

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

EXEMPTION

I.

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

II.

Pursuant to 10 CFR 50.12(a), the NRC may grant exemptions from the requirements of the regulations (1) which 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; and (2) where special circumstances are present.

Section III.D.1.(a) of Appendix J to 10 CFR Part 50 requires the performance of three Type A containment integrated leakage rate tests (ILRTs), at approximately equal intervals during each 10-year service period of the primary containment. The third test of each set shall be conducted when the plant is shut down for the 10-year inservice inspection of the primary containment.

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III.

By letter dated March 17, 1995, as supplemented April 26, 1995, CPCo requested temporary relief from the requirement to perform a set of three Type A tests at approximately equal intervals during each 10-year service period of the primary containment. The requested exemption would permit a one-time interval extension of the third Type A test by approximately 21 months (from the 1995 refueling outage, currently scheduled to begin in May 1995, to the 1997 refueling outage) and would permit the third Type A test of the second 10-year inservice inspection period to not correspond with the end of the current American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) inservice inspection interval.

The licensee's request cites the special circumstances of 10 CFR 50.12, paragraphs (a)(2)(ii) and (iii), as the basis for the exemption, and states that the exemption would eliminate a cost of \$1 million for the Type A test which is not necessary to achieve the underlying purpose of the rule. 10 CFR Part 50 Appendix J, states that the purpose of the Type A, B, and C tests is to assure that leakage through the primary containment shall not exceed the allowable leakage rate values as specified in the technical specifications or associated bases. CPCo points out that the existing Type B and C testing programs are not being modified by this request and will continue to effectively detect containment leakage caused by the degradation of active containment isolation components as well as containment penetrations. It has been the experience at the Palisades Plant that, with the exception of the 1978 test results, during the six Type A tests conducted from 1974 to date, any significant containment leakage paths are detected by the Type B and C testing. The Type A test results have only been confirmatory of the results

of the Type B and C test results. The testing history, structural capability of the containment, and the risk assessment establish that there is significant assurance that the extended interval between Type A tests will not adversely impact the leak-tight integrity of the containment and that performance of the Type A test is not necessary to meet the underlying purpose of Appendix J. The licensee also references the proposed revision to Appendix J which would reduce the frequency of Type A tests.

IV.

Section III.D.1.(a) of Appendix J to 10 CFR Part 50 states that a set of three Type A leakage rate tests shall be performed at approximately equal intervals during each 10-year service period.

The licensee proposes an exemption to this section which would provide a one-time interval extension for the Type A test by approximately 21 months. The Commission has determined, for the reasons discussed below, that pursuant to 10 CFR 50.12(a)(1) this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(ii) and (iii), are present justifying the exemption; namely, that application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule and would impose excessive cost.

The underlying purpose of the requirement to perform Type A containment leak rate tests at intervals during the 10-year service period is to ensure that any potential leakage pathways through the containment boundary are identified within a time span that prevents significant degradation from continuing or becoming unknown. The NRC staff has reviewed the basis and

supporting information provided by the licensee in the exemption request. The NRC staff has noted that the licensee has a good record of ensuring a leak-tight containment following the submittal of its Corrective Action Plan on June 30, 1986. The Corrective Action Plan was submitted following three consecutive Type A test failures, of which one was the 1978 test failure. However, the licensee has noted that the containment penetration local leak rate tests (LLRT, Type B and C tests) accounted for the majority of the before maintenance adjustment to the as-found ILRT (Type A) results during the as-found test failures. The penetration associated with the 1978 test failure was significantly modified in the mid-1980's to improve the LLRT test configuration to properly monitor the entire penetration boundary. In addition, the licensee aggressively replaced or repaired the valves and penetrations that accounted for the as-found test failures, with no repeat occurrences.

The NRC staff reviewed the LLRT Corrective Action Plan and granted an exemption to Appendix J for Palisades on September 17, 1987. The exemption stated that if the conditions of the Plan were met, and the next scheduled Type A test was successfully completed, then normal resumption of the Type A test frequency would be allowed. The two following Type A tests (11/88 and 2/91) passed with significant margin and the licensee has noted that the LLRT Corrective Action Plan was successful in eliminating original plant design, maintenance, and testing deficiencies. In addition, the licensee notes that the results of the Type A testing have been confirmatory of the Type B and C tests which will continue to be performed. The licensee has stated that it will perform the general containment inspection although it is required by Appendix J (Section V.A.) to be performed only in conjunction with Type A

tests. The NRC staff considers that these inspections, though limited in scope, provide an important added level of confidence in the continued integrity of the containment boundary.

The Palisades containment structure consists of a post-tensioned, reinforced concrete cylinder and dome connected to and supported by a reinforced concrete foundation slab. The containment structure is designed to ensure that leakage will not exceed 0.1% per day by weight at the peak pressure of the design basis accident. A concrete shield building surrounds the containment vessel, providing a shield building annulus between the two structures. Penetrations of the containment vessel for piping, electrical conductors, ducts, and access hatches are provided with double barriers against leakage.

The NRC staff has also made use of the information in a draft staff report, NUREG-1493, "Performance-Based Containment Leak-Test Program," which provides the technical justification for the present Appendix J rulemaking effort which also includes a 10-year test interval for Type A tests. The ILRT, or Type A test, measures overall containment leakage. However, operating experience with all types of containments used in this country demonstrates that essentially all containment leakage can be detected by LLRTs (Type B and C). According to results given in NUREG-1493, out of 180 ILRT reports covering 110 individual reactors and approximately 770 years of operating history, only 5 ILRT failures were found which local leakage rate testing could not detect. This is 3% of all failures. This study agrees well with previous NRC staff studies which show that Type B and C testing can detect a very large percentage of containment leaks. The Palisades Plant experience has also been consistent with these results.

The Nuclear Management and Resources Council (NUMARC), now the Nuclear Energy Institute (NEI), collected and provided the NRC staff with summaries of data to assist in the Appendix J rulemaking effort. NUMARC collected results of 144 ILRTs from 33 units; 23 ILRTs exceeded $1L_a$. Of these, only nine were not Type B or C leakage penalties. The NEI data also added another perspective. The NEI data show that in about one-third of the cases exceeding allowable leakage, the as-found leakage was less than $2L_a$; in one case the leakage was found to be approximately $2L_a$; in one case the as-found leakage was less than $3L_a$; one case approached $10L_a$; and in one case the leakage was found to be approximately $21L_a$. For about half of the failed ILRTs the as-found leakage was not quantified. These data show that, for those ILRTs for which the leakage was quantified, the leakage values are small in comparison to the leakage value at which the risk to the public starts to increase over the value of risk corresponding to L_a (approximately $200L_a$, as discussed in NUREG-1493). Therefore, based on these considerations, it is unlikely that an extension of one cycle for the performance of the Appendix J, Type A test at the Palisades Plant would result in significant degradation of the overall containment integrity. As a result, the application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule, and compliance would impose excess cost and undue hardship. Therefore, special circumstances exist pursuant to 10 CFR 50.12(a)(2)(ii) and (iii).

Based on the generic and plant-specific data, the NRC staff finds the basis for the licensee's proposed one-time schedular exemption to allow an extension of one cycle for the performance of the Appendix J, Type A test, provided that the general containment inspection is performed, to be acceptable, pursuant to 10 CFR 50.12(a)(1) and (2).