

October 28, 1997

Mr. Thomas C. Bordine  
Licensing Manager  
Palisades Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

SUBJECT: PALISADES PLANT - ISSUANCE OF EXEMPTION FROM CERTAIN  
REQUIREMENTS OF 10 CFR 70.24 (TAC NO. M99259)

Dear Mr. Bordine:

By letter dated July 2, 1997, you requested an exemption for Palisades from certain requirements of 10 CFR 70.24 concerning criticality monitors.

Based upon the information provided, there is reasonable assurance that irradiated and unirradiated fuel will remain subcritical; furthermore, Consumers Energy maintains radiation monitors in accordance with General Design Criterion (GDC) 63. The low probability of a criticality together with 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 Palisades. A copy of the exemption is being forwarded to the Office of Federal Register for publication.

Sincerely,

ORIGINAL SIGNED BY

Robert G. Schaaf, Project Manager  
Project Directorate III-1  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Exemption

cc w/encl: See next page

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Mr. Thomas C. Bordine  
Consumers Energy Company

Palisades Plant

cc:

Mr. Thomas J. Palmisano  
Site Vice President  
Palisades Plant  
27780 Blue Star Memorial Highway  
Covert, Michigan 49043

U.S. Nuclear Regulatory Commission  
Resident Inspector's Office  
Palisades Plant  
27782 Blue Star Memorial Highway  
Covert, Michigan 49043

Mr. Robert A. Fenech, Sr Vice Pres  
Nuclear, Fossil, and Hydro Operations  
Consumers Energy Company  
212 West Michigan Avenue  
Jackson, Michigan 49201

Drinking Water and Radiological  
Protection Division  
Michigan Department of  
Environmental Quality  
3423 N. Martin Luther King Jr Blvd  
P. O. Box 30630 CPH Mailroom  
Lansing, Michigan 48909-8130

M. I. Miller, Esquire  
Sidley & Austin  
54th Floor  
One First National Plaza  
Chicago, Illinois 60603

Gerald Charnoff, Esquire  
Shaw, Pittman, Potts and Trowbridge  
2300 N Street, N. W.  
Washington DC 20037

Mr. Thomas A. McNish  
Vice President & Secretary  
Consumers Energy Company  
212 West Michigan Avenue  
Jackson, Michigan 49201

Michigan Department of Attorney  
General  
Special Litigation Division  
630 Law Building  
P.O. Box 30212  
Lansing, Michigan 48909

Judd L. Bacon, Esquire  
Consumers Energy Company  
212 West Michigan Avenue  
Jackson, Michigan 49201

Regional Administrator, Region III  
U.S. Nuclear Regulatory Commission  
801 Warrenville Road  
Lisle, Illinois 60532-4351

Jerry Sarno  
Township Supervisor  
Covert Township  
36197 M-140 Highway  
Covert, Michigan 49043

Office of the Governor  
Room 1 - Capitol Building  
Lansing, Michigan 48913

DATED: October 28, 1997

EXEMPTION TO FACILITY OPERATING LICENSE NO. DPR-20 PALISADES

Docket File

PUBLIC

PDIII-1 Reading

E. Adensam (EGA1)

J. Hannon

C. Jamerson

R. Schaaf

OGC

G. Hill (2)

M. Boyle

G. Tracy

ACRS

B. Burgess, RIII

G. Wunder

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
Consumers Energy Company ) Docket No. 50-255  
 )  
(Palisades Plant) )

EXEMPTION

I.

Consumers Energy Company (the licensee) is the holder of Facility Operating License No. DPR-20 which authorizes operation of the Palisades Plant. The Palisades facility is a pressurized-water reactor located at the licensee's site in Van Buren County, Michigan. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

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. 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 Palisades 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 Palisades 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 uranium-235 (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 is 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 July 2, 1997, the licensee requested an exemption from 10 CFR 70.24(a). The Commission's technical staff has reviewed the licensee's submittal and has determined that Palisades 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 Palisades.

The purpose of the criticality monitors required by 10 CFR 70.24(a) 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(a).

#### 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 Consumers Energy an exemption from the requirements of 10 CFR 70.24(a).

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the environment (62 FR 55433).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 28th day of October 1997.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by  
Samuel J. Collins

Samuel J. Collins, Director  
Office of Nuclear Reactor Regulation

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