ARKANSAS POWER & LIGHT COMPANY
FIRST NATIONAL BUILDING/P.O. BOX 551/LITTLE ROCK, ARKANSAS 72203/(501) 371-4422

May 17, 1982

WILLIAM CAVANAUGH, III
Senior Vice President
Energy Supply

1CAN058203

Director of Nuclear Reactor Regulation
ATTN: Mr. J. F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Technical Specifications Concerning Steam Line Break Instrumentation and Control (SLBIC) Setpoints

Gentlemen:

Attached is a proposed Technical Specification change for your review and approval. This change involves raising the SLBIC setpoint so that upon a small steam line break the pressurizer level is not lost on the low end. Similar modifications to the Turbine Throttle Pressure Limiter setpoint should prevent spurious actuation. A detailed discussion of these changes is discussed further in Attachment A.

Pursuant to the requirement of 10CFR170.22, we have determined this request to be a Class III Amendment as it is a single safety issue. Accordingly, a check in the amount of $4,000 is remitted.

Very truly yours,

William Cavanaugh III

WC:MCS:nak

Attachments

A001 S.1/1 $4,000

STATE OF ARKANSAS)
) SS
COUNTY OF PULASKI)

I, William Cavanaugh III, being duly sworn, subscribe to and say that I am Senior Vice President, Energy Supply for Arkansas Power & Light Company; that I have full authority to execute this oath; that I have read the document numbered 1CAN058203 and know the contents thereof; and that to the best of my knowledge, information and belief the statements in it are true.

William Cavanaugh III

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for the County and State above named, this 17 day of May, 1982.

Sharon Kaye Hendrix
Notary Public

My Commission Expires:
9-19-89

INTRODUCTION

The objective of this report is to assess the impact of a raised SLBIC setpoint on the FSAR Chapter 14 transient analysis. Also it is to evaluate the addition of a throttle pressure limiter control system to ANO-1, confirm there are no safety problems and provide a setpoint.

DISCUSSION

The SLBIC system is designed to perform the secondary fluid isolation function following a secondary side depressurization transient. The current steam line pressure setpoint (~600 psi) has been used for FSAR analyses and in the preparation of the ATOG operating guidelines. It has been suggested that this setpoint should be raised (increased 180 psi) in the hope of retaining pressurizer level indication during a secondary system depressurization transient.

The FSAR events of Chapter 14 have been reviewed and the following conclusions can be stated. Following a large steam line break, as described in the FSAR, the rapid depressurization of the steam line creates a SLBIC signal in a few seconds at most. Using a 780 psi signal versus 600 psi would provide an isolation signal 1-2 seconds earlier. This is not sufficient to retain pressurizer level indication following a double-ended steam line break, but would result in slightly less overcooling since secondary fluid is terminated sooner.

In the case of less severe depressurization transient, a higher SLBIC signal will have greater impact on the transient response, terminating the overcooling earlier in time. The trend of the event remains the same, only the timing changes.

Raising the SLBIC setpoint may result in SLBIC actuation for transients that would not normally result in a secondary depressurization of sufficient magnitude, such as an excessive main feedwater flow event. This will change the course of the event from that which is typically predicted.

Consideration must also be given to the increase in probability of spurious actuation of SLBIC. Such an event would result in inadvertent MSIV closure with a loss of main feedwater to one or both steam generators.

The addition of a turbine throttle pressure limiter control (TPC), when functioning properly, should eliminate concern over inadvertent SLBIC actuation.

No safety problems are expected from the use of the TPC device. The B&W Instrumentation & Control Systems will monitor reactor, steam generator, and turbine functions to prevent unsafe operation, but possibly initiating load limits or reactor trips especially if operated in manual modes.

For the ANO-1 AEH turbine controller, a single solid state transducer with a very small deadband (±4 to 5 psi) is used for the TPC function only. (Separate transducers are used for the load control and speed control functions.) When the throttle pressure drops below the TPC setpoint, the TPC runs back the governor valves at a fixed rate of 200% per minute. (If desired, the rate can be changed by wiring changes, not at the turbine control panel.) The low limit of valve position (10 to 20%) is set to prevent overheating of turbine exhaust and last stage buckets by low load or "motoring". Runback by the TPC stops when pressure reaches or exceeds the TPC setpoint.

When the TPC is initiated, it puts the EHC into Operator Automatic mode -- essentially a turbine-manual mode. Governor valves will remain where the TPC left them until changed by the operator.

The TPC is controlled by "In" or "Out" pushbuttons on the turbine control panel. It must be "Out" of service for plant start-up.

To avoid tripping the reactor by the SLBIC system, the TPC setpoint should be as high as possible to allow for transients and instrument error:

Therefore, the recommended TPC setpoint is 835 psig, 55 psi above the 780 psig SLBIC setpoint and 50 psi below the 885 psig operating throttle pressure setpoint.

Therefore, raising the SLBIC setpoint from 600 to 780 psi presents no known safety problem and will be beneficial in small overcooling events. Raising the setpoint is not expected to assure pressurizer level indication during a large SLB transient.