

Mr. E. E. Fitzpatrick, Vice President  
 Indiana Michigan Power Company  
 c/o American Electric Power Service Corporation  
 1 Riverside Plaza  
 Columbus, OH 43215

July 6, 1995

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1 - ISSUANCE OF SCHEDULAR EXEMPTION FROM THE REQUIREMENTS OF APPENDIX J TO 10 CFR PART 50 REGARDING DELAY OF NEXT REQUIRED TYPE A LEAK RATE TEST (TAC NO. M91853)

Dear Mr. Fitzpatrick:

By letter dated March 17, 1995, Indiana Michigan Power Company requested a one-time schedular exemption to delay performance of a Type A test, as required by 10 CFR Part 50, Appendix J, for a period of approximately 20 months.

The NRC staff has reviewed the information provided in support of your schedular exemption request. On the basis of the submitted information and as discussed in the enclosed exemption, the NRC staff has concluded that there is a high degree of confidence that the containment will not degrade to an unacceptable extent while this exemption is in effect.

We find that granting the exemption from the requirements of 10 CFR Part 50, Appendix J, Section III.D.1.(a), is authorized by law, will not present an undue risk to public health and safety, is consistent with the common defense and security, and meets the special circumstances described in 10 CFR 50.12(a)(2)(ii). Accordingly, your request for a schedular exemption to delay performance of the Type A test until the 1997 refueling outage is granted.

A copy of the exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by

John B. Hickman, Project Manager  
 Project Directorate III-1  
 Division of Reactor Projects - III/IV  
 Office of Nuclear Reactor Regulation

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Docket No. 50-315  
 Enclosure: Exemption  
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Mr. E. E. Fitzpatrick  
Indiana Michigan Power Company

Donald C. Cook Nuclear Plant

cc:

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

Mr. S. Brewer  
American Electric Power Service  
Corporation  
1 Riverside Plaza  
Columbus, Ohio 43215

Attorney General  
Department of Attorney General  
525 West Ottawa Street  
Lansing, Michigan 48913

Township Supervisor  
Lake Township Hall  
P.O. Box 818  
Bridgman, Michigan 49106

Al Blind, Plant Manager  
Donald C. Cook Nuclear Plant  
1 Cook Place  
Bridgman, Michigan 49106

U.S. Nuclear Regulatory Commission  
Resident Inspector's Office  
7700 Red Arrow Highway  
Stevensville, Michigan 49127

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

Mayor, City of Bridgman  
Post Office Box 366  
Bridgman, Michigan 49106

Special Assistant to the Governor  
Room 1 - State Capitol  
Lansing, Michigan 48909

Nuclear Facilities and Environmental  
Monitoring Section Office  
Division of Radiological Health  
Department of Public Health  
3423 N. Logan Street  
P. O. Box 30195  
Lansing, Michigan 48909

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
Indiana Michigan Power Company ) Docket No. 50-315  
(D.C. Cook Nuclear Plant, Unit 1) )

EXEMPTION

I.

Indiana Michigan Power Company (IMPCo, the licensee) is the holder of Facility Operating License No. DPR-58 which authorizes operation of the Donald C. Cook Unit 1 Nuclear Plant at steady-state reactor power levels not in excess of 3250 megawatts thermal. The Cook 1 facility is a pressurized water reactor located at the licensee's site in Berrien 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

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plant is shut down for the 10-year inservice inspection required by 10 CFR 50.55a.

### III.

By letter dated March 17, 1995, IMPCo 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 20 months (from the 1995 refueling outage, currently scheduled to begin in September 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, paragraph (a)(2)(ii), as the basis for the exemption. In addition, the licensee states that the exemption would eliminate a cost of \$130,000 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. IMPCo 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 D. C. Cook Plant that 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.

#### 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 20 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), 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.

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. 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.

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 Cook containment structure consists of a reinforced concrete cylindrical structure with a hemispherical dome. The interior of the containment has a welded steel liner, with a minimum thickness of 3/8 inch at the dome and wall and 1/4 inch at the bottom, which is attached to the inside face of the concrete shell to ensure a high degree of leak tightness.

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 Local Leak Rate Tests (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 Cook 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 D. C. Cook 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. Therefore, special circumstances exist pursuant to 10 CFR 50.12(a)(2)(ii).

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption as described in Section III above 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) are present justifying the exemption.

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).

Pursuant to 10 CFR 51.32, the Commission has determined that granting this exemption will not have a significant effect on the quality of the human environment (60 FR 32354).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 6th day of July 1995.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by

Robert A. Capra, Acting Director  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

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