

J to 10 CFR 50, to provide for the use of glycol instead of air or nitrogen as the testing medium for the leakage rate testing of certain containment isolation valves in the Ice Condenser Refrigeration System. The requested exemption is for penetrations M-372 and M-373. The local leakage rate test (Type C test) would be performed without draining the glycol mixture from the seats of the diaphragm valves in these penetrations.

The design of the reactor containment building at McGuire includes an ice condenser to suppress the peak accident pressure. The ice condenser is refrigerated by recirculating a 50% - 50% mixture of ethylene glycol and water through a series of air handling units located inside the containment building and chiller units located in the auxiliary building. The licensee notes that draining, testing, and refilling the system typically requires 24 to 36 hours of downtime for the ice condenser refrigeration system. This extended downtime potentially diminishes the amount of ice in the baskets. The licensee also notes that draining the glycol consumes a significant number of manhours and creates toxic waste (glycol) which has to be disposed.

As an alternative to draining approximately 200 gallons of glycol as is necessary to perform this test in accordance with Appendix J, the licensee has proposed to test three diaphragm valves (NF-228A, NF-233B, and NF-234A) without draining the glycol mixture from the valve seats. The leakage rate acceptance criterion that would be imposed on these diaphragm valves would be zero indicated leakage (not including instrument error). In other words, the display device of the measurement system must read zero. Otherwise, if the leakage rate is greater than zero, the penetration will be fully drained and the valves leak tested in accordance with Appendix J.

Historically, the staff has not accepted the use of a liquid (usually water) in place of air or nitrogen as a testing medium for Type C tests (i.e., local tests of containment isolation valves). This is because it has not been possible to develop a sufficiently conservative, yet practically useful, conversion factor for converting water leakage to an equivalent air leakage. However, for the proposed testing, no conversion factor is used; the acceptance criterion of zero leakage of glycol can be assumed to be equivalent to zero leakage of air, or, at worst, possibly a very small leakage of air. This is compared to the acceptance criterion provided by Appendix J for air tests, which is that the total of all local leakage rate tests must not exceed $0.6 L_a$, where L_a is the maximum allowable leakage rate of the containment as a whole. Thus, Appendix J does not impose leakage rate limits on individual valves, but rather on the total leakage rate for all valves and penetrations. Therefore, the staff finds that an acceptance criterion of zero leakage of glycol, applied individually to each of the three valves, is at least as conservative as the acceptance criterion of Appendix J. For this reason, the staff finds that the requested exemption is acceptable.

If a valve fails the zero leakage criterion, the licensee will proceed to fully drain the penetration and test the valves with air or nitrogen in accordance with Appendix J. This is, of course, acceptable.

IV.

Accordingly, the Commission has determined 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 rule is to require local leak rate testing at periodic intervals of certain types of containment isolation valves to determine whether there has been degradation in the leakage characteristics of these valves which might adversely affect containment integrity. The proposed alternative test method is sufficient to achieve this underlying purpose in that it provides a conservative assurance of continued leak-tight integrity of the three affected valves, NF-228A, NF-233B and NF-234A.

Accordingly, the Commission hereby grants an exemption as described in Section III above from Section III C.2(a) of Appendix J of 10 CFR 50 to the extent that Type C tests for containment penetration numbers M-372 and M-373, performed without draining the glycol-water mixture from the seats of their diaphragm valves NF-228A, NF-233B and NF-234A, and meeting a zero indicated leakage rate (not including instrument error) for these diaphragm valves, shall constitute an acceptable alternate to Type C tests using air or nitrogen as the test medium.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this Exemption will have no significant impact on the environment (March 7, 1986, 51 FR 8053).

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Steven A. Varga, Acting Deputy Director
Division of PWR Licensing-A

Dated at Bethesda, Maryland
this 31st day of March 1986.

Distribution
SEE NEXT PAGE

*SEE PREVIOUS PAGE FOR CONCURRENCES
PWR#4/DPWR-A PWR#4/DPWR-A
*DHood/mac *MDuncan
03/17/86 03/21/86

CELD
*
03/30/86

PWR#4/DPWR-A
*BJYoungblood
03/31/86

AD/DPWR-A
TMNovak
03/31/86

DISTRIBUTION:

Docket File

NRC PDR

Local PDR

PRC System

NSIC

PWR#4 Rdg

MDuncan

DHood

BJYoungblood Rdg

OELD

TNovak