Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

July 8, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Zion Nuclear Power Station Units 1 and 2
Spent Fuel Storage Pool Capacity Increase
NRC Docket Nos. 50-295 and 50-304

References (a): April 13, 1978, letter from Cordell Reed to E. G. Case.

(b): February 14, 1980 Initial Decision by ASLB.

(c): March 29, 1979 Environmental Impact Appraisal.

(d): September 26, 1978 letter from A. Schwencer to Cordell Reed.

(e): October 24, 1978 letter from W. F. Naughton to the Director of Nuclear Reactor Regulation.

(f): November 8, 1978 letter from W. F. Naughton to the Director of Nuclear Reactor Regulation.

Dear Mr. Denton:

The purpose of this transmittal is to provide you with more accurate information regarding the normal leakage from Zion's spent fuel pool. This information was originally supplied to you in support of Commonwealth Edison's request to expand the spent fuel storage capacity at Zion Station (Reference (a)).

The required In-service Inspection hydrotest of Zion's spent fuel pool was conducted on January 16, 1985. This test yielded a leakage rate of 150 gallons per day. When comparisons were made between this measurement and previously measured leakage rates, it was determined that the previous measurements were potentially in error.

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The results of Zion Station's investigation into this matter are enclosed and are being sent to you for your information. Commonwealth Edison Company considers a leakage rate of 150 GPD from Zion's spent fuel pool to be insignificant. While 150 GPD is numerically different from previously determined values, it does not alter any conclusions reached in References (b) and (c).

If any questions arise concerning this matter, please direct them to this office.

Very truly yours,

Peter LeBlond

P. C. LeBlond
Nuclear Licensing Administrator

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Attachment

cc: NRC Resident Inspector - Zion
J. Norris - NRR
G. Wright - State of Ill.

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ATTACHMENT

Summary

The current leakage estimate of 150 gallons per day was obtained during a recent hydrotest of Zion's spent fuel pool. This leakage is insignificant when compared to the total liquid radwaste flow and does not alter any of the conclusions reached in References (b) and (c).

Background

As part of the installation of high capacity spent fuel storage racks, the NRC requested information in Reference (d) concerning the leakage through the spent fuel pool liner. Commonwealth Edison responded in References (e) and (f) with a leakage rate of 50 gallons per day and a statement that this value had remained constant since preoperational testing.

In addition, Reference (b) states that the total pool losses were estimated to be 20 gallons per day, with the liner leakage contributing approximately one quart per day. This information was provided in response to specific board questions. The leakage rate of one quart per day was determined from a special liner leakage test.

The Commission utilized the 50 gallon per day leakage rate in Section 5.3.4 of Reference (c) as follows;

> Leakage from the spent fuel pool is collected in the reactor building floor drain sumps. This water is transferred to the liquid radwaste system and is processed by the system before any water is discharged to Lake Michigan. There is presently about 50 gallons per day of leakage from the pool. This measured leakage rate has remained unchanged since the initial test period, the preoperational test period at Zion Station before it went into commercial operation. This leakage is of small magnitude compared to other waste volume flow rates handled by the liquid radwaste system.

New Information

The spent fuel pit hydrotest was conducted on January 16, 1985 as part of Zion Station's 10-year ISI program. This test yielded a leakage rate of approximately 150 gallons per day. Upon further investigation, it has been determined that the estimate of one quart per day was probably measured erroneously due to the use of the wrong drain line.

In an effort to confirm the estimated leak rate of 150 GPD, the amount of make-up water supplied to the spent fuel pool was monitored for the week following the hydrotest. This test yielded a total spent fuel make-up flow of approximately 525 GPD. Calculations showed that evaporation can easily account for 375 GPD, thus providing reassurance that the leakage estimate of 150 GPD is probably accurate.

It has not been determined whether the leakage rate has actually become greater or if the preoperational estimate was low. It should be noted that these estimates are obtained by visually observing a drip rate through a bulls-eye leakoff monitor. Obviously, this is subject to some interpretation. A monitoring program has been initiated to track the leakage rate.

Conclusions

As discussed above, Reference (c) utilized the 50 GPD estimate to state that "This leakage is of small magnitude compared to other waste volume flow rates handled by the liquid radwaste system." The current average flow rate handled by the liquid radwaste system is currently approximately 6 GPM. (~8640 GPD). Thus, 150 GPD is still a small fraction of the total flow and the conclusions of Reference (c) have not been altered.

The leakage monitoring program is adequate to track this small leak and to take action, if necessary.

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