December 14, 2000

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

SUBJECT: PALISADES PLANT - ISSUANCE OF AMENDMENT RE: REVISION TO OPERATING LICENSE EXPIRATION DATE (TAC NO. MA8753)

Dear Mr. Haskell:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 192 to Facility Operating License No. DPR-20 for the Palisades Plant. The amendment is in response to your application dated April 27, 2000.

This amendment changes the expiration date of the Operating License to 40 years from the date of issuance of the license rather than the date of the construction permit. Specifically, the amendment changes the expiration date of the Operating License from "midnight on March 14, 2007" to "midnight on March 24, 2011."

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

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

Enclosures: 1. Amendment No. 192 to DPR-20
2. Safety Evaluation

cc w/encls: See next page

December 14, 2000

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

SUBJECT: PALISADES PLANT - ISSUANCE OF AMENDMENT RE: REVISION TO OPERATING LICENSE EXPIRATION DATE (TAC NO. MA8753)

Dear Mr. Haskell:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 192 to Facility Operating License No. DPR-20 for the Palisades Plant. The amendment is in response to your application dated April 27, 2000.

This amendment changes the expiration date of the Operating License to 40 years from the date of issuance of the license rather than the date of the construction permit. Specifically, the amendment changes the expiration date of the Operating License from "midnight on March 14, 2007" to "midnight on March 24, 2011."

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

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

Enclosures: 1. Amendment No. 192 to DPR-20
2. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

PUBLIC	OGC
PDIII-1 Reading	ACRS
CCraig	WBeckner
DHood	GHill(2)
RBouling	MJordan, RGN-III

*Previously Concurred

OFFICE	PDIII-1/PM	PDIII-1/LA	EMCB/BC*	EEIB/BC*	EMEB/BC*	SRXB/BC*	OGC*	PDIII-1/SC
NAME	DHood	RBouling	KWichman	JCalvo	EImbro	JWermiel	STurk	CCraig
DATE	12/14/00	12/14/00	12/07/00	12/07/00	12/07/00	12/06/00	12/12/00	12/14/00

ACCESSION NO. ML003777442

OFFICIAL RECORD COPY

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. Udrys, 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

CONSUMERS ENERGY COMPANY

DOCKET NO. 50-255

PALISADES PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 192
License No. DPR-20

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Consumers Energy Company (the licensee) dated April 27, 2000, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended as indicated in the attachment to this license amendment; and paragraph 2.H of Facility Operating License No. DPR-20 is hereby amended to read as follows:

   H. This license is effective as of the date of issuance and shall expire at midnight on March 24, 2011.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Claudia M. Craig, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Change to the Operating License

Date of Issuance: December 14, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 192

FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Replace the following page of Operating License No. DPR-20 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of the change.

REMOVE	INSERT
Page 4	Page 4

of the leak-tight integrity of the primary reactor containment and systems and components which penetrate the containment. These exemptions were granted and sent to CPCo* in a letter dated December 6, 1989.

These exemptions granted pursuant to 10 CFR 50.12, are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. With these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

E. Consumers Energy Company shall fully implement and maintain in effect all provisions of the Commission-approved "Palisades Plant Physical Security Plan," "Palisades Plant Suitability Training and Qualification Plan," and "Palisades Plant Safeguards Contingency Plan," and all approved amendments. Consumers Energy Company may make changes to these plans without prior Commission approval, if the changes do not decrease the safeguards effectiveness of the plans, in accordance with 10 CFR 50.54(p)(2).

F. Except as otherwise provided in the Technical Specifications or Environmental Protection Plan, the licensee shall report any violations of the requirements contained in Section 2.C of this license in the following manner: initial notification shall be made within 24 hours to the NRC Operations Center via the Emergency Notification System with written follow-up within 30 days in accordance with the procedures described in 50.73(b), (c), and (e).

G. Consumers Energy Company shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.

H. This license is effective as of the date of issuance and shall expire at midnight on March 24, 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By: Thomas E. Murley

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Attachments:
1. Appendix A - Technical Specifications
2. Appendix B - Environmental Protection Plan

Date of Issuance: February 21, 1991

* On March 11, 1997, the name "Consumers Power Company" was changed to "Consumers Energy Company."

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 192 TO FACILITY OPERATING LICENSE NO. DPR-20

CONSUMERS ENERGY COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By application dated April 27, 2000, the Consumers Energy Company (the licensee) requested an amendment to the Operating License for the Palisades Plant (Palisades or the facility). This amendment would change the expiration date of the Operating License to 40 years from the date of issuance of the license rather than the date of the construction permit. Specifically, the amendment changes the expiration date of the Operating License from "midnight on March 14, 2007" to "midnight on March 24, 2011."

The Palisades Plant is currently licensed to operate for 40 years commencing with the issuance of its construction permit on March 14, 1967. The NRC issued a Provisional Operating License on March 24, 1971. The Provisional Operating License was replaced by a full-term Facility Operating License on February 21, 1991. The extended date for termination of the Operating License would be 40 years after issuance of the Provisional Operating License. This action would extend the period of operation to the full 40 years, from the date of the Provisional Operating License, as provided by the Atomic Energy Act and the *Code of Federal Regulations* (CFR).

2.0 BACKGROUND

Section 103.c of the Atomic Energy Act of 1954 provides that a license is to be issued for a specified period not exceeding 40 years. The regulations in 10 CFR 50.51, “Continuation of license,” specify that each license will be issued for a fixed period of time not to exceed 40 years from date of issuance. Also, 10 CFR 50.56, “Conversion of construction permit to license; or amendment of license,” and 10 CFR 50.57, “Issuance of operating license,” allow the issuance of an operating license pursuant to 10 CFR 50.51 after the construction of the facility has been substantially completed in conformity with the construction permit and when other provisions specified in 10 CFR 50.57 are met. The currently licensed term for the Palisades Plant is 40 years, commencing with the issuance of the construction permit on March 14, 1967. Accounting for the time that was required for plant construction, this represents an effective operating license term of slightly less than 36 years. Consistent with Section 103.c of the Atomic Energy Act and 10 CFR 50.51, 10 CFR 50.56, and 10 CFR 50.57 of the Commission's regulations, the licensee, by its application of April 27, 2000, seeks an extension that would permit Palisades to operate for the full 40-year design-basis lifetime. The proposed extension is also consistent with the Commission 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 over 50 such extensions to other licensees.

3.0 EVALUATION

The NRC staff has evaluated the safety issues associated with issuance of the proposed license amendment that would allow an additional 4 years and 10 days of plant operation. The issues addressed consist of general aging of facility structures and equipment, additional radiation exposure to the facility operating staff, impacts on the offsite population, and nonradiological impacts. The impact of additional radiation exposure to the facility operating staff and the impact on the general population in the vicinity of the facility and the nonradiological impacts are addressed in the NRC staff's Environmental Assessment dated November 7, 2000 (65 FR 66779).

3.1 Reactor Vessel

The reactor pressure vessel and its structural internals were initially designed and licensed considering the effects of 40 years of operation, presuming a design reactor thermal power level of 2650 megawatts (MWt) with a cumulative lifetime capacity factor of 80 percent, equivalent to 32 effective full power years (EFPY). The licensee notes that, to date, Palisades has operated at a core power of no more than 2530 MWt, and has attained a cumulative gross capacity factor of about 56 percent, corresponding to about 16 EFPY. Thus, even if the facility hereafter achieved and maintained an 80 percent capacity, the vessel and internals would not reach their design lifetime before the proposed extended license expiration date of March 24, 2011, for Palisades.

Thermal and loading cycles over a 40-year lifetime were considered in the design of the Palisades reactor vessel. Section 4.2.2 of the Updated Final Safety Analysis Report (UFSAR) identifies the allowable thermal and loading cycles for the Palisades reactor vessel. The number of cyclic loads experienced by the plant is monitored by the licensee at the site. The allowable thermal and loading cycles are conservative and, based upon cycles to date, are not predicted to be exceeded before the proposed extended license expiration date of March 24, 2011, for Palisades.

By separate letter dated February 21, 2000, as suplemented April 21, July 6, and August 31, 2000, the licensee forwarded Westinghouse Report WCAP-15353, "Palisades Reactor Pressure Vessel Neutron Fluence Evaluation," and requested that the NRC staff review and approve it. In those submittals, the licensee also provided and requested approval of a new estimate for reaching the pressurized thermal shock (PTS) screening criteria in 10 CFR Part 50.61, "Fracture toughness requirements for protection against pressurized thermal shock events." The evaluations provided by the February 21, 2000, letter, as supplemented, addressed the reactor vessel neutron fluence and PTS issues for the end of license based upon the current Operating License expiration date of March 14, 2007, as well as for the proposed expiration date of March 24, 2011. By letter dated November 14, 2000, the NRC staff stated that it had completed its review of WCAP-15353 and had concluded that (1) the planned operation with an Ultra-Low Leakage core design will provide a substantial reduction in the reactor vessel fluence during the remaining fuel cycles (Cycles 16-22) of the current Operating License with its proposed extension, (2) the WCAP-15353 methodology is acceptable for predicting the reactor vessel fluence, and (3) the calculation and updates of Palisades' reactor vessel fluence are acceptable. The NRC staff also concluded in its letter of

November 14, 2000, that the properties of the Palisades reactor vessel beltline materials will comply with the requirements of 10 CFR Part 50.61 for continued operation of the facility through both the end of the facility's current Operating License (to midnight, March 14, 2007) and through the proposed period of operation (to midnight, March 24, 2011).

Periodic reactor vessel inservice inspection (ISI) and testing requirements provide further assurance that any degradation will be identified in a timely manner. A vessel materials surveillance program is maintained in accordance with 10 CFR Part 50, Appendix H, which ensures that the fracture toughness requirements of 10 CFR Part 50, Appendix G, are met. As stated in the UFSAR (Table 4-20), reactor vessel surveillance capsules are periodically removed for Charpy V-notch and tensile strength tests. By letters dated September 15, 1999, and November 14, 2000, the NRC staff noted that the licensee had provided acceptable data for the NRC staff's Reactor Vessel Integrity Database (RVID). The NRC staff also noted that, if the NRC staff should approve the proposed license extension, the licensee's associated data would be incorporated into the RVID. The pressure-temperature limits of 10 CFR Part 50, Appendix G, are addressed in Section 3.4 of Palisades' Technical Specifications (TSs) and would remain valid at the end of the proposed license life in 2011.[1]

The NRC staff concludes that there is reasonable assurance that the reactor pressure vessel will, for the proposed license term extension, be in conformance with the applicable provisions of the rules and regulations of the Commission and the Palisades Operating License.

3.2 Structures

Critical Palisades structures (the primary containment with its liner encased within a concrete shell, its internal concrete and steel structures, and the other safety-related structures such as the Auxiliary Building, Spent Fuel Pool, and Intake Structure) and supports were designed to various codes and standards applicable at the time of plant construction. The design basis, fabrication, construction, and quality assurance criteria for the plant were reviewed and found acceptable by the NRC staff in its original Safety Evaluation Report dated March 6, 1970. Industrial experience with such structures and supports confirms that a service life in excess of 40 years can be anticipated. The NRC also completed an Integrated Plant Safety Assessment Report (IPSAR) for Palisades under the Systematic Evaluation Program and published the results of that assessment in NUREG-0820 dated October 1982, as supplemented November 1983. Issues remaining from the IPSAR were reviewed and found acceptable in the safety evaluation for issuance of a full-term 40-year Operating License for Palisades in November, 1990, and by subsequent NRC letters dated December 13, 1991, and September 25, 1998. These previous assessments remain valid because the 40-year plant lifetime considered in these previous assessments is not changed by the proposed change in the license expiration date.

---

[1] As noted in the NRC staff's safety evaluation for Palisades License Amendment No. 163 dated March 2, 1995, the existing pressure and temperature curves (TS Figures 3.4.3-1 and 3.4.3-2) are based upon a neutron fluence at the vessel's clad-to-base-metal interface of 2.19×10^{19} n/cm^2. This value exceeds the corresponding end-of-license (March 24, 2011) neutron fluence projection of 2.06×10^{19} n/cm^2 based upon revised estimates in the licensee's submittal dated July 6, 2000, for the limiting circumferential weld.

The licensee has an established maintenance and inspection program by which it regularly inspects concrete surfaces and protective coatings under 10 CFR 50.65 (the Maintenance Rule) and other ISI requirements to assess the condition of structures and complete required repairs in accordance with the applicable codes. Such periodic inspection and testing provide reasonable assurance that structural integrity remains adequate throughout the operating life of the plant, including the proposed extension period.

The NRC staff concludes that there is reasonable assurance that the critical plant structures will, for the proposed license term extension, be in conformance with the applicable provisions of the rules and regulations of the Commission and the Palisades Operating License.

3.3 Mechanical Equipment

With regard to equipment lifetime, the Palisades Plant was designed, licensed, and constructed for a 40-year service life. This does not mean that some components will not wear out during the plant's lifetime. Design features were incorporated that provide for inspectability and testing of structures, systems, and components during this lifetime. Surveillance and maintenance practices were implemented in accordance with 10 CFR 50.65 (the Maintenance Rule), the requirements for inservice testing of pumps and valves in accordance with the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* as set forth in 10 CFR 50.55a, and the TSs. These activities provide reasonable assurance that degradation in any plant safety equipment will be identified and corrected to provide safe operation during the life of the plant, including the period of the proposed license term extension. To date, major component replacements that have increased the efficiency and reliability of the Palisades systems include the steam generators (1990), main condenser (1990), and low pressure turbines (1999).

3.4 Environmental Qualification of Electrical Equipment

Aging analysis has been performed for all electrical equipment that is important to safety in accordance with 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants," identifying qualified lifetimes for this equipment. These lifetimes have been incorporated into plant equipment maintenance and replacement practices to ensure that all electric equipment important to safety remains qualified and available to perform its function during and following design-basis events, regardless of the overall age of the plant. The NRC staff's safety evaluation for environmental qualification of safety-related electrical equipment for Palisades, dated January 31, 1985, documents Palisades' compliance with 10 CFR 50.49 requirements. This previous assessment by the NRC staff is not changed by the proposed license term extension.

4.0 SUMMARY OF FINDINGS

On March 6, 1970, the NRC staff published its original Safety Evaluation Report regarding the application for a Provisional Operating License for Palisades. While changes have been made to the plant design since the original plant construction was completed, each of these changes that involved an unreviewed safety question has been reviewed and approved by the NRC staff with the details being documented in the NRC staff's related safety evaluation. Further, as required by 10 CFR 50.71(e), these changes and their effect on accident analyses, if any, are routinely updated in the UFSAR. Based on this ongoing review process, the NRC staff has not

identified any concerns associated with approval of the proposed amendment to extend the expiration date of the license that are not already addressed by licensee commitments, operating procedures, and license requirements.

The NRC staff concluded in the Environmental Assessment that the annual radiological effects during the additional years of operation that would be authorized by the proposed license amendment are not more than were previously estimated in the Final Environmental Statement, and are acceptable.

The NRC staff concludes from its considerations of the design, operation, testing, and monitoring of the mechanical equipment, structures, and the reactor vessel that an extension of the Operating License for Palisades to a 40-year service life is consistent with the UFSAR, Safety Evaluation Reports, and submittals made by the licensee, and that there is reasonable assurance that the facility will be able to continue to operate safely for the additional period authorized by this amendment.

In summary, the NRC staff finds that the extension of the Operating License for Palisades to allow a 40-year service life is consistent with the Final Environmental Statement and the Safety Evaluation Report for Palisades, and that the Commission's previous findings are not changed.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 10 CFR 51.32, and 10 CFR 51.35, an environmental assessment and finding of no significant impact was published in the *Federal Register* on November 7, 2000 (65 FR 66779), for this amendment. Accordingly, based upon the environmental assessment, the Commission has determined that issuance of this amendment will not have a significant effect on the quality of the human environment.

7.0 PUBLIC PARTICIPATION

The Commission has previously issued a Notice of Consideration of Issuance of Amendment to Facility Operating License and Opportunity for a Hearing (65 FR 31352, May 17, 2000) regarding the proposed license extension. During a subsequent NRC meeting with the public in South Haven, Michigan, on July 11, 2000, members of the public noted that the Palisades reactor vessel was calculated to reach its PTS limit in early 2004, and requested that the PTS issue be satisfactorily resolved before the NRC acts upon the licensee’s application to extend the expiration date for the Palisades Operating License. The NRC staff received a similar request from Mr. D. Lochbaum of the Union of Concerned Scientists in a letter dated August 29, 2000. As discussed in Section 3.1 above, the NRC staff has previously completed its review of

the Palisades PTS issue and concluded that the properties of the Palisades reactor vessel beltline materials will comply with the requirements of 10 CFR Part 50.61 for continued operation of the facility through the proposed period of operation. Therefore, the NRC staff has complied with this request. Mr. Lochbaum's letter, which also included technical comments that the NRC staff considered during its review of the reactor vessel PTS issue, is addressed by NRC replies dated October 4 and November 20, 2000.

In late May 2000, the NRC staff received a phone call from a member of the public expressing his opinion that the NRC should not approve the proposed extension to the Palisades Operating License "until the government is prepared to receive the spent fuel at a central waste repository." The NRC staff has addressed this concern in the environmental assessment, referenced above, which notes that, in addition to the reserve capacity of its spent fuel storage pool, Palisades is also authorized under a general license in accordance with 10 CFR Part 72 (Docket No. 72-7) to utilize dry cask storage and, therefore, has sufficient extra spent fuel storage capacity to accommodate the spent fuel storage needed for 40 years of operation. The NRC staff further noted in the environmental assessment that denial of the application for license extension 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." Therefore, the NRC staff finds that an insufficient basis exists to deny the operating license extension until the central waste repository becomes available.

The Commission received no other comments or requests regarding the proposed license extension for Palisades.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: D. Hood

Date: December 14, 2000