

March 25, 1998

Mr. O. J. Zeringue
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: ISSUANCE OF EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 70.24 -
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 - (TAC NOS. MA0685 AND
MA0686)

Dear Mr. Zeringue:

By letter dated December 5, 1997, the Tennessee Valley Authority requested an exemption from the requirements of 10 CFR 70.24 concerning criticality monitors at the Sequoyah Nuclear Plant.

Based upon the information provided, there is reasonable assurance that irradiated and unirradiated fuel will remain subcritical; 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 Sequoyah Units 1 and 2. A copy of the exemption is being forwarded to the Office of Federal Register for publication.

Sincerely,

/s/

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure: Exemption to 10 CFR 70.24(a)

cc w/encls: See next page

Distribution:

Docket Files PUBLIC GHill (4) MBoyle THarris (TLH3 SE)
SQN r/f ACRS LPlisco, RII MTschiltz, OEDO

DOCUMENT NAME: G:\SQN\0685.exe

To receive a copy of this document, indicate in the box:
"C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure
"N" = No copy

OFFICE	PDII-3/PM	PDII-3/LA	PDII-3/C	DRPE/D	ADPR	OGC	NRR/D
NAME	RHernan	BClayton	FHebdon	JZwolinski	BBoger	AP	SCollins
DATE	2/3/98	2/3/98	2/12/98	2/17/98	2/19/98	2/23/98	3/16/98

OFFICIAL RECORD COPY

9803310415 980325
PDR ADDOCK 05000327
PDR

REC FILE OFFICIAL COPY

DFC/11



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 25, 1998

Mr. O. J. Zeringue
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: ISSUANCE OF EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 70.24 -
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 - (TAC NOS. MA0685 AND
MA0686)

Dear Mr. Zeringue:

By letter dated December 5, 1997, the Tennessee Valley Authority requested an exemption from the requirements of 10 CFR 70.24 concerning criticality monitors at the Sequoyah Nuclear Plant.

Based upon the information provided, there is reasonable assurance that irradiated and unirradiated fuel will remain subcritical; 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 Sequoyah Units 1 and 2. A copy of the exemption is being forwarded to the Office of Federal Register for publication.

Sincerely,

A handwritten signature in black ink, appearing to read "Frederick J. Hebdon".

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure: Exemption to 10 CFR 70.24(a)

cc w/encls: See next page

Mr. O. J. Zeringue
Tennessee Valley Authority

SEQUOYAH NUCLEAR PLANT

cc:
Senior Vice President
Nuclear Operations
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Pedro Salas, Manager
Licensing and Industry Affairs Sequoyah
Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37379

Mr. Jack A. Bailey
Vice President
Engineering & Technical Services
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. J. T. Herron, Plant Manager
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37379

Mr. Masoud Bajestani
Site Vice President
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37379

Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
61 Forsyth Street, SW.
Suite 23T85
Atlanta, GA 30303-3415

General Counsel
Tennessee Valley Authority
ET 10H
400 West Summit Hill Drive
Knoxville, TN 37902

Mr. Melvin C. Shannon
Senior Resident Inspector
Sequoyah Nuclear Plant
U.S. Nuclear Regulatory Commission
2600 Igou Ferry Road
Soddy Daisy, TN 37379

Mr. Raul R. Baron, General Manager
Nuclear Assurance
Tennessee Valley Authority
4J Blue Ridge
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Michael H. Mobley Director
Division of Radiological Health
3rd Floor, L and C Annex
401 Church Street
Nashville, TN 37243-1532

Mr. Mark J. Burzynski, Manager
Nuclear Licensing
Tennessee Valley Authority
4J Blue Ridge
1101 Market Street
Chattanooga, TN 37402-2801

County Executive
Hamilton County Courthouse
Chattanooga, TN 37402-2801

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
TENNESSEE VALLEY AUTHORITY) Docket Nos. 50-327 and 50-328
)
(Sequoyah Nuclear Plant)
Units 1 and 2))

EXEMPTION

I.

The Tennessee Valley Authority (TVA or the licensee) is the holder of Facility Operating License Nos. DPR-77 and DPR-79, which authorize operation of the Sequoyah Nuclear Plant (SQN), Units 1 and 2, respectively. 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 Hamilton County, Tennessee.

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 SQN is in the form of nuclear fuel; the quantity of SNM other than fuel that is stored on site 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 SQN, 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 fuel 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 December 5, 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 SQN meets the criteria for prevention of inadvertent criticality; therefore, the staff has determined that it is extremely unlikely for an inadvertent criticality to occur in SNM handling or storage areas at SQN.

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, constitutes good cause for granting an exemption to the requirements of 10 CFR 70.24.

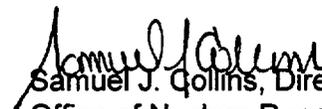
IV.

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 the Tennessee Valley Authority an exemption from the requirements of 10 CFR 70.24.

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 14481).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,
this 25th day of March 1998

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, constitutes good cause for granting an exemption to 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 the Tennessee Valley Authority an exemption from the requirements of 10 CFR 70.24.

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 14481).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Samuel J. Collins

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,
this 25th day of March 1998

Distribution:

Docket Files PUBLIC GHill (4) MBoyle THarris (TLH3 SE)
SQN r/f ACRS LPlisco,RII MTschiltz, OEDO

DOCUMENT NAME: G:\SQN\0685.exe

To receive a copy of this document, indicate in the box:

"C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	PDII-3/PM	<input checked="" type="checkbox"/>	PDII-3/LA	<input checked="" type="checkbox"/>	PDII-3	<input checked="" type="checkbox"/>	DRPED	<input checked="" type="checkbox"/>	ADPR	<input type="checkbox"/>	OGS/H	<input checked="" type="checkbox"/>	NRR/D	<input checked="" type="checkbox"/>
NAME	RHernan	<input checked="" type="checkbox"/>	BClayton	<input checked="" type="checkbox"/>	FHebdon	<input checked="" type="checkbox"/>	JZwolinski	<input checked="" type="checkbox"/>	BBoger	<input checked="" type="checkbox"/>			SCollins	<input checked="" type="checkbox"/>
DATE	2/3/98		2/3/98		2/4/98		2/11/98		2/19/98		2/23/98		3/16/98	

OFFICIAL RECORD COPY