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U. S. Nuclear Regulatory Commission
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SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Implementation of Anticipated
Transients Without Scram Modifications
(TAC No. 62122)

Gentlemen:

In letter 1CAN128804, dated December 16, 1988, Entergy Operations provided the conceptual design for the Arkansas Nuclear One, Unit 1 (ANO-1) specific modifications to comply with 10 CFR 50.62, "Requirements for Reduction from Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants". The modifications are based upon the generic design described in the Babcock & Wilcox (B&W) document 47-1159091-00, "Design Requirements for Diverse Scram System (DSS) and ATWS Mitigation System Actuation Circuitry (AMSAC)" as well as the subsequent guidance provided within the NRC's Safety Evaluation of this generic design. The Safety Evaluation was dated July 14, 1988 (1CNA078804). The AMSAC and the DSS, will be implemented in a computer based ATWS system called the Diverse Reactor Overpressure Prevention System (DROPS). In letter 1CAN128804, Entergy Operations also committed to install these modifications during the ninth refueling outage (1R9).

The NRC transmitted a request for additional information regarding the plant specific conceptual design on February 23, 1989 (1CNA028905). Entergy Operations provided the requested information in letter 1CAN048914, dated April 26, 1989. The implementation schedule (1R9) was confirmed in our April 26, 1989 letter.

The Staff's Safety Evaluation for the ANO-1 ATWS modifications was transmitted to Entergy Operations in letter dated September 18, 1989. In this letter, the Staff stated that it was their understanding that the ATWS modifications for ANO-1 would be implemented during the ninth refueling outage.

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The September 18, 1989, Safety Evaluation was based upon the AMSAC logic being automatically bypassed below a nominal power level of 25%. The bypass setpoint was revised upward during the later stages of the design in response to an engineering concern of spurious operation of AMSAC at the lower setpoint. This change was evaluated by the 10 CFR 50.59 evaluation prepared for the design change package for DROPS.

The ATWS modifications were implemented during 1R9 and DROPS was declared operational on January 10, 1991. During preoperational testing of DROPS, a discrepancy was identified that was not anticipated based upon the original design development.

This discrepancy involved the Gamma-metrics linear reactor power signal input which is being utilized by the AMSAC portion of the system as a diverse means of determining reactor power. The specifics of the condition were discussed with the ANO-1 NRR Project Manager; the Region IV, Project Section A Chief; the ANO Senior Resident Inspector; and the ANO-1 Resident Inspector during the week of January 7, 1991. The purpose of this letter is to provide additional information concerning these items.

The discrepancy dealt with the output of the Gamma-metrics linear amplifiers not providing a significant strength signal as prescribed in the Gamma-metrics vendor manual. This discrepancy was compensated for by recalibrating the voltage/voltage buffer devices located between the Gamma-metrics linear amplifiers output and DROPS. This recalibration required escalation in power up to the 90% range before putting DROPS into service.

ANO-1 tripped off line on January 10, 1991, due to a failure of the main generator exciter. While the unit was down to replace the exciter, new amplifiers with increased gain were installed and the voltage/voltage buffers recalibrated. These amplifiers were evaluated during the recent startup and found acceptable. Calibration was also required during this startup to place DROPS in service.

DROPS was placed back in service on January 22, 1991. Should you have any questions regarding this issue, please contact me.

Very truly yours,

James J. Fisicaro

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