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September 4, 1979

Dr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Zion Station Unit 1
Cycle 5 Reload
NRC Docket No. 50-295

Dear Dr. Denton:

Zion Unit 1 is currently in its fourth cycle of operation with a refueling outage scheduled to commence on October 6, 1979. Cycle 4 operation will be terminated within a cycle burnup range of 9500 to 10,500 MWD/MTU. Startup for Cycle 5 is expected to occur in late November 1979. This letter is to advise you of Commonwealth Edison Company's review of and plans regarding the Zion Unit 1, Cycle 5 reload core.

The Zion Unit 1, Cycle 5 reload core was designed to perform under current nominal design parameters, Technical Specifications and related bases, and current setpoints such that:

1. Core characteristics will be less limiting than those previously reviewed and accepted; or

2. For those postulated incidents analyzed and reported in the Zion Final Safety Analysis Report (FSAR) which could potentially be affected by fuel reload, reanalysis has demonstrated that the results of the postulated events are within allowable limits. Commonwealth Edison Company performed a detailed review at Westinghouse on the bases, including all the postulated incidents considered in the FSAR, of the Westinghouse Reload Safety Evaluation Report (RSER). Based on this review and the Westinghouse RSER, safety evaluations were performed by Commonwealth Edison On-Site and Off-Site Review pursuant to the requirements of 10 CFR 50.59(a) and 10 CFR 50.59(b).

The reload fuel mechanical and thermal-hydraulic design for the Cycle 5 reload core is unchanged from that of the previously reviewed and accepted reload designs. The current $F^N_{\Delta H}$ limit of less than 1.55 and penalties for rod bow ensure that the DNB ratio remains above 1.30. In addition, based on the Westinghouse "Eighteen Case" analyses, a total nuclear peaking factor (F_Q) of 2.13 could occur for the full range of power distributions, including load follow maneuvers, allowable under Constant Axial Offset Control (CAOC). Therefore, in order to accommodate the current Zion Station F_Q peaking factor limit of 1.86, axial power distribution monitoring type surveillance will be utilized for power levels above 87.3% of rated power. Should approval of the pending F_Q peaking factor limit of 1.93 be received, this surveillance will be utilized for power levels above 90.6% of rated power.

As in the past, the reload safety evaluation relied on previously reviewed and accepted analyses reported in the FSAR, fuel densification reports and previous reload safety evaluation reports. A detailed review of the core characteristics was performed to determine those parameters affecting the postulated accident analyses reported in the Zion FSAR. For those incidents whose consequences could potentially be affected by the reload core characteristics, the incidents were reanalyzed. Commonwealth Edison verified that the reanalyses were performed in accordance with the Westinghouse reload safety evaluation methodolgy as outlined in the March 1978 Westinghouse topical report entitled "Westinghouse Reload Safety Evaluation Methodology" (WCAP-9272). Commonwealth Edison also verified that the results of these reanalyses were within previously reviewed and accepted limits.

The reload safety evaluation demonstrated that Technical Specification changes are <u>not</u> required for operation of Zion Unit 1 during Cycle 5. Commonwealth Edison On-Site and Off-Site Review concluded that <u>no</u> unreviewed safety questions as defined by 10 CFR 50.59 are involved with this reload. More specifically with this reload:

1. There is no increase in the probability of occurrence or the consequences of an incident or malfunction of equipment important to safety previously evaluated in the safety analysis report;

2. No additional accident or malfunction of a different type than any evaluated previously in the safety analysis reported has been created; and

3. There has been no reduction in the margin of safety as defined in the basis for any Zion Unit 1 technical specification.

Therefore, based on this review application for amendment to the Zion Unit 1 operating license is not required.

Finally, verification of the reload core design will be performed per the standard startup physics tests normally performed at the start of each Zion reload cycle. These tests will include, but not be limited to:

1. Control rod drive tests and drop time;
2. Critical boron concentration measurements;
3. Control rod bank worth measurements;
4. Moderator temperature coefficient measurement;
5. Power coefficient measurement; and
6. Startup power distribution measurements using the incore flux mapping system.

Very truly yours,

D. L. Peoples
Director of Nuclear Licensing