



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

April 18, 2001

Mr. Craig G. Anderson  
Vice President, Operations ANO  
Entergy Operations, Inc.  
1448 S. R. 333  
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 2 - ISSUANCE OF AMENDMENT RE:  
CONTAINMENT PURGE AND PENETRATION TECHNICAL SPECIFICATIONS  
(TAC NO. MA9741)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment No. 230 to Facility Operating License No. NPF-6 for Arkansas Nuclear One, Unit No. 2 (ANO-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated August 10, 2000, as supplemented by letter dated March 22, 2001.

The amendment revises TS 3/4.9.4, "Refueling Operations, Containment Building Penetrations," by deleting the requirements for the containment purge and exhaust system and by revising the closure requirements for containment building penetrations to require that containment penetrations are capable of being closed during the handling of irradiated fuel within the containment.

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

Sincerely,

A handwritten signature in cursive script that reads "Thomas W. Alexion".

Thomas W. Alexion, Project Manager, Section 1  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures:

1. Amendment No. 230 to NPF-6
2. Safety Evaluation

cc w/encls: See next page

NRB-058

Arkansas Nuclear One

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February 2001



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

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 230  
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Entergy Operations, Inc. (the licensee), dated August 10, 2000, as supplemented by letter dated March 22, 2001, 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.

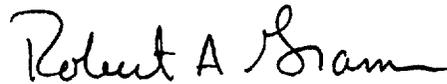
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-6 is hereby amended to read as follows:

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 230 , 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 and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Gramm, Chief, Section 1  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: April 18, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 230

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3/4 9-4  
3/4 9-5  
B 3/4 9-1

Insert

3/4 9-4  
---  
B 3/4 9-1

REFUELING OPERATIONS

CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

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3.9.4 The containment building penetrations shall be in the following status:

- a. The equipment door is capable\* of being closed,
- b. A minimum of one door in each airlock is capable\* of being closed, and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:
  1. Closed\* by a manual or automatic isolation valve, blind flange, or equivalent, or
  2. Capable\* of being closed by an OPERABLE containment purge and exhaust isolation system.

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

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4.9.4.1 Each of the above required containment penetrations shall be determined to be in its above required conditions within 72 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment.

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\* Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls. Administrative controls shall ensure that appropriate personnel are aware that when containment penetrations, including both personnel airlock doors and/or the equipment door are open, a specific individual(s) is designated and available to close the penetration following a required evacuation of containment, and any obstruction(s) (e.g., cables and hoses) that could prevent closure of an airlock door and/or the equipment door be capable of being quickly removed.

### 3/4.9 REFUELING OPERATIONS

#### BASES

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#### 3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: 1) the reactor will remain subcritical during CORE ALTERATIONS, and 2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the accident analyses.

#### 3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range neutron flux monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

#### 3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor pressure vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the accident analyses.

The minimum requirement for reactor subcriticality prior to movement of more than 70 irradiated fuel assemblies to the spent fuel pool ensures that sufficient time has elapsed to allow radioactive decay of the short-lived fission products such that the heat generated will not exceed the cooling capacity of the spent fuel pool cooling system. This decay time and total assembly limitation is conservatively within the assumptions used in the accident analyses.

#### 3/4.9.4 CONTAINMENT PENETRATIONS

The requirements on containment penetration closure ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

Containment penetrations, the personnel airlock doors, and/or the equipment door may be open during movement of irradiated fuel in the containment and during CORE ALTERATIONS provided a minimum of one closure method (manual or automatic valve, blind flange, or equivalent) in each penetration, one door in each airlock, and the equipment door are capable of being closed in the event of a fuel handling accident. This allowance assumes that 23 feet of water is maintained above the fuel seated within the reactor vessel to ensure any offsite dose consequence remains within 10 CFR 100 limits in the event of a fuel handling accident. Equivalent isolation methods must be approved and may include use of a material that can provide a temporary atmospheric pressure ventilation barrier. For closure, the equipment door will be held in place by a minimum of four bolts.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 230 TO

FACILITY OPERATING LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated August 10, 2000, as supplemented by letter dated March 22, 2001, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Arkansas Nuclear One, Unit No. 2 (ANO-2), Technical Specifications (TSs). The requested changes would revise TS 3/4.9.4, "Refueling Operations, Containment Building Penetrations," by deleting the filter/adsorber testing requirements for the containment purge and exhaust system and by revising the closure requirements for containment building penetrations to require that containment penetrations can be unisolated provided they are capable of being closed during the handling of irradiated fuel within the containment.

The March 22, 2001, supplemental letter provided clarifying information that did not change the scope of the original *Federal Register* notice or the initial no significant hazards consideration determination.

2.0 BACKGROUND

Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," was issued by the Nuclear Regulatory Commission (NRC or the Commission) on June 3, 1999. This generic letter requested the licensees to perform five actions. Action No. 5 of the generic letter requested that licensees who chose not to implement the requested actions should notify the NRC of their plans to pursue an alternative approach, the schedule for the alternative approach, and the basis for continued operability. By letter dated August 2, 1999, the licensee notified the NRC of its intent to pursue the alternative approach of not changing the filter testing requirements for the containment purge and exhaust system at ANO-2, and indicated that it will be processing a TS change request in the future to remove this filtration system from the TSs. The licensee took this position on the basis that the system operation is not credited in any ANO-2 radiological accident analysis. By letter dated August 10, 2000, as supplemented by letter dated March 22, 2001, the licensee requested this license amendment to revise TS 3/4.9.4 to remove operability requirements for the containment purge and exhaust system.

By License Amendment No. 166, dated September 28, 1995, the NRC granted approval for the licensee to revise ANO-2 TS 3/4.9.4 to allow the personnel air locks to remain open during the handling of irradiated fuel within the containment building. By License Amendment No. 203, dated April 16, 1999, the NRC granted approval for the licensee to revise TS 3/4.9.4 to allow the containment equipment hatch as well as the personnel air locks to remain open. By letter dated August 10, 2000, as supplemented by letter dated March 22, 2001, the licensee requested to revise TS 3/4.9.4 to allow other containment penetrations, in addition to the equipment hatch and/or personnel air locks, to remain open during the handling of irradiated fuel within the containment building. The proposed change will provide the licensee with the much-needed flexibility to perform limited functions and tests during fuel handling operations.

### 3.0 EVALUATION

#### 3.1 Impact on Previously Analyzed Radiological Consequences

ANO-2 TS 3/4.9.4 requires that any opening in the containment building be exhausted through an operable high efficiency particulate air (HEPA) and charcoal filter during core alterations or during the movement of irradiated fuel within the containment building. The containment purge and exhaust system is prohibited from being placed in operation in Modes 1, 2, 3, or 4 by TS 3.6.1.6 and must be capable of automatic isolation upon receipt of a high radiation signal by TS 3.3.3.1 during Modes 5 and 6. The system also receives automatic isolation signals from the engineered safety features actuation system on a safety injection actuation signal or a containment isolation signal. The exclusion of operating the system in Modes 1, 2, 3, and 4 limits the impact of the proposed change to the postulated fuel handling accident. However, the ANO-2 fuel-handling accident in containment does not credit filtration of the postulated radioactive material released by the containment purge and exhaust system. In analyses performed in support of License Amendment No. 166, the licensee assumed an instantaneous puff release via an open personnel air lock, without filtration. Since filtration was not assumed in these accident analyses, the staff concludes that the proposed change to remove operability requirements for the filter will have no effect on previously postulated radiological consequences of a fuel handling accident inside containment.

The containment purge and exhaust system is identified in various sections of the Safety Analysis Report (SAR) as (1) a means to purge the containment atmosphere following normal operations and abnormal occurrences as a means of personnel exposure control, and (2) as an alternative means of containment combustible gas control. The licensee states that these functions of the system are not safety-related. Containment purging for personnel exposure control purposes would be planned and controlled under the applicable provisions of 10 CFR Part 20 and 10 CFR Part 50, Appendix I. Section 6.2.5.1 of the SAR addresses the combustible gas control function and notes that "By limiting the purge time, the containment purge system may be used for containment atmosphere cleanup with only a small contribution to the maximum total dose which is less than the limits set in 10 CFR Part 100." Since ANO-2 relies on redundant hydrogen recombiners for controlling post-accident hydrogen concentrations, the staff did not and does not find it necessary for ANO-2 to analyze the radiological consequences of a post-accident containment purge. Based on the above considerations, the staff concludes that the proposed change to remove operability requirements for the filter will have no effect on previously postulated radiological consequences.

In the second proposed change, the licensee requests a change to the TSs for ANO-2 to allow other containment penetrations, in addition to the equipment hatch or personnel air locks authorized earlier, to remain open during the handling of irradiated fuel within the containment building. It has been the staff's policy to approve applications of this nature if (1) dose consequences indicate acceptable radiological consequences without credit for the containment's fission product control function, and (2) the licensee has committed to implement administrative procedures that ensure that the open penetration can and will be promptly closed, following containment evacuation, in the event of a fuel handling accident.

In analyses performed in support of License Amendment No. 166, the licensee assumed an instantaneous puff release via an open personnel air lock in analyzing the consequences of a fuel handling accident inside containment. This analysis was subsequently used in support of License Amendment No. 203 for the equipment hatch. Due to the licensee's assumption of a complete, instantaneous puff release (in essence assuming no containment structure), the authorization of additional open penetrations does not increase the magnitude of the postulated radioactive material release. The staff concludes that the proposed change to allow other containment penetrations to remain open during the handling of irradiated fuel within the containment building, will have no effect on the previously postulated radiological consequences of a fuel handling accident inside containment.

Regarding the administrative procedures discussed above, in the August 10, 2000, application, the licensee described the administrative controls already established within shutdown-mode programs. Such controls include the approval of management before opening a penetration, ensuring an individual is designated to close the penetration should a containment evacuation be required, ensuring communications are available between ANO-2 Operations and/or Outage Management and the designated individual, and that the penetration must be capable of being closed within 30 minutes (the licensee also indicated that the latter commitment aids in ensuring containment closure will be accomplished prior to core boiling in the event of a loss-of-shutdown cooling). The staff has reviewed these administrative controls and finds that they are adequate to ensure that the open penetration will be promptly closed in the event of a fuel handling accident.

### 3.2 Containment Purge TSs

In the application, the licensee proposed to delete the requirement for operable containment purge and exhaust system HEPA filters and charcoal adsorbers in TS 3.9.4.c.2 and replace it with a requirement to have an operable containment purge and exhaust isolation system, consistent with the intent of TS 3.9.4.c.1, and delete TSs 4.9.4.2.a through 4.9.4.2.e. TS 3.9.4.c.2 provides the limiting condition for operation for the containment purge and exhaust system and TSs 4.9.4.2.a through 4.9.4.2.e provide the charcoal adsorber and HEPA filter testing surveillance requirements for this system. In accordance with the application, the licensee stated that the ANO-2 fuel-handling accident in containment, as discussed in Section 15.1.23 of the ANO-2 SAR, does not credit the containment purge and exhaust system as a means of filtering a release of radionuclides to the environment. Therefore, since filtration was not assumed in the licensee's accident analyses, the staff concludes that the proposed change to modify TS 3.9.4.c.2 and remove TSs 4.9.4.2.a through 4.9.4.2.e for the containment purge and exhaust system are acceptable.

### 3.3 Containment Penetration TSs

In the second proposed change, the licensee requested to revise ANO-2 TSs 3.9.4.c.1 and 3.9.4.c.2 to allow other containment penetrations, in addition to the equipment hatch and/or personnel air locks, to be unisolated under administrative controls provided they are capable of being closed. In support of this revision, the footnote at the bottom of the page is revised to include administrative controls that must be established when such a penetration is unisolated. The staff notes that there is a minor wording change to a phrase in TS 3.9.4.c.1, which clarifies how the penetrations may be closed (i.e., by a manual or automatic isolation valve, blind flange, or equivalent) and does not change the meaning of TS 3.9.4.c.1. The staff also notes that the methods used to ensure closure is revised to be consistent with that of NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," as modified by Technical Specification Task Force 312, Revision 1.

As stated in Section 3.1 of this Safety Evaluation, it has been the staff's policy to approve applications of this nature if (1) dose consequences indicate acceptable radiological consequences without credit for the containment's fission product control function, and (2) the licensee has committed to implement administrative procedures that ensure that the open penetration can and will be promptly closed, following containment evacuation, in the event of a fuel handling accident.

The NRC approved the opening of the equipment hatch and/or personnel air locks in Amendment Nos. 166 and 203, in part, due to the fact that postulated dose consequences were within the appropriate regulatory acceptance criteria in this configuration. The evaluation of dose consequences assumed that the containment building was not available to aid in limiting any radiological release should a fuel handling accident occur while the equipment hatch and/or personnel air locks were opened. Since the dose consequences in this event remain within the appropriate regulatory acceptance criteria, allowing other penetrations to be opened during the handling of irradiated fuel within the containment is equally acceptable.

Also, as stated in Section 3.1 of this Safety Evaluation, the staff finds that the licensee's administrative controls regarding open containment penetrations are adequate to ensure that the open penetrations will be promptly closed in the event of a fuel handling accident. In addition, the staff believes that these controls do not warrant the creation of regulatory requirements that would require prior NRC approval of subsequent changes.

Based on the acceptable radiological consequences and administrative controls, the staff finds that the proposed change to revise the TSs for ANO-2 to allow other containment penetrations, in addition to the equipment hatch and/or personnel air locks authorized earlier, to remain open during the handling of irradiated fuel within the containment building, is acceptable.

### 3.4 EVALUATION SUMMARY

Based on the information provided by the licensee related to the proposed TS changes, the staff finds that the impacts of the proposed changes are bounded by licensee and staff analyses performed in support of License Amendments 166 and 203. Thus, the staff concludes that there is reasonable assurance that the radiological consequences of anticipated accidents at ANO-2 will continue to be well within the dose guidelines of 10 CFR Part 100 and the criteria of 10 CFR Part 50, Appendix A, General Design Criterion 19 and Section 6.4 of NUREG-0800.

Based on the above evaluation, the staff finds that the deletion of the TS filter/adsorber testing requirements for the containment purge and exhaust system is acceptable since this system is not credited in the licensee's radiological accident analysis. The staff also finds that the second proposed change, to revise the TSs for ANO-2 to allow other containment penetrations, in addition to the equipment hatch and/or personnel air locks authorized earlier, to be unisolated during the handling of irradiated fuel within the containment building, is acceptable.

#### 4.0 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.

#### 5.0 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 and changes surveillance requirements. 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 (65 FR 56950, dated September 20, 2000). 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.

#### 6.0 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: S. LaVie  
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R. Goel  
T. Alexion

Date: April 18, 2001

April 18, 2001

Mr. Craig G. Anderson  
Vice President, Operations ANO  
Entergy Operations, Inc.  
1448 S. R. 333  
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 2 - ISSUANCE OF AMENDMENT RE:  
CONTAINMENT PURGE AND PENETRATION TECHNICAL SPECIFICATIONS  
(TAC NO. MA9741)

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Sincerely,  
/RA/

Thomas W. Alexion, Project Manager, Section 1  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures:

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cc w/encls: See next page

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