# THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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January 30, 1984

MURRAY R. EDELMAN VICE PRESIDENT NUCLEAR

> Mr. James G. Keppler Regional Administrator, 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 Design of the Diesel Generator Exhaust Piping [RDC 78(83)]

Dear Mr. Keppler:

This letter serves as the final report pursuant to 10CFR50.55(e) on the deficiencies concerning exhaust line back pressures exceeding manufacturer's recommendations on the Standby Diesel Generators and the Diesel Generators for the High Pressure Core Spray System (HPCS). Mr. P. R. Pelke of your office was notified on August 5, 1983, by Mr. C. M. Shuster of The Cleveland Electric Illuminating Company that this problem was being evaluated. On July 27, 1983, Gilbert Associates, Inc. (GAI), the Architect/Engineer for PNPP, notified the Nuclear Regulatory Commission, under 10CFR21, of a deficiency involving the design of diesel generator exhaust piping. This problem was formally reported in our first interim report dated August 30, 1983, and an update was provided in our second interim report dated October 6, 1983.

This report contains a description of the deficiencies, an analysis of safety implications, and the corrective action to be implemented.

## Description of Deficiencies

The design of the exhaust piping for the Standby Diesel Generators was such that the engines might have stalled if loaded beyond 75% of their rated capacity. The design loading was less than 75% of the rated load for both Units.

The design of the exhaust piping for the High Pressure Core Spray (HPCS) Diesel Generators was such that the manufacturer's recommended exhaust pressure might have been exceeded, thus causing deteriorated performance of these diesels and possible failure of the HPCS system to perform.

### Analysis of Safety Implications

If additional loadings were added to the Standby Diesel Generators such that the design load was beyond 75% of rated capacity, stalling of the engines may have occurred due to excessive exhaust pressures in the event that the Standby Diesel Generators were called upon to operate as a result of a Loss of Coolant Accident (LOCA) and/or a Loss of Offsite Power (LOOP). The postulated failure of the Standby Diesel Generators would have resulted in their inability to provide Class IE power to the PNPP engineered safety systems.

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#### Mr. James G. Keppler

In the event that a LOCA and/or a LOOP resulted in the initiation of the High Pressure Core Spray (HPCS) and its associated Diesel Generators, excessive exhaust pressures may have caused the HPCS Diesel Generators to stall, thereby resulting in the failure of the HPCS to operate. Postulating an additional failure in the Emergency Core Cooling System, reactor vessel inventory may not have been maintained. Additionally, during a LOCA in which the uncovering of the core is calculated, spray cooling heat transfer would not have been provided by the HPCS.

## Corrective Action

The Architect/Engineer, Gilbert Associates, Inc. (GAI), has completed a redesign of the affected exhaust piping for both the Standby and HPCS Diesel Generators which will reduce the exhaust backpressure to within manufacturer's recommendations. All piping design drawings have been issued as final. Associated pipe supports have been designed and will be field verified. These support details will be issued as final by February 3, 1984.

The original piping design resulted from an error in the calculations for diesel exhaust pressure drop. GAI has completed a review of other calculations performed by the GAI Engineer who performed the original calculations with the results that no other calculation errors were found.

Full compliance will be achieved with installation of the redesigned piping/supports. Installation is currently scheduled to be complete by May 1, 1984, for Unit 1 and October 1, 1984, for Unit 2.

Please call if there are any additional questions.

Sincerely,

murray N Edelman

Murray R. Edelman Vice President Nuclear Group

MRE:pab

cc: Mr. M. L. Gildner NRC Site Office

> Director Office of Inspection and Enforcement U.S. Nuclear Regulatory Commission Washington, D.C. 20555

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