

November 7, 1997

Mr. John K. Wood
Vice President - Nuclear, Davis-Besse
Centerior Service Company
c/o Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: ISSUANCE OF EXEMPTION FROM THE REQUIREMENTS OF 10 CFR 70.24
REGARDING CRITICALITY ACCIDENT REQUIREMENTS - DAVIS-BESSE NUCLEAR
POWER STATION, UNIT 1 (TAC NO. M97924)

Dear Mr. Wood:

By letter dated January 30, 1997, as supplemented May 28 and October 3, 1997,
you requested an exemption from the requirements of 10 CFR 70.24 concerning
criticality monitors.

On the basis of 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 63.
The low probability of a criticality, together with your adherence to General
Design Criterion 63, constitutes 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 the Davis-Besse Nuclear Power Station, Unit 1. A
copy of the exemption is being sent to the Office of the Federal Register for
publication.

Sincerely,

Original signed by:
Allen G. Hansen, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-346
Enclosure: Exemption
cc w/encl: See next page

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GMarcus OGC DMatthews GHill (2)
ACRS GTracy GGrant, RIII EAdensam (EGA1)
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OFFICE	PDI-3:PM	E	TECH ED		PDI-3:LA	E	PDI-3:D
NAME	AHansen		BCalure *		CBoyle		GMarcus
DATE	10/17/97		10/17/97		10/24/97		10/17/97
OFFICE	OGC		DRPW: (A)D		NRR:ADR #6115A		NRR:D
NAME			EAdensam		RZimmerman		SCollins
DATE	10/21/97		10/5/97		10/ /97		10/7/97

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2025 RELEASE UNDER E.O. 14176

November 7, 1997

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DATE	10/17/97		10/17/97		10/29/97		10/17/97
OFFICE	OGC		DRPW:(A)D		NRR:ADP		NRR:D
NAME			EAdensam		RZimmerman		SCollins
DATE	10/21/97		10/5/97		10/7/97		10/7/97

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

November 7, 1997

Mr. John K. Wood
Vice President - Nuclear, Davis-Besse
Centerior Service Company
c/o Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

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REGARDING CRITICALITY ACCIDENT REQUIREMENTS - DAVIS-BESSE NUCLEAR
POWER STATION, UNIT 1 (TAC NO. M97924)

Dear Mr. Wood:

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The U.S. Nuclear Regulatory Commission, pursuant to 10 CFR 70.14, has issued the enclosed exemption for the Davis-Besse Nuclear Power Station, Unit 1. A copy of the exemption is being sent to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in black ink, appearing to read "Allen G. Hansen".

Allen G. Hansen, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure: Exemption

cc w/encl: See next page

John K. Wood
Toledo Edison Company

cc:

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Davis-Besse Nuclear Power Station
Unit No. 1

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Attorney General
Department of Attorney
30 East Broad Street
Columbus, OH 43216

President, Board of County
Commissioner of Ottawa County
Port Clinton, OH 43252

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
TOLEDO EDISON COMPANY)	Docket No. 50-346
)	
CENTERIOR SERVICE COMPANY)	
)	
THE CLEVELAND ELECTRIC ILLUMINATING)	
COMPANY)	
)	
(Davis-Besse Nuclear Power Station,)	
Unit 1))	

EXEMPTION

I.

Toledo Edison Company, Centerior Service Company, and The Cleveland Electric Illuminating Company (the licensees) are the holders of Facility Operating License No. NPF-3, which authorizes operation of the Davis-Besse Nuclear Power Station (DBNPS), Unit 1 (the facility). The license provides, among other things, that the facility is subject to all the rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility is a pressurized-water reactor located at the licensees' site in Ottawa County, Ohio.

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 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 special nuclear material 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 provide the means for identifying quickly any 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 special nuclear material used or to be used in the reactor. Subsection (d) of 10 CFR 70.24 states that any licensee that believes that there is good cause why it 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 special nuclear material that could be assembled into a critical mass at DBNPS is in the form of nuclear fuel. The quantity of special nuclear material other than fuel that is stored onsite 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 DBNPS and has determined that it is extremely unlikely that such an accident will occur if the licensees meet the following seven criteria:

1. Only one new 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, 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 special nuclear material, other than nuclear fuel, stored onsite 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; and
7. The maximum nominal U-235 enrichment is limited to 5.0 weight percent.

By letter dated January 30, 1997, as supplemented May 28 and October 3, 1997, the licensees requested an exemption from 10 CFR 70.24. In this request, the licensees addressed the seven criteria given above. The Commission's technical staff has reviewed the licensees' submittals and has determined that DBNPS meets the criteria for prevention of inadvertent criticality. Therefore, the staff has determined that it is extremely unlikely an inadvertent criticality will occur in the handling of special nuclear materials or in their storage areas at DBNPS.

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 special nuclear material, 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 licensees have 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 licensees' adherence to General Design Criterion 63, constitutes good cause for granting an exemption to the requirements of 10 CFR 70.24.

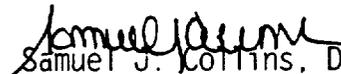
IV.

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 licensees an exemption from the requirements of 10 CFR 70.24 for DBNPS.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not result in any significant adverse environmental impact (62 FR 59908).

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 7th day of November 1997

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NAME	AHansen <i>ACA</i>		BCalure *		CBoyle <i>CB</i>		DVP for GHM *	
DATE	11/6/97		10/17/97		11/6/97		10/17/97	
OFFICE	OGC	E	DRPW:(A)D		NRR:ADP		NRR:D	
NAME	APH *		EAdensam *		RZimmerman		SCollins	
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