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Nuclear  
Operations

July 29, 1992  
NRC-92-0090

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20545

- References:
- 1) Fermi 2  
NRC Docket No. 50-341  
NRC License No. NPF-43
  - 2) Generic Letter 88-01, dated January 25, 1988
  - 3) Generic Letter 88-01, Supplement 1, dated February 4, 1992
  - 4) Detroit Edison Letter to NRC, NRC-88-0191, dated August 5, 1988
  - 5) NRC Letter to Detroit Edison, TAC No. 69135, dated March 16, 1989
  - 6) Detroit Edison Letter to NRC, NRC-89-0106, dated May 12, 1989
  - 7) NRC Letter to Detroit Edison, TAC No. 69135, dated January 4, 1990
  - 8) Detroit Edison Letter to NRC, NRC-90-0103, dated July 3, 1990
  - 9) NRC Letter to Detroit Edison, TAC No. 77674, dated June 11, 1991

Subject: Fermi 2 Response to Generic Letter 88-01, Supplement 1, "NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping"

Detroit Edison (DECo) has reviewed Generic Letter 88-01, Supplement 1, "NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping" for its applicability to Fermi 2. This review indicates that there are two outstanding issues associated with this generic letter. These issues are: (1) Resolution of the difference between the current Fermi 2 Technical Specification (TS) 3/4.4.3.2, "Reactor Coolant System Operational Leakage", leakrate rate of change requirement and the GL 88-01 Staff position; and

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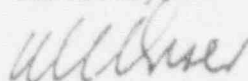
(2) Removal of condensate and feedwater system welds under the scope of GL 88-01 from the Inservice Inspection - Nondestructive Examination (ISI-NDE) Program (Plan) for Fermi 2 Power Plant (ISI-NDE Program).

The current TS 3/4.4.3.2 leakrate rate of change limit is a 2 gpm increase within any 4 hour period and the NRC Staff position expressed in GL 88-01 is a 2 gpm increase in 24 hours or less. This issue has been previously discussed in References 4 and 6 through 9. Reference 7, the NRC safety evaluation for the Fermi 2 response to GL 88-01, states that the current Fermi 2 TS limit is not acceptable and that this is the only outstanding GL 88-01 issue. Reference 9 states that the NRC will review our response to this issue as part of the DECo response to GL 88-01, Supplement 1. DECo proposes to resolve the TS leakrate issue by submitting a proposed license amendment that incorporates the GL 88-01 Staff position in TS 3/4.4.3.2. The proposed license amendment will be submitted under separate cover. This license amendment is scheduled to be submitted to the NRC by October 1, 1992.

The weld issue is a new issue identified by DECo. Through this letter, DECo proposes to resolve this issue by requesting NRC approval for removing the subject condensate and feedwater system GL 88-01 welds from the ISI-NDE Program. The justification for removing these welds from the ISI-NDE Program is included in Enclosure 1 of this letter.

If you have any questions, please contact Mr. David H. Brown at (313) 586-4213.

Sincerely,



Enclosures: Enclosure 1 - Justification for Removing Condensate and Feedwater System GL 88-01 Welds from the Fermi 2 ISI-NDE Program

Enclosure 2 - Table of Welds Proposed for Removal

cc: ANII - M. Ferguson  
Chief Inspector, Michigan Dept. of Labor, Bureau of Construction  
Codes/Boiler Division - R. Aben  
T. Colburn  
A. B. Davis  
M. P. Phillips  
S. Stasek

Enclosure to  
NRC-92-0090

ENCLOSURE 1

Justification  
for  
Removing Condensate and Feedwater System GL 88-01 Welds  
from the  
Ferwi 2 ISI-NDE Program

Justification  
for  
Removing Condensate and Feedwater System GL 88-01 Welds  
from the  
Fermi 2 ISI-NDE Program

Introduction

The NRC issued Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping" to provide the NRC Staff positions on intergranular stress corrosion cracking problems. The technical bases for the positions outlined in GL 88-01 are detailed in NUREG-0313, Revision 2, "Technical Report on Material Selection and Process Guidelines for BWR Coolant Pressure Boundary Piping". In Reference 4, the initial DECo response to GL 88-01, DECo focused primarily on piping within containment. The GL 88-01 welds were identified as Category A, B, and G ASME III, Class 1 welds inside containment. In Reference 5, the NRC requested additional information and a revised format for the GL 88-01 response. The DECo response (Reference 6) provided the information requested and presented the GL 88-01 response in the requested format. This response identified 24 additional Category G welds outside of containment. These non-safety related, non-seismically qualified ANSI B31.1 welds are part of the condensate and feedwater systems and are located on the Number 3, 4, 5, and 6 Feedwater Heaters. The subject welds were administratively upgraded from Category G to Category D following inspection during the first refueling outage. They are currently included in the Fermi 2 ISI-NDE Program because they were previously identified as GL 88-01 welds.

As a result of the GL 88-01, Supplement 1, review, DECo concluded that the subject condensate and feedwater system welds are not within the scope of GL 88-01. Therefore, the subject welds should be removed from the Fermi 2 ISI-NDE Program.

Proposed ISI-NDE Program Change

DECo is proposing that the 24 condensate and feedwater system ANSI B 31.1 welds listed in Enclosure 2 be deleted from the Fermi 2 ISI-NDE Program because they are not within the scope of GL 88-01.

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ENCLOSURE 2

Table  
of  
Welds Proposed for Removal

Table  
of  
Welds Proposed for Removal

<u>Weld Identification</u>	<u>Configuration</u> *	<u>Diameter</u>	<u>System</u>
FW-N21-3109-18W0	SE-Pipe	24 inches	Feedwater
SW-N21-01-B002-ASWE	Noz-SE	24 inches	Feedwater
FW-N21-3109-29W0	SE-Pipe	24 inches	Feedwater
SW-N21-01-R001-ASWE	Noz-SE	24 inches	Feedwater
FW-N20-3107-OW1	SE-Pipe	20 inches	Condensate
SW-N20-03-B013-BWSE	Noz-SE	20 inches	Condensate
FW-N20-3107-OW17	SE-Pipe	20 inches	Condensate
SW-N20-03-B014-BWSE	Noz-SE	20 inches	Condensate
FW-N20-3105-24W0	SE-Pipe	20 inches	Condensate
SW-N20-03-B013-AWSE	Noz-SE	20 inches	Condensate
FW-N20-3105-16W0	SE-Pipe	20 inches	Condensate
SW-N20-03-B014-AWSE	Noz-SE	20 inches	Condensate
FW-N20-3105-OW23	SE-PIPE	20 inches	Condensate
SW-N20-03-B011-BWSE	Noz-SE	20 inches	Condensate
FW-N20-3105-OW15	SE-Pipe	20 inches	Condensate
SW-N20-03-B012-BWSE	Noz-SE	20 inches	Condensate
FW-N20-3105-22W0	SE-Pipe	20 inches	Condensate
SW-N20-03-B011-AWSE	Noz-SE	20 inches	Condensate

\* SE-Pipe = Safe end to pipe  
 Noz-SE = Nozzle to safe end

### Justification

GL 88-01 applies to all BWR piping made of austenitic stainless steel that is 4 inches or larger in nominal diameter and contains reactor coolant at a temperature above 200°F during power operation regardless of Code classification. It also applies to reactor vessel attachments and appurtenances such as jet pump instrumentation penetration assemblies and head spray and vent components.

The subject welds should be removed from the scope of GL 88-01 because:

- 1) The welds are not located on piping that contains reactor coolant. The subject welds are feedwater heater nozzle welds in "nozzle to safe end" or "safe end to pipe" configurations. As noted in Enclosure 2, they are part of the condensate or feedwater systems. These welds are located on piping that contains condensate which is heated by the feedwater heater trains prior to injection into the reactor pressure vessel. As noted in Regulatory Guide 1.26 and Fermi 2 UFSAR Subsection 3.1.2.2.5, systems and components within the reactor coolant pressure boundary are classified as Quality Group A. Fermi 2 UFSAR Table 3.2-1 indicates that the feedwater piping within the outermost isolation valves is classified as Quality Group A and, as such, is part of the reactor coolant pressure boundary. However, since the subject welds are on piping located outside of the outboard containment isolation valves B21-F076A and B21-F076B and in the turbine building, they are not a part of the reactor coolant pressure boundary.
- 2) The welds are not located on reactor vessel attachments or appurtenances. As stated above, the welds are located on piping that is outside of the outboard containment isolation valves and is not part of the reactor pressure boundary. As stated in Fermi 2 UFSAR Subsection 10.4.7.3, the condensate and feedwater systems are not required for the safe shutdown of the reactor or for operation of the nuclear steam supply system safety features.
- 3) The welds are not exposed to all the conditions needed for intergranular stress corrosion cracking (IGSCC) to occur. Three components must be present for IGSCC to occur: (1) a susceptible material; (2) stress conditions; and (3) an aggressive chemical (oxidizing) environment. The removal of any one of these components will eliminate the possibility of IGSCC attack. Material susceptibility and stress conditions are present but the oxidizing environment is absent.

For an oxidizing environment to propagate a weld crack, high temperatures (greater than 300°F); high dissolved oxygen (greater than 200 ppb); and high total ionic impurities concentration (conductivity greater than 0.2  $\mu\text{S}/\text{cm}$ ) must be present. Experimental results indicate that the individual ionic impurities, specifically chlorides and sulfates, should be maintained less than 50 ppb. Under normal conditions, dissolved oxygen levels are approximately 20 ppb; conductivity is less than 0.06  $\mu\text{S}/\text{cm}$ ; and individual chloride and sulfate concentrations are less than 50 ppb. Therefore, IGSCC would be insignificant in the feedwater welds because only one parameter (high temperature) is present.

Based on the above justification, DECo has determined that the condensate and feedwater system welds listed in Enclosure 2 are not within the scope of GL 88-01 and should be deleted from the Fermi 2 ISI-NDE Program.



Table  
of  
Welds Proposed for Removal  
(Continued)

<u>Weld Identification</u>	<u>Configuration</u> *	<u>Diameter</u>	<u>System</u>
FW-N20-3105-14W0	SE-Pipe	20 inches	Condensate
SW-N20-03-B012-ASWE	Noz-SE	20 inches	Condensate
FW-N20-3105-0W21	SE-Pipe	20 inches	Condensate
SW-N20-03-B010-BWSE	Noz-SE	20 inches	Condensate
FW-N20-3105-0W13	SE-Pipe	20 inches	Condensate
SW-N20-03-B009-BWSE	Noz-SE	20 inches	Condensate

\* SE-Pipe = Safe end to pipe  
Noz-SE = Nozzle to safe end