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January 29, 1992  
NRC-91-0263

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

Reference      Fermi 2  
                  NRC Docket No. 50-341  
                  NRC License No. NPF-43

Subject:        Proposed Technical Specification Change  
                  (License Amendment) - Refueling Platform  
                  Hoist Surveillance Requirements

Pursuant to 10CFR50.90, Detroit Edison Company hereby proposes to amend Operating License NPF-43 for the Fermi 2 plant by incorporating the enclosed changes into the Plant Technical Specifications. The proposed change incorporates surveillance setpoints for the General Electric Model NF-500 refueling mast into Technical Specification 4.9.6. Prompt approval of this proposal is requested to allow use of the Model NF-500 mast during Fermi 2's third refueling outage, which is currently scheduled for September, 1992.

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. In accordance with 10CFR50.91, Detroit Edison has provided a copy of this letter to the State of Michigan.

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

Sincerely,

*William S. Orser*

Enclosure

cc: T. G. Colburn  
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I, WILLIAM S. ORSER, 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.

*William S. Orser*

WILLIAM S. ORSER  
Senior Vice President

On this 29th day of January, 1992, before me personally appeared William S. Orser, being first duly sworn and says that he executed the foregoing as his free act and deed.

*Rosalie A. Armetta*  
Notary Public

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

### INTRODUCTION

The proposed Technical Specification (TS) change revises surveillance requirement TS 4.9.6.a to specify a refueling platform fuel grapple hoist overload setpoint to allow the use of a General Electric Model NF-500 refueling mast. Detroit Edison currently plans to utilize the Model NF-500 mast in conjunction with the refueling platform fuel grapple hoist during Fermi 2's third refueling outage. The hoist is used inside the Reactor Building for reactor core refueling operations.

The fuel grapple hoist currently utilizes a four segment, open frame, triangular mast (General Electric Model NF-400). The Model NF-500 is a four segment, solid, cylindrical telescoping mast. The Model NF-500 mast provides improved contamination control and the increased rigidity of the mast improves the ability to precisely locate the hoist where desired.

The utilization of this new mast will not affect the function or operation of the fuel grapple hoist mechanism or the refueling platform. The auxiliary hoists of the refueling platform will also remain unaffected. However, the new mast does weigh approximately 400 pounds more than the previous mast; consequently, the hoist overload interlock load limit (contained in TS 4.9.6.a) must be revised, since the weight of the mast was a factor in the establishment of this limit.

The use of the Model NF-400 mast is a potential contingency for any problems which may be encountered with the new Model NF-500 mast. Therefore, the TS are being modified to provide a specific limit for both masts. This will eliminate the need for a subsequent license amendment should the use of the Model NF-400 mast be necessary.

In addition, the fuel grapple hoist loaded interlock setpoint (contained in TS 4.9.6.e) was reviewed and determined not to require changing. For clarity, this surveillance is proposed to be reworded to reflect that the setpoint is applicable for both masts.

Finally, the fuel hoist slack cable cutoff surveillance is proposed to be revised to remove an unnecessary tolerance band for the slack cable cutoff setpoint. An upper limit for this setting is not required to assure that the cable slack cutoff feature is operable.

### EVALUATION

Three surveillance requirements are affected by the proposed change. The first involves the hoist overload cutoff limit. A limit of 1395

pounds is being specified for the Model NF-500 mast, with the existing limit of 1200 pounds being specified for the Model NF-400 mast.

The hoist overload cutoff is selected to limit the lifting forces of the hoist to ensure that excessive lifting forces are not applied to a fuel bundle should it become stuck during lifting operations. The cutoff also protects other core and reactor vessel components from damage should they be inadvertently engaged during lifting operations. The limiting force is approximately 2,000 pounds. The proposed fuel grapple hoist cutoff setpoints are substantially below this value and will therefore continue to ensure that lifting forces from the fuel grapple hoist will be limited to less than those forces considered in the core/fuel design.

The hoist overload limit is specified in terms of the external load applied to the hoist, which in turn is equivalent to possible lifting force applied by the hoist. Since these concerns do not involve the weight of the mast it would appear that the existing limit would remain adequate. However, when the hoist is retracted the weight of each section is transferred from the mast section above to the hoist cable as it is lifted. During the retraction process the lowest section is first lifted until it is fully retracted into the section above whereupon the hoist then lifts the lowest two sections as a unit. The process is repeated for the third section which is lifted as a unit of three until full retraction into the fourth section is attained. The fourth section is always directly supported by the refueling bridge.

As each section is lifted the new hoist cable tension reduces the capability of the hoist to lift a desired load. This is because the load sensor is set with only the lowest section held by the cable. Thus, the overload limit must be sufficiently high to allow a desired load ( a fuel bundle) and the two additional mast sections to be lifted with sufficient margin to allow for starting surges and frictional forces. The new limit for the model NF-500 mast has been determined in this manner in order to prevent actuation of the overload cutoff during normal operation.

A similar circumstance occurs when examining the hoist loaded interlock. The limit is specified in terms of external load and must be low enough that a channeled fuel bundle causes the interlock to occur. However, if set too low the retraction of an empty hoist could cause a "false" loaded signal solely due to the weight of the two additional sections of mast lifted during the retraction process. The current limit of 535 pounds remains sufficiently greater than the weight of the two additional sections of Model NF-500 mast. Thus, this limit is acceptable for use with both masts. TS 4.9.6.e has been

changed to clearly indicate that the limit is applicable to both models of masts.

TS 4.9.6.d requires a demonstration of the slack cable cutoff when the load is less than 50 pounds with a 10 pound tolerance. The purpose of the cutoff is to prevent unwinding of the hoist cable and the associated grapple control air hose without appropriate downward motion of the grapple. To fulfill this purpose, the cutoff must operate before the cable is completely detensioned. A lower limit is thus needed but an upper limit is not. The upper limit setting is practically limited by the need to prevent a "false" operation during normal movement of an unloaded hoist. However, the upper limit has no safety significance and does not need to be specified in TS.

Setting this limit to the currently stated tolerance is a difficult and time consuming task which involves partially unloading the hoist in a controlled manner by slowly lowering a load against a fixed surface. The increased weight of the Model NF-500 mast is expected to exasperate this process.

The proposal retains the 40 pound lower limit for this function. The elimination of the unnecessary tolerance band will reduce the time to perform this surveillance and the attendant wear on the hoist equipment.

The limit is given in terms of cable tension. The surveillance terminology is proposed to be modified to eliminate the use of the term "load" to avoid confusion with other surveillances where "load" refers to the external load applied to the hoist. This change is strictly administrative.

The only accident analysis that could potentially be impacted by the use of a heavier refueling mast is the Fuel Handling Accident (FHA). A FHA is postulated to occur as a consequence of a failure of the fuel bundle lifting mechanism. It is postulated that this results in the dropping of a raised fuel bundle with mast onto fuel bundles either loaded in the core or stored in spent fuel storage racks. The most severe fuel handling accident from the radiological viewpoint is the dropping of the fuel assembly onto the top of the core. The original FSAR radiological release calculations are based on the failure of 124 fuel rods. This evaluation is documented in Updated Final Safety Analysis Report (UFSAR) Section 15.7.4 and was reviewed and accepted by the NRC staff in the Fermi 2 Safety Evaluation Report (NUREG-0798) Section 15.2.3.4. The FHA is reviewed on a cycle-to-cycle basis and included in UFSAR Appendix B, Section B.15.7.4 as part of the annual UFSAR update. For the current cycle, the number of fuel rod failures calculated using the NF-400 mast is 104 rods. These results will be

included in the UFSAR update scheduled for March 1992. The calculated number of fuel rod failures for the FHA with the increased weight of the NF-500 mast is 117 rods. Therefore, the radiological release for a FHA with the Model NF-500 mast is within that already reviewed and approved by the NRC staff in the original licensing of Fermi 2.

#### 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 incorporates surveillance limits for the General Electric Model NF-500 refueling mast into Technical Specification 4.9.6. In addition, the change eliminates an unnecessary tolerance band for the fuel hoist cable slack cutoff surveillance requirement. The change does not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated. As discussed in UFSAR Section 15.7.4, a Fuel Handling Accident (FHA) is postulated to occur as a consequence of a failure of the fuel assembly lifting mechanism which results in the dropping of a raised fuel assembly with mast onto fuel bundles either loaded in the core or stored in spent fuel storage racks. The most severe FHA from a radiological viewpoint is dropping of the fuel assembly onto the top of the core. Revised calculations using the increased weight of the NF-500 mast show that the results, although increased from those obtained for the current fuel cycle, remain below the previously evaluated FHA documented in UFSAR Section 15.7.4 and reviewed by the NRC staff in the Fermi 2 Safety Evaluation Report (NUREG-0798) Section 15.2.3.4.

This proposed change does not result in a change to any of the assumptions of the postulated FHA. The design of the grapple is not being changed as a result of this proposed change. The NF-500 mast is similar in design and function to the currently installed NF-400 mast. The NF-500 mast is designed to match or exceed all aspects of the currently installed NF-400 mast. Additionally, interlocks on the platform prevent unsafe operation over the reactor vessel during control rod movements, limit

travel of the fuel grapple and interlock grapple hook engagement with hoist power. The proposed hoist overload cutoff setpoint will still ensure that excessive lifting forces are not applied to a core/fuel component and the hoist loaded setpoint will still ensure that the associated interlocks are initiated when the weight of a channeled fuel bundle is applied to the grapple. The revised slack cable cutoff surveillance requirement provides the equivalent assurance that cable reel unwinding does not occur by maintaining the existing margin between the lower limit for the cutoff and a fully detensioned hoist cable. Furthermore, the maximum height from which a fuel bundle could be dropped remains unchanged as does the minimum required water level above stored irradiated fuel. Therefore, the proposed change will not increase the probability or the consequences of any accident previously evaluated.

- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated. No new failure modes will be introduced as a result of this proposed change. The NF-500 mast is similar in design and function to the currently installed NF-400 mast. The NF-500 mast is designed to match or exceed all aspects of the currently installed NF-400 mast. Additionally, the design of the grapple is not being changed as a result of this proposed change. The proposed hoist overload cutoff setpoint will still ensure that excessive lifting forces are not applied to fuel and the hoist loaded setpoint will still ensure that the associated interlocks are initiated when the weight of a channeled fuel bundle is applied to the grapple. The revised slack cable cutoff surveillance requirement does not affect the operation of the hoist and still assures that cable reel unwinding does not occur. Therefore, this proposed change cannot create a new or different kind of accident from any accident previously evaluated.
- 3) Involve a significant reduction in a margin of safety. The proposed hoist overload cutoff limit accounts for the increased weight of the NF-500 mast. The proposed hoist overload cutoff setpoints ensure that excessive lifting forces are not applied to a fuel bundle or other core/reactor vessel component. The existing hoist loaded interlock limit still ensures that the associated interlocks are initiated when the weight of a channeled fuel bundle is applied to the grapple. The revised slack cable cutoff setpoint retains the existing margin between the lowest allowed setting and complete cable detension. As a result, there is no significant reduction in the margin of safety.

Based on the above, 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 change does 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 requirements for an Environmental Impact Statement.

#### CONCLUSION

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

The approval of this proposal is needed to allow use of the Model NF-500 refueling mast during Fermi 2's third refueling outage, which is currently scheduled for September 1992. In order to allow for site document changes a 30 day implementation period is requested for this proposal.