

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMERDMENT NO. 4 TO LICENSE NO. DPR-51

CHANGE NO. 4 TO TECHNICAL SPECIFICATIONS

ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE - UNIT 1

DOCKET NO. 50-313

INTRODUCTION

By letter dated April 17, 1975, the Arkansas Power & Light Company (the licensee) requested changes to the Technical Specifications appended to Facility Operating License No. DPR-51 for Arkansas Nuclear One - Unit 1. The changes involve setting and surveillance requirements for the Steam Line Break Instrumentation and Control System (SLBIC).

DISCUSSION

During the operating license review for the Arkansas Nuclear One - Unit 1 facility, it was recognized that a very large steamline break could cause an unacceptably high reactivity increase in the core if that break occurred late in core life when the moderator temperature coefficient has a substantial negative value. The SLBIC system was designed to limit the positive reactivity addition and attendant reactor power increase to acceptable levels in the event of any steam line break at any time in core life.

The plant was licensed while the final design and Technical Specifications for the SLBIC were under review since analysis submitted by the licensee showed that the moderator temperature coefficient does not reach sufficiently negative values to require the protection of the SLBIC until the core has accumulated 225 EFPD (effective full power days) of exposure. The licensee agreed to have the SLBIC system operable at this point in core life. The SLBIC system is a seismic Category I system which consists of four steam pressure sensors and one logic cabinet per steam loop plus valve operators, power supplies, and associated wiring. It provides for prompt detection of the rapid decrease in steam pressure that would accompany a large steam line break and prompt isolation of the steam generator in the affected loop by closing that loop's main steam block valve and main feedwater block valve. This isolation eliminates the excessive removal of heat by that steam generator thereby limiting the decrease in water temperature in the affected primary coolant loop. This, in turn, limits the positive reactivity added to the core (due

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to the negative temperature coefficient) and the attendant power increase is reduced to acceptable levels. We have reviewed the design of the SLEIC and by letter of February 12, 1975, notified the licensee of its acceptability.

The Technical Specification changes involved in this amendment provide for the operation of and establish the safety settings for the SLEIC system. The changes proposed by the licensee include a change to Specification 3.4 to require that the SLEIC be operable before the plant's main steam pressure exceeds 700 psig. This specification also calls for the SLEIC to be set at  $600 + 25$  psig. The licensee also proposed to change Table 3.5.1-1 of the Technical Specifications to add the SLEIC to the instrumentation required for operation. Lastly, the licensee proposes changes in the surveillance section to require weekly check and quarterly test of the SLEIC as well as calibration at each refueling period.

#### EVALUATION

We have evaluated these proposed changes to the Technical Specifications and find them acceptable for the following reasons:

- a. The steam pressure limit at which the SLEIC is required to be operable, 700 psig, is well below the normal steam pressure of 900-1000 psig assuring that the SLEIC will be available when a very large steam break excursion might be experienced. Any system blowdown occurring at an initial pressure less than 700 psig will not yield consequences greater than those which have been found acceptable in the staff's safety evaluation of the Arkansas Nuclear One - Unit 1 Final Safety Analysis Report.
- b. The SLEIC actuation pressure of  $600 + 25$  psig is far enough below the required operability pressure (700 psig) to provide a practical interval for arming the system. The setpoint provides a reasonable margin between the lowest pressure expected during an operating transient, 700 psig, and is high enough to provide prompt system actuation should a major steam line break occur. The consequences of any system blowdown which commences at an initial steam pressure equal to or greater than the operability pressure and which is terminated by the SLEIC system actuated at a pressure of  $600 + 25$  psig is less than those consequences which have been found acceptable in the staff's safety evaluation of the Arkansas Nuclear One - Unit 1 Final Safety Analysis Report.
- c. The surveillance requirements proposed by the licensee for the SLEIC are consistent with the surveillance requirements usually applied to systems of this type and are sufficient to cover all elements of the system. Item 14.a of Table 4.1-2 (Minimum Equipment Test Frequency)

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concerning exercising of the main steam isolation valves has been modified to allow exercising the valves through 10% of travel vice 20% of travel proposed by the licensee. Twenty percent of travel could interfere with steam flow at high power operation whereas 10% of travel sufficiently verifies valve operability, yet has a negligible effect on power operation. The licensee agrees with this change.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: SEP 11 1975

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