



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 229 TO FACILITY OPERATING LICENSE NO. DPR-49

IES UTILITIES INC.

CENTRAL IOWA POWER COOPERATIVE

CORN BELT POWER COOPERATIVE

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letter dated May 10, 1999, as supplemented July 16 and October 4, 1999, IES Utilities Inc., (the licensee) proposed changes to the current Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC) Cycle 17 operation. The proposed changes involve the Minimum Critical Power Ratio (MCPR) safety limits and the associated Bases for Cycle 17 operation. Cycle 17 is a mixed core of 368 fuel assemblies, which consists of 128 fresh GE-12 bundles, 120 once-burned GE-10 bundles, and 120 twice-burned GE-10 bundles.

The NRC staff's initial proposed no significant hazards considerations determination was noticed in *Federal Register* on July 14, 1999 (64 FR 38029). The July 16 and October 4, 1999, letters from the licensee provided clarifying information within the scope of the original application and did not change the NRC staff's initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The licensee requested a change to the DAEC TSs in accordance with 10 CFR 50.90 for the upcoming Cycle 17 operation. The proposed revision of TS 2.1.1.2 and its associated Bases is described below.

2.1 TS 2.1.1.2

The licensee proposes changes to the value of the Safety Limit MCPR (SLMCPR) in TS 2.1.1.2 from 1.07 to 1.10 for two recirculation loop operation and from 1.08 to 1.12 for single recirculation loop operation when the reactor steam pressure is ≥ 785 psig and core flow ≥ 10 percent rated core flow.

The licensee described the methodology used to calculate the SLMCPR value for the TS in the submittal. The Cycle 17 SLMCPR analysis was performed by GE Nuclear Energy (GENE) using the plant- and cycle-specific fuel and core parameters, NRC approved methodologies including GESTAR-II (NEDE-24011-P-A-11, Sections 1.1.5 and 1.2.5), NEDO-10958-A, January 1977, and the Amendment 25 to GESTAR-II.

The NRC staff has reviewed the justification for the SLMCPR value of 1.10 for two recirculation loop operation and 1.12 for single loop operation for Cycle 17 using the approach stated in the Amendment 25 to GESTAR-II, NEDE-24011. The NRC staff has, as part of that review, reviewed the detailed summary results for Cycles 16 and 17 operation. The purpose of reviewing Cycle 16 and 17 operation results is to compare what had previously been approved in Cycle 16 to the difference.

Based on our review of the submittal and the detailed summary results of the analysis for the Cycles 16 and 17 operation, the staff has concluded that the Cycle 17 SLMCPR analysis for DAEC using the plant- and cycle-specific calculation in conjunction with the approved method is acceptable for DAEC. The Cycle 17 SLMCPR will ensure that 99.9 percent of the fuel rods in the core will not experience boiling transition which satisfies the requirements of General Design Criterion 10 of Appendix A to 10 CFR Part 50 regarding acceptable fuel design limits. Therefore, the staff has concluded that the justification for analyzing and determining the SLMCPR value of 1.10 for two loop and 1.12 for single loop for DAEC Cycle 17 operation is acceptable since approved methodologies were used.

2.2 Bases 2.1.1.2

The proposed change is to replace the statement "During SLO, the SLMCPR must be increased by 0.01 to account for the increased uncertainty in the core flow and Traversing In-Core Probe (TIP) reading," with "For SLO, the SLMCPR is greater to account for the increased uncertainties."

The staff has reviewed the proposed change and has no objection since the SLMCPR analysis is using the plant- and cycle-specific parameters in accordance with the procedures specified in Amendment 25 to GESTAR-II, NEDE-24011-P-A and a single adder approach is no longer applicable to this analysis.

3.0 CONCLUSION

The NRC staff has reviewed the request by IES Utilities Inc., to revise the TS and its associated Bases for the DAEC Cycle 17 operation. Based on the review, the NRC concludes that these revisions are acceptable since the analysis was in accordance with the procedures specified in Amendment 25 to GESTAR-II, NEDE-24011-P-A.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Iowa State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (64 FR 38029). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 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 this amendment.

6.0 CONCLUSION

The NRC 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. Huang, SRXB

Date: October 20, 1999