

Detroit
Edison

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Nuclear
Operations

July 29, 1992
NRC-92-0092

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) GE Report NEDE-21821-A, "BWR Feedwater
Nozzle/Sparger Final Report", dated February 1980
 - 3) NUREG-0619, "BWR Feedwater Nozzle and Control Drive
Return Line Nozzle Cracking", dated November 1980
 - 4) NRC Generic Letter 81-11, dated February 20, 1981
 - 5) Detroit Edison Letter to NRC, "Degree of
Conformance with NUREG-0619", EF2-53449, dated
June 4, 1981
 - 6) Detroit Edison Letter to NRC, "Feedwater Nozzle
Crack Growth Analysis", NRC-89-0237, dated November
1989
 - 7) NRC Letter to Detroit Edison, "Feedwater Nozzle
Crack Growth Analysis (TAC No. 77675)", dated
August 21, 1991

Subject: Revised Feedwater Nozzle Crack Growth Analysis

The purpose of this letter is to submit the revised feedwater nozzle
crack growth analysis as discussed in References 6 and 7.

Reference 6 submitted a Fermi 2 plant unique fracture mechanics
analysis of the feedwater nozzles. This analysis was required by
Generic Letter 81-11 (Reference 4), as recommended in NUREG-0619
(Reference 3), to allow continued use of an existing high quality, low
flow controller that did not possess all six characteristics of
NEDE-21821-A (Reference 2). The initial analysis results indicate
that stresses from existing controller's temperature and flow profiles
would not result in the growth of a crack more than one inch depth in

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8.9 years of plant operation, as compared to the Generic Letter 81-11 required 40 years life of the plant. The initial results were based on the use of conservatively estimated thermal cycle history data since sufficient actual operating data were not available. However, as stated in Reference 5, it was intended that actual temperature fluctuation data from the first fuel cycle will be used as input to the analysis. Therefore, Detroit Edison committed in Reference 6 to perform a revised feedwater nozzle crack growth analysis using actual plant operating data. The revised analysis was to be completed prior to returning to power operation after the third refueling outage. This was found acceptable in Reference 7 which required that the analysis be submitted 90 days prior to restart of Fermi 2 for Cycle 4, currently scheduled for October 31, 1992.

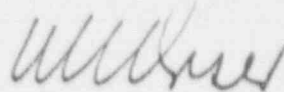
Detroit Edison has now completed a revised plant unique fracture mechanics analysis of the Fermi 2 feedwater nozzles using actual recorded temperature data collected during 1990-1991. This data is considered to be conservative with respect to future plant operation. The results of the revised analysis show that stresses from the existing controller's temperature and flow profiles would not result in the growth of an assumed initial 0.25 inch crack to greater than one inch depth during the 38.3 years after initial plant startup. This is based on the 1989 ASME Code, Section XI, fatigue crack growth methods. Since this analysis still includes conservative thermal cycle projections based on the early years of plant operation, it is our engineering judgement that with projections based on several years of plant operation the analysis would have predicted the crack growth to no greater than one inch in 40 years life of the plant.

Therefore, Detroit Edison concludes that Fermi 2 meets the intent of the requirements regarding feedwater nozzle crack growth, as specified in NUREG-0619 and amended by Generic Letter 81-11.

A copy of the General Electric Report No. GE-NE-523-22-0292, Revision 0, "Updated NUREG-0619 Feedwater Nozzle Fatigue Crack Growth Analysis" is enclosed.

If you have any questions, please contact Mr. Girija S. Shukla at (313) 586-4270.

Sincerely,



Enclosure

cc: T. G. Colburn
A. B. Davis
M. P. Phillips
S. Stasek