

October 31, 2000

Mr. Nathan L. Haskell, Director  
Licensing and Performance Assessment  
Palisades Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

SUBJECT: PALISADES PLANT - ENVIRONMENTAL ASSESSMENT AND FINDING OF NO  
SIGNIFICANT IMPACT FOR LICENSE AMENDMENT REVISING LICENSE  
EXPIRATION DATE (TAC NO. MA8753)

Dear Mr. Haskell:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendment dated April 27, 2000. The proposed amendment would change the expiration date of the Palisades Plant Operating License from "midnight on March 14, 2007" to "midnight on March 24, 2011."

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

**/RA/**

Darl S. Hood, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Environmental Assessment

cc w/encl: See next page

October 31, 2000

Mr. Nathan L. Haskell, Director  
Licensing and Performance Assessment  
Palisades Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

SUBJECT: PALISADES PLANT - ENVIRONMENTAL ASSESSMENT AND FINDING OF NO  
SIGNIFICANT IMPACT FOR LICENSE AMENDMENT REVISING LICENSE  
EXPIRATION DATE (TAC NO. MA8753)

Dear Mr. Haskell:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendment dated April 27, 2000. The proposed amendment would change the expiration date of the Palisades Plant Operating License from "midnight on March 14, 2007" to "midnight on March 24, 2011."

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

*/RA/*

Darl S. Hood, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Environmental Assessment

cc w/encl: See next page

DISTRIBUTION

PUBLIC  
PDIII-1 Reading  
CCraig  
DHood  
RBouling

OGC  
ACRS  
CCarpenter  
AVegel, RIII

\*Previously Concurred

OFFICE	PDIII-1/PM	PDIII-1/LA	RGEB/BC*	OGC	PDIII-1/SC
NAME	DHood	RBouling	CCarpenter	STurk	CCraig
DATE	10/30/00	10/27/00	10/27/00	10/30/00	10/30/00

Accession No. ML003765187

OFFICIAL RECORD COPY

Palisades Plant

cc:

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

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

Arunas T. Udry, Esquire  
Consumers Energy Company  
212 West Michigan Avenue  
Jackson, MI 49201

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

Jerry Sarno, Supervisor  
Covert Township  
P. O. Box 35  
Covert, MI 49043

Office of the Governor  
P. O. Box 30013  
Lansing, MI 48909

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

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, MI 48909-8130

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

UNITED STATES NUCLEAR REGULATORY COMMISSION

CONSUMERS ENERGY COMPANY

DOCKET NO. 50-255

PALISADES PLANT

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment to Facility Operating License No. DPR-20, issued to Consumers Energy Company (the licensee), for operation of the Palisades Plant, located in Van Buren County, Michigan.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would change the expiration date of the Operating License from "midnight on March 14, 2007" to "midnight on March 24, 2011." Palisades is currently licensed to operate 40 years commencing with the issuance of the construction permit on March 14, 1967. At present, the Facility Operating License expires at midnight on March 14, 2007. The licensee seeks an extension of the license term to allow Palisades to operate until 40 years from the issuance of its Provisional Operating License. The Provisional Operating License for Palisades was issued on March 24, 1971. This action would extend the period of operation to the full 40 years provided by the Atomic Energy Act and the *Code of Federal Regulations*.

The proposed action is in accordance with the licensee's application for license amendment dated April 27, 2000.

The Need for the Proposed Action:

The proposed action is needed to allow the licensee to continue to operate Palisades for 40 years from the date of issuance of the Provisional Operating License. This extension of 4 years and 10 days would permit Palisades to operate for the full 40-year design-basis lifetime, consistent with the Commission's policy stated in a memorandum dated August 16, 1982, from William Dircks, Executive Director for Operations, to the Commissioners, and as evidenced by the issuance of more than 50 such extensions to other licensees.

Environmental Impacts of the Proposed Action:

The NRC has completed its evaluation of the proposed action and concludes that extending Facility Operating License No. DPR-20 for 4 years and 10 days would not create any new or unreviewed environmental impacts. This change does not involve any physical modifications to Palisades and there are no new or unreviewed environmental impacts that were not considered as part of the Final Environmental Statement (FES) related to operation of Palisades, dated June 1972, as supplemented by a final addendum (NUREG-0343), dated February 1978, related to an increase in core power level, and as supplemented by an environmental assessment (EA) dated October 22, 1990, related to conversion of the Provisional Operating License to a 40-year full-term Facility Operating License, which concluded that an FES supplement was not necessary. Evaluations for the FES, as supplemented by the final addendum and by the EA, considered a 40-year operating life. The considerations involved in the NRC staff's determination are discussed below.

Radiological Impacts of the Hypothetical Design-Basis Accidents

The offsite exposure from releases during postulated accidents was evaluated and found acceptable during the operating license stage and subsequent license amendments. This type of evaluation involves four issues: (1) type and probability of postulated accidents, (2) the radioactive material releases calculated for each accident, (3) the assumed

meteorological conditions, and (4) population size and distribution in the vicinity of Palisades. The NRC staff has concluded that neither the type and probability of postulated accidents nor the radioactive material releases calculated for each accident would change through the proposed extended operation. As discussed in Sections 2.5.5 and 2.5.6 of Palisades' Updated Final Safety Analysis Report (UFSAR), more recent meteorological data collected onsite (1983 to 1997 for short-term and 1988 to 1993 for long-term atmospheric dispersion potentials) since issuance of the Operating License have resulted in generally more favorable atmospheric dispersion estimates such that the earlier analyses of the offsite consequences of postulated radiological releases to the atmosphere remain bounding. A comparison of the 1980 population in the UFSAR with the actual 1990 census data shows a 3.5-percent decline in the permanent resident population within 10 miles of Palisades. Using 1990 census data and recent surveys to establish the possible transient population, the licensee found that the maximum probable population within the 10-mile Emergency Planning Zone has declined from that shown in the UFSAR for 1980. The 1998 estimated population for the 13 cities and townships within 10 miles of Palisades declined by 1 percent from the 1990 census. These declining trends are expected to continue such that the population for the period 2007 through 2011 should be well within the previous FES and UFSAR projections. There are no changes to the current exclusion area, low population zone, and nearest population center distance, and the licensee will continue to meet the requirements of 10 CFR 100.11(a) for the proposed license term extension. Also, there is no expected change in land usage during the license terms that would affect offsite dose calculations. Therefore, cumulative exposure to the general public due to a design-basis accident would be within the bounds of the original projections because of the lower than projected population and improved meteorological conditions for the site and surrounding area.

Accordingly, the NRC staff concludes that the proposed action will not significantly change previous conclusions regarding the potential environmental effects of offsite releases from postulated accident conditions.

#### Radiological Impacts of Annual Releases and Occupational Exposures

On an annual basis, the licensee submits an Occupational Radiation Exposure Report to the NRC. The data in these reports show that the collective occupational exposure at Palisades is in a declining trend. The 3-year annual average collective occupational exposure at Palisades has dropped from about 270 person-rem/year in 1996 to about 161 person-rem/year in 1999. Through continued implementation of As Low As Is Reasonably Achievable (ALARA) and other programs, and by continuing to apply new techniques as they are developed by the industry, the licensee expects to minimize occupational exposure for Palisades during the period of the license extension. The licensee projects that the collective occupational exposure at Palisades for the period of 2007 to 2011 will average 125 person-rem/year. Based on its review of historical radiation exposure data at Palisades, the licensee's continued implementation of ALARA, and the licensee's continued compliance with the requirements of 10 CFR Part 20, the NRC staff concludes that the occupational exposures will continue to decline, and therefore, exposures during the proposed extended period will remain below the exposures experienced during Palisades' previous years of operation.

In accordance with Palisades' Technical Specifications (TSs), the licensee has established several radiation monitoring programs, including a program that follows 10 CFR Part 50, Appendix I, guidelines to maintain radiation doses ALARA to members of the public. The Appendix I guidelines establish radioactive design/dose objectives for liquid and gaseous offsite releases, including iodine particulate radionuclides. In addition, routine releases to the environment are governed by 10 CFR Part 20, which states that such releases should be ALARA. Each year, the licensee submits an Annual Radioactive Effluent Release

and Waste Disposal Report that provides an annual assessment of the radiation dose as a result of radioactive liquid and gaseous effluents released from Palisades. These reports show that release of radioactive liquids and gases have historically been only a small percentage of the Appendix I guidelines. As a result of the continued implementation of the ALARA program, offsite exposures can be expected to remain lower than the Appendix I guidelines and FES estimates. These reports also discuss the types and quantity of solid radioactive waste (radwaste) processed during the year and shipped to a licensed offsite low-level waste disposal facility in another state. Solid radwaste typically includes dry active waste, evaporator bottom contents, spent resins and filters, and irradiated hardware. The volume of solid radwaste shipped from Palisades has historically been consistent with that projected in the FES (2100 to 10,000 cubic feet per year). The volume of radwaste generated at Palisades due to the processing of radioactive liquids (filters and resins), and due to routine maintenance on equipment, has decreased significantly since the late 1980's due, in part, to the processing of dry active waste by incineration. The licensee continues to pursue waste volume reduction technology to minimize impacts associated with radwaste management. Therefore, the NRC staff concludes that the additional solid radwaste generated and processed during the extended period of operation will continue to be consistent with the types and quantities previously projected in the FES.

In accordance with Palisades' TSs, the licensee has an established Radiological Environmental Monitoring Program by which it monitors the effect of operation of its facility upon the environment. This is accomplished by continuously measuring radiation levels and airborne radioactive material levels and periodically measuring amounts of radioactive materials in samples at various locations surrounding Palisades. Continued environmental monitoring and surveillance under the program ensure early detection of any increase in exposures over the proposed extended operation.



Accordingly, the NRC staff concludes that the radiological impact upon the public due to the proposed extended operation would not increase over that previously evaluated in the FES and the occupational exposures will be consistent with the industry average and in accordance with 10 CFR Part 20.

The NRC staff has reviewed the environmental impacts attributable to the transportation of spent fuel and waste from the Palisades site. With respect to the normal conditions of transport and possible accidents in transport, the NRC staff finds that the environmental impacts are bounded by those identified in Table S-4, "Environmental Impact of Transportation of Fuel and Waste to and from One Light Water-Cooled Nuclear Power Reactor," of 10 CFR Part 51.52 for burnup levels up to 60,000 megawatt-days per metric ton of uranium (MWd/MTU) and 5 weight percent U-235 enrichment (53 FR 6040 and 53 FR 30355). The NRC staff concludes that the environmental impact related to the transportation of fuel and waste remains low and is not significantly increased by the change in the expiration date of the Operating License.

Based upon the conservative population estimate in the FES dated November 1973 and EAs dated February 26 and June 7, 1990, low radiological exposure from plant releases during normal operation and postulated accidents, and the environmental monitoring program, the NRC staff concludes that the radiological impact on the public due to the proposed action would not be significant and the conclusions of the FES would remain valid.

#### Environmental Impact of the Uranium Fuel Cycle

Palisades is currently operating in its 15<sup>th</sup> fuel cycle. Fuel enrichments (batch average) have ranged from a minimum of 1.65 weight percent U-235 up to 4.02 weight percent U-235. Palisades is presently licensed to store fuel with enrichments up to 4.4 weight percent U-235. To date, the maximum burn-up of any single fuel assembly has been 51,500 MWd/MTU. In its generic EA dated February 29, 1988 (53 FR 6040), the NRC staff concluded that the

environmental impact of extended fuel irradiation up to 60,000 MWd/MTU and increased enrichment up to 5 weight percent are bounded by the impacts reported in Table S-4 of 10 CFR 51.52. Thus, this generic assessment is bounding for the Palisades Plant.

The total projected number of fuel cycles remaining before the current Facility Operating License expiration date (March 14, 2007) is five. The proposed extended operation will increase the number of complete fuel cycles by about 3 to a total of 22 based on projected cycle lengths. The total number of discharged fuel assemblies, including a full core discharge at the end of the current Operating License expiration date, is projected to be 1453. The licensee projects that the total number of spent fuel assemblies, including a full core discharge at the end of the 40-year operating life, would be between 1577 and 1625. Thus, the proposed extended operation involves the generation, interim storage, and ultimate disposal of up to an additional 172 spent fuel assemblies.

To provide for the storage of additional spent fuel assemblies beyond the licensed capacity of the Palisades spent fuel pool, the licensee began using dry storage in 1993 under a general license in accordance with 10 CFR Part 72 (Docket No. 72-7). The licensee projects that the proposed extended operation will result in an additional 126 fuel assemblies in dry fuel storage. Licensed dry fuel storage has provided, and will continue to provide, sufficient extra spent fuel storage capacity to accommodate the spent fuel storage needed for 40 years of operation.

Based on the above, the NRC staff concludes that there are no significant changes in the environmental impact related to the uranium fuel cycle due to the proposed extended operation of Palisades.

### Nonradiological Impacts

The NRC relies upon the State of Michigan, Department of Environmental Quality (MDEQ), for regulation of nonradiological matters involving water quality and aquatic biota. The State of Michigan has reviewed and considered the environmental impacts of Palisades' water discharge in its issuance of the National Pollutant Discharge Elimination System (NPDES) permit and renewals. The NPDES permit contains requirements necessary to comply with State and Federal water pollution control laws, and is audited by MDEQ and the U.S. Environmental Protection Agency. On October 1, 1999, MDEQ renewed the NPDES permit for Palisades (NPDES Permit No. MI0001457) with an effective date of November 1, 1999, and an expiration date of October 1, 2003. The licensee expects the MDEQ to renew and issue NPDES permits about every 4 years until expiration of the Operating License. Because the licensee will continue to abide by the NPDES permits, there will be no significant nonradiological impact on the environment with regard to liquid discharges from Palisades as a result of extending the expiration date of the Operating License. Also, the proposed action does not involve any historic sites. Therefore, the NRC concludes that there are no significant nonradiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

### Alternatives to the Proposed Action:

As an alternative to the proposed action, the NRC staff considered denial of the proposed action (i.e., the "no action" alternative). Denial of the application would result in no significant improvement in environmental impacts, but could result in nonradiological environmental effects due to airborne effluents from nonnuclear plants that would be required to operate in order to replace the power supplied by Palisades. The environmental impacts of the proposed action and the alternative action are otherwise similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the FES, as supplemented, for Palisades.

Agencies and Persons Consulted:

In accordance with its stated policy, the NRC staff consulted with the Michigan State official regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated April 27, 2000. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the ADAMS Public Library component on the NRC Web site, <http://www.nrc.gov> (the Electronic Reading Room).

Dated at Rockville, Maryland, this 31<sup>st</sup> day of October 2000.

FOR THE NUCLEAR REGULATORY COMMISSION

**/RA/**

Darl S. Hood, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation