Duke Power Company
P.O. Box 33189
Charlotte, NC 28242

(704)373-4011

DUKE POWER

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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
Steam Generator Tube Rupture Analysis

Gentlemen:

On March 30, 1987 the NRC staff issued a Safety Evaluation Report (SER) accepting the Steam Generator Tube Rupture (SGTR) analysis methodology documented in WCAP-10698, SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill. Section D, Enclosure 1, of the NRC's SER required additional plant specific input from each utility referencing WCAP-10698. My December 7, 1987 letter to the NRC addressed the five items required by SER Section D, for Catawba Nuclear Station. Please find attached additional information regarding the five Section D items for Catawba. This information is being requested per conversations with the NRC staff.

My August 24, 1988 letter transmitted SGTR analysis and a Technical Specification amendment request in response to License Conditions 16 (Unit 1) and 10 (Unit 2). Revised FSAR Table 15.6.3-1 was attached to my August 24, 1988 letter. Two typographical errors have been found in the revised FSAR Table 15.6.3-1 that relate to the SGTR sequence of events. Cooldown completion should have been at 64.2 minutes instead of 64.8 minutes. Depressurization should have been at 66.2 minutes instead of 66.3 minutes. As indicated in the attachment, simulator training response times are consistent with the FSAR analysis. The revised FSAR Table 15.6.3-1 will be included in a future FSAR update.

Very truly yours,

J W Hampton for

H. B. Tucker

JGT/5/SGTR

xc: Mr. S. D. Ebneter
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta St., NW, Suite 2900
Atlanta, Georgia 30323

Mr. W. T. Orders
NRC Resident Inspector
Catawba Nuclear Station

A001
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CATAWBA NUCLEAR STATION
STEAM GENERATOR TUBE RUPTURE ANALYSIS
UPDATE TO DECEMBER 7, 1987 SUBMITTAL

ITEM 1 TRAINING PROGRAMS

Additional information to that in Item 1 of my December 7, 1987 submittal was provided to the NRC per my August 8, 1988 letter. Operators have been retrained in all five Action Items in the August 8, 1988 submittal. Simulator training response times are consistent with safety analysis assumptions.

ITEM 2 COMPUTER CODE

On October 19, 1988 the NRC approved the computer code RETRAN02/MOD004. This is the computer code used for the plant specific dose analysis in Item 2.

Additional information to that in Item 2 of my December 7, 1987 submittal was provided per my August 24, 1988 letter to the NRC.

ITEM 2 INITIAL CONDITIONS

In the SER issued on March 30, 1987 accepting the SGTR analysis methodology documented in WCAP-10698, the NRC staff concluded that "the single failure analysis and sensitivity studies in (WCAP-10698) Supplement 1, have identified the worst single failure and the analysis assumptions which are conservative with respect to offsite doses." The SER also indicates that this conclusion will stand unless the review of WCAP-106989 causes it to be challenged or some reason is found on a plant specific basis for it not being applicable. No such reason was found for Catawba Nuclear Station. The worst single failure identified in WCAP-10698 Supplement 1 is a failed-open steam line PORV on the ruptured steam generator. This worst single failure was used for the Catawba Nuclear Station offsite dose analysis.

Break location is not a sensitive parameter for the offsite dose analysis unless the steam generator tubes are uncovered. No credit is taken for partitioning in the secondary liquid if the steam generator tubes are uncovered. This is equivalent to assuming a break at the top of the tube bundle.

ITEM 3 STRUCTURAL ANALYSIS OF MAIN STEAM LINES

The Catawba Nuclear Station main steam piping was qualified for structural adequacy including the postulation of a steam generator tube rupture (SGTR). The SGTR was considered in the analysis by including a static loading case with each main steam isolation valve. All supports - with the exception of snubbers - were assumed to be active during this loading case. Spring supports were assumed to be un-pinned (travel stops removed) as during normal operating conditions.

Qualification of the piping was performed using the above loading case in equation 9 of the ASME code, 1974 edition through summer 74 addenda. The SGTR case is considered a faulted loading with respect to support loads. This particular case is enveloped by other faulted loadings and does not control support design.

CATAWBA NUCLEAR STATION
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ITEM 5 RELATIONSHIP TO REFERENCE PLANT

As stated in the December 7, 1987 response,the Catawba steam generators have smaller tube diameters and larger initial steam volumes than the reference plant. As stated on page 4-3 of WCAP-10698, the reference plant inside tube diameter is 0.775", while the Catawba Nuclear Station inside tube diameter is 0.664" (see Catawba FSAR Table 5.4.2-1). As indicated in WCAP-10698 Table 4.1-1 the reference plant steam volume is 3658 cubic ft. The Catawba Nuclear Station Unit 1 steam volume is 3848 cubic ft. and the Unit 2 steam volume is 3883 cubic ft. Following the December 7, 1987 submittal, Catawba Unit 2 has lowered the full power normal operating water level in the steam generators. This Catawba Unit 2 modification results in an even larger margin to overfill.

The break location was modeled conservatively. For the system thermal-hydraulic analysis, the break was assumed to occur at the top of the tubesheet on the outlet plenum side. This assumption is consistent with the guidance in WCAP-10698, page 3-6.

ITEM 5 SINGLE FAILURE

As stated in the December 7, 1987 submittal, the single failure evaluation in WCAP-10698 either is applicable to or bounds the Catawba Nuclear Station single failure, depending on the specific failure. Because certain failures are bounding on Catawba, rather than being directly applicable to it, the numerical results in WCAP-10698 for relative severity of individual single failures would not be directly applicable to Catawba. It can only be determined that the worst single failure at Catawba would be no worse than the numerical results given in the WCAP. A plant specific analysis would be required to further determine which failure is worst and to quantify its severity. A plant specific analysis is contrary to the purpose of the owner's group approach of bounding all possible plants via a generic analysis.