

SAFETY EVALUATION

for

LASALLE NUCLEAR STATION  
NF500 CYLINDRICAL REFUELING MAST

October 1991

Prepared by:

D. L. Rousar  
D. L. Rousar, Engineer  
Servicing Equipment Design

Reviewed by:

F. Ortega  
F. Ortega, Manager  
Servicing Equipment Design

Reviewed by:

D. L. Faulstich  
D. L. Faulstich  
Senior Program Manager

Reviewed by:

J. D. Friday  
J. D. Friday  
Licensing

Approved by:

N. J. Biglieri  
N. J. Biglieri, Manager  
Reactor Design Engineering

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## I. INTRODUCTION

This safety evaluation addresses the replacement of LaSalle's current refueling mast with GE's new NF500 design refueling mast. The refueling mast is used inside the Reactor Building for reactor core refueling operations.

The NF500 mast incorporates several new features. The only design change of significance in this safety evaluation is the additional weight of the NF500 mast relative to current mast designs. The NF500 mast weighs approximately 420 pounds more than GE's current product line offering, the 762E974 mast. The additional weight necessitates changes in the LaSalle platform setpoints for detecting overload conditions on the refueling platform hoist. The overload setpoint has been selected to limit the force and the resultant stresses on the fuel assembly and top guide to be well within the allowable limits for these components. These setpoint changes will not impact the safety bases for the Technical Specification and the FSAR.

## II. SAFETY EVALUATION

The only accident that could potentially be impacted by the design change is the Fuel Handling Accident (FHA). A Fuel Handling Accident (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 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 FSAR radiological release calculations are based on the failure of 124 fuel rods. The current reload licensing basis, as referenced in the FSAR (NEDE-24011-P-A) calculates failure of 104 fuel rods for this accident based on the weight of the NF400 mast. The calculated number of fuel rod failures for the FHA with the increased weight of the NF500 mast is 116 rods. Therefore, the radiological release for the FHA with the NF500 mast as calculated by current approved methods is less than the release documented in the FSAR.

The use of the NF-500 mast does not involve a change to the FSAR. However a change to the Technical Specifications is required, and the criteria of 10CFR50.92 are applied to the change in the NF500 mast design, particularly with regard to the FHA in the reactor building. The licensing assessment concludes the following:

1. The change in the refueling mast design will not increase the possibility or consequences of an accident previously evaluated. The NF500 mast is designed to match or exceed all aspects of the 762E974 mast now in use. The probability of failure of the NF500 mast and of the 762E974 mast are both judged to be very small. In addition, the consequences of a FHA contained in the LaSalle FSAR are conservative for the NF500 compared to current calculations of radiological release.
2. The change in the refueling mast will not create the possibility of a new or different kind of accident from any accident previously evaluated. The NF500 mast is similar enough in design and function to the 762E974 mast so as not to create the possibility of a new or different kind of accident. The LaSalle platform structural integrity is not degraded by the additional weight and stresses are below allowables.
3. Using the new mast will not reduce the margin of safety, in the basis of any Technical Specification. Refueling platform hoist setpoints serve no safety function. These setpoints exist to prevent damage to reactor internals (such as the fuel support piece) caused, for example, by a stuck bundle or similar anomaly. The setpoint changes only allow for the increased weight of the new mast, i.e., the difference between the new setpoint and the weight of the NF500 mast is approximately the same as the difference between the current setpoint and the weight of the 762E974 mast.

### III. CONCLUSION

It is concluded that the installation and use of the NF500 mast at LaSalle (1) will not involve a significant hazards consideration per the criteria of 10CFR50.92, and (2) it will require a change to the Technical Specifications to account for the changes in the setpoint values identified in the GE supplied design documentation.



General Electric Company  
2311 West 22nd St. Suite 201 Oak Brook, IL 60121  
708 573-3929

EBO-91-527

October 15, 1991

Mr. J. D. Williams  
Commonwealth Edison Company  
La Salle County Station  
RR #1, Box 220  
Marseilles, IL 61341

SUBJECT: SAFETY EVALUATION FOR NF500 CYLINDRICAL REFUELING MAST  
RDE-39-0791, REVISION 1  
LA SALLE COUNTY STATION

References: 1. CECO Purchase Order No. 340517, dated June 21, 1991.  
2. GE Letter EBO-91-404, Same Subject, W. Arndt to J. Williams,  
dated August 5, 1991.

Dear Mr. Williams:

Attached is GE's revised input for CECO's safety evaluation for the La Salle County Station NF500 Cylindrical Refueling Mast. This report is part of GE's software scope of supply under the Reference 1 Purchase Order. At the request of CECO's R. B. Williams, this report revises GE's original Safety Evaluation (Reference 2) to add a statement regarding the increased overload setpoint selection to the introduction, to change references to the current mast to the applicable assembly number, and to attach a revised mark-up of La Salle's Technical Specification.

The attached report provides the technical justification to conclude there are no significant hazards considerations associated with the installation of the GE NF500 Cylindrical Refueling Mast at La Salle. The NF500 is bounded by the existing fuel handling accident (FHA) analysis addressed in the La Salle FSAR.

Because of the increase in weight of the tubular mast compared to the current triangular mast, the Technical Specification set points required change. A copy of the limiting conditions for Operation and the Surveillance Requirements, Section 3.9.6 and 4.9.6 have been marked up to reflect the normally recommended set points and are included for your information.

Per discussions between GE's D. L. Faulstich and CECO's R. B. Williams, it is technically acceptable to use a tolerance of +50/-50 lbs for the load interlock, however it will (as discussed) increase the chance of an inadvertent trip due to operational considerations. Additionally, it is acceptable to interpret the hoist jam as 1650 +/-50 lbs.



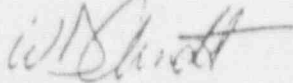
J. D. Williams

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GE thanks you for the opportunity to provide this service. Please do not hesitate to call me, or Dave Faulstich at (408) 925-6414, if you have any questions regarding the attached report.

Sincerely,



W. D. Arndt  
Senior Customer Service Engineer  
(708) 573-3964

cc: CECo  
V. V. Masterson  
R. H. Mirochna  
J. V. Schmeltz  
R. B. Williams  
Chron System

GE  
J. C. Elliott  
D. L. Faulstich w/o att  
J. E. Kusky  
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