Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

10 CFR 50.90

January 21, 1992

Dr. Thomas E. Murley
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Document Control Desk

SUBJECT: LaSalle County Station Units 1 and 2
Application for Amendment to Facility Operating Licenses
NPF-11 and NPF-18, Appendix A, Technical Specifications;
Refueling Platform Hoist Interlock Setpoints in
Surveillance Requirements 4.9.6
NRC Docket Nos. 50-373 and 50-374

Pursuant to 10 CFR 50.90, Commonwealth Edison (CECo) proposes to amend Appendix A, Technical Specifications, of Facility Operating Licenses NPF-11 and NPF-18. The proposed amendment requests a change to the refueling platform hoist interlock setpoints in Technical Specification Surveillance Requirement 4.9.6. This change will update the Technical Specifications to reflect the additional weight resultant from installation of new NF500 tubular refueling masts. These masts will replace the presently installed triangular masts for both units at LaSalle. It is requested that the amendments be made effective upon issuance for both Unit 1 and Unit 2.

This proposed amendment is subdivided as follows:

1. Attachment A gives a description and safety analysis of the proposed changes in this amendment.

2. Attachment B includes the marked-up Technical Specifications pages with the requested changes indicated.

3. Attachment C describes CECo's evaluation performed in accordance with 10 CFR 50.92(c), which confirms that no significant hazards consideration is involved.

4. Attachment D provides the Environmental Assessment.

5. Attachment E includes GE's safety evaluation comparing LaSalle's current refueling mast with the new NF500 design.

To the best of my knowledge and belief, the statements contained above are true and correct. In some respect these statements are not based on my personal knowledge, but obtained information furnished by other Commonwealth Edison employees, contractor employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

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Commonwealth Edison is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachemtns to the designated state official.

Please direct any questions you may have concerning this submittal to this office.

Sincerely,

Peter L. Piet
Nuclear Licensing Administrator

Attachments:

A. Description of Safety Analysis of the Proposed Changes
B. Marked-Up Technical Specification Pages
C. Evaluation of Significant Hazards Considerations
D. Environmental Assessment
E. GE Safety Evaluation for NF500 Cylindrical Refueling Mast

cc: A.B. Davis - Regional Administrator, RIII
Senior Resident Inspector - LSCS
B.L. Siegel - NRR, Project Manager
Office of Nuclear Facility Safety - IDNS

PLP:

Signed before me on this 21st day
of January, 1992.
by _____.
Notary Public

" OFFICIAL SEAL "
SANDRA C. LARA
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 6/25/94

ATTACHMENT A

DESCRIPTION AND SAFETY ANALYSIS OF PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS OF FACILITY OPERATING LICENSES NPF-11 AND NPF-18

BACKGROUND

LaSalle County Station has ordered new NF500 tubular refueling masts offered by the General Electric Company (GE) to replace the presently installed triangular masts for both units. The triangular masts are no longer being made by GE and replacement parts are obsolete and require special order to obtain. The Unit 1 mast is currently damaged and requires replacement.

The NF500 mast has several new beneficial features but the major significant design change is the additional weight of the mast. Due to the additional weight of the NF500 mast, the setpoints of the overload cutoff and the loaded interlock must be changed to include appropriate weight limits. This proposed amendment to Technical Specification 3/4.9.6 will add the setpoints for the NF500 mast. The triangular mast setpoints will remain unchanged. This will allow the mast that is scheduled for removal from Unit 2 to be used as a spare mast to limit outage delays should a NF500 mast become unusable. This fuel mast is interchangeable with the Unit 1 and 2 refueling bridges.

In 1990, Illinois Power Company installed the NF500 mast and proposed an amendment to the Technical Specifications for Clinton Power Station (Reference (a)). LaSalle's amendment request is similar to the request submitted by Illinois Power Company, which was reviewed and approved by the Nuclear Regulatory Commission (Reference (b)).

BENEFITS OF THE PROPOSED CHANGES

There are several benefits to be obtained from the installation of the NF500 mast at LaSalle Station:

1. The availability of replacement parts will save time and high costs associated with ordering obsolete spare parts on a special order expedited basis.

2. The stainless steel cylindrical construction of the improved mast reduces or eliminates both corrosion and the introduction of activated corrosion products in the water of the fuel pool and reactor vessel. This also allows easier decontamination of the mast when it is removed from the water for storage or maintenance.

3. The round design of the mast produces less water ripple during movement, permitting better visibility during fuel handling and positioning. This will result in a reduced probability of fuel mispositioning events.

4. Air hoses and electrical cable are run inside the mast cylinders. Beta radiation doses as well as fixed and airborne contamination exposure to the console operators are reduced with this feature.

5. Air hoses and electrical cables are a quick connect amphenol design and plugged to the top of the innermost mast section. Air hose or electrical cable replacement will no longer require pulling the mast out of the water to perform the necessary work. This reduces the duration and subsequent radiation exposure due to the maintenance of the hose and cable.

6. The torsional rigidity and solid sectional construction of the mast make it resistant to bending, bowing and impact damage. This stability reduces the duration required to settle the mast after lateral moves and improves operator control.

FUEL HANDLING SYSTEM DESIGN

The fuel handling and refueling systems are designed to provide a safe and effective means for transporting and handling fuel. LaSalle is provided with two refueling platforms, one designated for each unit. The refueling platforms are gantry cranes which are used to transport fuel and reactor components to and from the spent fuel storage pools and reactor pressure vessels. The platforms span the fuel storage and vessel pools on tracks embedded in the refueling floor. Each refuel platform has a telescoping mast and grapple suspended from a trolley system which is used to lift, lower, and orient fuel assemblies for core and fuel storage pool rack placement. The platforms are designed and constructed such that either one can be configured to service either the Unit 1 or Unit 2 reactor vessels and the associated fuel storage pools.

The main fuel grapple provides 8 feet of minimum water shielding over the active fuel during transit in its fully retracted or "normal up" position. This complies with Surveillance Requirement 4.9.6.d. The main grapple reaches its "normal down" position at a distance of 54 feet below the platform rails. Further travel beyond this point is prevented by the "normal down" interlock.

The fuel grapple hoist incorporates redundant lifting features. The fuel grapple is hoisted by two separate and independent cables ensuring that no single component failure will result in a fuel bundle drop.

Interlocks governing platform movement prevent unsafe operation over the reactor vessel during control rod movements. Interlocks also limit the travel of the fuel grapple and control grapple hook engagement with hoist power.

762E974 Mast Description

The presently installed mast consists of four concentric sections of 12, 10, 7 and 5 inches. Each section is a triangular, reinforced tubular frame. The top 12 inch section is mounted to the trolley and is stationary in the "up" and "down" direction of travel. The 10, 7, and 5 inch sections are movable and telescope up or down as a function of mast extension. At the "normal up" position, the combined weight of the 10, 7, and 5 inch sections and any load on the grapple is held by the main fuel hoist. At the "normal down" position, only the weight of the 5 inch section and any load on the grapple is held by the main fuel hoist. In this condition the weight of the 7 and 10 inch sections is transmitted through the 12 inch section to the platform structure.

NF500 Mast Description

The NF500 mast consists of four concentric round sections of 6, 5, 4 and 3 inches. Each section is a tubular frame. The top 6 inch section will mount to the trolley and is stationary in the up and down direction of travel. The 5, 4, and 3 inch sections are movable and telescope up and

down as a function of mast extension. At the "normal up" position, the combined weight of the 5, 4, and 3 inch sections and any load on the grapple is held by the main fuel hoist. At the "normal down" position, only the weight of the 3 inch section and any load on the grapple is held by the main fuel hoist. In this condition the weight of the 4 and 5 inch sections is transferred through the 6 inch section to the platform structure.

The NF500 refuel mast meets or exceeds the design specifications for the existing mast (762E974) in all aspects. However, the NF500 mast's dry weight is approximately 420 pounds more than the 762E974 mast design. As a result, the setpoints for the overload cutoff and the loaded interlock as given in Technical Specification Surveillance Requirements 4.9.6.a and 4.9.6.b, respectively need to be updated to incorporate the increased weight of the NF500 refuel mast.

SETPOINT ESTABLISHMENT

Fuel hoist loading setpoints have been established to provide indication that a grapple is loaded. Setpoints also protect the top guide and fuel assemblies from excessive lifting force in the event that they are inadvertently engaged during lifting operations. To ensure a refueling mast fulfills these functions, the following design criteria have been established by GE, the mast manufacturer:

1. With the mast at "normal up" and the grapple unloaded there must be no hoist loaded signal present.

2. With the mast at "normal up" and the grapple loaded with a fuel assembly, a hoist loaded signal must be generated and no hoist jam signal present.

3. The fuel hoist overload cutoff setpoint must avoid spurious trips with the grapple loaded due to mast movement throughout the entire range of mast travel. Mast movement causes impulse loadings which may generate a hoist jam if the jam setpoint is set too low.

4. The fuel hoist overload cutoff interlock must limit the lifting force and resultant stresses on the fuel assembly and top guide. The overload setpoint of 1600 +100/-0 pounds is well within the allowable stress limit for these core components.

As stated in LaSalle County Station's safety analysis, the purpose of fuel hoist loaded interlocks is to:

1. Initiate a control rod block in order to prohibit control rod withdrawal when the main hoist is loaded and located over the reactor vessel.

2. Prevent lifting of a load when the platform is over the reactor vessel and a control rod is withdrawn.

3. Prevent grapple disengagement when the fuel hoist is loaded.

4. Prevent raising a grapple loaded with a fuel bundle if the grapple is not fully engaged.

As shown in Attachment E, the use of the new NF500 mast does not adversely impact the safety bases of the above setpoints. The basis for the NF500 setpoint values are described below.

SETPOINT CHANGES

The present 485 ± 50 pound and 550 ± 50 pound fuel hoist loaded interlock setpoints for the 762E974 design must be raised to 700 +50/-0 pounds to incorporate the weight difference of the NF500 mast design. The 1200 ± 50 pound fuel hoist overload cutoff interlock setpoint for the 762E974 design must also be raised to 1600 +100/-0 pounds to incorporate the weight difference of the NF500 mast design. These setpoint changes are required to account for the increased weight of the NF500 mast and to prevent satisfying interlocks due solely to mast weight (with the grapple unloaded).

The bases for the new NF500 setpoints are as follows:

Fuel Hoist loaded interlock setpoint:

When the mast is fully extended and a fuel assembly is engaged, the weight on the cable of a submerged fuel assembly (approximately 650 pounds) and the small section of the mast (approximately 180 pounds) is approximately 830 pounds. This loading is sufficient to exceed the setpoint (maximum 750 pounds) and provide a hoist loaded signal.

When the mast is fully withdrawn to the "normal up" position without a fuel assembly loaded on the grapple the cable load is approximately 620 to 660 pounds. This loading is below the setpoint (minimum 700 pounds) and thus will not give a hoist loaded signal.

Thus, 700 +50/-0, pounds is used to determine if the hoist is loaded (hoist cable load) with the range providing adequate margin to the upper and lower limits.

Fuel Hoist overload interlock setpoint

The setpoint for the NF500 mast prevents inadvertent trips due to a fully withdrawn mast loaded with a fuel assembly. The combined weight is approximately 1300 pounds. The margin above 1300 pounds is required to prevent spurious jams as a result of normal mast movement.

The setpoint is also used to prevent damage to the fuel assembly, top guide and other vessel internals, refueling mast, refueling cable, and hoisting mechanism. The setpoint for the NF500 mast is more than 250 pounds less than the allowable limit to prevent damage to the core internals, fuel and the refuel equipment.

Thus, 1600 +100/-0, pounds for the NF500 mast is used to determine if the hoist is overloaded (hoist cable load) with the range providing adequate margin to the upper and lower limits.

SUMMARY

The new mast is similar in design and function to the current mast and meets or exceeds all design requirements. Therefore, the NF500 mast cannot create a new or different kind of accident. Because the overload and loaded interlocks still perform their design function, there is no reduction in the margin of safety for LaSalle County Station (Attachment E).

The proposed NF500 fuel hoist mast setpoints for the crane and hoist Technical Specification Surveillance Requirements provides the Station the flexibility of servicing the reactor vessel or spent fuel pool with either fuel hoist mast. This will reduce equipment downtime and the costs associated with fuel handling activities during refuel outages in the event a mast becomes unusable. Both the Triangular mast and the NF500 mast fully meet all appropriate design requirements. The associated setpoints for the fuel hoist loaded and overloaded interlocks are set conservatively to assure the fuel hoist interlocks, refueling platform position interlocks and control rod block interlocks function as originally designed.

This amendment request is similar to the amendment request that was approved for Illinois Power Company concerning the change in setpoints for Clinton Power Station's main hoist, when the mast was replaced by the NF500 mast (References (a) and (b)). The difference in setpoints between Clinton and LaSalle is based upon further analysis of mast operation by GE. As stated in Attachment E by GE, it is technically acceptable to use a tolerance of 1650 +/- 50 lbs for the hoist jam. Plant experience has shown that because the load cells are oil-filled, the setpoint has a tendancy to drift upward. LaSalle's proposed setpoint of 1600 +100, -0 lbs. provides the same level of protection yet reduces the possibility of the setpoint drifting outside the allowable band.

This Technical Specification amendment can be made effective upon issuance as both the current and the new setpoints will be maintained within the Technical Specifications; thus, there are no schedular requirements imposed by this amendment request.

REFERENCES

(a) Letter from J.S. Perry to the Nuclear Regulatory Commission, dated April 25, 1990; concerning Clinton Power Station's proposed amendment of Facilty Operating License No. NPF-62.

(b) Letter from J.B. Hickman (NRC) to F.A. Spangenberg, dated August 3, 1990; concerning Amendment No. 4, to Facility Operating License No. NPF-62 (TAC NOS. 76819 and 76820).