



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 35 TO FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

WOLVERINE POWER SUPPLY COOPERATIVE, INCORPORATED

FERMI-2

DOCKET NO. 50-341

1.0 INTRODUCTION

By letter dated April 3, 1989, the Detroit Edison Company (DECo or the licensee) requested amendment to the Technical Specifications (TSs) appended to Facility Operating License No. NPF-43 for Fermi-2. The proposed amendment would revise the Technical Specifications (TS) to reflect modifications to the actuation logic for the Automatic Depressurization System (ADS). The ADS will be modified in accordance with TMI Action Plan II.K.3.18 of NUREG-0737, and as described in NUREG-0798, "Safety Evaluation Report Related to the Operation of Fermi-2," Supplement 5.

2.0 EVALUATION

The proposed modifications to the ADS are being implemented in order to bring Fermi-2 ADS into compliance with Item II.K.3.18, "Modification of ADS Logic" of NUREG-0737; the methods of achieving this compliance are in accordance with the "BWR Owners' Group Response to Item II.K.3.18 of NUREG-0737," Option 4. The NRC staff has reviewed and approved the proposed modification in NUREG-0798, Supplement 5.

Technical Specification 3/4.3.3, "Emergency Core Cooling System Actuation Instrumentation," Tables 3.3.3-1, -2 and -3, and Table 4.3.3-1 are revised to denote the addition of drywell pressure-high bypass timers and manual inhibit switches for the ADS. The bypass timers will provide automatic initiation of ADS for postulated events where reactor level remains low but drywell pressure does not increase; e.g., steam line break outside containment or stuck open relief valve. Presently, such events require manual initiation of ADS. The manual inhibit switches will allow a single operator action to inhibit ADS, thereby relieving the operator of having to successively reset the existing ADS timer.

The proposed changes to the TS are as follows:

- o Two new entries have been proposed to Table 3.3.3-1 "ECCS Actuation Instrumentation," one for the drywell pressure-high bypass timer (TRIP FUNCTION 4.h) and one for the manual inhibit (TRIP FUNCTION 4.i). The MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (MOCPTS) for the drywell

pressure-high bypass timer is specified as two because the design incorporates two drywell pressure bypass timers per Trip System (one timer per channel). The MOCPTS for the manual inhibit switch is specified as one per Trip System because the modification will install a single switch that will inhibit a single ADS trip system. The APPLICABLE OPERATIONAL CONDITIONS for both entries are 1, 2 & 3 which is consistent with other ADS entries, the General Electric Standard Technical Specification and the design basis for the system. The applicable ACTIONS for both of the proposed entries are consistent with their associated existing ADS TRIP FUNCTIONS. The proposed drywell pressure-high bypass timer ACTION (TRIP FUNCTION 4.h) is the same as the existing ADS timer (TRIP FUNCTION 4.c). Likewise, the proposed manual inhibit switch ACTION (TRIP FUNCTION 4.i) is the same as the existing manual system initiation switch (TRIP FUNCTION 4.g). ACTION 23 has some editorial changes proposed to clarify that it is applicable to both the manual initiation TRIP FUNCTION entries (entries 1a, 2b, 3f, and 4g) of this Table and the proposed manual inhibit entry. The proposed change will provide a direct link between ACTION 31 of the Table and ACTION "c" of the LCO Section of this Technical Specification by using the same terminology. ACTION 31 is only applicable to ADS entries.

- o Two new entries have been proposed to Table 3.3.3-2 "ECCS ACTUATION INSTRUMENTATION SETPOINTS." A Fermi-2 unique analysis was performed by General Electric to determine the correct bypass timer TRIP SETPOINT and ALLOWABLE VALUE. The proposed drywell pressure-high Bypass Timer has a TRIP SETPOINT OF <420 seconds, (7 minutes) with an ALLOWABLE VALUE of <450 seconds (7 1/2 minutes). The proposed entry 4.i, manual inhibit, is added to this Table for the sake of providing consistency.
- o Two new entries have been proposed to Table 3.3.3-3 "ECCS RESPONSE TIMES" to provide consistency even though the entries for response time are "N/A", the same as for the other ADS entries. The response time of the bypass timer is inherent in the setpoint, and is governed by Tables 3.3.3-2 and 4.3.3.1-1.
- o Two new entries have been proposed to Table 4.3.3-1 "ECCS INSTRUMENTATION SURVEILLANCE REQUIREMENTS." The applicable surveillance requirements for both of the proposed entries are consistent with their associated existing ADS TRIP FUNCTIONS. The proposed surveillance requirements for the Drywell Pressure-High Bypass Timer are consistent with the ADS timer (entry 4.c). The proposed surveillance requirements for the manual inhibit switch are consistent with the manual system initiation (entry 4.g).

The proposed TS change will bring Fermi-2 ADS into compliance with item 31.X.3.18 of NUREG-0737 "Modifications of ADS Logic." The modifications have been made in accordance with the licensee's commitments in NUREG-0798, Supplement 5 which had previously been reviewed and approved by the staff.

As required by NUREG-0798, Supplement 5, a plant-specific analysis was performed by General Electric to determine the optimum setpoint for the drywell pressure bypass timer. By letter dated August 28, 1989, the licensee committed to keep the analysis onsite for future NRC inspection. The analysis

determined that the limiting case was the postulated main steam line break outside containment assuming a D.C. power source failure. For this case the analysis found that, after the water level reached level 1, a maximum drywell pressure bypass timer setpoint of 8 minutes followed by the existing ADS timer setpoint of 2 minutes resulted in a Peak Cladding Temperature (PCT) of 1600°F. This temperature is below the 10 CFR 50.46 acceptance criteria. The 8 minute time delay, plus the additional 2 minutes from the existing ADS initiation delay, will combine to produce a total delay of 10 minutes to trip the ADS after RPV level 1 is reached. Using the 8 minutes as an Analytical Limit, General Electric chose the Trip Setpoint of 7 minutes and Allowable Value of 7.5 minutes using Setpoint Methodology which has been reviewed and accepted in NUREG-0738, Supplement 5. The time between the Setpoint and Allowable Value (0.5 minutes) is an adequate margin for instrument drift. The margin between the Allowable Value and Analytical Limit (0.5 minutes) accommodates uncertainties associated with the instrument accuracies and calibration effects, and is adequate to assure that the PCT will remain under 1600°F for the limiting event, should this event occur at a time when the setpoint has drifted to equal the Allowable Value. The new hardware being added has been procured and designed, and will be installed to meet the same criteria as the existing design.

The ADS modification reflected by the proposed Technical Specifications will eliminate the need for manual ADS actuation and still provide manual operator action as a backup. The specified drywell pressure bypass timer delay allows the operations staff time to control the system manually and still ensures automatic depressurization in time to prevent excessive fuel heatup. The manual inhibit switch will allow an operator to inhibit ADS operation without repeatedly pressing the reset pushbutton as currently required under the same conditions. This switch will free up the operation staff so that they can more effectively address the off-normal plant condition(s). Neither the over-pressure relief function, manual ADS nor individual SRV control will be affected by operation of the manual inhibit switch or the drywell pressure-high bypass timer.

Based on the above evaluation, the staff finds the proposed changes to the TS acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32 and 51.35, an environmental assessment and finding of no significant impact have been prepared and published in the Federal Register on August 28, 1989 (54 FR 35541). Accordingly, based upon the environmental assessment, we have determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

4.0 CONCLUSION

We have concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: August 30, 1989