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September 30, 1988
NRC-88-0225

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

- References:
- 1) Fermi 2
NRC Docket No. 58-341
NRC License No. NPP-43
 - 2) Detroit Edison Letter to NRC, NRC-87-0244,
"Proposed Technical Specification Change (License
Amendment) - Emergency Equipment Cooling Water
System (3/4.7.1.2), Emergency Equipment Service
Water System (3/4.7.1.3), and Ultimate Heat Sink
(3/4.7.1.5)", dated March 18, 1988

Subject: Proposed Technical Specification Change (License
Amendment) - Ultimate Heat Sink (3/4.7.1.5)

Pursuant to 10CFR50.90, Detroit Edison Company hereby proposes to amend Operating License NPP-43 for the Fermi 2 plant by incorporating the enclosed change into the Plant Technical Specifications. The proposed change modifies Specification 2/4.7.1.5 for the Ultimate Heat Sink to better reflect the Fermi 2 design bases.

Detroit Edison has evaluated the proposed Technical Specifications against the criteria of 10CFR50.92 and determined that no significant hazards consideration is involved. The Fermi 2 Onsite Review Organization has approved and the Nuclear Safety Review Group has reviewed the proposed Technical Specifications and concurs with the enclosed determinations.

Pursuant to 10CFR170.12(c) enclosed with this amendment request is a check for one hundred fifty dollars (\$150.00). In accordance with 10CFR50.91, Detroit Edison has provided a copy of this letter to the State of Michigan.

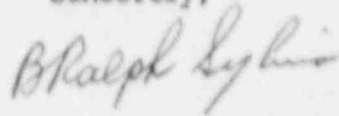
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September 30, 1988
NRC-88-0225
Page 2

If you have any questions, please contact Mr. Glen D. Ohlemacher at
(313) 586-4275.

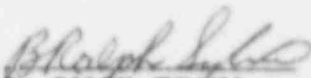
Sincerely,




Enclosure

cc: Mr. A. B. Davis
Mr. R. C. Knop
Mr. T. R. Quay
Mr. W. G. Rogers
Supervisor, Advanced Planning and Review Section,
Michigan Public Service Commission

I, B. RALPH SYLVIA, 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.


B. RALPH SYLVIA
Senior Vice President

On this 30th day of September, 1988, before me personally appeared B. Ralph Sylvia, being first duly sworn and says that he executed the foregoing as his free act and deed.


Notary Public
SHIRLEY L. CARLSON
Notary Public, Wayne County, MI
My Commission Expires Jan. 28, 1991

BACKGROUND/DISCUSSION

The Fermi 2 Ultimate Heat Sink consists of two one-half capacity reinforced-concrete Residual Heat Removal (RHR) reservoirs of Category I construction, each with a capacity of 3,450,000 gallons of water. The reservoirs are connected by redundant valved lines to permit access to the combined inventory of the two reservoirs to either RHR division in the event of a mechanical failure in one of the RHR divisions. Each line contains two isolation valves of Category I construction that are remotely operable from the main control room. The Ultimate Heat Sink is described in UFSAR Section 9.2.5.

Specification 3.7.1.5 of the Fermi 2 Technical Specifications does not adequately address the Ultimate Heat Sink as a single source of water to both RHR divisions. Instead, the Limiting Condition for Operation (LCO) and ACTION requirements are written to imply that each reservoir can independently provide the required heat removal capability for either RHR division. Further, the surveillance requirements for the system must be modified to be consistent with the Ultimate Heat Sink design bases.

These problems are addressed in the proposed Technical Specification changes which are described below and are attached.

PROPOSED TECHNICAL SPECIFICATION CHANGES

The proposed Limiting Condition for Operation (LCO) for the Ultimate Heat Sink is:

- 3.7.1.5 The Ultimate Heat Sink, comprised of two one-half capacity residual heat removal (RHR) reservoirs with the capability of being cross-connected, shall be OPERABLE with:
- a. A minimum water volume of 2,990,000 gallons in each reservoir (equivalent to an indicated water level of 25 feet or 580 feet elevation).
 - b. A maximum average water temperature of less than or equal to 80° for each reservoir.
 - c. At least one OPERABLE cooling tower with two cooling fans for each reservoir.
 - d. A minimum combined water volume in the two reservoirs of 5,980,000 gallons.

- e. A maximum combined average water temperature for the two reservoirs of less than or equal to 80° F.
- f. A minimum average water temperature of greater than or equal to 41° F for each reservoir.
- g. Two reservoir cross-connect lines, each with two OPERABLE motor operated cross-connect valves.

The new LCO now clearly indicates that the Ultimate Heat Sink is a single water source consisting of two reservoirs which must be capable of being cross-connected. The APPLICABILITY requirements remain unchanged.

The proposed ACTION requirements are:

- a. With one or more of the requirements of Specification 3.7.1.5.a, b, and c not satisfied declare the affected reservoir(s) inoperable and take the ACTION required by d. or e. below.
- b. With the combined water volume requirement of Specification 3.7.1.5.d or the combined average water temperature of Specification 3.7.1.5.e not satisfied declare both reservoirs inoperable and take the ACTION required by e. below.
- c. With one or more reservoir cross-connect valves inoperable, within 8 hours open and de-energize both valves in at least one cross-connect line and verify that these valves remain open and de-energized at least once per 7 days. The provisions of Specification 3.0.4 are not applicable. Otherwise, declare both reservoirs inoperable and take the ACTION of e. below.
- d. With one reservoir inoperable declare the associated RHRSW system subsystem, EESW system subsystem, and diesel generator cooling water subsystem inoperable and take the ACTION required by Specifications 3.7.1.1, 3.7.1.3 and 3.7.1.4.
- e. With both reservoirs inoperable:
 - 1. In OPERATIONAL CONDITIONS 1, 2 or 3, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

2. In OPERATIONAL CONDITIONS 4 or 5, declare the RHRSW system, the EESW system and the diesel generator cooling water systems inoperable and take the ACTION required by Specifications 3.7.1.1, 3.7.1.3 and 3.7.1.4.
 3. In OPERATIONAL CONDITION *, declare the diesel generator cooling water systems inoperable and take the ACTION required by Specification 3.7.1.4. The provisions of Specification 3.0.3 are not applicable.
- f. With the requirements of Specification 3.7.1.5.f for one or both reservoirs not satisfied, perform a visual inspection of the reservoir(s) at least once per 12 hours to verify that no ice has formed. If ice is observed, demonstrate the OPERABILITY of each safety related pump in the reservoir(s) by running each safety related pump at least once per 8 hours. The provisions of Specification 3.0.4 are not applicable.

ACTION a. indicates that a reservoir is inoperable if any of the requirements of Specifications 3.7.1.5.a, b, and c for that reservoir are not satisfied. ACTION b. indicates that both reservoirs are considered inoperable if the combined water volume or temperature requirements of Specification 3.7.1.5.d and e are not met.

ACTION c. provides ACTION requirements for inoperable reservoir cross-connect valves. With one or more inoperable cross-connect valves, operation can continue indefinitely if it is assured that the reservoirs are cross-connected and thus can fulfill the design goals of the Ultimate Heat Sink as a single water source.

ACTION d. provides the ACTION requirements where an individual reservoir is not capable of meeting the requirements to provide cooling for the systems which utilize the reservoir. However, the Ultimate Heat Sink as a whole can meet the plants' long term cooling requirements using systems cooled from the remaining reservoir. These ACTIONS are consistent with the current ACTIONS for a single inoperable reservoir.

ACTION e. provides the ACTION requirements for situations where the Ultimate Heat Sink as a whole can not meet its intended function. The required ACTIONS are consistent with current ACTION requirements for having both reservoirs inoperable.

ACTIONS d. and e. are proposed to be consistent with the editorial change proposed in Reference 2. This change limited the listing of affected equipment to those directly cooled by the system in question.

ACTION f. reiterates the existing ACTION provisions for low temperature in one or both reservoirs. The provision to exclude this ACTION from the provisions of Specification 3.0.4 has been added. This exclusion is further discussed below.

The proposed Surveillance Requirements are:

4.7.1.5 The Ultimate Heat Sink shall be determined OPERABLE at least once per:

- a. 24 hours by verifying the individual and combined reservoir average water temperature and water volume to be within their limits.
- b. 31 days by:
 1. Starting each cooling tower fan from the control room and operating the fan on slow speed and on fast speed,* each for at least 15 minutes.
 2. For each electrical division of cross-connect valves, verify at least one valve in the division is open.
- c. 92 days by cycling each reservoir cross-connect valve through at least one cycle of full travel.

* Fast speed need not be tested during icing periods.

Specification 4.7.1.5.a is editorially modified to indicate that water volume is to be verified daily versus water level. Further, individual reservoir temperatures and both combined and individual reservoir volume must be verified. This is to be consistent with the modified LCO.

The Fermi 2 Ultimate Heat Sink is divided into two one-half capacity reservoirs in order to minimize the impact of a below grade breach of the reservoir structure (UFSAR Section 9.2.5.3.2). Detroit Edison believes that this event is extremely unlikely. Further, the loss of water is limited by the site ground water level. Since approximately 90 percent of the RHR reservoir capacity is located below the ground water level, the consequences of the below grade structural breach has not significantly changed. Detroit Edison therefore believes that

the marginal benefit of requiring that the reservoirs be maintained not cross-connected is not merited in view of the additional complexity this would entail. However, for the reasons set forth above, the normal system line-up is to maintain the two reservoirs not cross-connected. Therefore, this Specification is written to allow operation with the reservoirs either cross-connected or not cross-connected. Surveillance requirement 4.7.1.5.b.2 ensures that the reservoirs can be cross-connected in the event of a failure of one division of electrical power.

As ACTIONS c. and f. allow plant operation for an unlimited period of time, a provision is included to exclude these ACTIONS from the provisions of Specification 3.0.4. This is consistent with guidance provided by the NRC staff in Generic Letter 87-09.

When one or more of the cross-tie valves are inoperable the Ultimate Heat Sink remains OPERABLE (as discussed above) as long as the two reservoirs are cross-connected as required by ACTION c. Further, the cross-connect valves are located near the bottom of the RHR reservoir and potentially present an unusual difficulty for repair. In view of these circumstances, Detroit Edison believes that a change in OPERATIONAL CONDITION should be allowed when operating under the provisions of ACTION c.

When a reservoir temperature is less than 41^oF, ACTION f. allows continued operation provided that compensatory ACTION is taken to assure that the Ultimate Heat Sink OPERABILITY is not degraded due to potential ice formation. Detroit Edison believes that restricting changes in OPERATIONAL CONDITION when operating under the provision of ACTION f. is not warranted since acceptable means of assuring that the Ultimate Heat Sink remains OPERABLE exists in Technical Specifications. In light of these compensatory ACTIONS taken to ensure OPERABILITY, and the guidance of Generic Letter 87-09, Detroit Edison is proposing that Specification 3.0.4 not apply to ACTION f.

SIGNIFICANT HAZARDS CONSIDERATION

In accordance with 10CFR50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards considerations. To make this determination, Detroit Edison must establish that operation in accordance with the proposed amendment would not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated, or 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or, 3) involve a significant reduction in a margin of safety.

The proposed change to modify the Ultimate Heat Sink Technical Specification provisions to better reflect the plant design bases do not:

- 1) Involve a significant increase in the probability or consequence of an accident previously evaluated. The changes act to provide greater assurance that the Ultimate Heat Sink is available by providing provisions appropriate for its design as a single water source. By allowing unlimited operation with the reservoirs cross-connected the change acts to increase the consequences of a below grade breach of the Category I RHR reservoir structure. This is because the level of both reservoirs instead of one reservoir would equalize with the site ground water level. However, since 90 percent of the reservoir capacity is below the ground water level the resultant impact on the ability of the RHR reservoirs to supply a 30-day cooling capacity is not judged to be significant. Further, adequate time for compensatory measures for any such breach is likely to be available since the rapid reservoir level decrease would be easily detectable.
- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated. The change does not modify plant design. The change allows unlimited operation with the reservoirs cross-connected where currently a not cross-connected line-up is implied by the LCO requirement of two independent reservoirs. Cross-connected operation does not create a new accident mode since cross-connecting the reservoirs is pre-establishing the conditions necessary for each RHR division to access the full capacity of the Ultimate Heat Sink. Thus, no new mode of failure of the Ultimate Heat Sink is created.
- 3) Involve a significant reduction in a margin of safety. By providing provisions appropriate to the design of the Ultimate Heat Sink the change acts to increase the margin of safety by reducing the possibility of inappropriate system operation.

The proposed change to exclude ACTIONS which allow continued operation for an unlimited time period from the provisions of Specification 3.0.4 do not:

- 1) Involve a significant increase in the probability or consequence of an accident previously evaluated. The change allows entry into an OPERATIONAL CONDITION where, if the situation covered by the ACTION were to occur while in the OPERATIONAL CONDITION, operation for an unlimited time would be allowed. As the measures called for by the ACTIONS provide equivalent assurance that the Ultimate

Heat Sink can perform its intended functions, the probability and consequences of any previously evaluated accident is not changed.

- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated. The change does not modify plant design or operation and therefore creates no new accident modes.
- 3) Involve a significant reduction in a margin of safety. The change allows power increases, by allowing OPERATIONAL CONDITION changes, which previously would have been prohibited until the situation causing the need for the ACTION was rectified. In these cases, however, the compensatory measures of the ACTION requirements provide equivalent assurance that the Ultimate Heat Sink can perform its intended functions. Thus, the safety margin is maintained.

Based on the above reasoning, Detroit Edison has determined that the proposed amendment does not involve a significant hazards consideration.

ENVIRONMENTAL IMPACT

Detroit Edison has reviewed the proposed Technical Specification changes against the criteria of 10CFR51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor significantly change the types or significantly increase the amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed Technical Specifications do meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

CONCLUSION

Based on the evaluations above: 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 proposed amendments will not be inimical to the common defense and security or to the health and safety of the public.