

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPLEMENTAL AMENDMENT NO. 2 TO LICENSE NO. ENE-51

(CHANGE NO. 2 TO THE TECHNICAL SPECIFICATIONS)

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE - UNIT 1

FOCKET NO. 50-313

INTRODUCTION

By letters dated January 17, 1975 and March 21, 1975, Arkansas Power and Light Company requested changes to the Technical Specifications appended to Facility Operating License No. ENE-51 for the Arkansas Nuclear One - Unit 1 (ANOC-1). The proposed changes involved both Appendix A and Appendix B Technical Specifications. Only those changes related to Appendix A Technical Specifications are discussed in this report and involve:

1. Changing the 5 percent overpower trip function from administrative to automatic control.
2. Relating the Core Flooding Tank (CFT) instrumentation from Specification 3.3.5 for maintenance provisions.
3. Decreasing the operational power imbalance envelope to be compatible with the maximum allowable setpoints for the reactor protection system.
4. Changing the testing requirements for the Pressurized Relief System (PRS) isolation valves.
5. Clarifying the sampling and analysis frequency requirements by the addition of footnotes to Table 4.1-3.
6. Changing the testing requirements for the emergency and personnel hatch door seals.
7. Adding surveillance requirements for all three battery chargers.

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DISCUSSION

During our review of the proposed changes, we determined that additional changes to related technical specifications were necessary to implement and clarify the proposed changes. These additional changes were discussed with and agreed to by the ANO-1 staff members and involve:

1. Redefining the reactor coolant system activity limits for total specific activity and adding a limit for radioiodine activity.
2. Rewriting Specifications 3.3.5, 3.3.6 and 3.3.7 to combine all conditions for component maintenance of stated systems into one specification and establishing specifications to define actions to be taken if limiting conditions for operation of stated systems cannot be met.
3. Reducing the secondary coolant system limit for radioiodine activity.
4. Adding setpoints for DPFS isolation valve closure and LPRS relief valve opening.
5. Changing minimum sampling and analysis frequency and tests to be performed on reactor coolant and secondary coolant relating to activity limits.
6. Adding a test for dissolved gases on reactor coolant consistent with Specification 3.1.9.1.
7. Deleting tests for Sr-89, Sr-90, tritium and gross alpha activity on reactor coolant and for gross beta-gamma activity on secondary coolant.
8. Changing analysis requirements in the footnotes to Table 4.1-3 for activity determinations.
9. Changing the testing requirements on the personnel hatch and emergency hatch outer door seals to meet Appendix J, 10 CFR Part 50.

The first change proposed by the licensee merely incorporates into the Technical Specifications a modification previously reviewed and approved by the Commission in a letter dated February 12, 1975. Proposed changes 2 and 3 are corrections to the specifications and bases necessary to eliminate discrepancies. Change 4 is necessary to permit testing of the DPFS isolation valves at appropriate pressures. Change 5 is required to

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clarify the intent of sampling requirements and measurements. Changes 6 and 7 would increase the surveillance requirements by changing the acceptance testing for the personnel hatch and emergency hatch door seals and battery chargers.

EVALUATION

Our evaluation of the changes proposed by the licensee and added by the staff which were agreed to by the licensee is as follows:

- (1) Table 2.3-1 - Our review of the reactor protection system (RPS) modification as given in the safety evaluation appended to our letter dated February 12, 1975, for the shutdown bypass circuitry modification concluded that the modification did not affect any other safety related system, satisfied the requirements of IEEE Std 279-1971 and enhanced safety by replacing an administrative control function with an automatic control function. This change to the technical specification reflects completion of this approved RPS modification and is acceptable.
- (2) Section 3.1.4, Reactor Coolant System Activity - We performed a reanalysis of the postulated double-ended rupture of a steam generator tube using current analytical models and meteorological parameters as discussed in the bases to the new specifications. This analysis was performed to determine the acceptable specific activity limits for radiiodine in both the reactor coolant system and secondary coolant system. The specific activity limits for the reactor coolant have been defined in terms of mass (grams) rather than volume (milliliter) as previously used to eliminate possible error in defining temperature and pressure associated with the sample volume. The half-life limitation valve was deleted from the specification since this parameter does not change the possible exposure from cloud passage of a given radioisotopic mixture. However, the minimum time for decay enroute from the source to the nearest site boundary for the assumed meteorological conditions should be considered during the sample analysis and is discussed later. A requirement has been added to the specification which specifies the actions to be taken if the specific activity limits are exceeded. Such requirements were not previously included in the specification. The specific activity limit for radiiodine was not previously defined for the reactor coolant. These limits are defined for steady state reactor conditions and do not reflect possible spiking conditions associated with transient reactor conditions. Such conditions are considered later for surveillance requirements. The minimum ratio determined between the radiiodine specific activity for the reactor coolant and the secondary coolant was conservatively assessed on the basis of the maximum allowable leakage rate of 1 ppm between the primary and secondary systems and

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the half-life of I-131 for equilibrium conditions. The actual ratio of radioiodine specific activity in the reactor coolant to the secondary coolant would be expected to be significantly greater than the calculated value of 20 to 1.

- (3) Specifications 3.3.5, 3.3.6 and 3.3.7 - The changes delete the CFT pressure and level instrumentation from the list of systems for which provisions have been made for maintenance. The restrictions on this system are delineated in Specification 3.3.3(D). Exceptions to Specification 3.3.6 conditions given in Specification 3.3.7 provide adequate relief for performing necessary maintenance functions on both the CFT and Borated Water Storage Tanks (BWST) instrument channels. Therefore, deletion of the CFT pressure and level instrumentation from the maintenance aspect of Specification 3.3.5 does not affect the safety of the system or reactor operations and therefore is acceptable. Continued reactor operation for seven days with inoperable instrument channels in the CFT and BWST systems as given in Specification 3.3.7 is consistent with exceptions permitted for instrument channels in similar systems and therefore is acceptable.
- (4) Specification 3.5.1.7 - This added specification delineates the appropriate DHRIS isolation valve closure setpoints on the suction line to assure proper operation of the DHRIS when required and the DHRIS relief valve setting necessary to protect the system against overpressure. Proper settings for these valves would be verified during the testing and calibration required by Table 4.1-1.
- (5) Figure No. 3.5.2-3 - The change in the permissive operating region for power imbalance reduces the allowable operation to be compatible with the protective system maximum allowable setpoints. The change to this figure does not change the allowable reactor operation since the reactor had to be operated within the more restrictive limits established for the reactor protective system. The change is acceptable.
- (6) Section 3.10, "Secondary System Activity" - We have reanalyzed the steam generator tube rupture as previously analyzed in the Bases to Specification 3.1.4.1 and as analyzed in the Bases for the change to Specification 3.1.4.1 to determine reactor and secondary coolant activity limit, a loss of load incident as previously analyzed in the Bases to this Specification to determine the secondary system activity limit and a steam line break accident outside containment. Using the secondary coolant activity limit determined from the steam generator tube rupture as presented in the bases for the reactor coolant system activity, Section 3.1.4, the thyroid doses

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