

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
PLANT SYSTEMS BRANCH
AUXILIARY BUILDING CRANE
ARKANSAS NUCLEAR ONE, UNIT 1
DOCKET NO 50-313

1.0 INTRODUCTION

By letter dated June 27, 1991 and supplemental information dated August 22, 1991, Entergy Operations, the licensee for Arkansas Nuclear One, Unit 1 (ANO-1) requested a temporary exemption to Technical Specification (TS) 3.8.15, which prohibits movement of a spent fuel shipping cask by the Auxiliary Building crane. The proposed change will replace the existing footnote with one which will allow a spent fuel cask to be handled by the Auxiliary Building crane for the period from October 15, 1991, through January 31, 1992. This temporary change is intended to permit the use of a 17 ton shipping cask for the movement of two spent fuel rods.

The licensee has participated in a program to study extended nuclear fuel burnup. Part of this program involves the shipment of two high burnup fuel rods in a DOE cask from ANO-1 to Sweden for hot cell examination during the specified period. TS 3.8.15 prohibits such use pending NRC evaluation of the crane design and the spent fuel cask drop accident.

In 1978 and again in 1987, the NRC staff approved exemptions to ANO-1 TS 3.8.15 to permit handling of 25-ton casks by the Auxiliary Building crane for removal and shipment of some irradiated burnable poison rods and spent fuel rods. These shipments were also part of the DOE program.

2.0 EVALUATION

The licensee has stated that the same precautions as used for the previously approved cask movements will be used for this shipment. The precautions are as follows:

1. An automatic limit switch and a power disconnect from the main contact rails will be provided on the Auxiliary Building crane to preclude cask travel over the spent fuel storage pool.
2. Interlocks will also be used to limit the height to which the cask is raised above the floor.
3. Further hoist operation will be prevented by an electrical interlock and the crane hoist control circuits will be disabled under administrative controls once the cask has been raised to the proper height. Consequently, changes in cask height will be prevented during horizontal movement.
4. Cask travel within safe load areas is limited by strict administrative controls in combination with interlocks which limit crane travel to within normal crane handling areas.

The safe load path defined by the licensee for the cask movement includes an area over the control room. The floor slab of the fuel handling area is the ceiling of a portion of the control room that houses relay panels. The licensee has performed analyses to demonstrate that a cask drop will not penetrate the floor or cause damage to the equipment in the control room below. The analyses included a cask drop from 3 inches above the floor and a cask drop from 9 inches above the floor within 3 inches of 260 psi hexagonal honeycomb energy absorbing material between the cask and the floor.

The two fuel rods that will be loaded into the cask were removed from the reactor in August 1988. These rods were taken from a fuel assembly with a burnup of 57,152 MWD/MTU. Any radiation release from these rods resulting from a cask drop accident would be only a very small fraction of Part 100 limits. (To reach one quarter of Part 100 limits, more than 5,000 fuel assemblies that had been out of the reactor for 3 years would have to be damaged.) The cask will not travel over spent fuel, so it will not be possible to damage spent fuel assemblies outside of the cask. Therefore, an analysis of radiological consequences of a cask drop accident is not required.

The procedure requires the height to be checked several times during transfer. The licensee plans to use 3 inches of energy absorbing material between the cask and the floor and move the cask at a height not to exceed 9 inches above the floor. In addition, the operators in the control room will be alerted when the fuel movement is taking place. ANO's procedures, load paths, crane equipment certification, operator training and other related heavy load handling topics were previously evaluated as part of the control of heavy loads issue and found acceptable. Therefore, the cask movement has been found acceptable based on the licensee satisfying the heavy loads handling criteria.

3.0 CONCLUSION

Based on a review of the above information, the staff finds that the potential for a cask drop accident is a highly unlikely occurrence because of the one time use and the added measures provided to preclude a possible cask drop. The consequences of a cask drop would be well within allowable limits because of the small number of fuel rods being transported, because of the length of decay time since the rods were removed from the reactor core, and because the cask will not travel over stored spent fuel. The cask will travel in defined safe load paths that have been evaluated for load a drop of 17 tons with no resulting damage to safe-shutdown equipment. Therefore, the licensee's request for an exemption to TS 3.8.15 to allow handling of a 17-ton spent fuel storage cask has been found acceptable by the staff.

Based on the above, the staff concludes that TS 3.8.15 may be suspended temporarily to permit use of the auxiliary building crane to move the cask and the two fuel rods. When such actions requiring the use of the Auxiliary Building crane have been completed, TS will again be placed in force.

SPLB SALP INPUT

Plant Name: Arkansas Nuclear One, Unit 1
SER Subject: Auxiliary Building Crane Exemption for Spent Fuel Cask Handling
TAC No.: M30881

Summary of Review/Inspection Activities

The staff reviewed the licensee's proposed temporary exemption to the Technical Specification (TS) to allow the movement of two special fuel rods in a 17 ton cask, using the Auxiliary Building Crane.

Narrative Discussion of Licensee Performance - Functional Area

The licensee provided information for review. However, additional information was required from the licensee in order to assure protection of the control room in the event of a cask drop. The information provided by the licensee demonstrated a good understanding of the issues involved with this temporary exemption to the TS.

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Date: November 1, 1991