

August 4, 1994

Docket No. 50-313

Mr. Jerry W. Yelverton
Vice President, Operations ANO
Entergy Operations, Inc.
Route 3 Box 137G
Russellville, Arkansas 72801

Dear Mr. Yelverton:

SUBJECT: ISSUANCE OF AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE
NO. DPR-51 - ARKANSAS NUCLEAR ONE, UNIT NO. 1 (TAC NO. M88990)

The Commission has issued the enclosed Amendment No.173 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 March 3, 1994.

The amendment removes restrictions from the ANO-1 TSs that prohibit use of the auxiliary building crane to move spent fuel shipping casks.

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,

Original signed by:
George Kalman, Senior Project Manager
Project Directorate IV-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

- Enclosures:
1. Amendment No. 173 to DPR-51
2. Safety Evaluation

cc w/enclosures:
See next page

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

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2. Safety Evaluation

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Mr. Jerry W. Yelverton
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Arkansas Nuclear One, Unit 1

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

ENTERGY OPERATIONS INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 173
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 March 3, 1994, 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.173 , 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

William D. Beckner

William D. Beckner, Director
Project Directorate IV-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 4, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 173

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Replace 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

59b

INSERT PAGES

59a

59b

- 3.8.15 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 are not applicable.
- 3.8.16 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 are not applicable.
- 3.8.17 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.⁽¹⁾

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.⁽²⁾ 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

replacement. The k_{eff} with all rods in the core and with refueling boron concentration is approximately 0.9. Specification 3.8.5 allows the control room operator to inform the reactor building personnel of any impending unsafe condition detected from the main control board indicators during fuel movement.

The specification requiring testing reactor building purge termination is to verify that these components will function as required should a fuel handling accident occur which resulted in the release of significant fission products.

Because of physical dimensions of the fuel bridges, it is physically impossible for fuel assemblies to be within 10 feet of each other while being handled.

Specification 3.8.11 is required as: 1) the safety analysis for the fuel handling accident was based on the assumption that the reactor had been shutdown for 72 hours.⁽³⁾; and, 2) to assure that the maximum design heat load of the spent fuel pool cooling system will not be exceeded during a full core offload.

Specification 3.8.14 will assure that damage to fuel in the spent fuel pool will not be caused by dropping heavy objects onto the fuel. Administrative controls will prohibit the storage of fuel in locations adjoining the walls at the north and south ends of the pool, in the vicinity of cask storage area and fuel tilt pool access gates.

Specifications 3.8.15 and 3.8.16 assure fuel enrichment and fuel burnup limits assumed in the spent fuel safety analyses will not be exceeded.

Specification 3.8.17 assures the boron concentration in the spent fuel pool will remain within the limits of the spent fuel pool accident and criticality analyses.

REFERENCES

- (1) FSAR, Section 9.5
- (2) FSAR, Section 14.2.2.3
- (3) FSAR, Section 14.2.2.3.3



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 173 TO

FACILITY OPERATING LICENSE NO. DPR-51

ENERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

1.0 INTRODUCTION

Energy Operations, Inc, the licensee for the Arkansas Nuclear One, Unit 1 (ANO-1) plant, is planning to move spent fuel shipping casks by means of the auxiliary building crane. Presently, Technical Specification 3.8.15 states that "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 are not applicable." In a submittal dated March 3, 1994, the licensee proposes to delete this Specification and to renumber the specifications that follow to account for this deletion.

2.0 EVALUATION

2.1 Auxiliary Building Crane

Franklin Research Center (FRC), acting as a consultant for NRC, reviewed the auxiliary building crane and reported its findings in a Technical Evaluation Report dated September 24, 1984. The licensee reported that this crane was designed in accordance with the then extant criteria of EOCI-61, "Specifications for Electric Overhead Traveling Cranes." In addition, the licensee conducted a detailed comparison of the design of the fuel handling crane with the criteria of CMAA-70, "Specifications for Electric Overhead Cranes." Based upon this, the FRC reviewer concluded that the design is consistent with Guideline (7) of Section 5.1.1 of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants. Guideline 7 states: The crane should be designed to meet the applicable criteria and guidelines of Chapter 2-1 of ANSI B30.2-1976, "Overhead and Gantry Cranes" and of CMAA-70, "Specifications for Electric Overhead Travelling Cranes." An alternative to a specification in ANSI B30.2 or CMAA-70 may be accepted in lieu of specific compliance if the intent of the specification is satisfied.

The NRC, in a safety evaluation dated October 11, 1984, concurred with the findings of the consultant.

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2.2 Cask Drop Analyses

The licensee provided an analysis of a hypothetical cask drop on the floor above the control room as the most critical location in the path from the shipping cask area in the spent fuel pool (SFP) to the cask's exit from the auxiliary building. At the request of the staff, the licensee also provided an analysis of a hypothetical cask drop in the shipping cask area in the SFP and an examination of areas in the path of the cask from the shipping cask area to the auxiliary building exterior.

2.2.1 Cask Drop On Floor Above Control Room

In the submittal dated March 3, 1994, the licensee provided an analysis of a cask drop on the floor above the control room. This analysis has been reviewed and the consequences of that drop have been found to be acceptable in that neither spent fuel nor redundant trains of safe shutdown equipment is adversely affected. It is noteworthy that the licensee plans to raise the cask no higher than nine inches above the floor in its movement path with three inches of honeycomb energy material (260 psi) attached to the bottom of the cask to reduce the impact load on the floor in the event of an actual drop. These considerations were included in the calculations.

2.2.2 Cask Drop in Shipping Cask Area in SFP

The licensee calculated that the drop of a cask in the shipping cask area would severely damage that area. However, there would be no adverse effect on the adjacent SFP because the shipping cask area of the SFP is supported by the bedrock underneath. The loss of water in the cask shipping area resulting from damage to that area would not affect the SFP coolant in the pool proper because of the watertight barrier installed between the SFP and shipping cask area. This barrier is installed whenever a shipping cask has to be introduced into or removed from the shipping cask area. Furthermore, there is no safety-related safe shutdown equipment in the shipping cask area of the SFP.

2.2.3 Areas in Path of Cask

The licensee examined the rest of the path of the cask from the shipping cask area in the SFP to the building exterior and declared that neither spent fuel nor dual trains of safe shutdown equipment would be adversely affected by a cask drop in those areas.

2.3 Technical Specifications (TSs)

As noted in Section 1, above, "Introduction," removal of this TS hinges upon the staff's approval of the crane design (see Section 2.1 above) and upon approval of the spent fuel cask drop accident (See Sections 2.2.1 and 2.2.2, above).

The crane design has been reviewed and found consistent with applicable guidelines; the design is hereby approved. The drop of a shipping cask on both the floor above the control room and in the SFP shipping cask area will not adversely affect either spent fuel nor redundant trains of safe shutdown equipment. The licensee has examined other areas in the path of the movement of the cask and found that neither spent fuel nor redundant trains of safe shutdown equipment would be affected adversely, by a cask drop in those areas. Therefore, TS 3.8.15 may be removed since the licensee has complied with the guidelines for its removal when moving a cask weighing 100 tons or less.

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 (59 FR 17598). 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: N. Wagner
J. Ma

Date: August 4, 1994