

Docket No. 50-313

November 6, 1991

Mr. Neil S. Carns  
Vice President, Operations ANO  
Entergy Operations, Inc.  
Route 3 Box 137G  
Russellville, Arkansas 72801

Dear Mr. Carns:

SUBJECT: ISSUANCE OF AMENDMENT NO. 153 TO FACILITY OPERATING LICENSE  
NO. DPR-51 - ARKANSAS NUCLEAR ONE, UNIT NO. 1 (TAC NO. 80881)

The Commission has issued the enclosed Amendment No. 153 to Facility Operating License No. DPR-51 for the Arkansas Nuclear One, Unit No. 1 (ANO-1). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated June 27, 1991, as supplemented August 22, October 4, and October 16, 1991.

The amendment replaces the existing footnote to the ANO-1 TS 3.8.15 with one that will allow a 17-ton shipping cask with two spent fuel rods to be handled for shipping by the auxiliary building crane during the period from October 15, 1991, through January 31, 1992.

A copy of our related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Thomas W. Alexion, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III, IV, and V  
Office of Nuclear Reactor Regulation

## Enclosures:

1. Amendment No. 153 to DPR-51
2. Safety Evaluation

cc w/enclosures:

See next page

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

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Sincerely,

A handwritten signature in cursive script, reading "Steven R. Peterson".

for

Thomas W. Alexion, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III, IV, and V  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 153 to DPR-51
2. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Neil S. Carns  
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Arkansas Nuclear One, Unit 1

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

ENTERGY OPERATIONS INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 153  
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Entergy Operations, Inc. (the licensee) dated June 27, 1991, as supplemented August 22, October 4, and October 16, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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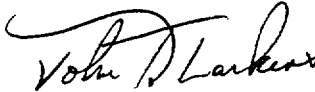
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. DPR-51 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 153, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John T. Larkins, Director  
Project Directorate IV-1  
Division of Reactor Projects III, IV, and V  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: November 6, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 153

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Revise the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

REMOVE PAGES

59a

INSERT PAGES

59a

- 3.8.15\* The spent fuel shipping cask shall not be carried by the Auxiliary Building crane pending the evaluation of the spent fuel cask drop accident and the crane design by AP&L and NRC review and approval. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.
- 3.8.16 Storage in the spent fuel pool shall be restricted to fuel assemblies having initial enrichment less than or equal to 4.1 w/o U-235. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.
- 3.8.17 Storage in Region 2 (as shown on Figure 3.8.1) of the spent fuel pool shall be further restricted by burnup and enrichment limits specified in Figure 3.8.2. In the event a checkerboard storage configuration is deemed necessary for a portion of Region 2, vacant spaces adjacent to the faces of any fuel assembly which does not meet the Region 2 burnup criteria (non-restricted) shall be physically blocked before any such fuel assembly may be placed in Region 2. This will prevent inadvertent fuel assembly insertion into two adjacent storage locations. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.
- 3.8.18 The boron concentration in the spent fuel pool shall be maintained (at all times) at greater than 1600 parts per million.

#### Bases

Detailed written procedures will be available for use by refueling personnel. These procedures, the above specifications, and the design of the fuel handling equipment as described in Section 9.6 of the FSAR incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety. If no change is being made in core geometry, one flux monitor is sufficient. This permits maintenance on the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition.

The requirement that at least one decay heat removal loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel at the refueling temperature (normally 140°F), and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.<sup>(1)</sup>

The requirement to have two decay heat removal loops operable when there is less than 23 feet of water above the core, ensures that a single failure of the operating decay heat removal loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating decay heat removal loop, adequate time is provided to initiate emergency procedures to cool the core.

The shutdown margin indicated in Specification 3.8.4 will keep the core subcritical, even with all control rods withdrawn from the core.<sup>(2)</sup> Although the refueling boron concentration is sufficient to maintain the core  $k_{eff} \leq 0.99$  if all the control rods were removed from the core, only a few control rods will be removed at any one time during fuel shuffling and

Note: \*An exception to 3.8.15 is granted for the period of October 15, 1991, through January 31, 1992, for the movement of two spent fuel rods utilizing a 17 ton shipping cask.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 153 TO

FACILITY OPERATING LICENSE NO. DPR-51

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

1.0 INTRODUCTION

By letter dated June 27, 1991, as supplemented August 22, October 4, and October 16, 1991, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Arkansas Nuclear One, Unit No. 1 (ANO-1) Technical Specification (TS). The requested changes would replace the existing footnote to ANO-1 TS 3.8.15 with one that will allow a 17-ton shipping cask with two spent fuel rods to be handled for shipping by the auxiliary building crane during the period from October 15, 1991, through January 31, 1992. The August 22, October 4, and October 16, 1991, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

The licensee has participated in a program to study extended nuclear fuel burnup. Part of this program involves the shipment, during the specified period, of two high burnup fuel rods in a DOE cask from ANO-1 to Sweden for hot cell examination. 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 Department of Energy program.

2.0 EVALUATION

The licensee has stated that the same precautions 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 that 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 with 3 inches of 260 psi hexagonal honeycomb energy-absorbing material between the cask and the floor.

The staff has reviewed the engineering calculations in the licensee's letters dated August 22, October 4, and October 16, 1991, and finds that the licensee has used proper methods and conservative assumptions in calculating cask drop loads and structural resistance. Therefore, the staff agrees with the licensee's conclusions that the structure can maintain its integrity for a cask drop of 2.5 inches without hexagonal honeycomb material and a cask drop of 9 inches with 3 inches of hexagonal honeycomb material.

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 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 and, therefore, could not damage other spent fuel assemblies. 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 to 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.

Based on a review of the above information, the staff finds a cask drop accident is highly unlikely because of the one-time use and the measures taken to preclude a cask drop. The consequences would be well within allowable limits because of the small number of fuel rods being transported and because of the length of decay time since the rods were removed from the reactor core. The cask will travel in defined safe load paths that have been evaluated for a load 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 3.8.15 will again be in force.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arkansas State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 37581). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

### 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: A. Dummer  
J. Ma  
N. Wagner

Date: November 6, 1991