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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention Document Control Desk

Subject: Duke Power Company
McGuire Nuclear Station
Docket Numbers 50-369 and -370
Catawba Nuclear Station
Docket Numbers 50-413 and -414
Minor Change to NRC-Approved Methodology

The purpose of this letter is to notify the NRC staff of a minor change to the NRC-approved analysis methodology that Duke Power uses for FSAR Chapter 15 analyses to support the McGuire and Catawba Nuclear Stations. This methodology is detailed in the topical report DPC-NE-3002-A, "FSAR Chapter 15 System Transient Analysis Methodology." The specific modeling change is the assumed performance of the pressurizer code safety valves and the main steam code safety valves. In the licensed methodology it is stated that these valves "are modeled with lift, accumulation, and blowdown assumptions which maximize (or minimize) the pressurizer (or secondary) pressure." The specific minor change is in regard to the concept of accumulation during lift of a safety valve. Accumulation has been modeled as a linear opening of a safety valve beginning at the lift setpoint and reaching full open at a pressure corresponding to the lift setpoint plus an accumulation allowance which is typically 1-3% of the lift pressure setpoint. For example, a pressurizer safety valve with a lift setpoint of 2500 psig and 3% accumulation would reach full open at 2575 psig. Although this is a conservative modeling approach, it does not physically represent the real valve performance, which is best characterized as a popping-open response. The proposed minor change to the approved modeling would be to model the valves as popping open with a conservatively slow response time. For each valve type for which this modeling is to be applied, valve testing data will be researched to determine the actual valve dynamic response. These data will then be conservatively bounded by the new popping-open modeling used in the RETRAN-02 model for McGuire and Catawba.

The need for this modeling change is twofold. Licensing basis analyses assuming +3% valve setpoint drift and the current 3% linear accumulation assumption can result in peak primary or secondary pressures which approach or exceed the overpressure limits. The proposed modeling significantly reduces the predicted peak pressures, thereby adding margin and avoiding other unnecessary and undesirable alternatives such as lowering the valve setpoints. The second cause is

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the design of the replacement steam generators which are to be installed at McGuire and Catawba Nuclear Stations, beginning in mid-1996. The increase in steam generator heat transfer area in the replacement steam generators results in higher peak secondary pressures following turbine trip. The analysis results will exceed the secondary overpressure limit unless this modeling change is implemented or the code safety valve setpoints are lowered, which would require a Technical Specification change. Lowering the valve setpoints is not desirable, and any unnecessary Technical Specification revisions should be avoided if possible.

This modeling change was discussed by phone with NRC staff from the Mechanical Engineering and Reactor Systems Branches in May 1995. The conclusions from the discussions were that the proposed modeling approach would be acceptable as long as the modeling was conservative relative to the industry valve testing database. That constraint will be followed with the proposed modeling approach, with a significant amount of conservatism maintained.

NRC concurrence with this proposed modeling change will be necessary to avoid submittal of a topical report revision or a Technical Specification change. The application of this proposed modeling change is necessary to support the Catawba Unit 1 outage with steam generator replacement, which is currently scheduled to start in April 1996.

If you would like to discuss this letter, please call Scott Gewehr at (704) 382-7581.

Very truly yours,

M. S. Tuckman

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