

August 28, 1995

MEMORANDUM TO: William L. Axelson, Director
Division of Reactor Projects
Region III

50-341

FROM: John N. Hannon, Director
Project Directorate III-1 Original signed by T. J. Kim for
Division of Reactor Projects - III/IV

SUBJECT: TASK INTERFACE AGREEMENT - FERMI 2 PERFORMANCE OF AN OPERATION
WITH THE POTENTIAL TO DRAIN THE REACTOR VESSEL WITH LESS THAN
THE MINIMUM A. C. ELECTRICAL POWER SOURCES AVAILABLE
(AITS 495)

This memorandum responds to your November 30, 1994, request for assistance in determining the acceptability of Fermi 2 Nuclear Plant performance of reactor protection system logic functional testing with all four emergency diesel generators technically inoperable. Specifically, you requested the Office of Nuclear Reactor Regulation (NRR) to determine if the testing constituted an operation with the potential for draining the reactor vessel (OPDRV) as used in the context of Fermi 2's Technical Specification (TS) 3.8.1.2, which states in part, "with less than the minimum A. C. electrical power sources operable, suspend..., operations with the potential for draining the reactor vessel,..." Attached to the request were an excerpt from the resident inspector's inspection report and licensee documentation of a similar event in 1985. Also attached were the licensee's documentation of the event and Monticello TS interpretation 3.5.E.1.& 2.

There is not a consistent definition for OPDRV throughout the industry. The attached analysis of the Fermi 2 event includes a suggested NRR definition of OPDRV and a brief analysis of the Fermi situation. The staff concludes that although many operational problems occurred, the reactor vessel was not close to being drained and Fermi 2 was not in an OPDRV condition.

If you have any questions, please contact Timothy G. Colburn, the Fermi 2 Project Manager at (301) 415-1341.

Attachment: Fermi 2 OPDRV Analysis
and Proposed OPDRV Definition

cc: Richard W. Cooper, RI
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Fermi 2 OPDRV Analysis and Proposed OPDRV Definition

In response to a request from Region III dated November 30, 1994, the NRR staff evaluated the Fermi 2 licensee's performance of an October 7, 1994, surveillance evolution. The region requested assistance in determining the acceptability of the performance of Protection System Logic Functional Testing with all four emergency diesel generators technically inoperable. The Fermi 2 Technical Specification 3.8.1.2 states, in part, that "with less than the minimum A. C. electrical power sources operable, suspend..., operations with a potential for draining the reactor vessel,..." The region requested that the staff assist in determining whether the licensee was conducting an operation with the potential to drain the reactor vessel (OPDRV). Included with the region's request were several industry definitions of OPDRV and a description of the Fermi evolution.

There is not a consistent definition of OPDRV throughout the industry. The following is a suggested NRR definition of OPDRV and a brief analysis of the Fermi evolution. The staff concludes that Fermi 2 was not conducting an OPDRV.

Proposed OPDRV Definition

The plant is in an OPDRV condition if the following exists:

- 1) An open penetration > [1 inch] in diameter. (The size threshold is based upon that size which compensatory makeup measures are able to replace water inventory loss.)
- 2) The open penetration is below the normal water level.
- 3) The penetration is not protected by an automatic isolation valve, is not isolated by a closed valve, is unisolable, or is not isolable in a timely manner.
- 4) The open penetration has the potential to uncover irradiated fuel.

Brief analysis of Fermi 2 situation

- 1) The size of the open penetration was < 1 inch. The actual inventory loss rate was 135 gpm; the loss rate for a 1-inch penetration is 175 gpm. The reactor vessel water level fell 30 inches, from 220 inches to 190 inches. The level was restored after receipt of the torus sump high level alarm, when the sump pump was restored to service by replacing its power fuses.
- 2) The penetration was isolated in a timely manner by halting the RPS surveillance (SR) and restoring systems to normal configuration.

Other recognized Fermi operational problems:

- 1) There was a failure to return the torus sump pump to operable status after the conduct of an SR.

ATTACHMENT

- 2) The operators displayed a lack of alertness and failed to know plant status. This was evidenced by their failure to understand existence of flow path, failure to recognize reactor vessel level decrease, and the fact that it required the Torus Sump Hi Level alarm to alert the operators to the situation and problem.
- 3) Failure to learn from similar prior experience (including the failure to heed warning signs instituted after similar previous events).
- 4) Four EDGs became inoperable.

Despite Fermi's many problems, the reactor vessel was not close to being drained.

Conclusion:

Fermi was not in an OPDRV.

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