



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 84 TO

FACILITY OPERATING LICENSE NO. NPF-6

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated May 9, 1988, Arkansas Power and Light Company (AP&L or the licensee) requested amendments to the Technical Specifications (TSs) appended to Facility Operating License No. NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2). The proposed amendment would change the control element assembly maximum drop time operability limit.

2.0 DISCUSSION

At the conclusion of refueling outage 2R6, Arkansas Power & Light (AP&L) recently performed control element assembly (CEA) drop time testing as required by Technical Specifications (TS). Utilizing a new method which involved dropping all 81 control rods simultaneously rather than one at a time, AP&L noted a fairly uniform delay in the unlatching of the CEAs which caused an increase in CEA drop times of approximately 0.25 seconds. This resulted in a number of CEAs exceeding the TS limit of 3.0 seconds, with the largest drop time being 3.18 seconds. In a letter dated May 5, 1988, AP&L requested a temporary waiver of compliance from TS 3.1.3.4 and provided a supporting safety evaluation valid to 30 percent full power, to allow startup low power physics testing to proceed concurrently with the preparation and submittal of a technical specification change request to revise the requirement for CEA drop time. The temporary waiver of compliance was granted on May 5 until May 12, 1988 contingent upon reactor power being limited to no higher than 30 percent rated power, and an emergency technical specification change request being submitted by 5:00 p.m. (EST) on May 9. The emergency technical specification change request was submitted on May 9, 1988 and provided the results of evaluations performed to support an increased CEA drop time Technical Specification limit of 3.2 seconds for full power operation.

3.0 EVALUATION

The staff has reviewed AP&L's reevaluation of those Chapter 15 Design Basis Accidents which could be adversely impacted by the increased CEA scram time. The reevaluation of these events, which incorporated the increased measured CEA drop times in a conservative manner, also incorporated

a revised CEA reactivity versus position curve based on space-time neutron kinetics calculations rather than the previously used static calculations. The staff has previously approved this methodology to determine CEA scram characteristics for other Combustion Engineering plants. The reevaluation has shown that for most events, this revised scram reactivity prediction is conservative relative to the reference analysis scram reactivity data at the crucial time in the transient during the closest approach to a safety limit.

Two events, the uncontrolled CEA withdrawal event from 100% power conditions and the increased main feedwater event, were found to involve a rapid approach to minimum departure from nucleate boiling ratio (DNBR) during the first part of the scram insertion. For these events, there was insufficient CEA insertion for space-time neutronic adjustments to totally offset the increased trip delay time.

To account for this, AP&L has proposed to increase the core protection calculator (CPC) DNBR power uncertainty penalty addressable constant labeled BERR1 in the CPC algorithms by a factor of 1.005. Adjustments to the value of addressable constants by AP&L, without prior NRC approval, is permitted by Technical Specification 6.8.1.g, provided the new value is within the software limit values. This is the case with this adjustment. Although the BERR1 addressable constant may require change from cycle to cycle, the 1.005 correction factor will be permanently included in the determination of those changes, to account for the delay in CEA insertion on a reactor trip for the two events noted above. This correction factor effectively provides a reactor trip at least 0.3 seconds sooner than that assumed in the reference analysis. The staff concludes that this earlier trip is more than sufficient to offset the effect of the measured increased trip delay time.

The staff finds the proposed increase in CEA drop time acceptable based on the above evaluation which concluded that the reference safety analyses remain bounding provided the adjustment to the BERR1 addressable constant discussed above is made to account for the cases of the uncontrolled CEA withdrawal event from 100% power and the increased main feedwater event.

4.0 EMERGENCY CIRCUMSTANCES

CEA drop testing as a matter of course occurs just prior to reactor startup. Utilizing a more realistic, and thus safety enhancing testing method, AP&L discovered a previously unidentified delay in rod drop times. In response to this finding they have taken conservative action by proposing an adequately justified increase in the CEA drop time requirement. Approval of the requested Technical Specification change is needed to avoid a delay in plant startup. AP&L could not have reasonably anticipated the need for this change.

5.0 NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if the operation of the facility in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The evaluation in Section 2.0 shows that the revised upper limit on CEA drop time would have no effect on the probability and no significant effect on the consequences of any of the accidents previously evaluated. The proposed change does not create a possibility of a new or different accident, and does not affect any margins of safety.

Based on the above evaluation, the staff concludes that operation of the facility in the proposed manner would not involve a significant increase in the probability or consequences of an accident previously evaluated, would not create the possibility of a new or different kind of accident from any accident previously evaluated, and would not involve a significant reduction in a margin of safety.

Accordingly, we conclude the amendment involves no significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, consultation was held with the State of Arkansas by telephone. The State expressed no concern from both the standpoint of safety and the standpoint of the no significant hazards consideration determination.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment involves a change in the operability acceptance criteria of a surveillance requirement for control element assemblies. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposures. The Commission has made a final no significant hazards consideration finding with respect to this amendment. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: May 16, 1988

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