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August 14, 1978

Docket No. 50-269

Duke Power Company
ATTN: Mr. William O. Parker, Jr.
Vice President - Steam
Production
P. O. Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Gentlemen:

We are currently reviewing your submittal of June 8, 1978 in regard to a proposed increase in the steam generator tube Technical Specification leak limit from 0.3 gpm to 1.0 gpm. We find that we need additional information so that we can continue our review of this proposal.

It is requested that you provide the information identified in the enclosure to enable us to complete our review. Kindly submit three signed originals and 37 additional copies.

Sincerely,

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosure:
Request for Additional
Information and
Evaluation

cc w/enclosure: See next page

MBF

OFFICE →	ORB#4:DOR	C-ORB#4:DOR			
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DATE →	8/14/78	8/14/78			

REQUEST FOR ADDITIONAL INFORMATION
AND
EVALUATION OF OCONEE UNIT 1 PROPOSED
TECHNICAL SPECIFICATION STEAM GENERATOR TUBE
LEAKAGE RATE LIMIT INCREASE

Steam generator tube primary-to-secondary leakage gives an indication that the reactor coolant pressure boundary has been breached. The technical specification steam generator tube leakage rate limit is the last line of defense against unacceptable tube degradation. In the event that abnormally degraded tubes develop through wall cracks during normal operation, the primary to secondary leak rate limit will ensure that any leaking tube has an adequate margin of safety to withstand the loads imposed during normal operation and postulated accidents. To establish a leak rate limit that retains an adequate margin of safety against tube failure it is necessary to know the burst pressures and leak rates associated with various types of through wall defects. The primary to secondary leak rate limit under normal operating pressure should be less than the leak rate determined theoretically or experimentally for the most limiting single defect.

To date no theoretical or experimental leak rate data has been submitted for Babcock and Wilcox (B&W) steam generators. Furthermore, the only tube burst data which has been submitted for B&W steam generator tubes (Attachment 2 to December 16, 1977 Letter Addressed to Mr. E. Case from Mr. W. Parker, Jr.) did not include results for any through wall defects. Therefore, a proper assessment of the proposed leak rate limit cannot be made. The current 0.3 GPM leak rate limit was conservatively established based on leak rate and tube burst data submitted by other vendors; however, this data may not be fully applicable to B&W steam generator tubes.

Proper assessment of the leak rate limit for the Oconee B&W steam generators will require review of leak rate and tube burst data for postulated defects. In particular this data should be made available for defect geometries resembling the "erosion" and circumferential fatigue cracks which have been observed in the Oconee steam generators. The defects should be manufactured to resemble observed tube degradation as accurately as possible. Circumferential cracks should preferably be introduced by a fatigue mechanism since mechanically machined or electric discharge machined (EDM) cracks are not as tight as fatigue cracks and tend to overestimate leak rates. Burst and leak tests should be conducted in an environment approximating real operating conditions as nearly as practicable. In particular these tests should be conducted at the actual operating temperature.

Duke Power Company

cc: Mr. William L. Porter
Duke Power Company
P. O. Box 2178
422 South Church Street
Charlotte, North Carolina 28242

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