

Detroit  
Edison

Douglas R. Gipson  
Senior Vice President  
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(313) 586-5249

September 8, 1994  
NRC-94-0089

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) NRC Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors", dated July 11, 1994.

Subject: Detroit Edison Response to NRC Generic Letter 94-02

This letter provides Detroit Edison's response to Generic Letter 94-02, which required a response within 60 days of the date of the Generic Letter. This generic letter was issued to request that each addressee (1) take the appropriate actions to augment its respective procedures and training for preventing or responding to thermal-hydraulic instabilities in its reactors, and (2) submit to the NRC a plan describing the long-term stability solution option it has selected and the implementation schedule it proposes for the modification of plant protection systems.

Detroit Edison's response to each of the above items is provided in the Enclosure to this letter. This response includes the following commitments:

- (1) Procedure changes and initial training will be completed as described in the enclosure to implement the BWROG guidelines prior to startup from the current outage.
- (2) Plant modifications will be made to provide early detection of instability and to initiate the appropriate mitigating action. The long term solution designated as BWROG Option III has been selected by Detroit Edison. Contingent upon NRC approval of the generic and plant specific licensing submittals discussed in the Enclosure, the new system will be installed during RFO5 to operate for one cycle in the "indicate only" mode, followed by activation of the automatic stability trip in RFO6.

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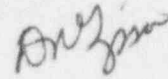
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If you have any questions, please contact Mr. Girija S. Shukla at  
(313) 586-4270.

Sincerely,

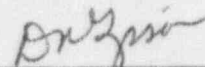


Enclosure

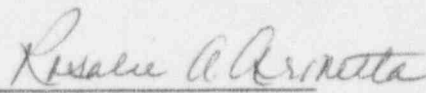
cc: T. G. Colburn  
C. Lehmann (BWROG)  
H. C. Pfefferlen (BWROG)  
L. Phillips  
J. B. Martin  
K. McElroy (BWROG)  
M. P. Phillips  
T. J. Rausch (BWROG)  
K. R. Riemer

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I, DOUGLAS R. GIPSON, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

  
\_\_\_\_\_  
DOUGLAS R. GIPSON  
Senior Vice President

On this 8th day of September, 1994 before me personally appeared Douglas R. Gipson, being first duly sworn and says that he executed the foregoing as his free act and deed.

  
\_\_\_\_\_  
Notary Public

ROSALIE A. ARMETTA  
NOTARY PUBLIC STATE OF MICHIGAN  
MONROE COUNTY  
MY COMMISSION EXP. NOV. 20, 1995

DETROIT EDISON RESPONSE TO GENERIC LETTER 94-02

(Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors)

o Detroit Edison Response to NRC Requested Action 1, Upgrade of Interim Operating Recommendations in Procedures and Training:

- Background

Detroit Edison has implemented and incorporated in Fermi 2 procedures the Interim Corrective Actions (ICAs) specified in NRC Bulletin 88-07, Supplement 1. In addition, Detroit Edison has supported the BWR Owners' Group (BWROG) effort to develop improved guidelines for the ICAs to better address startup and low power maneuvering conditions. A copy of the improved BWR Owners' Group Guidelines for Stability Interim Corrective Action dated June 6, 1994 has already been provided to the NRC by the BWROG.

The improved Guidelines are consistent with, but more restrictive than, the ICAs which were previously implemented and incorporated into Fermi 2 Technical Specifications as a result of NRC Bulletin 88-07, Supplement 1. The original regions were defined in the 1988 BWROG ICAs and were included in NRC Bulletin 88-07, Supplement 1, based on stability tests and events known at the time. Subsequent work identified a sensitivity to reactor power shape and/or feedwater temperature conditions. To respond to this new information, the improved Guidelines incorporate an expanded stability region and power distribution control definition to strengthen the oscillation prevention feature. This, in conjunction with the detection and suppression provisions of the improved Guidelines, provides a higher degree of protection against unacceptable power oscillations.

- Action Planned

Detroit Edison plans to modify, where necessary, its operating procedures and training programs such that they are consistent with or more conservative than the BWROG Guidelines. At Fermi 2, the Controlled Entry Region will be treated as part of the Exit Region and power distribution controls will not be implemented. The Fermi 2 procedure changes and initial training will be implemented prior to startup from the current outage for cycle 5. Training for the current licensed operator requalification class, reactor engineers, and STAs has been completed. Training program material for the next initial licensed operator class will be revised by July 28, 1995.

No modification of the Fermi 2 Technical Specifications are planned because the plant operating procedures and operator training modifications necessary to implement the ICAs are intended for use only until the stability long-term solution is implemented, and can be accommodated within the current applicable Technical Specifications. However, a Technical Specification Clarification has been issued to further clarify the relationship between the existing Fermi 2 Technical Specifications and the BWROG guidelines.

o Detroit Edison Response to NRC Requested Action 2, Long-Term Solution, Selection and Implementation:

- **Background:**

The NRC requirement for stability long-term corrective actions to ensure compliance with General Design Criteria 10 and 12 of 10 CFR 50 was originally presented in NRC Bulletin 88-07, Supplement 1. The Bulletin acknowledged that the NRC was working with the BWROG to develop generic approaches for resolution of this issue. The resulting BWROG effort has led to the solution concepts and supporting methodology described in NEDO-31960 and NEDO-31960, Supplement 1, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology." The NRC has preliminarily accepted the BWROG developed solution concepts and supporting methodology.

- **Action Planned:**

Based on the technical progress that has been made on the BWROG stability program and the degree of NRC acceptance of various solution concepts, plans have been formulated for implementing a stability long-term solution. Detroit Edison has elected to proceed with a solution designated as BWROG Option III (NEDO-31960) which introduces new plant hardware/software to provide early detection of coupled neutronic/thermal-hydraulic instabilities and to initiate an appropriate mitigating action. To complete this activity, Detroit Edison is participating with other utilities under a BWROG program to finalize the supporting Option III methodology, and has contracted with GE to develop the hardware/software design and deliver the final product.

Recommendations for associated Technical Specification changes will be provided as part of the BWROG methodology program. These changes will be submitted for Fermi 2 as appropriate.

The new hardware will implement the Option III methodology as an integrated part of an advanced digital power range neutron monitoring (PRNM) upgrade using GE NUMAC equipment. This



integrated implementation approach will provide a better overall solution for the stability trip function since the LPRM signal processing will be improved and the risk of creating new problems at the stability trip hardware/PRNM interface will be eliminated.

This integrated implementation approach will also improve overall PRNM performance. To provide better overall APRM averages, improved immunity to individual detector transients, and more operational flexibility, as well as reduced risk of surveillance induced trips, Fermi 2 has also elected to implement an improved 4-channel APRM system with 2-out-of-4 PRNM trip logic into the Reactor Protection System.

Implementation of the stability long-term solution plan is contingent upon NRC acceptance of the planned BWROG submittal on methodology and the Fermi 2/GE generic submittal on the implementing hardware and software design. The schedule for completion of the generic design and licensing activities is provided in Table 1. Plans for Fermi 2 specific activities are provided in Table 2. Assuming the joint development activities and NRC acceptance is completed as scheduled, it is Detroit Edison's objective to have the PRNM upgrade with the Option III trip in the "indicate only" mode installed at Fermi 2 during RF05. Fermi 2 will be developing specific plans to monitor and evaluate the Option III trip performance for one cycle prior to activation of the automatic trip. Subject to successful identification and implementation of any required modifications, Detroit Edison's objective is to have the automatic stability trip operational after RF06, which is currently scheduled for the fall of 1997.

TABLE 1GENERIC DESIGN & LICENSING ACTIVITIES  
(OPTION III PLUS PRNM UPGRADE)

1993	NRC approval of BWROG Long-Term Stability Solutions Licensing Methodology, NEDO-31690 and NEDO-39610, Supplement 1.
1993	Initiate NUMAC PRNM equipment design work (GE).
2Q94	Deliver first NUMAC PRNM (without stability trip), non-US BWR (GE).
2Q94	Initiate design work to incorporate Option III into NUMAC PRNM architecture (GE).
3Q94	Select lead plant for NUMAC PRNM w/Option III
3Q94	Meet with NRC to review overall licensing plan and review key issues (GE and Utilities).
4Q94	Meet with NRC to review technical issues and resolution status.
1Q95	Submit Generic Topical Report, NUMAC PRNM w/Option III/alternate (2 out of 4) trip logic (hardware/software implementation and generic issues) (GE).
1Q95	Submit BWROG Detect & Suppress Topical Report (BWROG)
2Q95	Lead plant system design complete
2Q95	Lead plant hardware fabrication complete
3Q95	NRC approval (SER) of Generic NUMAC PRNM Topical Report
3Q95	Fabricate and test NUMAC PRNM with Option III & 2-out-of-4 trip logic prototype (GE)
4Q95	NRC approval (SER) of BWROG Detect & Suppress Topical Report
4Q95	Option III ready for installation at lead plant

TABLE 2

FERMI 2 SPECIFIC ACTIVITIES  
(OPTION III PLUS PRNM UPGRADE)

3Q95	Submit Technical Specification Change for NUMAC PRNM Upgrade (and improved 4-channel APRM with 2 out of 4 trip logic)
1Q96	NRC approval SER of Technical Specification Change submittal for PRNM Upgrade (prior to refueling outage scheduled to start 3/96)
1Q96	Confirm schedule for implementation
1Q96	Hardware Fabrication Complete & Factory Acceptance Test Complete
2Q96	Install PRNM upgrade (and improved 4-channel APRM with 2 out of 4 trip logic) and Option III (with stability trip disabled)
3Q96	Submit Technical Specification Change for Option III (stability) functions in NUMAC PRNM
3Q97	NRC SER of Technical Specification Change submittal for Option III (stability) functions. (Prior to refueling outage scheduled to start 9/97)
4Q97	Activate Stability Trip Function, for Cycle 7.