

PERRY NUCLEAR POWER PLANT

10 CENTER ROAD
PERRY, OHIO 44081
(216) 259-3737

Mail Address:
P.O. BOX 97
PERRY, OHIO 44081

November 4, 1996
PY-CEI/NRR-2108L

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

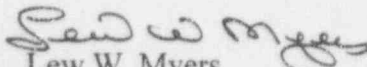
Perry Nuclear Power Plant
Docket No. 50-440
Subject: Response To Request For Information On Porous Concrete Sub-Foundation

Ladies and Gentlemen:

By letter dated October 16, 1996, the Nuclear Regulatory Commission (NRC) staff requested response to several questions on porous concrete sub-foundations. Answers to the questions are provided in the attachment to this letter.

If you have questions or require additional information, please contact
Mr. James D. Kloosterman, Manager - Regulatory Affairs, at (216) 280-5833.

Very truly yours,


Lew W. Myers
Vice President - Nuclear

BSF:sc

cc: NRC Project Manager
NRC Region III
NRC Resident Inspector

120040

9611140022 961104
PDR ADOCK 05000440
P PDR

ADDI'

By letter dated October 16, 1996, the Nuclear Regulatory Commission (NRC) staff forwarded the following questions on porous concrete sub-foundations:

Your plant appears to have a porous concrete layer below the containment basemat.

1. Have you found slurry in the drainage from this layer?

A: Cement slurry has not been observed in the drainage. The drainage water is clear, i.e., not cloudy or opaque, and there has not been evidence of pea gravel in the drain pipes or manholes. A discussion of calcium carbonate deposits is included in the answer to Question 3.

2. Has there been any settlement of the containment basemat?

A: Data is taken on a monthly basis by measuring the elevation of a number of plugs installed in the exterior of plant structures. An engineering evaluation performed in 1995 examined data from 1978 to 1994, and determined that the settling at the measurement locations was insignificant. For example, the plug installed in the east face of the Shield Building wall (which surrounds the containment shell) was measured in October of 1996 at 624.339 feet (ground elevation is \approx 620 feet), in March of 1986 (the month of initial licensing) at 624.335 feet, and in October of 1985 (prior to plant licensing) at 624.340 feet (minor variations occur between measurements due to differences in temperatures and associated building growths, and accuracy of the measurement techniques).

3. Have you noticed any unusual conditions which may be related to the porous concrete sub-foundation layer?

A: Dissolved calcium carbonate is being carried to the drainage pipes and the sumps where it is solidifying as a fine particulate which hardens into a scale. Although scaling from the calcium carbonate is occurring in the drainage pipes and sumps, a recent continuity test on the flow through the porous concrete layer (see Updated Safety Analysis Report (USAR) Section 2.4.13.5.4) showed continued acceptable performance.

It has been determined (from samples of external local groundwater versus water entering the sumps) that local groundwater contributes to the concentrations, but is not the primary source. A portion of the calcium carbonate may be from limestone used in roadways and yard areas, but evaluations performed to date have assumed that the measured increase in calcium concentrations (above the levels in the normal groundwater) are from the porous concrete pad. The Plant Underdrain System is designed such that the groundwater mainly interacts with the outer

periphery of the porous concrete layer, which extends significantly past the plant buildings. Thus, an engineering evaluation performed in 1995 concluded that the interior of the porous concrete layer (under the plant buildings) is fairly stagnant, and leaching of calcium would tend to be localized in the peripheral portions of the porous concrete pad, and not uniformly throughout the pad. The effects of the calcium carbonate on the Plant Underdrain System are continuing to be monitored by the site engineering department.

4. Are you monitoring anything related to the drainage from the porous concrete sub-foundation layer(s) below the containment basemat?

A: The monitoring program for the Plant Underdrain System is described in USAR Sections 2.4.13.5.3 and 2.4.13.5.4. Detailed therein are checks on the water table under and around the plant buildings, hydrostatic pressure under the foundation mats, radioactivity, flow continuity across the system, and the amount of groundwater inflow. These USAR Sections also describe annual inspections to ensure that the system is in an operating condition.

The following table identifies those actions which are considered to be regulatory commitments. Any other actions discussed in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments. Please notify the Manager - Regulatory Affairs at the Perry Nuclear Power Plant of any questions regarding this document or any associated regulatory commitments.

Commitments

No regulatory commitments are included in this letter
