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Dalwyn R. Davidson
VICE PRESIDENT
SYSTEM ENGINEERING AND CONSTRUCTION

July 25, 1979

Mr. James G. Keppler
Director, Region III
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

RE: Perry Nuclear Power Plant
Docket Nos. 50-440; 50-441
Interim Report on Inadequate
Compaction of Class "A"
Backfill and Settling of
Individual Pipes of P45
System

Dear Mr. Keppler:

This letter constitutes the Interim Report as required by 10CFR50.55(e) on inadequate compaction of Class "A" backfill around P45 System piping and settling of individual pipes below design elevation. The condition was reported to Region III by our Messrs. M. R. Edelman and W. J. Kacer on June 27, 1979, in telephone conversation with Mr. J. Konkle of your office.

Description of the Deficiency:

Inadequate compaction of Class "A" backfill around safety-related piping in the P45 System is evident from: (1) failing in-place density tests on backfill previously accepted by backfill contractor (as documented on CAR No. 0467 and NR No. GLC-459); and (2) settling of individual pipes below design elevation (as documented on NR Nos. CQA-049, CQA-051, PPP-070, and PPP-076). The re-tests of the in-place densities ranged from 10.3 to 63.8% relative density versus a required average of 85% with none below 80%. Scanning with a television camera of three buried pipes has revealed minimum deflections of seven inches over span/lengths of approximately 45 feet at varied locations in the P45 System designated as the north end of ISO's O-P45-64 through 68.

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Analysis of Safety Implications:

Stress analysis performed by the Design Engineer reveals that some piping may have been stressed beyond the maximum allowable. If an analysis by the Contract Administrator and Responsible Engineer had not called for the use of a special closed-circuit television inspection, the condition of possible overstressed piping may have gone undetected causing a potential for failure. The apparent failure of Great Lakes Construction Company, Pullman Power Products, Inc., and the Perry Nuclear Power Plant Project Organization to require and assure proper backfilling and control of the bellholes dug for weld joints created a condition which might have gone undetected; therefore, creating the potential for a pipe break.

Completion of stress analysis of P45 System piping will require excavation of the backfill west of Water Treatment Building in the fall of 1979. Exposing P45 piping in this area will permit confirmation of the television inspection data, accurate measurement of pipe deformations, and more precise calculation of stresses in the piping.

Corrective Action:

Nonconformance documentation identifying the deficiencies has been issued: Nonconformance Report Nos. CQA-049, CQA-051, GLC-459, PPP-070 and PPP-076; and Corrective Action Report No. 0467.

To assure the conditions relating to the inadequate backfill and settled pipes would be corrected, the following actions were initiated:

1. Backfill in P45 trench north of Water Treatment Building was removed and replaced around P45 pipes.
2. The backfill placement contractor has increased the number of quality control personnel covering backfill operations from two to four inspectors.
3. Construction Quality Control of the CEI Perry Project Organization has hired an experienced backfill inspector who is responsible for monitoring safety-related backfill operations.
4. Piping contractor shall minimize bellholes both in number and size.
5. Bellholes are being filled to within six inches of bottom of pipe with lean concrete (1500 psi). The effectiveness of this method has been verified by surveying measurements.
6. Backfill contractor is performing 100% inspection of all compaction of safety-related backfill in bellhole areas.

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July 25, 1979

In Summary:

Five runs of underground pipe in P45 System designated as the north end of ISO's O-P45-64 through 68 shall be excavated in the fall of this year. The pipes shall be examined along their entire length to determine pipe elevation profiles and overall conditions. The disposition of the pipes will be determined after the completion of the investigation with input from the Design Engineer. During excavating and uncovering operations, the last one to two feet above the pipes shall be hand excavated to prevent damage to pipe.

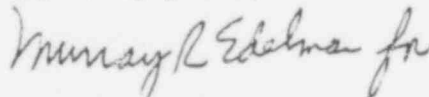
Other safety-related pipe (e.g., P72 Underdrain System) that was installed by the same method (i.e., bellholes dug into Class "A" bedding and later backfilled upon completion of pipe work) will be inspected by taking physical measurements on a random basis to determine status of pipe. As a minimum, 20% of all safety-related piping shall be checked. Any nonconforming conditions revealed by this investigation shall be documented on nonconformance reports.

Removal and replacement of backfill around the P45 System pipes north of the Water Treatment Building has corrected the nonconforming, in-place condition. Additional backfill inspectors hired by both the backfill contractor and CQC should prevent recurrence of the backfill practices which resulted in low, in-place densities.

Minimizing bellholes, both in size and number, plus filling bellholes with lean concrete to within six inches of bottom of pipe, should prevent deflections of pipe during backfilling operations.

The Final Report on Inadequate Compaction of Class "A" Backfill and Settling of Individual Pipes of P45 System will be provided by December 20, 1979.

Very truly yours,



D. R. Davidson
Vice President
System Engineering and Construction

DRD/ksz

cc: Victor Stello, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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