UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	Docket No. 50-29
YANKEE ATOMIC ELECTRIC COMPANY	)	
(Yankee Nuclear Power Station)	)	
	)	

EXEMPTION

I.

The Yankee Atomic Electric Company (YAEC, the licensee) is the holder of Facility Operating License No. DPR-3 (the license) which authorizes operation of the Yankee Nuclear Power Station (Yankee) located in Franklin County, Massachusetts, at steady state reactor core power levels not in excess of 600 megawatts thermal (rated power). This license provides, among other things, that it is 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 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 June 4, 1975, YAEC submitted its evaluation of Yankee in which it assessed compliance with the rule and also requested an exemption from certain requirements of the rule. The YAEC submittal was supplemented by letters dated September 2, 1975, September 30, 1975, October 10, 1975, February 7, 1977, March 9, 1977, and April 27, 1981. In these submittals, YAEC requested that certain test sequences and methodology, components, and penetrations be exempted from Appendix J reguirements. 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 Report dated June 25, 1982, the staff has concurred in the TER's bases and findings.

The exemption requests found to be acceptable are as follows:

1. Section II.G.1 of Appendix J requires, in part, that Type B tests be performed on containment penetrations whose design incorporates resilient seals, gaskets, or sealant compounds, and piping penetrations fitted with expansion bellows. YAEC requested an exemption from the Type B testing for the equipment and emergency hatches, the containment leg expansion joints, and the fuel chute expansion joint. These penetrations do not incorporate in their design provisions for local testing. Experience by the licensee has shown that these penetrations are not subject to short term deteriorations and leakage has never been detected through any of them.

Furthermore, these joints and hatches are passive leakage barriers that are not exposed to severe operational transients. Any increase in leakage can be determined from the continuous leakage monitor or during the Type A test.

We have reviewed the licensee's submittals and have determined that an exemption from Type B testing requirements for the equipment and emergency hatches, containment leg expansion joints, and the fuel chute expansion joint are justifiable because testing experience has shown that periodic Type A testing provides sufficient leakage monitoring of these penetrations.

2. Section III.D.2 of Appendix J requires, in part, that Type B tests of containment electrical penetrations be performed during reactor shutdowns for refueling, or at other convenient intervals, but in no case at intervals greater than 2 years. YAEC requested an extension of the time interval specified in paragraph III.D.2 with regard to the containment electrical penetrations. YAEC proposed to locally leak test at least 25% of the electrical penetrations annually subject to the following conditions:

1) During testing of the electrical penetrations, any penetration which fails the leak test will be included in the subsequent annual tests until two acceptable consecutive leak tests have been demonstrated.

2) These penetrations will be in addition to the 25% selected for testing during the subsequent annual test periods.

The Yankee design has 163 electrical penetrations. The design of these penetrations did not include provisions for ease of testing. Although the penetrations are testable, each penetration requires two tests. One test is for the double o-ring seals, and another is needed for the cylinder holding the electrical conductors. These tests require that considerable time be allocated for each electrical penetration, and extreme care must be taken when testing the penetrations and exposed terminal boards, which are electrically energized.

The penetrations are passive leakage barriers that are not exposed to severe operational transients. The containment continous leakage monitoring system will provide an additional means of determining an increase in leakage in the interval between Type A tests. In view of the leakage monitoring system at the Yankee plant, testing each penetration at the frequency required by Section III.D.2 of Appendix J (every 2 years) would serve only to identify the need for corrective action at a particular penetration. Furthermore, when the penetrations themselves are continuously monitored, Section III.D.2 permits extension of the penetration testing interval to 3 years.

YAEC's proposed plan would test each penetration once every 4 years. Annual testing of those penetrations which fail tests (until two successive satisfactory tests are performed) also helps to determine the non-leakage reliability of the penetrations. In view of the design of the Yankee Rowe plant, this testing is considered to be a reasonable approach to achieving the objective of Appendix J.

YAEC's proposal to test 25% of the electrical penetrations at the Yankee plant annually with provisions for retest of failures is technically acceptable considering the design of the penetrations, the type of penetration, and the existence of the continuous containment leakage monitoring system and an exception from the Type B testing requirements of Appendix J is acceptable.

3. Section III.C.3 requires that Type C tests shall be performed during each reactor shutdown for refueling, but in no case at intervals greater than 2 years. YAEC requested a temporary exemption, until the 1982 refueling outage, regarding the testing of the steam supply line to the containment heaters, the service water supply to the containment coolers, and the component cooling water supply to containment. The licensee stated that he intended to procure and install single automatic isolation valves, and any necessary manual block valves and test taps, to permit Type C testing in these three lines. He stated that the installation shall be completed during the 1982 refueling outage, which is scheduled to start on September 11, 1982. We have reviewed the licensee's justification and have determined

that this temporary exemption is acceptable.

The following exemption request is not acceptable:

Section III.C.3 requires that Type C tests shall be performed during each reactor shutdown for refueling, but in no case at intervals greater than 2 years. YAEC requested an exemption from these testing provisions for valves VD-V-752 and VD-V-754, the Neutron Shield Tank Leakage Monitor Lines. YAEC stated that these are 1/2 inch sample lines which are valved closed and are capped, but provided no justification or basis for exempting these lines from Type C testing. This request is therefore unacceptable.

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 II.G.1 of Appendix J pertaining to the performance of Type B tests for the equipment and emergency hatches, the containment leg expansion joints, and the fuel chute expansion joint.

2. Exemption is granted from the requirements of Section III.D.2 of Appendix J pertaining to the test frequency of containment electrical penetrations provided that

   a. At least 25% of the penetrations shall be tested annually; and

   b. During testing of the electrical penetrations, any penetration

which fails the leak test will be included in the subsequent annual tests until two acceptable consecutive leak tests have been demonstrated; and,

c. these penetrations (listed in section 2.b above) will be in addition to the 25% selected for testing during the subsequent annual test periods.

3. Temporary exemption is granted from the requirements of Section III.C.3 of Appendix J pertaining to the test frequency of the steam supply line to the containment heaters, the service water supply line to the containment coolers, and the component cooling water supply line to containment until the end of the refueling outage which is scheduled to start in September, 1982.

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

for Robert Purple
Darrell G. Eisenhut, Director
Division of Licensing

Dated at Bethesda, MD.
this 2nd day of September, 1982.