

Mr. C. Randy Hutchinson
 Vice President, Operations ANO
 Entergy Operations, Inc.
 1448 S. R. 333
 Russellville, AR 72801

October 6, 1998

SUBJECT: ISSUANCE OF EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 70.24
 FOR ARKANSAS NUCLEAR ONE, UNITS 1 AND 2 (ANO-1, ANO-2)
 (TAC NOS. MA1278 AND MA1279)

Dear Mr. Hutchinson:

By letter dated October 31, 1997, Entergy Operations, Inc., requested an exemption from the requirements of 10 CFR 70.24 concerning criticality monitors for ANO-1 and ANO-2.

Based upon the information provided, there is reasonable assurance that fuel assemblies will remain subcritical during handling and storage; furthermore, you maintain radiation monitors in accordance with General Design Criterion (GDC) 63. The low probability of a criticality together with your adherence to GDC 63 constitute good cause for granting an exemption from 10 CFR 70.24.

The U.S. Nuclear Regulatory Commission, pursuant to 10 CFR 70.14, has issued the enclosed exemption for ANO-1 and ANO-2. A copy of the exemption is being forwarded to the Office of Federal Register for publication.

Sincerely,
ORIGINAL SIGNED BY:
 William Reckley, Project Manager
 Project Directorate IV-1
 Division of Reactor Projects III/IV
 Office of Nuclear Reactor Regulation

Docket Nos. 50-313 and 50-368

Enclosure: Exemption

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

October 6, 1998

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Vice President, Operations ANO
Entergy Operations, Inc.
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Sincerely,

A handwritten signature in black ink that reads "William Reckley".

William Reckley, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-313 and 50-368

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cc w/encl: See next page

Mr. C. Randy Hutchinson
Entergy Operations, Inc.

Arkansas Nuclear One, Units 1 & 2

cc:

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& Chief Operating Officer
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Pope County Courthouse
Russellville, AR 72801

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
ENERGY OPERATIONS, INC.)	Docket Nos. 50-313
)	and 50-368
)	
(Arkansas Nuclear One, Units 1 and 2))	
)	

EXEMPTION

I.

Entergy Operations, Inc., (the licensee) is the holder of Facility Operating License Nos. DPR-51 and NPF-6, which authorize operation of Arkansas Nuclear One, Units 1 and 2. The licenses provide, among other things, that the licensee is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

The facility consists of two pressurized-water reactors at the licensee's site located in Pope County, Arkansas.

II.

Section 70.24 of Title 10 of the CODE OF FEDERAL REGULATIONS, "Criticality Accident Requirements," requires that each licensee authorized to possess special nuclear material (SNM) shall maintain a criticality accident monitoring system in each area where such material is handled, used, or stored. Subsections (a)(1) and (a)(2) of 10 CFR 70.24 specify detection and sensitivity requirements that these monitors must meet. Subsection (a)(1) also specifies that all areas subject to criticality accident monitoring must be covered by two

detectors. Subsection (a)(3) of 10 CFR 70.24 requires licensees to maintain emergency procedures for each area in which this licensed SNM is handled, used, or stored and provides that (1) the procedures ensure that all personnel withdraw to an area of safety upon the sounding of a criticality accident monitor alarm, (2) the procedures must include drills to familiarize personnel with the evacuation plan, and (3) the procedures designate responsible individuals for determining the cause of the alarm and placement of radiation survey instruments in accessible locations for use in such an emergency. Subsection (b)(1) of 10 CFR 70.24 requires licensees to have a means to identify quickly personnel who have received a dose of 10 rads or more. Subsection (b)(2) of 10 CFR 70.24 requires licensees to maintain personnel decontamination facilities, to maintain arrangements for a physician and other medical personnel qualified to handle radiation emergencies, and to maintain arrangements for the transportation of contaminated individuals to treatment facilities outside the site boundary. Paragraph (c) of 10 CFR 70.24 exempts Part 50 licensees from the requirements of paragraph (b) of 10 CFR 70.24 for SNM used or to be used in the reactor. Paragraph (d) of 10 CFR 70.24 states that any licensee who believes that there is good cause why he should be granted an exemption from all or part of 10 CFR 70.24 may apply to the Commission for such an exemption and shall specify the reasons for the relief requested.

III.

The SNM that could be assembled into a critical mass at ANO-1 and ANO-2 is in the form of nuclear fuel; the quantity of SNM other than fuel that is stored on site in any given location is small enough to preclude achieving a critical mass. The Commission's technical staff has evaluated the possibility of an inadvertent criticality of the nuclear fuel at ANO-1 and ANO-2, and has determined that it is extremely unlikely for such an accident to occur if the

licensee meets the following seven criteria:

1. Only one new assembly is allowed out of a shipping cask or storage rack at one time.
2. The k-effective does not exceed 0.95, at a 95% probability, 95% confidence level in the event that the fresh fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water.
3. If optimum moderation occurs at low moderator density, then the k-effective does not exceed 0.98, at a 95% probability, 95% confidence level in the event that the fresh fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with a moderator at the density corresponding to optimum moderation.
4. The k-effective does not exceed 0.95, at a 95% probability, 95% confidence level in the event that the spent fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water.
5. The quantity of forms of special nuclear material, other than nuclear fuel, that are stored on site in any given area is less than the quantity necessary for a critical mass.
6. Radiation monitors, as required by General Design Criterion 63, are provided in fuel storage and handling areas to detect excessive radiation levels and to initiate appropriate safety actions.
7. The maximum nominal U-235 enrichment is limited to 5.0 weight percent.

By letter dated October 31, 1997, the licensee requested an exemption from 10 CFR 70.24. In this request the licensee addressed the seven criteria given above. The Commission's technical staff has reviewed the licensee's submittals and has determined that the applicable criteria are satisfied for ANO-1 and ANO-2. Therefore, the staff has determined that it is extremely unlikely for an inadvertent criticality to occur in SNM handling or storage areas at ANO-1 and ANO-2.

The purpose of the criticality monitors required by 10 CFR 70.24 is to ensure that if a criticality were to occur during the handling of SNM, personnel would be alerted to that fact and would take appropriate action. The staff has determined that it is extremely unlikely that such an accident could occur; furthermore, the licensee has radiation monitors, as required by General Design Criterion 63, in fuel storage and handling areas. These monitors will alert personnel to excessive radiation levels and allow them to initiate appropriate safety actions. The low probability of an inadvertent criticality, together with the licensee's adherence to General Design Criterion 63, constitute good cause for granting an exemption from the requirements of 10 CFR 70.24.

IV.

The Commission has determined that, pursuant to 10 CFR 70.14, this exemption is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. Therefore, the Commission hereby grants Entergy Operations, Inc., an exemption from the requirements of 10 CFR 70.24 for ANO-1 and ANO-2.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the environment (63 FR 51380).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Roy P. Zimmerman, Acting Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland, this 6th day of October 1998.