September 28, 2000

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

SUBJECT: PALISADES PLANT - PRESSURE TEST RELIEF REQUEST NO. 7 FOR THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NO. MA8794)

Dear Mr. Haskell:

By letter dated April 24, 2000, Consumers Energy Company (CEC) submitted Pressure Test Relief Request No. 7 (PR-7) related to the third 10-Year inservice inspection (ISI) interval for the Palisades Plant. In PR-7, CEC requests relief from the hydrostatic pressure testing requirements of the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, 1989 edition, Subsection IWB-2500, Table IWB-2500-1, Category B-P, Footnote 2. Footnotes 2 states that "The pressure retaining boundary during the system hydrostatic test shall include all Class 1 components within the system boundary." CEC proposes an alternative to Footnote 2 for certain specified ASME Code Class 1 vent, drain, test, and fill piping segments that range in diameter from 3/4-inch to 2 inches. These piping segments are normally isolated from the primary coolant system (PCS) by a double boundary. Installing a test connection and performing the tests consistent with the ASME Code would result in significant dose consequences. CEC proposes that, after each refueling outage, these piping segments would be visually examined for leakage and evidence of leakage during the PCS leakage test. Pursuant to 10 CFR 50.55a(a)(3)(ii), CEC requests that the proposed alternative be accepted in lieu of the Footnote 2 requirement since compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has reviewed CEC's submittal and concludes that compliance with the ASME Code's hydrostatic testing requirements for the specified piping segments would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The proposed visual examinations will provide reasonable assurance of PCS integrity. Therefore, the proposed alternative is authorized, pursuant to 10 CFR 50.55a(a)(3)(ii), for the third 10-year ISI interval at the Palisades Plant.

The results of the NRC staff's review are provided in the enclosed safety evaluation. If you have any questions concerning this action, please call Mr. D. Hood of my staff at (301) 415-3049.

Sincerely,

/RA by Beth Wetzel for/

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

Docket No. 50-255

Enclosure: Safety Evaulation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE THIRD INSERVICE INSPECTION INTERVAL

PRESSURE TEST RELIEF REQUEST NO. PR-7

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By letter dated April 24, 2000, Consumers Energy Company (the licensee) submitted a request for relief from certain examination requirements of the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." The specific request was designated as Pressure Test Relief Request No. 7 (PR-7) and addresses Class 1 vent, drain, test, and fill piping segments between 3/4-inch and 2 inches in diameter that are isolated from the primary coolant system (PCS) when it is in its normal operating configuration. The information provided by the licensee in support of PR-7 has been evaluated pursuant to the provisions of 10 CFR 50.55a(a)(3)(ii). The licensee's request and the NRC staff's disposition are documented below.

2.0 BACKGROUND

Inservice inspection (ISI) of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Code, and applicable addenda, as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The regulation at 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if...(ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that the inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals complies with the requirements in the latest edition and addenda of Section XI of the ASME Code, which was incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the third 10-year ISI interval at the Palisades Plant is the 1989 edition.

ENCLOSURE

3.0 DISCUSSION OF RELIEF REQUEST NO. PR-7

3.1 The Components For Which Relief Is Requested:

The ASME Code Class 1 vent, drain, test, and fill piping segments for which relief is requested are listed in the following table. These piping segments are shown in Palisades Final Safety Analysis Report Figure 4-1 (Piping and Instrumentation Diagram (PID) M-201, sheets 1 and 2, for the PCS) and Figure 9-18 (PID M-202, sheets 1 and 1B, for the chemical and volume control system).

SYSTEM PRESSURE TESTING RELIEF REQUEST			
Isolation Values	Piping Description	Type of Piping	Piping and Instrumentation Diagram/Coordinates
MV-PC1068	3/4"-Primary Coolant Pump P-50B DPI-0127	Test	PID M-201-1; A-2
MV-PC1068A			
MV-PC1069A	3/4"-P-50B DPI-0127 Highside	Test	PID M-201-1; A-2
MV-PC1069B			
MV-PC164A	3/4"-Isolation for LT-0105	Test	PID M-201-2; A-6
MV-PC164B			
MV-PC165A	3/4"-Isolation for LT-0105	Test	PID M-201-2; A-6
MV-PC165B			
MV-PC1075	3/4"-P-50C DPI-0128 Highside	Test	PID M-201-1; A-7
MV-PC1075A			
MV-PC1076	3/4"-P-50C DPI-0128 Lowside	Test	PID M-201-1; A-7
MV-PC1076A			
MV-PC1032B	2"-PCS Loop 2A Cold Leg Drain	Drain	PID M-201-1; A-8
MV-PC1032C			
MV-PC1094B	2"-Loop 1 Hot Leg Drain	Drain	PID M-201-1; C-3,4
MV-PC1094C			
MV-ES3091	1"-CK-3410 Test Tap Isolation	Test	PID M-201-1; C-4
MV-ES3091A			

SYSTEM PRESSURE TESTING RELIEF REQUEST			
Isolation Values	Piping Description	Type of Piping	Piping and Instrumentation Diagram/Coordinates
MV-PC1012	3/4"-Loop 1 SX-1012	Test	PID M-201-1; C, D-4
MV-PC1012A			
MV-PC1093A	3/4"-Refueling Level Isolation	Test	PID M-201-1; C,D-3,4
MV-PC1093B			
MV-PC1022B	2"-PCS Loop 1B Cold Leg Drain	Drain	PID M-201-1; D-1
MV-PC1022C			
MV-PC1083B	3/4"-P-50D DPI-0129 Highside	Test	PID M-201-1; E,F-7
MV-PC1082B			
MV-PC1021B	2"-PCS Loop 1A Cold Leg Drain	Drain	PID M-201-1; F-1
MV-PC1021C			
MV-PC1061	3/4"-P-50A DPI-0126 Highside	Test	PID M-201-1; F-1,2
MV-PC1061A			
MV-PC1062	3/4"-Primary Coolant Pump P-50A Discharge Pump Tap	Test	PID M-201-1; F-2
MV-PC1062A			
MV-PC1082	3/4"-Primary Coolant Pump P-50D Suction Pressure Tap Lowside	Test	PID M-201-1; F-7
MV-PC1082A			
MV-PC166	Instrumentation Valve	Test	PID M-201-1; F-7
MV-PC167			
MV-PC169			
MV-PC1033A	2"-PCS Loop 2BCold Leg Drain	Drain	PID M-201-1; F-8
MV-PC1033B			
MV-PC1060B	3/4"-Reactor Vessel Head Vent	Vent	PID M-201-1; G-4
MV-PC1060C			
MV-PC1060D			

SYSTEM PRESSURE TESTING RELIEF REQUEST			
Isolation Values	Piping Description	Type of Piping	Piping and Instrumentation Diagram/Coordinates
MV-PC506	3/4"-PRV-1042B Test Tap Isolation	Test	PID M-201-2; E-6
MV-PC507			
MV-PC508	3/4"-PRV-1042B Test Tap Isolation	Test	PID M-201-2; D-6
MV-PC509			
MV-PC510	3/4"-PRV-1043B Test Tap Isolation	Test	PID M-201-2; D-7
MV-PC511			
MV-PC512	3/4"-PRV-1043B Test Tap Isolation	Test	PID M-201-2; D-7
MV-PC513			
MV-PC514	2"-MO-1042A & MO-1043A Test Tap Isolation	Test	PID M-201-2; D-6
MV-PC515			
MV-PC516	3/4"-PRV-1069 & PRV-1070 Test Tap Isolation	Test	PID M-201-2; C-7
MV-PC517			
MV-PC1044A	3/4"-Pressurizer Vent	Vent	PID M-201-2; D-7
MV-PC1044B			
MV-CVC2288	1"-Letdown Line Drain Valve	Drain	PID M-202-1; B, C-7
MV-CVC2289			
MV-CVC2290	1"-Letdown Line Drain Valve	Drain	PID M-202-1B; D-7,8
MV-CVC2291			

3.2 ASME Code Requirement:

ASME Code, Section XI, 1989 edition, Subsection IWB-2500, Table IWB-2500-1, Category B-P, Footnote 2, states that, “The pressure retaining boundary during the system hydrostatic test shall include all Class 1 components within the system boundary.”

3.3 Licensee's Requested Relief:

The licensee states that:

> This relief is requested pursuant to 10 CFR 50.55a(a)(3)(ii) since compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The relief requested is that the proposed alternative be accepted in lieu of the specified ASME Section XI-1989 Code requirement for the hydrostatic test of the ASME Code Class 1 vents, drains, test and fill piping which range in diameter from 3/4 inch to 2 inch[es].

3.4 Licensee's Proposed Alternative:

The licensee proposes the following alternative:

> The specified ASME Code Class 1 vents, drains, test and fill piping which range in diameter from 3/4 inch to 2 inch piping segments shall be visually examined following each refueling outage for leakage and evidence of leakage during the PCS leakage test. This visual examination is conducted with the PCS at normal operating temperature and pressure.

3.5 Licensee's Basis for Relief:

The licensee provided the following explanation as to why the requested relief is needed:

> Various piping segments are located in open-ended or capped tailpipes that serve as vent, drain, test or fill lines. Manual valves and flanges bound these piping segments to provide the design-required double isolation at the primary coolant system pressure boundary. These piping segments are not normally pressurized. Pressure testing of these piping segments at nominal operating pressure would require that the inboard isolation valve be opened when the primary coolant system (PCS) is at full temperature and pressure (2060 psia and 535°F). The action would deviate from the design requirement for double isolation valve protection. This work on high temperature components and the potential for spills when opening the system valves presents a significant risk of personnel contamination and injury.
>
> Pressure testing when the PCS is depressurized would require that a hydrostatic pump be connected at each segment location. However, for some segments there is no connection available and a modification for installation of a pump connection would be required. These piping segments are located in radiation areas and testing would result in significant personnel radiation exposure. A breakdown of the dose estimates for installation of test taps and performance of testing is provided below:
>
> A. Primary Coolant Pump Delta P, Discharge Pressure and Suction Pressure Instrument Lines. Location: 607 Containment.
>
> 8 items at 4 person-hours per item at 50 to 100 mR/hour.

B. Refueling Level Instrumentation Lines (LT-0105). Location: 590 Containment Air Room.

2 items at 4 person-hours per item at 1 mR/hour.

C. PCS Loop Cold Leg Drains. Location: 607 Containment

4 items at 10 person-hours per item 60 to 100mR/hour.

D. Loop 1 Hot Leg Drain. Location: 607 Containment, near A Steam Generator.

1 item at 4 person-hours per item at 150 mR/hour.

E. CK-ES3410 Test Tap Lines. Location 607 Containment, near A Hot Leg.

1 item at 4 person-hours per item at 150 mR/hour.

F. Loop 1 SX-1012 (Sample Line). Location: 590 Containment, near Clean Waste Receiver Tank T-64A.

1 item at 4 person-hours and 25 mR/hour.

G. Refueling Level Isolation. Location: Containment 616 to 649 Elevation.

1 item at 4 person-hours per item at 1 to 3 mR/hour.

H. Instrumentation Valve Line. Location: 607 Containment, near dPI-0129.

1 item at 4 person-hours and 50 to 100 mR/hour.

I. Reactor Vessel Head Vent. Location: 649 Containment, near Pressurizer shed.

1 item at 2 person-hours and 3 to 5 mR/hour.

J. PRV-1042B/PRV-1043B Test Tap Isolation. Location: Containment Pressurizer Shed.

4 items at 2 person-hours and 20 to 30 mR/hour.

K. MO-1042A/MO-1043A Test Tap Isolation. Location: Containment Pressurizer Shed.

1 item at 2 person-hours and 20 to 30 mR/hour.

L. PRV-1069/PRV-1070 Test Tap Isolation. Location: Containment 649, near Pressurizer shed.

1 item at 2 person-hours and 3 to 5 mR/hour.

M. Pressurizer Vent. Location: Containment Pressurizer shed.

1 item at 2 person-hours and 35 mR/hour.

N. Letdown Line Drain Valves. Location: Containment Letdown Walkway.

2 items at 8 person-hours per item at 15 to 35 mR/hour.

This results in a minimum of 6 REM of dose accumulation in performing these installations and tests. This data is based on estimated durations and actual survey data. These radiation exposure estimates are based on the removal of blind flanges, the installation of test flanges and the connection of a hydrostatic pump. Personnel would remain in the area to perform the test, disconnect the test equipment and reinstall the blind flange. (This evaluation does not address any risks associated with test instrument installation at reduced inventory.)

These piping segments are visually inspected each refueling outage as the PCS is returned to operation. These segments are not specifically pressurized past the first isolation valve for this inspection. With these inspections being performed approximately six times in each inspection interval, the increase in safety achieved from the required nominal operating pressure test is not commensurate with the hardship of performing such testing. In addition, testing between isolation valves is unnecessary to maintain assurance of PCS integrity, and elimination of testing does not degrade reactor safety. Therefore, it is requested that this relief request be approved pursuant to 10 CFR 50.55a(a)(3)(ii).

4.0 NRC STAFF EVALUATION

The ASME Code requires a system hydrostatic test to be performed once per interval in accordance with Subsection IWA-5000 for Class 1 components. The pressure test is to be applied to the components within the Class boundary. Vent, drain, test, and fill lines are typically designed with redundant isolation valves (or a combination of valve and flange). The first closed valve is the primary isolation, while the second closed valve provides redundant isolation. These valves are only opened and closed for system draining, venting, testing, and filling. Under normal operating conditions, these valves would normally be closed. Requiring the licensee to open the primary valve for the purpose of pressurizing the second valve would result in unnecessary radiation exposure and additional radioactive waste (i.e., the contaminated water that would be generated as a result of testing each valve within the system boundary). The licensee visually inspects these lines for leakage following each refueling outage. The frequency of performing the visual examinations on the outermost isolation valve

of the specified lines for evidence of leakage provides reasonable assurance of PCS integrity. Therefore, the NRC staff finds that requiring the licensee to open the primary isolation valve for the sole purpose of pressurizing the secondary isolation valve would result in a hardship without a compensating increase in quality and safety.

5.0 CONCLUSION

On the basis of the above NRC staff evaluation, compliance with the ASME Code's hydrostatic testing requirements for the specified piping segments would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, the NRC staff authorizes the licensee's proposed alternative, pursuant to 10 CFR 50.55a(a)(3)(ii), for the third 10-year ISI interval at the Palisades plant.

Principal Contributor: A. Keim

Date: September 28, 2000