

Detroit

2000 Second Avenue  
Detroit, Michigan 48226  
(313) 237-8000



June 4, 1981

EF2 - 53449

U. S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D. C. 20555

Attention: Mr. Darrell G. Eisenhut, Director  
Division of Licensing

Gentlemen:

Reference: Enrico Fermi Atomic Power Plant, Unit 2  
NRC Docket No. 50-341

Subject: Degree of Conformance with NUREG-0619

- References: 1. Letter from D. G. Eisenhut to Applicant  
November 13, 1980  
2. NRC Generic Letter 81-11, February 20, 1981

The Detroit Edison Company has completed its study of NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking" to determine the degree of conformance feasible and practicable on Enrico Fermi 2 Nuclear Power Plant. This study shows Fermi 2 can conform in all major aspects of your report but must request relief from some of the ancillary modifications. This letter presents the results of that study and describes both the modifications being incorporated and the justifications for areas of non-conformance.

1. Modification to Sparger/Thermal Sleeve

Fermi 2 will install the General Electric triple-sleeve sparger design as described by General Electric in NEDE-21821-A.

Our commitment to this sparger has been incorporated in Section 5.2.1.20 of the Fermi 2 FSAR. This is in complete conformance with NUREG-0619.

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2. Nozzle Clad Removal

The Fermi 2 vessel was manufactured with unclad feedwater nozzles. Consequently, we are already in full conformance with this requirement.

3. Inservice Inspection Program

Fermi 2 will incorporate the inspections required in Table 2 of NUREG-0619. Our inspection agent, Southwest Research Institute, has been instructed to perform a preservice UT examination of the nozzle blend radii and bore regions from the exterior of the reactor vessel. Tracks are being fabricated for permanent installation on the feedwater pipe so that these examinations can be done remotely with mechanical devices to minimize radiation exposure to inspection personnel.

A preservice PT examination will be made of the accessible blend radii area. We endorse and strongly urge the NRC to continue to review the need for inservice PT examination. We hope this review will show the PT examination is redundant and can be eliminated for it will cause high radiation exposure to many workers.

4. On Line Leakage Monitor

Requests for proposals for supplying an On Line Leakage Monitor have been made to both General Electric and NUTECH. We have been informed that General Electric is withdrawing their device from the market.

The NUTECH device requires the thermocouples to be permanently attached to the safe end. Such thermocouples (and their leads) will interfere with and, therefore, are not compatible with our mechanized UT inspection device. NUTECH has been asked to propose removable thermocouples; no such proposal has been received.

Consequently, we have been frustrated in our efforts to obtain an on-line monitor. We will continue to pursue this effort; however, should a compatible device become available, installation may have to be delayed to a refueling outage. Note that installation of such a monitor is not a requirement of NUREG-0619.

5. Low-Flow Controller

Fermi 2 employs a plant unique, high quality, low flow controller which is far superior to the on-off device used as the basis for

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the General Electric study. Consequently, rather than incorporate the General Electric controller, we opt for the plant-specific fracture mechanics analysis discussed in Reference 2.

The basis of such an analysis is a history or record of temperature fluctuations - the validity of the analysis is no better than that record. Since the Fermi 2 controller is unique, there is no basis to postulate what that history may be.

With NRC concurrence, the Detroit Edison Company will commit to performing a plant-specific fracture mechanics analysis based on actual, typical, temperature fluctuations during the first fuel cycle. The results of this study will be presented to the NRC for review consistent with Reference 2.

6. Repiping RWCU Return Line

NUREG-0619 endorses the change to RWCU return line discussed in General Electric report NEDE-21821-A. (That change calls for splitting the RWCU return flow of warm water to both feedwater lines so that the feedwater temperature is raised in both lines). It is our belief that once the triple sleeve sparger is incorporated, the benefit from this modification is negligible and is greatly offset by introducing an additional tee in the feedwater line which is subject to severe temperature fluctuations.

The General Electric report shows a 31% reduction in usage factor from a zero-leakage thermal sleeve with the RWCU modification. This, indeed, is very significant and worthwhile for a base case where the zero-leakage usage factor is quite high as for the single sleeve design. However, the zero-leakage usage factor for a base case of the triple sleeve sparger is 0.19; 31% of this is only 0.06. Thus, in absolute terms, this modification gives a very small improvement on usage factor for the triple sleeve design.

On the other hand, we believe consideration should be given to the adverse effect this change has on the usage factor on the feedwater line at the injection tee. Our studies conclude that the small benefits at the feedwater nozzle is completely eclipsed by the very real potential of failure by fatigue at the additional RWCU tee into the feedwater line. Thus, for reason of reducing the potential for pipe breaks, we request relief from this requirement.

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7. Control Rod Drive Return Line

Fermi 2 is in the 251-inch BWR/4 class of BWRs. We have chosen the "cut and cap"-without-rerouting solution to the nozzle cracking problem. NUREG-0619 accepts this solution for our class of plants providing specific additional modifications are made. Fermi 2 is in conformance with all those requirements. Specifically:

- a. Equalizing valves between the cooling water header and the normal drive movement exhaust water header have been incorporated.
- b. Exhaust water headers have been changed to stainless steel.
- c. Flow stabilizer loop is stainless steel and is routed directly to the cooling water header.

All modifications were constructed and inspected consistent with the applicable sections of the ASME B&PV code.

Detroit Edison agrees and commits to test for satisfactory system operation, return-flow capability equal to or in excess of the base-case requirement, and two-pump operation. The following reference is used for our base-case requirements:

March 14, 1979 letter, G.G. Sherwood (General Electric) to V. Stello (NRC) and R.J. Mattson (NRC) re: CRD Return Line Removal

That letter specifies an injection rate for the Fermi 2 class of BWRs of 165 gpm with one pump and two pump operation viability.

Detroit Edison also agrees and commits to establishing operating procedures for achieving this flow.

We believe Detroit Edison is making a sincere and honest effort to comply with NUREG-0619. This letter discussed our conformance on a point-by-point basis and presented justification where deviations were found necessary. Should you need additional information, we will welcome the opportunity for discussion.

Very truly yours,

*William F. Colbert*

William F. Colbert  
Technical Director  
Enrico Fermi 2

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bcc: M. L. Batch  
R. M. Berg  
F. E. Gregor  
J. W. Honkala  
E. Lusic  
L. E. Schuerman  
A. E. Wegele  
Document Control