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June 1, 1982
EF2 - 57,802

Mr. L. L. Kintner
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Licensing
Washington, D. C. 20555

Dear Mr. Kintner:

References: (1) Enrico Fermi Atomic Power Plant, Unit 2
NRC Docket No. 50-341
(2) Telex, L. L. Kintner to L. E.
Schuerman, April 6, 1982
(3) Letter, E. Luzis to L. L. Kintner,
January 20, 1981, EF2-56,328

Subject: Redesign of Control Rod Drive (CRD)
Penetration in Biological Shield

This letter confirms the verbal information provided during the telephone conversations of March 4, 1982 and March 24, 1982 between you and Mr. W. Street on the above subject, at your request.

1. The original structural design of the Biological Shield considered the area around the CRD lines to be one large penetration, and the reinforcing steel was designed and placed accordingly. Thus, no reinforcing steel was cut when the concrete in this area was removed, and the replacement blocks that are now being used to fill this opening are not required to support any load other than their own weight.
2. The thermal transient described in Reference 2 consists of a 540°F water flowing for a short period of time, with subsequent natural cooling. A heat transfer calculation shows that the maximum concrete temperature would be 135°F. This is less than allowed by the ASME code sections listed in the Reference 2 letter as well as that allowed for embedded pipe in ACI 318 (structural concrete code).

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Mr. L. L. Kintner

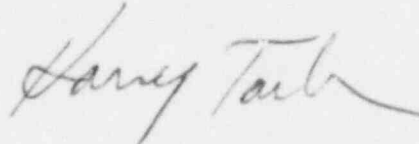
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3. A second transient (maximum continuous valve leakage) was identified as resulting in potentially higher concrete temperatures. Conservative calculations indicate local concrete temperatures could be as high as 410°F. Since the concrete blocks are unrestrained, there would be no large thermal stresses and, therefore, no structural damage. Several textbooks, Portland Cement Association, American Concrete Institute, Concrete Reinforcing Steel Institute, and professional papers report concrete damage starts to occur from 800°F to 1200°F. Because these values are far above our temperature of 410°F, we expect no spalling or surface damage that would produce debris that would interfere with the thermal expansion of the CRD lines.

Sincerely,



cc: B. Little