most recent reload amendments on Units Nos. 1, 2 and 3. We would still prefer and are requesting, for the current Unit No. 3 reload a reanalysis of the load rejection without bypass (LRWOBP) and the feedwater controller failure transients with the proposed licensing basis ODYN Code, as applied in the letter from E. D. Fuller, General Electric Company, to D. F. Ross, NRC, dated June 26, 1979, "Impact of ODYN Transient Model on Plant Operating Limits". Your previous position has been that you would perform any reload analysis with either REDY or ODYN - but not both - because of the time and cost required for duplicate analysis. You also raised the question of the acceptability of ODYN analyses until such time as the ODYN Code is approved by NRC. On the most recent reload amendments for Units Nos. 1, 2 and 3 we have resolved this issue by adding a margin to the OLMCPRs calculated by the REDY Code to account for possible lack of conservatism at the end of the fuel cycle when transient effects are most severe. You are requested to provide an ODYN analysis of the limiting pressurization transients as discussed above. If you do not propose to provide these ODYN analyses, explain the basis for your position and propose appropriate margins to the OLMCPR's with justification therefore.

2. The proposed Technical Specifications for Cycle 3 include a change (pg. 75) which would allow BF-3 to operate at up to 85% power with neither RPT operable for an indefinite period of time. The present Technical Specifications require that the unit be brought to below 30% power within 24 hours if both RPT systems are inoperable. Provide justification for this change via a plant and cycle specific analysis of the most severe pressurization transients occurring from 85% power without taking credit for the RPT feature. Show that the safety limit MCPR will not be violated by any fuel type assuming the respective proposed operating limit MCPRs. If the proposed specification is intended to be applied to all future cycles of BF-3 the analysis should bound expected future core characteristics, otherwise cycle specific analyses may be required.

3. Describe or reference the physics startup test program which will be used for the restart of BF-3 for Cycle 3 operation.

4. The staff stated in Section 6.2.2 of its safety evaluation of the Generic Reload Fuel Application (which you have referenced in your reload application) that "Additional data should be submitted by GE to the staff for review, to justify the conservatism of the GEXL correlation for the second and subsequent cycles of operation of the retrofit 8x8 bundles, when local peaking factors may increase sufficiently to cause non-conservative CPR calculations." Your reload submittal has not addressed this issue. Accordingly, we request you provide either directly or through reference, adequate information which speaks to this concern. Your response should include:

   - The extent to which individual heater rods are instrumented in steady-state critical power tests for the retrofit fuel design.

   - For each test bundle provide measured and predicted results in tabular form for the various test conditions.

   - Provide trend plots (measured critical power/predicted critical power vs h_{IN}, G, P, critical power, test bundle)

   - Maximum R-Factor for each test bundle (new and old R-Factor definitions)

   - Thermocouple locations (rod-by-rod and axially)

   - Spacer-grid locations

   - Provide power and heat flux for all plots of transient CPR cases.