7590-01

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	Docket Nos. 50-254/265
	)	
COMMONWEALTH EDISON COMPANY	)	
	)	
(Quad Cities Nuclear Power Station, Units 1 and 2)	)	

EXEMPTION

I.

The Commonwealth Edison Company (CECo/the licensee) is the holder of Facility Operating License Nos. DPR-29 and DPR-30 (the licenses) which authorize operation of the Quad Cities Nuclear Power Station, Units 1 and 2 respectively, located in Rock Island County, Illinois, at steady state reactor core power levels not in excess of 2527 megawatts thermal. These licenses provide, among other things, that they are subject to all rules, regulations and Orders of the Commission now or hereafter in effect.

II.

Section 50.54(o) of 10 CFR Part 50 requires that primary reactor containments for water cooled power reactors be subject to the requirements of Appendix J to 10 CFR Part 50. Appendix J contains the leakage test requirements, schedules, and acceptance criteria for tests of the leak-tight integrity of the primary reactor containment and systems and components which penetrate the containment. Appendix J was published on February 14,

1973 and in August 1975, each licensee was requested to review the extent to which its facility met the requirements.

On September 26, 1975, Commonwealth Edison Company submitted its evaluation of the Zion Station Unit Nos. 1 and 2, Dresden Station Unit Nos. 1, 2, and 3, and Quad Cities Station Unit Nos. 1 and 2 in which it assessed compliance with the rule and also requested an exemption from certain requirements of the rule. This Exemption addresses only the Quad Cities Nuclear Power Station, Units 1 and 2. The CECo submittal for the Quad Cities Nuclear Power Station, Units 1 and 2 was supplemented by letters dated September 9, 1976, April 5, 1977, and March 21, 1978. In these submittals, CECo requested that certain test sequences and methodology, components, and penetrations be exempted from Appendix J requirements. The Franklin Research Center, as a consultant to NRR, has reviewed the licensee's submittals and prepared a Technical Evaluation Report (TER) of its findings. The NRC staff has reviewed this TER and, in its Safety Evaluation, the staff has made the following findings. Item 4 below required additional staff evaluation prior to determining the acceptability of the licensee's request.

The exemption requests found to be acceptable are as follows:

1. Section III.A.1.(a) of Appendix J requires, in part, that the Type A test be performed as close as practical to the "as is" condition. When excessive leakage paths are identified during the Type A test, the test is to be terminated and leakage through such paths is to be measured by

local leakage rate procedures. After repair or adjustment, a subsequent Type A test is performed.

CECo requested an exemption from this requirement in order to perform local valve leakage rate tests (Type-C tests) prior to the integrated primary containment leakage rate test (Type A test) and to back-correct the results of the Type A test with the results of the Type C tests. CECo submitted its methodology and justification that performance of the test sequence in this manner would yield conservative results.

We have reviewed CECo's submittals and have concluded that the licensee's methodology will yield conservative results under certain conditions. Therefore, the licensee's request for exemption from the required sequence of conducting Type A and C tests is acceptable, provided that:

a. When performing Type C tests, the conservative assumption that all measured leakage is in a direction out of the containment is applied, unless the test is performed by pressurizing between the isolation valves; and,

b. When performing Type C tests by pressurizing between the isolation valves, the conservative assumption that the two valves leak equally is applied, where the isolation valves are shut by normal operation without preliminary exercising or adjustment.

2. Section II.H.1 of Appendix J requires, in part, Type C testing of containment isolation valves which provide a direct connection between

inside and outside atmospheres of the primary reactor containment under normal operation. CECo requested an exemption from this requirement in order to exclude certain instrument line manual isolation valves from the Type C test requirements and submitted certain design information as justification.

We have reviewed the licensee's submittals and have determined that the instrument line manual isolation valves are not instrument valves which provide a direct connection between the inside and outside atmos pheres of the primary reactor containment under normal operation. In addition, the instrument lines were installed in accordance with Regulatory Guide 1.11, Instrument Lines Penetrating Primary Reactor Containment.

Since these valves remain open in both normal and accident conditions, the licensee's request for exemption from Type C test requirements for the instrument line manual isolation valves is acceptable, provided that the affected instrument lines are not isolated from the containment atmosphere during the performance of a Type A test.

3. Section III.C.2 of Appendix J requires, in part, that Type C testing be performed at the peak calculated accident pressure (Pa). CECo requested an exemption from this requirement for the Main Steam Isolation Valves (MSIVs) to permit testing at 25 psig rather than at Pa (62 psig) and submitted certain design information as justification.

The MSIVs are leak tested by pressurizing between the valves. The MSIVs are angled in the main steam lines in the direction of flow in order to afford better sealing upon closure. Consideration of this feature was included at the design stage of the facility when the original test pressure of 25 psig was established. A test pressure of Pa acting under the inboard disc is sufficient to lift the disc off its seats, and results in excessive leakage into the reactor vessel.

We have reviewed the licensee's submittals and have concluded that testing of the MSIVs at a reduced pressure of 25 psig will result in a conservative determination of the leakage rate through the MSIVs and, therefore, the proposed exemption is acceptable.

4. Section III.D.2 of Appendix J requires, in part, that Type B tests be performed on containment airlocks at six-month intervals at a test pressure of not less than Pa. CECo requested an exemption from the frequency requirement in order to permit testing on a schedule consistent with the plant operating cycle (i.e., each refueling outage). CECo also requested an exemption to conduct the tests at a reduced pressure.

Our contractor's evaluation of the licensee's submittals concluded that the licensee's program related to test frequency and pressure should conform to the requirements of Section III.D.2 of Appendix J. However, subsequent discussions with the licensee regarding test methodology and additional evaluation by the NRC staff of airlock degradation causal factors and operating history have resulted in a reevaluation of our position. The staff agrees with the licensee that without this exemption

from the Appendix J requirements, the plant would have to be shutdown and the equipment hatch opened in order to install a strongback on the inner airlock door to perform the test, and subsequent door and hatch openings to remove it. This would result in an outage of several days for the licensee, the cost of replacement power to the public, and could subject operating personnel to additional radiation exposure. In addition, the additional openings of the equipment hatch and airlock provide additional opportunities for inadvertent seal degradation.

As a result, the staff has reevaluated the six-month test requirement and has developed a revised position which is believed to meet the objectives of Appendix J requirements for containment airlock door tests. This revised position still requires the containment airlock to be tested at six-month intervals at a pressure of Pa in accordance with Appendix J, except that this test interval may be extended up to the next refueling outage (up to a maximum interval between Pa tests of 24 months) if there have been no airlock openings since the last successful test at Pa and a Pa test is performed following the next airlock opening. The intent of the Appendix J requirement is to assure that the airlock door seal integrity is maintained and no degradation has occurred as a result of opening of the airlock doors between testing intervals at Pa. Since there is no adequate basis to conclude that airlock seal integrity is maintained if the airlock doors have been opened between extended testing intervals at Pa, we believe that a reduced pressure test or testing between seals every six months should be performed to assure that the airlock door seal integrity

is maintained between the extended testing intervals at Pa. We believe this position satisfies the objectives of the requirements. Therefore, the exemption from the airlock testing frequency requirement of Appendix J requested by the licensee is granted on condition that the licensee complies with the staff's revised position on airlock testing and should be granted. Upon implementation of this Exemption, the licensee should propose modifications to the Technical Specifications as appropriate.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, an exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. Therefore, the Commission hereby approves the following exemption requests:

1. Exemption is granted from the requirements of Section III.A.1(a) of Appendix J pertaining to the sequence for conducting Type A and Type C C tests provided that:
   a. When performing Type C tests, the conservative assumption that all measured leakage is in a direction out of the containment is applied unless the test is performed by pressurizing between the isolation valves; and,
   b. When performing Type C tests by pressurizing between the isolation valves, the conservative assumption that the two

valves leak equally (and therefore one half of the measured leakage is in a direction out of the containment) is applied, where the isolation valves are shut by normal operation without preliminary exercising or adjustment.

2. Exemption is granted from the requirements of Section II.H.1 of Appendix J pertaining to the Type C testing of instrument lines provided that the affected instrument lines are not isolated from the containment atmosphere during the performance of a Type A test.

3. Exemption is granted from the requirements of Section III.C.2 of Appendix J pertaining to the Type C testing of the main steamline isolation valves at a test pressure of Pa. Testing at a reduced pressure of 25 psig is acceptable due to the unique design of the valves.

4. Exemption is granted from the requirements of Section III.D.2 of Appendix J pertaining to the test frequency for conducting Type B tests at six-month intervals at a test pressure of not less than Pa. The test interval may be extended to the next refueling outage, but in no case shall exceed 2[illegible] months from the last test at Pa, provided that there have been no airlock openings since the last successful test at Pa and a Pa test is performed following the next airlock opening. A reduced pressure test or testing between seals every six months shall be performed to assure that airlock door seal integrity is maintained between extended testing intervals at Pa.

The NRC staff has determined that the granting of these exemptions will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4), an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

FOR THE NUCLEAR REGULATORY COMMISSION

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 12th day of June, 1984.