



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NRC PDR

DEC 5 1978

Docket No: 50-341

APPLICANT: The Detroit Edison Company
FACILITY: Enrico Fermi Atomic Power Plant Unit 2
SUBJECT: SUMMARY OF NOVEMBER 9, 1978 MEETING REGARDING OL SAFETY
REVIEW

The purpose of the meeting was to discuss selected areas in our review of the application for a license to operate Fermi 2.

At the conclusion of the meeting, the applicant requested that further discussions be scheduled for three areas: turbine trip transients, containment isolation valve criteria, and asymmetric loads on the reactor vessel support. A meeting to discuss turbine trip transients has been scheduled for November 28, 1978. Other areas will be scheduled for later meetings.

Additional information will be requested by letters in several areas discussed in the meeting: containment systems, design modifications to minimize cracking of stainless steel piping, and loose parts monitors. The staff will also send a letter regarding our plans to complete the review of the Mark I containment modifications for Fermi 2.

The applicant is expected to provide additional information regarding: tornado missile protection of RHR cooling towers; technical specification leakage limit for main steam isolation valves; implementation of Regulatory Guides 1.63, 1.108, 1.124, and 1.130, and; addition of fire extinguishing sprinklers over the recirculation pump oil system.

DISCUSSION:

1. Turbine Trip Without Bypass

The applicant proposed to modify the design by deleting the fast trip of the recirculation pumps from the design. This trip is currently included in the FSAR for mitigating the turbine trip transient assuming complete failure of the steam bypass to open. The results included in the FSAR indicate fuel failures; however, the FSAR states this is acceptable because of the low frequency of occurrence of this transient (about one time in 300 plant years).

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The staff said that it has not previously accepted the classification of this transient as one in which fuel failures are acceptable because the low frequency cited has not been adequately demonstrated.

The staff said the acceptability of credit for steam bypass would depend on verification that the equipment and instrumentation used in the transient meet single failure requirements and verification of the analysis method, perhaps by tests during startup. It was noted that the Hatch 2 plant includes a fast trip of the recirculation pumps to mitigate this transient. It was also noted that the Reactor Systems Branch is scheduled to have positions on Fermi 2 by December 1, 1978, so that modifications to the FSAR at this time will result in an open item. Too many open items can delay the schedule for completion of the staff's review.

2. Low Pressure Safety Injection

The applicant confirmed its telephone call of October 20, 1978 that it will not make any modifications to the low pressure safety injection system (see my memorandum of August 2, 1978 for a description of modifications which had been proposed earlier). Therefore, the loop selection logic and swing bus design as described in the FSAR will not be modified.

3. Recirculation Pump Trips

There are two trips for the recirculation pumps currently included in the design: (1) a fast trip derived from turbine control valve fast closure, and; (2) a slow trip derived from reactor high pressure. As noted in Item 1 above, applicant is considering the deletion of the fast trip from the design. The slow trip, which is beneficial to the mitigation of anticipated transients without scram, will be retained in the design.

4. Tornado Missile Protection for Residual Heat Removal (RHR) Cooling Tower Fans

The staff provided comments on the applicant's letter dated October 30, 1978 that proposed a means for residual heat removal in the event that cooling tower fans are damaged by a tornado induced missile. The applicant calculates that 12 hours are required to reach limiting temperatures in the torus (170°F) and the RHR reservoir (125°F). At this time after shutdown one of the four cooling tower cells will be sufficient to discharge residual heat to the air. The applicant estimates that one cooling tower cell could have its fans replaced and debris removed within four hours. The staff's comments were:

- a. The reactor would not be in a cold shutdown condition at the time 170°F is reached in the torus; therefore, operation of safety relief valves in high temperature torus water may cause excessive vibrations.
- b. The RHR reservoir water is used to cool components required for a safe shutdown; therefore, the effect of 125°F water in temperature sensitive components may cause functional failure or degradation. The maximum water temperature given in the FSAR is 89°F.
- c. Redundant means for rejecting heat to the atmosphere should be provided so that a single failure would not preclude necessary residual heat removal.
- d. If water to one of the cooling towers is bypassed for cleaning out debris and replacing a fan, the hot (140°F) water may go directly to the RHR inlet; resulting in water temperatures to components higher than the average temperature calculated for the reservoir (125°F).
- e. The spare fans should be stored in a building that is protected from tornadoes.
- f. The analysis should allow adequate time for removal of debris (tree limbs, pieces of wood) as well as for replacement of fans due to damage by a steel rod missile.
- g. Technical Specifications would be necessary, prohibiting fan operation during a tornado and assuring the achievement of other conditions assumed in the analysis.
- h. The cost of analyses and associated justification of the proposed method may outweigh the cost of gratings over the cooling tower outlets.

The applicant said they believed the above comments could be satisfactorily answered. They were not prepared to respond in the meeting to the comment regarding use of 125°F water in temperature sensitive components. They commented that a preliminary design of a grating to keep a steel rod missile and debris out of the tower appeared to cost more than a million dollars.

Subsequent to the meeting, the staff provided a drawing of the grating design used in the Grand Gulf Plant. This design uses a grating, supported on the top of the cooling tower, instead of on separate columns, as in the Fermi 2 preliminary design concept. The staff urged the applicant to give further consideration to a grating design as an alternative to the proposed method of replacing damaged fans.

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5. Main Steam Isolation Valve Leakage Control System

The FSAR presentation of this system states that leakage tests would be performed every 40 months and the leakage limit would be 100 standard cubic feet per hour. The staff commented that tests should be performed more frequently (e.g. every 16 months) and that 100 SCFH per valve appeared excessive as a limit.

The applicant said their reason for 40 month intervals was that it was suggested by Section XI of the ASME B&PV Code and that more frequent testing would cause unnecessary radiation exposure of test personnel.

The applicant said the leakage limit of 100 SCFH was for all valves tested as a system, rather than for each valve. The FSAR description of the tests will be clarified.

6. Combustible Material Inside Containment

The applicant said that the shield doors in its sacrificial shield are made of non-combustible material. Sprinklers will be installed inside containment to extinguish any combustion of oil that may leak from the recirculation pump system.

7. Power, Instrumentation and Control Systems

The staff described the scope of work required to complete the review in this area. We will audit the design in selected areas - including the swing bus design and the manual scram. The applicant was advised of several issues that were satisfactorily resolved on the Hatch 2 plant and indicated that similar solutions would be acceptable for Fermi 2. These issues include:

- a. Startup testing ("STAR TREK") system
- b. Reactor Protection System motor generator set performance
- c. Containment electrical penetrations
- d. Remote shutdown panel.

The staff indicated two Regulatory Guides designated Category II by the Regulatory Requirements Review Committee that should be implemented on Fermi 2:

- a. Regulatory Guide 1.63 Revision 1 - Electrical Penetration Assemblies in Containment Structures
- b. Regulatory Guide 1.108 Revision 1 - Periodic Testing of Diesel Generator Units. This guide is being implemented by incorporation in Standard Technical Specifications.

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8. Containment Systems

Draft questions on open issues in the Interim SER were provided to the applicant for discussion at the meeting. Clarification of FSAR information on the hydrogen recombiner and containment isolation valves resulted in some changes in the final questions.

Staff said that the generic review by General Electric of asymmetric loads on the reactor vessel supports is due November 30, 1978 and the generic evaluation by the staff is estimated to be completed in 4 months.

9. Mechanical Components and Piping

The staff identified the need for the following additional information regarding cracking of stainless steel piping and design efforts to minimize its occurrences. The applicant provided drawings of the recirculation line and the core spray line. Formal requests will be prepared to obtain this information on the docket.

- a. A sketch of the design and the materials used in the recirculation line safe ends.
- b. The design and material used in the collect retainer tube of the Control Rod Drive (CRD).
- c. The resolution of the routing of the CRD hydraulic return line.
- d. The resolution of the CRD return line nozzle problem.
- e. The implementation of NUREG-0313 (BTP5-7) (the stainless steel pipe cracking by IGSCC) including but not limited to core spray lines, CRD hydraulic return lines, isolation condensor lines, and shutdown heat exchange lines.

The staff indicated that modifications and analyses for the Mark I Containment to demonstrate adequate margin for hydrodynamic loads should address piping and its supports as well as containment structure. The applicant stated that they believed the FSAR as amended does address all relevant areas. The staff said that its evaluation would be based on the Short Term Program Structural acceptance criteria. A commitment to meet Long Term Program acceptance criteria should be made.

The staff said that criteria used for bolts in ASME Class 1 component supports should meet the positions in Regulatory Guide 1.124 (Revision 1) and Regulatory Guide 1.130. These guides were placed in Category II by the Regulatory Requirements Review Committee.

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10. Loose Parts Monitor

The applicant said it does not currently plan to include a loose parts monitor in Fermi 2.

The staff said a loose parts monitor is required for Fermi 2 and provided the following requirements, which will be sent formally.

A design description and the LPMS Manufacture's sensitivity specification shall be provided. The LPMS must be operational and capable of recording vibration signals for signature analysis at the time of initial startup testing.

A description of the monitoring equipment including location and basis for alarm settings shall be provided in the FSAR. Anticipated major sources of internal and external noise will be provided along with plans to minimize these sources. A description of precautions taken to insure the operability of the LPMS after operational basis earthquakes should be discussed. A detailed discussion of the operator training program for operation of the LPMS, planned operating procedures, and record keeping procedures should be provided.

We require a minimum of two LPMS sensors at each natural collection region. The LPMS is required to function after any seismic event for which plant shutdown is not required. An exception is that recorders are not required to function within their specified accuracy during or after seismic events without maintenance. However, monitoring (alarm and/or indication) capability must remain available for that channel at all times during and after the seismic event. The system should also be shown to be adequate by analysis and/or test for the normal operating radiation, vibration, temperature, and humidity environment.

L L Kintner

Lester L. Kintner, Project Manager
Light Water Reactors Branch No. 1
Division of Project Management

Enclosure:
List of Attendees

cc:
See next page

Dr. Wayne H. Jens

Dr. Wayne H. Jens,
Assistant Vice President
Engineering & Construction
Detroit Edison Company
2000 Second Avenue
Detroit, Michigan 48226

cc: Eugene B. Thomas, Jr., Esq.
LeBoeuf, Lamb, Leiby & MacRae
1757 N. Street, N.W.
Washington, D. C. 20036

Peter A. Marquardt, Esq.
Co-Counsel
The Detroit Edison Company
2000 Second Avenue
Detroit, Michigan 48226

Mr. William J. Fahrner
Project Manager - Fermi 2
The Detroit Edison Company
2000 Second Avenue
Detroit, Michigan 48226

Larry E. Schuerman
Licensing Engineer - Fermi 2
Detroit Edison Company
2000 Second Avenue
Detroit Michigan 48226

ENCLOSURE

DETROIT EDISON - NRC MEETING
NOVEMBER 9, 1978

<u>NAME</u>	<u>ORGANIZATION</u>
R. Fitzpatrick	NRC
H. H. Voigt	LeBoeuf, Lamb, Leiby & MacRae
P. A. Marquardt	Detroit Edison
R. L. Drake	Detroit Edison
R. Horn	Detroit Edison
M. L. Batch	Detroit Edison
J. Fray	GE
N. Shirley	GE
E. Lusic	Detroit Edison
W. F. Colbert	Detroit Edison
L. E. Schuerman	Detroit Edison
L. L. Kintner	NRC
J. S. Wermiel	NRC
C. Graves	NRC
J. Kudrick	NRC
T. Huang	NRC
L. Sage	General Physics
N. Holland	General Physics
W. Brooks	NRC
J. Nehemias	NRC
W. Hodges	NRC
F. Cherney	NRC
K. Desai	NRC
M. Hum	NRC
B. Turovlin	NRC
L. Bell	NRC