

Detroit
Edison

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August 23, 1984
EF2-69698

DMB

Mr. James G. Keppler
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

Reference: (1) Fermi 2
NRC Docket No. 50-341
(2) Letter, D. A. Wells to J. G. Keppler,
February 29, 1984, QA-84-326
Subject: Final Report of 10CFR50.55(e) Item 116
"Potential Design Deficiency by Allowing
Freezing of Buried Piping Systems"

This is Detroit Edison's final report of Item 116,
"Potential Design Deficiency by Allowing Freezing of Buried
Piping Systems." Item 116 was originally reported as a
potential design deficiency on January 31, 1984, and
subsequently documented in Reference (2).

Description of Deficiency

During severe cold weather in January 1984, the supply line
for the Division I fire protection system in the Residual
Heat Removal (RHR) complex was found to be frozen. This
item was originally identified as a potential design defici-
ency for buried piping systems because the review to deter-
mine the scope of the problem also included safety related,
buried lines that enter the RHR complex. Upon engineering
review, the scope of the reportable deficiency was deter-
mined to be limited to potential freezing of the RHR complex
fire protection system supply line.

The supply line for the Division I fire protection system
froze in the area where it is routed into the RHR complex.
The pipe is routed from below ground level to the first
floor of the building by embedding it inside the building's
concrete foundation wall. This wall is exposed to outside

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ambient temperatures on both sides. There is no source of heat in the wall to prevent the line from freezing. The remaining sections of the supply line will not freeze since they are buried six feet or more below grade which is below the frost line, or located inside of the building which is heated to at least 60°F.

The design of the fire protection supply lines into the RHR complex, for both Divisions I and II, are identical. They are routed into the building at different locations; however they both have the same potential to freeze in the winter.

Analysis of Safety Implications

In the event that the RHR complex fire protection system was rendered inoperable, due to freezing of a supply line, safety related equipment could potentially become inoperable or damaged during a fire. The safety related equipment in the RHR complex which could be affected are the Emergency Diesel Generators, the safety related service water pumps, and the mechanical draft cooling towers.

Corrective Action

After the Division I system was reported as inoperable, the emergency cross tie valve which connects Division I and II was opened which made the system operable again. The Division I line was later cleared of ice. To prevent any additional freezing of these lines, water was passed through the supply lines for both Division I and II once a shift while the potential for freezing existed.

To eliminate future incidents of freezing of the supply lines for both Division I and II, new lines will be installed which bypass the section of the line currently embedded inside the building foundation wall. The new lines will be routed from the base of the building, below the frost line, into the building vertical pipe runs. The remainder of the piping will be run through the building's interior and pipe chases.

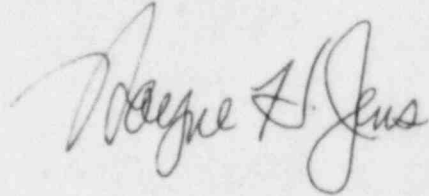
The engineering for this project is scheduled to be completed by mid-September, 1984. Upon completion of engineering, the installation schedule will be determined. If the installation cannot be completed prior to winter (approximately mid-November), the new lines will not be connected to the existing system and a temporary solution will be used for the 1984-1985 winter. The temporary

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solution will require a continuous flow of water through both of the existing supply lines during the winter. The required flow rate has been determined to be 1 GPM. A temporary administrative procedure will require visual inspections for flow during normal rounds of the operator to the RHR complex. In addition, the flow rate through the temporary lines will be checked every two weeks to verify the flow is 1 GPM or greater.

This is Detroit Edison's final report of this item. If you have questions concerning this matter, please contact Mr. Lewis P. Bregni, (313) 586-5083.

Sincerely,

A handwritten signature in dark ink, appearing to read "Wayne F. Jones". The signature is fluid and cursive, with the first name "Wayne" being more prominent and the last name "Jones" following in a similar style.

cc: Mr. P. M. Byron
Mr. R. C. DeYoung
Mr. R. C. Knop