October 12, 2000

Mr. Craig G. Anderson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 2 - ONE-TIME EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50, APPENDIX J, OPTION B (TAC MA9350)

Dear Mr. Anderson:

The Commission has issued the enclosed exemption from certain requirements of 10 CFR Part 50, Appendix J, “Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors,” Option B, “Performance-Based Requirements,” for the Arkansas Nuclear One, Unit 2. This exemption is related to your application dated June 29, 2000, to allow for the integrated leakage rate test to be performed at the same pressure that is used for the structural integrity test.

A copy of the Exemption and the supporting safety evaluation by the staff are enclosed. The Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures: 1. Exemption
2. Safety Evaluation

cc w/encls: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO EXEMPTION FROM 10 CFR PART 50, APPENDIX J, OPTION B

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated June 29, 2000, Entergy Operations, Inc., the licensee for the Arkansas Nuclear One, Unit 2 (ANO-2) applied for an exemption to 10 CFR Part 50, Appendix J, Option B. The purpose of this exemption is to permit the licensee to perform an integrated leak rate test (ILRT) of the ANO-2 containment at the same test pressure as that used for a structural integrity test (SIT) of the containment. The licensee claims that performing both tests at the same test pressure saves approximately 30 hours of plant outage time, which is a substantial savings.

2.0 BACKGROUND

The licensee intends to replace both ANO-2 steam generators (SGs). In order to accommodate the new SGs and continue to meet all applicable regulations and regulatory guidance, the licensee has increased the containment design pressure from 54 psig to 59 psig. The licensee plans to conduct an SIT at 1.15 times the new containment design pressure, or 68 psig.

These changes also require that an ILRT, or Type A test, be performed in accordance with 10 CFR Part 50, Appendix J, Option B. The ILRT must be performed at P_a, the calculated peak pressure due to a loss-of-coolant accident (LOCA). The new value of P_a, based on the new SGs, is 58 psig. Furthermore, ANO-2 Technical Specification (TS) 6.1.5 requires performance of the ILRT under the conditions specified in 10 CFR Part 50, Appendix J, Option B, Section III.A and Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Rate Program," September 1995. RG 1.163 refers to the guidance of Nuclear Energy Institute (NEI) 94-01, Revision 0, "Industry Guideline for Implementing Performance Based Option of 10 CFR 50, Appendix J," and American National Standards Institute (ANSI)/American Nuclear Society (ANS) 56.8-1994, "Containment System Leakage Testing Requirements." Option B of Appendix J of 10 CFR Part 50, requires that the pressure at which the ILRT is performed be "representative" of the design basis LOCA containment peak pressure. ANSI/ANS 56.8-1994, Section 3.2.11, states that the ILRT test pressure shall not be less than 0.96 P_a, nor exceed the containment design pressure. ANSI/ANS 56.8-1994, Section 5.4, states that the SIT pressure shall be reduced to less than 85 percent of P_a for at least 24 hours prior to repressurization to P_a for the Type A test.

In order for the licensee to comply with these requirements, the licensee would have to first perform the SIT, then reduce the containment internal pressure to 85 percent of P_a for 24 hours, and then perform the ILRT. Instead, the licensee has applied for an exemption to 10 CFR Part 50, Appendix J, Option B which would permit the ILRT to be performed at the same pressure as the SIT, which is not representative of the peak LOCA pressure. The licensee claims that this saves significant outage time and is conservative.

ANO-2 TS 6.15 states that "a program will be established to implement the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions." Since the peak test pressure is being modified by an exemption, and the TSs recognize modifications to the containment leak rate testing program by exemption, no change is required to the ANO-2 TSs.

The regulation at 10 CFR 50.12, "Specific exemptions," Section 50.12(a)(2) states that the Commission will not consider granting an exemption unless special circumstances are present. The licensee's June 29, 2000, letter states that two special circumstances, as specified in 10 CFR 50.12(a)(2)(ii) and 50.12(a)(2)(iii), are present.

The regulation at 10 CFR 50.12(a)(2)(ii) states that application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

The regulation at 10 CFR 50.12(a)(2)(iii) states that compliance with the rule would result in "undue hardship" or other costs that are significantly in excess of those contemplated when the regulation was adopted, or are significantly in excess of those incurred by others similarly situated.

The staff has reviewed the licensee's exemption request. Our evaluation is provided below.

3.0 EVALUATION

3.1 Assurance of Safe Operation

The proposed exemption would allow the licensee to perform the ILRT at a pressure 17 percent higher than P_a while maintaining the allowable leakage rate limit (L_a) at the same value (0.1 percent of containment air weight per day). This is conservative if the higher pressure is applied in the same direction as would be the case during a LOCA; that is, if the higher pressure does not further seal the containment. The ANO-2 containment structure is lined with welded steel having a minimum thickness of ¼-inch. The licensee states that liner strains generally increase in the positive direction as containment internal pressure increases. Therefore, any potential leakage path through the liner will tend to enlarge as the pressure is increased. Therefore, the SIT pressure is conservative with respect to P_a.

Appendix J, Option B requires a general inspection of the accessible interior and exterior structures and components for structural deterioration which could affect either the containment structural integrity or leak-tightness. The licensee states that "no evidence of damage or degradation has ever been found" as a result of these inspections.

Appendix J, Option B also requires local leak rate testing of pressure-containing or leakage-limiting boundaries (Type B tests) and isolation valves (Type C tests). The licensee's June 29, 2000, letter describes how Type B and Type C tests will be modified due to the increase of P_a. The existing Type B and Type C testing programs will be modified due to the increase of P_a to 58 psig. Those penetrations whose sealing capabilities will not be improved by a higher test pressure will be tested between 58 psig and 63 psig. Those penetrations whose sealing capability might improve with a higher pressure (e.g., check valves) will be limited to a range of 58 psig to 59 psig. This is in agreement with the guidance of ANSI/ANS 56.8-1994 which states that the test pressure should not be less than P_a, and for those isolation valves for which increased pressure results in increased sealing, the test pressure should not be greater than $1.1P_a$ (63 psig). Since the licensee's proposed Type B and Type C testing complies with the guidance of ANSI/ANS 56.8-1994, as required by the ANO-2 TSs, this is acceptable.

The licensee also states that local leakage rate tests will be completed on all available penetrations prior to the ILRT. However, the penetrations will not be vented and drained for the ILRT as specified in ANSI/ANS 56.8-1994, Section 3.2.5. The licensee wants to protect sensitive equipment external to the containment building from damage due to the higher test pressure. To account for the higher pressure permitted by this exemption, the licensee will add the minimum pathway leakage through these penetrations (as determined in separate tests) to the 95 percent upper confidence limit to obtain the measured value of L_a. This is permitted by ANSI/ANS 56.8-1994, Sections 3.2.9 and 3.2.15, and is acceptable to the staff.

Since the use of the higher SIT pressure is conservative, and the licensee has followed the applicable regulations and guidance, the staff finds the use of the SIT pressure for the ILRT to be technically acceptable.

3.2 Compliance with 10 CFR 50.12

The ANO-2 licensee is applying for an exemption from 10 CFR Part 50, Appendix J, Option B to permit performing an ILRT at a pressure above that representing a design basis LOCA. Specifically, although P_a is 58 psig, the licensee proposes to perform the ILRT at 68 psig. Section 3.1 of this safety evaluation concludes that this is technically acceptable since the higher pressure is conservative and the licensee is following the applicable regulations and guidance.

The licensee states that the requested exemption meets two special circumstances of 10 CFR 50.12.

The regulation at 10 CFR 50.12(a)(2)(ii) is a special circumstance for the condition that application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

Since the licensee will still perform an ILRT, and it will be performed at a pressure which is conservative with respect to that required by 10 CFR Part 50, Appendix J, Option B, the staff finds that the underlying purpose of the rule, to ensure an essentially leak tight containment, is satisfied and this special circumstance applies.

The regulation at 10 CFR 50.12(a)(2)(iii) is a special circumstance for the condition that compliance with the rule would result in "undue hardship" or other costs that are significantly in

excess of those contemplated when the regulation was adopted, or are significantly in excess of those incurred by others similarly situated.

The staff disagrees that this special circumstance applies. Since ANSI/ANS 56.8-1994, Section 5.4, recognizes the situation in which an ILRT is performed after an SIT, this situation cannot be considered as an undue hardship or a burden significantly in excess of that which might be incurred by other licensees in similar circumstances.

Since the licensee has met the special circumstances of 10 CFR 50.12(a)(2)(ii), the staff finds the licensee's request for an exemption acceptable.

4.0 CONCLUSION

The licensee requested an exemption to perform the ILRT at a pressure above, but not representative of, the calculated peak containment LOCA pressure. The staff finds this acceptable since it is conservative, is in compliance with the applicable regulations and guidance, and satisfies the special circumstances of 10 CFR 50.12(a)(2)(ii).

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Date: October 12, 2000

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