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September 27, 1984
EF2-72258

Director of Nuclear Reactor Regulation
Attention: Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

Reference (1) Fermi 2
NRC Docket No. 50-341
(2) NRC IE Bulletin 84-01, "Cracks in BWR Mark I Containment Vent Headers", February 3, 1984
(3) INPO Significant Event Report (SER) 14-84, "Cracks in the Torus Ringheader"
(4) NRC IE Information Notice 84-17, "Problems With Liquid Nitrogen Cooling Components Below Nil Ductility Temperature", March 5, 1984
(5) GE Service Information Letter (SIL) 402, "Wetwell/Drywell Temperature," February 14, 1984

Subject: <u>Response to GE SIL 402</u>

As per the request of the Fermi 2 Licensing Project Manager, this letter provides Detroit Edison's response to applicable recommendations provided in the subject SIL (Reference 5.) The SIL was initiated after an inspection at an operating BWR revealed a large crack in the vent header within the torus.

It should be noted that Detroit Edison has a comprehensive experience analysis program whereby experience documents (GE SIL's, INPO SER's, IE Bulletins, Notices, etc.) are assigned, tracked, and dispositioned. Consequently, the GE SIL and the other applicable documents (references (2), (3) and (4)) had been reviewed by Detroit Edison with respect to the Fermi 2 design and planned operation. It was concluded that the design and operation of the nitrogen system at Fermi 2 provides adequate assurance that the impingement of liquid or extremely cold nitrogen against vital plant components will not occur.

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SIL 402 made two recommendations applicable to Fermi 2. The recommendations and Edison's responses as requested by you are provided below:

Recommendation 1

Evaluate the design of the nitrogen inerting system. Investigate the potential for introducing cold (less than 40°F) nitrogen and the orientation of the nitrogen port relative to the vent header, downcomers, or other equipment in the path of the injected nitrogen. Assure that the temperature monitoring devices, the low temperature shutoff valve, and overall system design are adequate to prevent the injection of cold nitrogen into the containment.

Edison Response

The Nitrogen Inerting System is described in FSAR Section 9.3.6 and Figure 9.3-12. The system includes a storage tank, steam vaporizer, electric heat exchanger, piping, valves and controls. The steam vaporizer is used for inerting the primary containment prior to plant operation per the Technical Specifications and provides high flow at low pressure. Liquid or gaseous nitrogen enters the steam vaporizer and is heated by steam from the auxiliary boiler. The electric heat exchanger is used for plant nitrogen distribution during normal operation which includes primary containment nitrogen make up and provides a low flow at high pressure. The inerting system supply and plant nitrogen distribution system are separate subsystems, each with its own dedicated equipment and controls, and have the nitrogen supply tank as their only shared component. The inerting flow is through both 20 and 24 inch valves, while the nitrogen make up flow is through one (1) inch valves.

System control and operation during both the initial inerting and normal operating modes of the Nitrogen Inerting System is described below:

Inerting Operation

In accordance with procedures, an operator is required, during inerting, to be stationed in the nitrogen equipment building next to the skid. This operator monitors the steam vaporizer operation. The control room operator is responsible for valve alignment from secondary containment to primary containment. The pertinent information that is provided to these operators and the automatic trips for the inerting system are identified below:

a) Control Room

- Secondary containment valve position
- Primary containment valve position
- Pressure control (hand/auto) station
- System discharge pressure indicator/recorder

b) Nitrogen Equipment Building

- Steam vaporizer outlet nitrogen temperature indicator
- Steam vaporizer outlet nitrogen pressure indicator
- Automatic trip of nitrogen supply on:

  1) outlet low nitrogen temperature; or
  2) outlet low nitrogen pressure

<u>Normal Operation</u>

The normal plant nitrogen distribution system is a continuous system which provides pressurized nitrogen to dual receivers. Control of the system is from the control room. Pertinent information available to operators and the automatic trip in the normal nitrogen distribution system is identified below:

a) Control Room

- Secondary containment valve position
- Receiver discharge valve position
- Receiver pressure indicator
- Electric heat exchanger outlet low nitrogen temperature alarm
- Electric heat exchanger high temperature alarm
- System pressure control station
- Electric heat exchanger outlet nitrogen temperature indicator/recorder

b) Nitrogen Equipment Building

- o Electric heat exchanger outlet nitrogen pressure indicator
- o Electric heat exchanger temperature controller/indicator
- o Electric heat exchanger power indication
- o Automatic trip of nitrogen supply on low discharge temperature

Accordingly, operators are provided with adequate indication, alarm and control information to properly operate the Nitrogen Inerting System. Automatic trips are provided to isolate the supply of nitrogen. The instrumentation is checked, either singly or as part of its overall loop, every 18 months and, other than sensing elements, is located in the heated environment of the nitrogen equipment building or plant. There are no valves that can be operated to bypass the normal nitrogen flow and the associated automatic trips.

The orientation of the torus and drywell nitrogen injection ports was investigated relative to other equipment and structures within primary containment. The torus nitrogen injection lines are approximately seven feet above and slightly off center from the vent header. The inspection of drywell penetrations revealed that several items of safety related equipment are located in proximity to the inerting line penetrations. Accordingly, it can't be shown conclusively by inlet line orientation alone that liquid or extremely cold nitrogen wouldn't have a deleterious effect on safety related components. However, Detroit Edison feels that this is acceptable based on the following:

(1) The steam vaporizer as a source of nitrogen is only used during limited time periods (i.e., initial inerting of containment prior to operation.)

(2) During these periods, an operator is required to be present at the local nitrogen equipment station to monitor parameters and make necessary adjustments.

(3) During normal makeup, low volume electric heat exchangers are used.

(4) An automatic shutoff exists to stop the flow of nitrogen in either mode.

(5) Adequate instrumentation and alarms exist to monitor the system performance for either mode.

(6) There are no valves that can be operated to bypass the normal nitrogen flow path and the associated automatic trips.

Recommendation 2

Review the operating experience of the inerting system to assure that the vaporizer, the low temperature shutoff valve and the temperature indicators have functioned properly. Evaluate the plant calibration, maintenance and operating procedures for the inerting system. Assure that cold nitrogen injection would be detected and prevented.

Edison Response

Due to the construction status of Fermi 2, the Nitrogen Inerting System has not yet been operated, except as required to support preoperational tests. However, as stated in the response to Recommendation 1, the Fermi 2 Nitrogen Inerting System design and operating procedures provide sufficient assurance that cold nitrogen injection would be detected and prevented.

If you should have any further questions, please contact Mr. O. Keener Earle at (313) 586-4211.

Sincerely,

Wayne H. Jens

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