



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO.69 TO FACILITY OPERATING LICENSE NO. NPF-3

TOLEDO EDISON COMPANY

AND

CLEVELAND ELECTRIC ILLUMINATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1

DOCKET NO. 50-346

1. INTRODUCTION

By letter dated February 17, 1984, as revised March 29, 1984, Toledo Edison Company (the licensee) made application to amend Facility Operating License No. NPF-3 for the Davis-Besse Nuclear Power Station, Unit No. 1, to allow coastdown operation at the end of Cycle 4. In support of this operation, the licensee provided Reload Report BAW-1783, Revision 1 (October 1983), and a Safety Evaluation and Significant Hazard Consideration. The original version of BAW-1783 (May 1983) was approved and is the basis for Cycle 4 operation up to this point in time.

2. EVALUATION

The amendment request which is the subject of this evaluation provides for an alternate Cycle 4 design of 280 effective full power days (EFPDs). The original approved design life of Cycle 4 was 240 EFPDs. The additional core life is obtained by withdrawal of the axial power shaping rods (APSRs) from the core at 200 EFPDs and power coastdown. Coastdown operation was approved as part of the Davis-Besse Cycle 3 design, as well as an alternate in many B&W reactor cycle designs. In Davis-Besse Cycle 3, the APSR pull at 200 EFPDs coupled with a power coastdown resulted in a cycle length of approximately 268 EFPDs.

The fuel cladding creep collapse analysis predicts a collapse time longer than 35,000 effective full power hours (EFPHs). The expected alternate Cycle 4 residence time is 22,800 EFPHs, so that creep collapse is not predicted to occur. No other fuel effects need to be considered for the extension of Cycle 4 life.

The licensee provided a comparison of core physics parameters from Cycle 3 with those of both the (approved) base and alternate designs for Cycle 4. These values were generated using approved methods for all three designs. The thermal-hydraulic design results in the alternate Cycle 4 do not differ significantly from that in Cycle 3. The moderator and Doppler coefficients remain negative for the alternate Cycle 4. The moderator coefficient is less negative than the Final Safety Analysis Report (FSAR) value so that the FSAR value is bounding for main steam line break or any overcooling transients. The maximum drop rod worth is less than the FSAR value which

compensates for the slightly more negative Doppler coefficient at Beginning of Cycle (BOC) 4. The ejected rod worth is also smaller than the FSAR value. The boron reactivity worth is also bounded by the FSAR value for the moderator dilution accident. The FSAR accidents have been examined by B&W with respect to the alternate Cycle 4 parameters to ensure that the thermal performance during the hypothetical transients has not been degraded. Thus, the values of the alternate Cycle 4 parameters are such that the transient evaluation is bounded by the previously accepted analyses.

Technical Specification modifications were proposed in BAW-1783, Revision 1, to allow withdrawal of the APSRs and power coastdown. The Specifications affected are 3.1.3.6, 3.1.3.9, and 3.2.1. There are also changes to Figures 8-5, 8-5a, 8-5b, 8-8, 8-8a, 8-8b, 8-11, 8-11a, 8-11b, 8-12, 8-13, 8-14, 8-14a, 8-17, 8-17a, 8-17b, 8-20, 8-20a, 8-20b. These table and figure numbers are those contained in BAW-1783, Revision 1. The Technical Specification numbers are referenced on each of the above tables and figures.

These modifications appropriately account for changes in power peaking, control rod worths, and APSR withdrawal. Additionally, a modification to Table 8-2, Quadrant Power Tilt Limits (Technical Specification Table 3.2.2), incorporates new cycle dependent steady state and transient tilt limits for the symmetrical incore detector system with the values changing from 3.03 to 3.43 and 8.53 to 8.93 respectively. These limits should have been changed in the original Reload Report. The limits have been relaxed slightly because of the replacement of some of the incore detectors for Cycle 4. The new detectors provide an improved overall system accuracy. The safety analysis was performed with the relaxed limits.

The proposed changes to the axial power imbalance limits will maintain the peak linear heat rate during normal operation of the power plant within the bounds assumed as input to the loss of coolant accident analysis.

Our review of the licensee's submittal indicates that the fuel design, physics, thermal-hydraulic and transient information and Technical Specification changes were calculated with approved models and appropriately revised and evaluated to allow the alternate Cycle 4 design. We find all of the proposed changes appropriate and acceptable.

3. ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR 51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

4. CONCLUSION

We have 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: June 12, 1984

This Safety Evaluation was prepared by M. Dunenfeld