Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

November 25, 1998
LIC-98-0155

Mr. E. W. Merschoff,
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

References: 1. Docket No. 50-285
2. Letter from OPPD (W. G. Gates) to NRC (Document Control Desk) dated December 7, 1992 (LIC-92-0340A)

SUBJECT: Omaha Public Power District Report Pursuant to 10 CFR 50.9(b)

The Omaha Public Power District (OPPD) is providing the attached information as a follow-up to the conference call held with you and members of your staff on November 5, 1998, made pursuant to 10 CFR 50.9(b).

Title 10 Code of Federal Regulations Part 50.9(a) requires that information provided to the NRC be complete and accurate in all material respects. In the November 5, 1998, conference call, OPPD informed you of a calculational error discovered by an OPPD contractor, Holtec International Company. This error was transmitted to the NRC as part of an Application for Amendment (Reference 2) that was subsequently reviewed and discussed in the NRC Safety Evaluation Report for Amendment 155 to the Fort Calhoun Station Technical Specifications.

The error concerns the time-to-boil calculation related to the spent fuel pool rerack modification that was approved as part of Amendment 155. Although the values provided in the Application for Amendment are incorrect due to this error, the preliminary evaluation regarding the significance of the error indicates more than adequate time is still available to address the loss of spent fuel pool cooling event. Holtec is continuing its review of this matter under 10 CFR Part 21.

OPPD will submit a revision to the Fort Calhoun Station licensing basis reflecting this updated information within 60 days of receipt of qualified calculations. The expected submittal date is February 1, 1999. If you should have any questions, please contact me.

Sincerely,

S. K. Gambhir
Division Manager
Nuclear Operations

SKG/brh

Attachment

c: NRC Document Control Desk
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector
Winston & Strawn
Holtec International Co.

Attachment

Background

On November 3, 1998, Holtec International Company notified OPPD that certain errors had been discovered in the Holtec TBOIL computer program. The TBOIL program was used for modification MR-FC-91-009, "Spent Fuel Pool Rerack," which increased the storage capacity of the FCS spent fuel pool in 1994. The TBOIL program is a proprietary computer program used by Holtec which provided OPPD the time-to-boil in the spent fuel pool under various conditions. The program error is the result of a code logic error that causes the decay heat load in the spent fuel pool to be under-predicted for a loss of cooling scenario,. This results in a corresponding non-conservative prediction of the time-to-boil for some full core discharge cases. The corresponding maximum water boil-off rate is also non-conservatively predicted for the affected cases. Holtec used this program to provide information to OPPD that was subsequently provided to the NRC in an Application for Amendment dated December 7, 1992 (Reference 2).

The NRC approved the spent fuel pool modification and changed the FCS Operating License in Amendment 155 to reflect the increased storage capacity. Preliminary calculations provided by Holtec indicate a 37% decrease in time-to- boil for the limiting case provided to the NRC in the correspondence. The time-to-boil for the limiting case transmitted to the NRC was 9.9 hours. The limiting case assumes the spent fuel pool is at the end of usable pool storage life (cycle 27) with the next cycle's core (cycle 28) being discharged into the pool. Currently FCS is in cycle 18.

Holtec's preliminary calculation indicates that the 9.9 hour time-to-boil, noted in various plant documents and NRC correspondence, will be reduced to approximately 7.2 hours.

Attachment

Significance

The time-to-boil for the limiting case was 9.9 hours. The limiting case assumes the spent fuel pool is at the end of usable pool storage life (cycle 27) with the next cycle's core (cycle 28) being discharged into the pool. The plant is currently in cycle 18. The analysis assumes an initial spent fuel pool temperature of 140°F when cooling is lost. The administrative limit for spent fuel pool temperature is 120°F. The spent fuel pool temperature is typically maintained at about 85°F. Procedure OI-SFP-1, "Spent Fuel Pool Cooling Normal Operation," states that the temperature should be maintained between 75°F and 100°F. The Holtec analysis assumes that the core is off-loaded 72 hours after plant shutdown. Historically the core is off-loaded approximately 10 to 14 days after plant shutdown. In addition, the calculation assumes there are 1339 spent fuel bundles in the pool. This assumes that OPPD will consolidate bundles, which is presently not being done.

Analysis Assumptions vs. Actual Conditions

	Analysis Assumption	Maximum/Minimum		Actual Value
Fuel Bundles in Spent Fuel Pool	1339 (w/consolidation)	1083	Maximum allowed (w/o consolidation)	706
Starting Pool Water Temperature	140°F	120°F	Maximum allowed by admin limit	~ 85°F
Time to start unloading core	72 hrs	72 hrs	Minimum allowed by TS 2.8	10 to 14 days

Based on the above considerations there is reasonable assurance that the time-to-boil in the current conditions would exceed 7.2 hours. However, 7.2 hours is still sufficient time to adequately address a loss of cooling event to the spent fuel pool using Abnormal Operating Procedure (AOP) 36, "Loss of Spent Fuel Pool Cooling." Historically when pool heatup is calculated about 2 weeks after plant shutdown with the core off-loaded, the heatup rate is about 4°F/hour. With an initial SFP temperature of 120°F, and assuming a 4°F/hr heatup rate, SFP heatup to 160°F would take approximately 10 hours.

Attachment

Conclusion

The error introduced by the Holtec program affects the output of a design calculation. This error only affects the time-to-boil and associated boil-off rate and does not affect any other thermohydraulic calculations completed for the spent fuel pool modification. Based on the above discussion, there is no impact on the current design basis of the plant.

A review of the OPPD submittal and NRC response does not indicate that there is a definitive acceptable time-to-boil. Conservatively, this issue was reported to the NRC under 10 CFR 50.9 on November 5, 1998, as this information was provided to the NRC under oath and affirmation as part of Amendment 155 to the FCS Technical Specifications. This information is included in the FCS Updated Safety Analysis Report and other plant procedures. A change to the FCS licensing basis, as described in the NRC Safety Evaluation Report for Amendment 155, will be submitted for NRC review.

Holtec International Company is performing a reportability evaluation pursuant to 10 CFR Part 21.