March 22, 1993

Docket No. 50-373

Mr. Thomas J. Kovach
Nuclear Licensing Manager
Commonwealth Edison Company-Suite 300
OPUS West III
1400 OPUS Place
Downers Grove, Illinois 60515

SUBJECT: LASALLE COUNTY STATION, UNIT 1 - CORRECTION TO SAFETY EVALUATION RELATED TO LICENSE AMENDMENT NO. 90 (TAC NO. M83797)

By letter dated February 24, 1993, the Commission issued Amendment No. 90 to Facility Operating License No. NPF-11, for LaSalle, Unit 1. In the staff Safety Evaluation (SE) prepared in support of the amendment, a typographical error occurred that could cause some confusion. The erroneous statement, located on page 9 of the SE, states that "The licensee's calculations determined that the storage of defective fuel containers loaded with fresh fuel in these cells would result in a maximum k_{eff} of approximately 0.74." In this sentence, k_{eff} should be replaced with k_{∞}. This change does not affect the staff's conclusions regarding the license amendment.

A corrected page with a marginal line indicating the area of change is enclosed for your convenience. If you have any questions regarding this matter, please contact me at (301) 504-1346.

Sincerely,

Original Signed By

Robert J. Stransky, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosure:
Corrected page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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the standard LaSalle core geometry, which is defined as an infinite array of fuel assemblies located in a 6-inch lattice spacing in unborated water at 20 °C, without any control absorber or voids present. Thus, any fuel assembly which has a k_∞ of 1.332 or less at 20 °C in the standard core geometry, and an average enrichment of 4.6 w/o or less in the enriched zone, will result in a k_{eff} of less than 0.8973 (0.9241 including uncertainties) when stored in the spent fuel rack, and will meet the fuel storage reactivity criterion specified in the SRP. The staff considers storage of fuel with average enrichments of up to 4.25 w/o ^{235}U (4.6 w/o in the enriched zone) to be acceptable, provided that the storage configuration of fuel assemblies does not result in a local k_∞ of 1.332 or greater, when calculated as described above. The licensee will be expected to verify that the k_∞ of the limiting lattice, at all potential fuel burnups, remains less than this limit.

The licensee considered the reactivity effects of abnormal and accident conditions due to temperature and water density effects, eccentric fuel assembly positioning, fuel rack lateral movement, or the drop of a fuel assembly on top of the storage rack. None of the credible conditions resulted in exceeding the SRP maximum reactivity criterion of $k_{eff} \leq 0.95$.

The proposed storage racks will also contain four large, square cells with an inside dimension of 11.5 inches. These cells are designed to store control rod guide tubes or defective fuel containers. The licensee's calculations determined that the storage of defective fuel containers loaded with fresh fuel in these cells would result in a maximum k_∞ of approximately 0.74. This result is also well within the SRP maximum reactivity requirement.

2.5 Structural Design

2.5.1 High Density Racks

The proposed high density spent fuel storage racks are seismic Category I equipment, and are required to remain functional during and after a safe shutdown earthquake (SSE). The licensee used a computer program, DYNARACK, for dynamic analysis to demonstrate the structural adequacy of the spent fuel rack design under earthquake loading conditions. The proposed spent fuel racks are free-standing and self-supporting equipment, and are not attached to the floor of the storage pool. A nonlinear dynamic model consisting of inertial mass elements, spring, gap, and friction elements as defined in the program was used to simulate three dimensional dynamic behavior of the rack including frictional and hydrodynamic effects. The program calculated nodal forces and displacements at the nodes, and then obtained the detailed stress field in the rack elements from the calculated nodal forces.

The seismic analysis was performed utilizing the time-history method. The seismic time histories were calculated from the plant floor response spectra (FRS) as described in the LaSalle County Station UFSAR. For stress and displacement analysis, three rack geometries were considered: (1) 15 feet x 17 feet, (2) 15 feet x 18 feet, and (3) 9 feet x 18 feet. Each rack was considered fully loaded, partially loaded, and almost empty with three different coefficients of friction between the rack and the pool floor