

January 30, 1998

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 PART 50, APPENDIX R, SECTION III.O, REGARDING OIL COLLECTION SYSTEMS FOR REACTOR COOLANT PUMPS - DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 (TAC NO. MA0161)

Dear Mr. Wood:

By letter dated November 18, 1997, as supplemented by facsimile dated December 9, 1997, you requested an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.O, regarding oil collection systems for reactor coolant pumps.

The Commission has issued the enclosed exemption for the Davis-Besse Nuclear Power Station, Unit 1, from certain requirements of the subject regulation. This exemption allows you to use reactor coolant pump lubricating oil fill lines without a collection system. This exemption is contingent on the use, for each use of the fill lines, of the compensatory measures that are itemized in your letter of request.

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
Enclosures: 1. Exemption
2. Safety Evaluation
cc w/encls: See next page

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January 30, 1998

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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 PART 50,
APPENDIX R, SECTION III.0, REGARDING OIL COLLECTION SYSTEMS FOR
REACTOR COOLANT PUMPS - DAVIS-BESSE NUCLEAR POWER STATION,
UNIT 1 (TAC NO. MA0161)

Dear Mr. Wood:

By letter dated November 18, 1997, as supplemented by facsimile dated
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The Commission has issued the enclosed exemption for the Davis-Besse Nuclear
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This exemption allows you to use reactor coolant pump lubricating oil fill
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 30, 1998

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 PART 50,
APPENDIX R, SECTION III.0, REGARDING OIL COLLECTION SYSTEMS FOR
REACTOR COOLANT PUMPS - DAVIS-BESSE NUCLEAR POWER STATION,
UNIT 1 (TAC NO. MA0161)

Dear Mr. Wood:

By letter dated November 18, 1997, as supplemented by facsimile dated December 9, 1997, you requested an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.0, regarding oil collection systems for reactor coolant pumps.

The Commission has issued the enclosed exemption for the Davis-Besse Nuclear Power Station, Unit 1, from certain requirements of the subject regulation. This exemption allows you to use reactor coolant pump lubricating oil fill lines without a collection system. This exemption is contingent on the use, for each use of the fill lines, of the compensatory measures that are itemized in your letter of request.

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 "A.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

Enclosures: 1. Exemption
2. Safety Evaluation

cc w/encls: See next page

John K. Wood
Toledo Edison Company

Davis-Besse Nuclear Power Station, Unit 1

cc:

Mary E. O'Reilly
Centerior Energy Corporation
300 Madison Avenue
Toledo, OH 43652

Robert E. Owen, Chief
Bureau of Radiological Health
Service
Ohio Department of Health
P.O. Box 118
Columbus, OH 43266-0118

James L. Freels
Manager - Regulatory Affairs
Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State - Route 2
Oak Harbor, OH 43449-9760

James R. Williams, Chief of Staff
Ohio Emergency Management Agency
2855 West Dublin Granville Road
Columbus, OH 43235-2206

Gerald Charnoff, Esq.
Shaw, Pittman, Potts
and Trowbridge
2300 N Street, NW.
Washington, DC 20037

Donna Owens, Director
Ohio Department of Commerce
Division of Industrial Compliance
Bureau of Operations & Maintenance
6606 Tussing Road
P.O. Box 4009
Reynoldsburg, OH 43068-9009

Regional Administrator
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60523-4351

Ohio Environmental Protection Agency
DERR--Compliance Unit
ATTN: Zack A. Clayton
P.O. Box 1049
Columbus, OH 43266-0149

Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
1700 Rockville Pike, Suite 525
Rockville, MD 20852

State of Ohio
Public Utilities Commission
180 East Broad Street
Columbus, OH 43266-0573

Resident Inspector
U.S. Nuclear Regulatory Commission
5503 North State Route 2
Oak Harbor, OH 43449

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

James H. Lash, Plant Manager
Toledo Edison Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

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

Roy P. Lessy, Jr.
Akin, Gump, Srauss, Hauer & Feld, LLP
1333 New Hampshire Ave., NW., Ste. 400
Washington, DC 20036

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
TOLEDO EDISON COMPANY)	
CENTERIOR SERVICE COMPANY)	Docket No. 50-346
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, Unit 1 (the facility). The license provides, among other things, that the facility is subject to all 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.

By letter dated November 18, 1997, as supplemented by facsimile dated December 9, 1997, the licensees requested an exemption from certain requirements in Title 10 of the Code of Federal Regulations, Part 50, Appendix R, Section III.0, for Davis-Besse.

III.

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security, and (2) when special circumstances are present. Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule...."

10 CFR Part 50, Appendix R, Section III.0, requires that the reactor coolant pump (RCP) shall be equipped with an oil collection system if the containment is not inerted during normal operation. The oil collection system shall be so designed, engineered and installed that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will withstand the Safe Shutdown Earthquake. The underlying purpose of 10 CFR Part 50, Appendix R, Section III.0, is to ensure that leaking oil will not lead to a fire that could damage safe shutdown systems during normal or design basis accident conditions.

On the basis of the enclosed Safety Evaluation, the NRC staff concluded that the design of the oil filling system and the level of protection provided by the licensees through the use of certain compensatory measures during oil

fill operations provides reasonable assurance that a lube oil fire will not occur. The compensatory measures, as itemized in the licensees' November 18, 1997, exemption request, are:

- (1) The licensees will take the following compensatory actions each time oil is added:
 - (a) Oil will be added only when a low oil level computer alarm is received on an RCP motor.
 - (b) Only a predetermined amount of oil necessary to clear the alarm (approximately three pints based on experience) will be initially added to the reservoir through the remote fill line. A maximum total volume of four pints may be added in an attempt to clear the alarm.
 - (c) The oil fill pot will be verified empty before the technician leaves the immediate area. Any spillage resulting from adding oil to the remote oil fill pot will be cleaned up.
 - (d) Personnel responsible for adding the oil will be instructed to report (to the control room) any evidence of smoke during the oil addition process. If smoke is seen, the fire brigade will be immediately dispatched to the area.
- (2) In addition, a visual inspection will be conducted following refueling outages to confirm the integrity of the remote fill line system.

The staff also concluded that a worst-case postulated fire, from not having a lube oil collection system for the RCP lube oil fill lines, would be of limited magnitude and extent. In addition, the staff concluded that such a fire would not cause significant damage in the containment building and would not prevent operators from achieving and maintaining safe shutdown conditions. Accordingly, in light of the foregoing, the staff concluded that application of this collection system requirement is not necessary to achieve the underlying purpose of the rule.

IV.

Contingent upon the use of the compensatory measures that are itemized in the licensees' November 18, 1997, exemption request, the NRC staff has concluded that the licensees' proposed use of the remote oil addition system without a collection system is authorized by law, will not present an undue risk to public health and safety and is consistent with the common defense and security. The NRC staff has also determined that there are special circumstances present, as specified in 10 CFR 50.12(a)(2)(ii), in that application of 10 CFR Part 50, Appendix R, Section III.0, is not necessary in order to achieve the underlying purpose of this regulation.

Accordingly, the Commission hereby grants an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.0, to the extent that the RCP lube oil fill lines are required to be protected with a collection system. The granting of this exemption is conditioned upon the licensees' use of the compensatory measures set forth in the licensees' November 18, 1997 exemption request.

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 (63 FR 4678).

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 30th day of January 1998.

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 (63 FR 4678).

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO EXEMPTION FROM
SECTION III.0 OF APPENDIX R TO 10 CFR PART 50
FACILITY OPERATING LICENSE NO. NPF-3
TOLEDO EDISON COMPANY
CENTERIOR SERVICE COMPANY
AND
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1
DOCKET NO. 50-346

1.0 INTRODUCTION

Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," to Title 10 of the Code of Federal Regulations (10 CFR) Part 50, establishes fire protection features required to satisfy General Design Criterion 3, "Fire Protection," of Appendix A to 10 CFR Part 50 with respect to certain generic issues for nuclear power plants licensed to operate prior to January 1, 1979. By letter dated November 18, 1997, as supplemented by facsimile dated December 9, 1997, the Toledo Edison Company, Centerior Service Company, and The Cleveland Electric Illuminating Company, the licensees for the Davis-Besse Nuclear Power Station (DBNPS), Unit 1, requested an exemption from certain technical requirements of Appendix R.

2.0 EXEMPTION REQUESTED

Section III.0 of Appendix R to 10 CFR Part 50 requires that the licensees have a collection system "capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump (RCP) lube oil systems." It also specifies that "leakage points to be protected shall include lift pump and piping, overflow lines, lube oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and lube oil reservoirs where such features exist on the reactor coolant pumps." The underlying purpose of the rule is to ensure that leaking oil will not lead to a fire that could damage safe shutdown systems during normal or design basis accident conditions.

The licensees requested an exemption from the technical requirements of Section III.0 to the extent that they require that the RCP lube oil fill lines be protected with an oil collection system.

3.0 DISCUSSION

Periodically, as a result of oil consumption during power operations, the licensees need to add oil to the RCP motor lube oil reservoirs. Prior to 1990, the licensees accomplished this by going into the containment building cavities (inside the D-rings) and adding the oil using the fill connection at the motor. In 1990, the licensees added remote oil fill lines to each of the four RCP motors so that oil could be added to the lower reservoir, if necessary, from a low-dose area during power operation. Use of the fill lines would reduce personnel dose, increase personnel industrial safety (for example, by reducing heat stress), and reduce the risk of spilling oil in the immediate area of the RCP during oil addition.

The licensees stated the following:

At the time of their design, the remote oil fill lines were considered a means to facilitate maintenance and were not viewed as part of the RCP oil system. Therefore, they were not designed to meet the requirement that any potential leakage would be collected as specified by 10 CFR 50, Appendix R, Section III.0. In early 1997, the DBNPS became aware that another licensee had submitted an exemption request regarding the lack of an enclosure on remote oil fill lines. On February 19, 1997, a Potential Condition Adverse to Quality Report (PCAQR) was initiated by the DBNPS staff to track resolution of this issue. This condition was later reported to the NRC as a condition outside the design basis of the plant (Licensee Event Report 97-004-00 dated March 3, 1997). The remote oil fill lines have since been disabled to prevent their use.

The Davis-Besse remote oil fill system is a non-pressurized, gravity-feed design. Each fill line has a stainless steel (SS) fill pot located outside of the D-ring, and ½-inch SS tubing and SS flexible hose from the fill pot to the RCP motor lower oil reservoir fill connection. The fill line system is designed to be leaktight, with each line sloped to prevent oil from being trapped in the line. Therefore, a significant quantity of oil is only present in the lines during use. Each fill line terminates inside of the existing oil collection enclosure for the lower reservoir above normal oil level. Since the oil reservoirs are vented to the atmosphere, a significant amount of oil can not back up into the fill lines.

Any leakage from the fill system within a D-ring would contact the top of the RCP insulation, the reactor coolant system (RCS) cold leg insulation, or the containment floor. The containment floor is graded so that any significant oil leakage would be funneled to the floor drains below each RCP. The insulation that would be contacted is metal reflective with a normal surface temperature about 200°F lower than the flash point of the oil. Therefore, this insulation would not normally be an ignition source. In addition, this insulation is configured so that oil would be diverted away from hot sources, and not retained (as would be expected with fibrous insulation). There are no other credible ignition sources during normal operation.

Any leakage outside of D-ring #1 would migrate directly to a floor drain that empties into the containment normal sump. There is no safe shutdown equipment in the immediate vicinity of these locations. Any leakage outside of D-ring #2 would pass through grating and migrate to a different floor drain, which also empties into the containment normal sump. Safe shutdown equipment in these areas is either adequately separated or is protected by a radiant energy shield. There is fire detection equipment on both elevations of concern outside of D-ring #2.

Additional fire detection is provided by two heat detectors over each RCP motor. These detectors alarm individually in the control room. Fire suppression relies on manual firefighting action. Equipment, including portable and wheeled (with hose) fire extinguishers, is available. A 2½-inch hose connection that can be used for firefighting is also available on the service water system in containment.

In order to minimize the potential for an oil fire due to a leak from the fill system that would not be captured by the existing oil collection system, the licensees will take the following compensatory actions each time oil is added:

Oil will be added only when a low oil level computer alarm is received on an RCP motor.

Only a predetermined amount of oil necessary to clear the alarm (approximately three pints based on experience) will be initially added to the reservoir through the remote fill line. A maximum total volume of four pints may be added in an attempt to clear the alarm.

The oil fill pot will be verified empty before the technician leaves the immediate area. Any spillage resulting from adding oil to the remote oil fill pot will be cleaned up.

Personnel responsible for adding the oil will be instructed to report (to the control room) any evidence of smoke during the oil addition process. If smoke is seen, the fire brigade will be immediately dispatched to the area.

In addition, a visual inspection will be conducted following refueling outages to confirm the integrity of the remote fill line system.

4.0 EVALUATION

The principal safety concern with the installation of remote fill lines is that damage to the tubing and/or flexible hose could result in an oil leak into the containment during the addition of oil. The leaking oil could ignite, and the resulting fire could affect the ability to achieve and maintain post-fire safe shutdown conditions.

The Davis-Besse Appendix R safe shutdown analysis assumed an all-consuming fire within one D-ring and determined that adequate separation exists between redundant circuits to achieve safe shutdown.

Because redundant components are adequately separated, a leak from one fill line poses no significant threat to the safe shutdown capability. Oil from a leak would migrate either directly or through a grate to the containment floor and then to the floor drains. In the event a fire were to occur, only one-half gallon of oil would be present due to the licensees' compensatory measures.

The compensatory measures that will be taken during oil filling, the lack of oil fill system pressurization, the limited fire size from one-half gallon of oil, the separation between, and the barriers protecting, redundant trains of safe shutdown equipment, and the anticipated flow paths of spilled oil provide reasonable assurance that significant damage would not occur in the containment building, particularly to safe shutdown equipment, from a worst-case postulated fire.

Fire detection and manual fire suppression equipment is available in the vicinity of the lube oil fill lines. In the event of a fire, it is expected that a detector would alarm and personnel in the immediate area would notify the control room. The fire brigade would then respond to extinguish the fire in its incipient stages. This further assures that a worst-case postulated fire would not damage safe shutdown equipment.

5.0 CONCLUSION

The staff has determined that the design of the oil filling system and the level of protection provided during oil fill operations provide reasonable assurance that a lube oil fire will not occur. This is contingent on the application of the compensatory measures itemized in the licensees' November 18, 1997, exemption request.

The staff has also determined that, in the event of a worst-case postulated fire due to the absence of a lube oil collection system for the remote lube oil fill lines, the fire would be of limited magnitude and extent. In addition, such a fire would not cause significant damage in the containment building and would not prevent the operators from achieving and maintaining safe shutdown conditions.

The staff has concluded that special circumstances are present in that an oil collection system for the RCP lube oil fill lines is not necessary to achieve the underlying purpose of the rule, and that an exemption as described herein is authorized by law, will not present an undue risk to public health and safety, and is consistent with the common defense and security. Therefore, the licensees' request for exemption should be granted.

Principal Contributors: A. Hansen
P. Qualls

Date: January 30, 1998

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 (63 FR 4678).

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 30th day of January 1998.

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