



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

STAFF EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION REGARDING
NRC BULLETIN 96-02, "MOVEMENT OF HEAVY LOADS OVER SPENT FUEL,
OVER FUEL IN THE REACTOR CORE, OR OVER SAFETY-RELATED EQUIPMENT"

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated December 11, 1996, the NRC issued a request for additional information (RAI) to Consumers Power Company regarding NRC Bulletin (NRCB) 96-02, "Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety Related Equipment." The RAI requested licensee review of a potential cask drop scenario related to the movement of spent fuel casks from the spent fuel pool. The scenario involved movement of a cask prior to securing the lid, and the attendant potential for tipping over of the cask, dislocation of the cask lid, and loss of confinement of the fuel.

Specifically, the licensee was asked to respond to the following:

Provide an evaluation of your crane design, load path, and cask loading and unloading processes that support a determination that the scenario described in the RAI is not credible at the Palisades plant.

The licensee responded to NRCB 96-02 and the RAI by letters dated May 13, 1996, and February 10, 1997, respectively.

2.0 EVALUATION

The licensee utilizes the Pacific Sierra Nuclear VSC-24 ventilated storage cask system for dry storage of spent fuel. The VSC-24 system consists of a multi-assembly sealed basket (MSB), a ventilated concrete cask (VCC), and an MSB transfer cask (MTC). The MSB/MTC is moved between a cask wash-down pit and a designated area within the spent fuel pool for fuel loading and unloading. Impact limiting pads are used in both areas to buffer the impact of a dropped cask on the liner of the pool. The cask wash-down pit and the spent fuel pool are separated by a 7 foot walkway and the travel distance of the cask between the two areas is approximately 14 feet from center to center. The relatively short and direct load path across the walkway helps to reduce the chances of a cask drop. Both the cask wash-down pit and the spent fuel pool are small enough so that the enclosure walls would prevent a dropped cask in either area from tipping over to a horizontal position. Therefore, a

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dropped cask would result in a diagonal orientation of the cask whereby the concrete walls coupled with the building structural steel would prevent the cask from being positioned where the potential for the cask lid to be dislodged is significant.

Based on information provided by the licensee, the configuration of the MSB shield lid coupled with the opening of MSB/MTC prevents the shield lid from being dislodged. This is because the shield lid to the MSB (which is 9.5 inches thick and weighs approximately 6,457 lbs.) is wedged into a seated position 12.5 inches into the MSB opening and is further restricted from movement by a keyway. As indicated by the licensee, the MSB shield lid would have to experience a significant horizontal force in a direction that is perpendicular to the cask lid in order for it to be dislodged.

The licensee has also indicated in its response to the RAI that it utilizes a "defense-in-depth" approach of controlling and handling heavy loads in accordance with NUREG-0612, and as such has implemented controls on its movement of the cask that safeguards against operator errors, equipment failures, and inadequate inspections and procedures.

Also as indicated by the licensee, training and procedural controls are used to minimize the potential for inadvertent movement of the cask, and to allow sufficient time during cask movement to make any necessary corrections to problems encountered during the lift. For example, the cask is moved at a very slow rate to allow long reaction times, if needed, to provide an opportunity for correction of any developing problems. The licensee has also indicated that although the cask drop scenario is not a credible accident at Palisades, the effects of a cask drop in either the cask loading pit or the spent fuel pool would be minimized due to deceleration of the cask by impact limiting pads.

The staff also finds that any occupational radiological consequences resulting from the dropping of the cask and exposure of the fuel could be easily managed by use of the spent fuel pool area ventilation system and the ability to immediately fill the cask loading pit with water to provide additional shielding. The potential for adverse radiological consequences resulting from a dropped cask is further minimized because the cask is not moved over any fuel stored in the spent fuel pool in accordance with the requirements of Technical Specifications (TS) 3.21.2. It should be noted that the staff is currently reviewing a licensee proposal to relocate the TS requirements related to heavy loads to licensee administratively controlled procedures. Once relocated, the requirements could be revised by the licensee; however, any changes will be subject to the controls of 10 CFR 50.59, requiring prior staff review and approval of any changes that are found to involve an unreviewed safety question.

3.0 CONCLUSION

Based on information provided by the licensee, the staff finds that Palisades' activities involving the movement of a loaded spent fuel cask with the cask lid in place are confined to a relatively small area with limited travel between the spent fuel pool and the adjacent cask wash-down pit. Thus the

close proximity of these facilities to each other and their physical configuration reduces the potential for occurrence of the accident scenario described above. Subsequent to being loaded, procedures and crane controls are utilized to minimize inadvertent load travel including maintaining a slow rate at which the load is moved, and maintaining a vertical distance of 6 inches between the bottom of the cask and the operating floor in order to minimize the effects of a cask drop.

Based on our evaluation of the licensee's response to both NRCB 96-02 and the RAI, the staff finds that the licensee's conclusion that the potential for the tip-over accident scenario is not credible at Palisades is acceptable.

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Date: May 9, 1997