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 KNIGHTON, G. W. PWR Project Directorate 7

SUBJECT: Forwards info re proposed Tech Spec Change NPF-10/15-222  
 (PCN 222). Proposed change revises Tech Spec 3/4.9.6.  
 "Refueling Machine."

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Southern California Edison Company

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M. O. MEDFORD  
MANAGER OF NUCLEAR ENGINEERING  
AND LICENSING

November 4, 1986

TELEPHONE  
(818) 302-1749

Director, Office of Nuclear Reactor Regulation  
Attention: Mr. George W. Knighton, Director  
PWR Project Directorate No. 7  
Division of PWR Licensing - B  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362  
San Onofre Nuclear Generating Station  
Units 2 and 3

Enclosed is information prepared in support of the proposed Technical Specification Change, NPF-10/15-222 (PCN 222). The proposed change revises Technical Specification 3/4.9.6, "Refueling Machine", to reflect an increase of 200 pounds to the existing load limits as a result of the installation of a removable TV camera unit. It is believed that the enclosed material will answer those outstanding issues discussed with your staff reviewers by telephone.

Refueling operations for San Onofre Nuclear Generating Station Unit 3 are currently scheduled to commence in December, 1986. The Southern California Edison Company requests your expeditious approval of the proposed change. A timely approval of this proposed change will greatly facilitate refueling operations.

If you have any questions regarding the enclosed information, please let me know.

Very truly yours,

Enclosures

cc: Harry Rood, NRC Project Manager  
F. R. Huey, USNRC Senior Resident Inspector, Units 1, 2 and 3

|                           |                           |          |          |
|---------------------------|---------------------------|----------|----------|
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Response to NRC Questions on PCN-222

Question 1

Please clarify the statement that "the removable TV camera unit would comply with the guidelines of NUREG-0612 and would not increase the probability of an accident due to a heavy load drop of 1500 pounds or more."

Response

This statement is applicable only to the removable TV camera unit only. The proposed Technical Specification change (PCN-222) would revise the LCO limits to reflect an increase of 200 pounds resulting from the installation of this removable TV camera unit.

SCE concludes that NUREG-0612 is not applicable since the removable TV camera unit weighs only 200 pounds. Thus, no further evaluation under NUREG-0612 is required. The consequences of dropping this removable TV camera would be within acceptable limits and not exceed those of a postulated fuel handling accident involving an accidental drop of a single fuel assembly weighing approximately 1,500 pounds.

Thus the removable TV camera unit would be exempted from NUREG-0612 and would not increase the probability of a postulated fuel handling accident previously analyzed in the SONGS 2&3 FSAR.

Question 2

Is NUREG-0615 applicable for this proposed Technical Specification change (PCN-222)?

Response

No, NUREG-0615 is not applicable. In fact, NUREG-0615 has never been published and released to the public. It is therefore impossible to address NUREG-0615 requirements in the proposed change.

Question 3

Please provide a copy of the letter attesting to the load carrying capability of the refueling machine hoist by the original vendor of the equipment.

Response

A copy of this letter is attached.



GCA CORPORATION  
Industrial Systems Group

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St. Paul, MN 55112  
Telephone: (612) 484-7261  
Telex: 821847

September 17, 1986

Southern California Edison Co.  
P.O. Box 800  
Rosemead, California 91770

Attention: W.W. Strom, Supervisor Nuclear Engineering, Safety, and Licensing

Subject: San Onofre Refueling Machine Hoist

Dear Mr. Strom:

This letter is to confirm recent telephone conversations with Russell Hall of your department regarding the hoist capacity, overload settings, and proof load testing for the San Onofre Nuclear Generating Station refueling machines.

1. The nominal or minimum capacity of the RM hoist is 3000 pounds per Combustion Engineering specifications. The maximum rated load for this hoist is 3500 pounds.
2. The "fuel plus hoist" overload setting is 100 pounds over the combined weight of the grapple, hoist box, fuel assembly, and CEA (reference CE Technical Manual TM-1470-486-820, Vol. 1, Section 2.1, Step 107). This setting must be increased for the weight added to the hoist box by the recent TV camera mounting modification (185 pounds dry weight). Wet weights should be used during refueling operations; dry weights are only used during pre-operational checkout and during initial core loading.
3. Proof load testing the hoist at 3850 pounds during the pre-operational checkout is acceptable to GCA.

We hope this information is adequate for changing your operating specifications. Please contact us if additional information is needed.

Very truly yours,

GCA Corporation

R. J. Sullivan  
Chief Mechanical Engineer

RJS/mt

cc: Dr. S. P. Wu, SCE  
Russell Hall, SCE

Question 4

Please provide a breakdown of component loads that the fuel hoist box will lift.

Response

A breakdown of component loads that the fuel hoist box will lift is given in the following:

| <u>Component</u>                              | <u>Weight</u>  |
|---|----------------|
| Hoist Box (Including Fuel & CEA)              | 3,006 lbs.*1   |
| Grapple                                       | 200 lbs.       |
| Track & Lifting Pipe<br>(Including TV Camera) | 170 lbs.       |
| Screws, Shims & Changes<br>to Camera Bracket  | 15 lbs.        |
| Cable Splices & New Lights                    | <u>15 lbs.</u> |
| Total   | 3,406 lbs.     |

A fully loaded hoist box will therefore carry a total weight of 3,406 pounds which is within the proposed LCO load limits and the vendor recommended load carrying capacity identified in the response to Question 3.

\*1. A fuel assembly weighs 1,451 pounds. SONGS 2&3 Final Safety Analysis Report, Table 4.2-1.

A five finger Control Element Assembly (CEA) weighs approximately 97 pounds.

Question 5

There is no evaluation of dropping a fully loaded hoist box as part of the fuel handling accident. Please provide justification.

Response

The fuel handling accident due to a load drop of a single spent fuel assembly is discussed in the SONGS 2&3 Final Safety Analysis Report (FSAR), Section 15.7.3.4, and has been reviewed by the NRC in the original licensing review or in the Generic Issue on "Fuel Handling Accident Inside Containment".

A load drop analysis for a fully loaded hoist box is not warranted due to the construction of the telescoping hoist/mast assembly. It is physically impossible to lower or drop the hoist box out of the mast assembly, as there are two sets of stops incorporated in the mechanical design of this machine.

Removal of the hoist box from the refueling machine mast assembly for maintenance can only be accomplished by pulling the hoist box out of the top of the mast assembly with an overhead crane. During the operation of the hoisting mechanism, the hoist box is extended from the mast assembly until it physically rests on the hoist down stop. Additional "block wedges" are located 1/8" below the down stop for seismic and structural integrity and will serve as additional stops for the hoist box in a free fall event. The fuel assembly located within the hoist box has no such restraints, and is therefore addressed in the SONGS 2 and 3 FSAR Section 15.7.3.4 accident analysis.

SCE has complied with the guidelines of NUREG 0612 Section 5.1 by the surveillances required in the applicable Technical Specification. In particular, the proposed Technical Specification 3/4.9.6 mandates the operability of the refueling machine "by performing a load test of at least 3,200 pounds and demonstrating an automatic load cut off when the refueling machine load exceeds 3,550 pounds." SCE has incorporated thereby a proof load test of 3,800 pounds (with a tolerance of +50 and -0 pounds) for at least one continuous minute in the appropriate SONGS operating procedures. This pre-operational proof load test will not be performed in proximity to the reactor vessel or over safe shutdown equipments. A successful demonstration of this load test will not only comply with Technical Specification surveillance requirements but also reassure the integrity of the refueling machine hoist. Consequently, the potential for a load drop during refueling operations is very unlikely. In addition, various electrical interlocks or mechanical stops are available to ensure a safe operation of the refueling machine hoist. As discussed in the San Onofre 2&3 FSAR, Section 9.1.4.2.1.1, the LCO load limit requirements would interrupt hoisting of a fuel assembly if the load would increase above the overload setpoint or insertion of a fuel assembly when the load would decrease below the underload setpoint.

In conclusion, the pre-operational load test per Technical Specification surveillance requirements, the required functional capability of specified electrical interlocks or mechanical stops, and the administrative control procedures for the operation of the refueling machine will provide adequate measures to reduce the potential for load drops.