



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 56 TO FACILITY OPERATING LICENSE NO. DPR-29

COMMONWEALTH EDISON COMPANY
AND
IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

QUAD CITIES STATION UNIT 1

DOCKET NO. 50-254

Introduction

By letter dated June 6, 1980, Commonwealth Edison Company (CECo), proposed an amendment to extend the license coastdown limit from 70% to 40% of reactor power, (Reference 1). CECo has presented previous coastdown mode analyses and justification for the use of these previous analyses for the current amendment proposal.

Discussion

Although the referenced analyses were performed for other specific reactor cycles, they are applicable to this core for the purpose of evaluating margins that are affected by extended coastdown. The analyses assume a linear power decrease with fuel exposure. The analyses show that the safety margins increase for thermal-hydraulic and overpressurization limits. These increased safety margins result from decreasing total power level during coastdown. In the referenced analyses, the void coefficient becomes less negative during coastdown operation and the scram reactivity becomes less effective as a shutdown mechanism. The effect on ΔCPR is a decrease resulting from the former and an increase resulting from the later change. The resultant, however, is a net increase in ΔCPR , which is conservative.

Evaluation

As previously stated, the referenced analyses are not uniquely applicable to this plant and cycle. However, we have previously accepted such analyses, e.g., Reference 2, for specific coastdown operation, where reactor dynamics and fuel performance characteristics have been essentially identical to the analyzed case. On this basis, we agree with the licensee that the overall trend will be the same for the proposed application. This agreement is restricted to a terminal power level of 40%. At 40% power, the scram reactivity insertion will not be degraded sufficiently to result in a transient more severe than that at EOC and will maintain an acceptable shutdown margin. For lower power coastdown operations, we would require cycle specific transient analyses or appropriate justification.

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The assumption of linear power decrease with exposure is conservative because actual reactor power will decrease exponentially. However, we have identified a requirement to assure that operation in the coastdown mode will be within the power level assumptions of the analyses. This requirement is that feedwater heating must be maintained in a "normal" configuration and condition. (With a reduction in feedwater heating, the reactor may achieve a higher power level than assumed in the analysis). Therefore, we and CECO have agreed to incorporate such a requirement in the license restriction.

The licensee's submittal shows that operation in the prescribed coastdown mode will increase thermal-hydraulic and overpressurization safety margins. The operation with a requirement to maintain "normal" feedwater heating will assure that the power level assumptions of the analyses remain valid. On these bases, we find coastdown to 40% power is acceptable.

Environmental Consideration

We have determined that this 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 Section 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 the amendment.

Conclusions

We have concluded, based on the considerations discussed above, that: (1) because the amendment 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 amendment 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.

Dated: June 26, 1980

References

1. Letter from Robert F. Janecek (CECo) to Director of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission, "Quad Cities Station Unit 1, Proposed Amendment to Facility Operating License No. DPR-29 to Extend End-of-Cycle Coastdown Operation, Nuclear Regulatory Commission Docket No. 50-254," June 6, 1980.
2. Letter from T. A. Ippolito (NRC) to C. Reed (CECo), February 23, 1979.