ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

December 9, 1974

Honorable Dixy Lee Ray
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON ZION STATION, UNITS 1 AND 2

Dear Dr. Ray:

At its 176th meeting, December 5-7, 1974, the Advisory Committee on Reactor Safeguards completed its review of the request of Commonwealth Edison Company for authorization to increase the power level of Zion Station Units 1 and 2 from the current maximum power of 2760 MW(t) to the full power level of 3250 MW(t) in the immediate future. The matter had been previously considered at a Subcommittee meeting on December 4, 1974. In its review, the Committee had the benefit of discussion with representatives of Commonwealth Edison and its consultants, the AEC Regulatory Staff, and the documents listed. The Committee reported previously on the operation of Zion Station Units 1 and 2 on August 17, 1972, and May 17, 1973.

In its previous reports, the Committee recommended that for the Zion Station, neither Unit 1 nor Unit 2 be operated at greater than 2760 MW(t) (85% of full power) until after the first refueling of Unit 1 and after further review by the Regulatory Staff and the ACRS of proposed power increases. However, the Regulatory Staff has requested an earlier review of a transition to higher power, based at least in part on a letter from the Federal Energy Administration, dealing with possible power shortages.

As of early December, 1974, Zion Unit 1 has operated about three months at 2760 MW(t); Unit 2 has recently reached the same level. In general, steady-state core and system performance measurements conform with prediction. More than the normal amount of power shape monitoring has been performed as part of an augmented startup program for Unit No. 1.

An evaluation of the compliance of these units with the requirements of 10 CFR 50.46 has not been completed; however, it is anticipated that total power peaking factors less than 2.3 would be required for operation at 3250 MW(t). An axial power distribution monitoring system (APDMS) is to be implemented on both units; however, experience with automatic operation of APDMS at Zion, including further evaluation of both reliability and accuracy aspects, remains to be obtained. Also, operation at 3250 MW(t) would make the average fuel linear heat generation rate for the Zion units higher than that for any other operating Westinghouse PWR.

A number of incidents having significance to the reliability of engineered safety features have occurred at the Zion Station, including some in recent months. The Applicant has recently made organizational and administrative changes in an effort to improve operational quality assurance and to minimize problems of a repetitive nature.

Various generic items, including monitoring for vibration or loose parts, anticipated transients without scram, instrumentation for determining the course of postulated accidents, and the possibility of reactor coolant pump-flywheel overspeed in the unlikely event of a downstream pipe break, remain to be resolved for Zion Units No. 1 and 2.

In view of the above, unless there exists an overriding national need for additional power from these units, the ACRS reaffirms its recommendation that neither Unit 1 nor 2 be operated at power levels greater than 85% of full power until after the first refueling of Unit 1. The Regulatory Staff and the ACRS should review any proposals for changes in maximum power levels during subsequent operation, taking into account the further operational experience, progress made in understanding of the performance and potential improvement of emergency core cooling systems, and the implementation of resolution of generic items.

Sincerely yours,

W. R. Stratton

W. R. Stratton
Chairman

Attachments:
References

References:

1. Safety Evaluation by the Directorate of Licensing, U. S. Atomic Energy Commission (DL), in the Matter of Commonwealth Edison Company (CECO), "Startup Program Results Up to 85% of Rated Power Level for the Zion Station Unit 1," dated December 3, 1974.

2. Letter, dated September 3, 1974, CECO to DL, concerning postulated accident analysis and proposed changes to Technical Specifications.

3. Letter, dated September 6, 1974, CECO to DL, concerning postulated accident analysis and proposed changes to Technical Specifications.

4. Letter, dated November 22, 1974, CECO to DL, concerning postulated accident analysis and proposed changes to Technical Specifications.

5. Letter, dated June 25, 1974, DL to CECO, concerning DL review and acceptance of Westinghouse topical report, WCAP-8218, "Fuel Densification, Experimental Results and Model for Reactor Application," dated Oct. 31, 1973.

6. Letter, dated November 5, 1974, DL to CECO, concerning DL review of Westinghouse topical report, WCAP-8377, "Revised Clad Flattening Model," dated July, 1974.

7. Westinghouse topical report, WCAP-8183, Revision 1, "Operational Experience with Westinghouse Cores," dated July, 1974.

8. "Westinghouse PWR Operating Experience," Handout at ACRS Meeting, November 14-16, 1974.

9. Westinghouse topical report, "Power Distribution Control and Load Following Procedures," dated September, 1974, WCAP-8385.

10. Letter, dated November 18, 1974, DL to CECO, concerning DL review and acceptance of topical report, WCAP-7912-L, "Power Peaking Factors."

11. Report, dated June, 1974, by the U. S. Atomic Energy Commission, Office of Operations Evaluations, "Diesel Generator Operating Experience at Nuclear Power Plants," OOE-ES-002.