

Schwenk

JUN 13 1983

MEMORANDUM FOR: D. B. Vassallo, Chief
 Operating Reactors Branch #2, DL

FROM: C. H. Berlinger, Chief
 Core Performance Branch, DSI

SUBJECT: "BROWNS FERRY EXCLUSION FROM APPROVAL OF SINGLE LOOP OPERATION
 AT 50% POWER"

Reference: Memorandum from Brian Sheron to D. B. Vassallo "BWR Single Loop
 Operation at 50% Power," June 3, 1983.

The above referenced memo indicates that there is no reason to exclude Browns
 Ferry from generic SLO approval. I would like to briefly indicate why it is
 the CPB position that Browns Ferry be excluded from the generic SLO approval
 at this time.

First, as a result of a recent review by ORNL of the Vermont Yankee Stability
 test data, ORNL disagrees with the following three positions previously taken
 by General Electric in their stability submittals.

1. Core stability at any point in the power/flow operating map is independent
 of the mode in which the core flow is induced, i.e., no difference between
 SLO and two-loop operation (TLO).
2. Core stability increases as core flow increases following constant control
 and position (viz, power/flow ratio) line in the power/flow operating map,
 regardless of the mode of operation, i.e., SLO or TLO.
3. The least stable condition on the power/flow operating map corresponds to
 natural circulation operation at the rated rod line or above.

We have discussed these differences with General Electric and it is our under-
 standing that they now concede that these positions are not supported by the
 data. Second, we feel that since Browns Ferry had previously experienced
 oscillations while in single loop operation that it should be subject to a
 special review. Specifically with respect to our current review of the Browns
 Ferry data, we disagree with TVA's position concerning oscillations experienced
 in SLO operation.

It is the TVA position that the observed increase in neutron noise under certain
 SLO conditions is not related to changes in core stability.

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This position is supported, according to TVA, by two facts:

1. The flow fluctuations increase due to reverse flow/downcomer mixing etc. therefore the increase in neutron noise is merely driven by the higher magnitude of the flow fluctuations.
2. The neutron noise increases as core flow increases, which according to two-loop operating experience should make the reactor more stable.

Point 1 above is not supported by the data. If stability changes had not occurred, the ratio between normalized power and flow fluctuations should have remained constant. The "magnification" factor for Browns Ferry during SLO is not constant.

Point 2 would be well taken if SLO and TLO were to have the same recirculation-loop dynamic characteristics. It is not so. Vermont Yankee data clearly shows that SLO was more unstable than natural circulation in spite of having a higher core flow rate with the same power/flow ratio.

TVA plans to allow ORNL personnel to take some noise data during a future planned pump outage. We intend, with study of this data and the completion of ORNL's review of the Browns Ferry noise oscillations, to resolve TVA's SLO submittal.

Original signed by:

C. H. Berlinger, Chief
Core Performance Branch, DSI

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