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**Timothy G. Mitchell Vice President, Operations** Arkansas Nuclear One

2CAN080802

August 21, 2008

U.S. Nuclear Regulatory Commission Attn: Document Control Desk Washington, DC 20555

SUBJECT: License Amendment Request Technical Specification Change to Extend Integrated Leak Rate Test Interval One-Time Arkansas Nuclear One, Unit 2 Docket No. 50-368 License No. NPF-6

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc (Entergy) hereby requests the following amendment for Arkansas Nuclear One, Unit 2 (ANO-2). The proposed change would allow for a one time extension to the ten-year frequency of ANO-2's next containment leakage rate test (e.g., Integrated Leak Rate Test [ILRT] or Type A test) that is required by Technical Specification (TS) 6.5.16. The proposed change would permit the existing ILRT frequency to be extended from ten-years to approximately 11.3 years.

The proposed revision would avoid the necessity of performing a Type A test fourteen months prior to the 10<sup>th</sup> year anniversary of the completion of the last Type A test (November 30, 2000). If granted, this revision would extend the period from 120 months (10 years) to no longer than approximately 135 months between the successive tests. In terms of refueling outages, this extension would move the performance of the next ILRT from 2R20 to 2R21.

The last ANO-2 ILRT was completed on November 30, 2000. The next ILRT is required, by TS 6.5.16, to be performed no later than November 30, 2010, approximately fourteen months after the conclusion of the twentieth refueling outage for ANO-2 (2R20). The proposed change would encompass the currently scheduled completion of ANO-2 's twenty-first refueling outage (2R21), approximately four months beyond the present frequency. This request is for 15 months which bounds the time to reach 2R21. This additional time is requested to allow flexibility in the schedule to address any potential extended down powers or forced outages or unforeseen issues that may arise during that outage without having to revise this request.

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The proposed change has been evaluated in accordance with 10 CFR 50.91 (a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that the change involves no significant hazards consideration. The bases for these determinations are included in the attached submittal.

The proposed change does not include any new commitments.

Entergy requests approval of the proposed amendment by August 1, 2009. Once approved, the amendment shall be implemented within 60 days.

If you have any questions or require additional information, please contact Dale James at 479-858-4619.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 21, 2008.

Sincerely,

1.

TGM/rwc

- Attachment:
- Analysis of Proposed Technical Specification Change
- 2. Proposed Technical Specification Changes
- cc: Mr. Elmo E. Collins Regional Administrator U. S. Nuclear Regulatory Commission Region IV 612 Lamar Blvd., Suite 400 Arlington, TX 76011-4125

NRC Senior Resident Inspector Arkansas Nuclear One P. O. Box 310 London, AR 72847

U. S. Nuclear Regulatory Commission Attn: Mr. Alan B. Wang MS O-7D1 Washington, DC 20555-0001

Mr. Bernard R. Bevill Director Division of Radiation Control and Emergency Management Arkansas Department of Health 4815 West Markham Street Little Rock, AR 72205 Attachment 1

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Analysis of Proposed Technical Specification Change

# 1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed change is to allow for a single extension to the 10-year frequency of the ANO-2 next containment leak rate test (e.g., Integrated Leak Rate Test [ILRT] or Type A test). With the approval of the proposed change, the existing ILRT frequency would be revised from 120 months (10 years) to approximately 135 months.

The proposed revision would avoid the necessity of performing a Type A test fourteen months prior to the 10<sup>th</sup> year anniversary of the completion of the last Type A test (November 30, 2000). If granted, this revision would extend the period from 120 months (10 years) to approximately 135 months between the successive tests. In terms of refueling outages, this extension would move the performance of the next ILRT from 2R20 to 2R21.

Extending the ILRT due date from November 30, 2010, to no later than the plant restart from 2R21 is a cost beneficial licensing change. It will reduce concerns associated with incorporating the ILRT into 2R20, provide time to plan and incorporate the containment ILRT in 2R21 in the spring of 2011, and prevent a forced outage. 2R21 is currently scheduled to end approximately four months after the current ILRT due date. This request for a 15 month extension will bound the time to reach 2R21 and provide additional time to allow flexibility in the schedule to address any potential extended down powers, forced outages or unforeseen issues that may arise during that outage without having to revise this request. Including the ILRT in 2R20, which is scheduled for September 2009 (approximately 14 months prior to ILRT due date) could impact the overall length of the outage.

# 2.0 PROPOSED CHANGE

ANO-2 TS 6.5.16, "Containment Leakage Rate Testing Program," states

A program shall 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. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995.

The proposed change would revise this section by adding the following phrase at the end of the last sentence.

... contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, except that the next Type A test performed after the December 2, 2000 Type A test shall be performed no later than April 15, 2011.

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#### 3.0 BACKGROUND

In 1995, the NRC amended 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," to provide a performance-based Option B for the containment leakage testing requirements. Option B requires that test intervals for Type A, Type B, and Type C testing be determined by using a performance-based approach. Performance-based test intervals are based on consideration of the operating history of the component and resulting risk from its failure.

Type A tests focus on verifying the leakage integrity of a passive containment structure and are performed during a period of reactor shutdown. Type B and C testing focuses on assuring that containment penetrations are essentially leak tight. These tests collectively satisfy the requirements of 10 CFR 50, Appendix J, Option B as stated in the introduction section to this Appendix:

The purposes of the tests are to assure that (a) leakage through the primary reactor containment and systems and components penetrating primary containment shall not exceed allowable leakage rate values as specified in the technical specifications (TSs) or associated bases; and (b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment.

Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Test Program," dated September 1995, was developed as a method acceptable to the staff for implementing Option B. This RG states that the Nuclear Energy Institute (NEI) guidance document, NEI 94-01, Revision 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," provides methods acceptable to the staff for complying with Option B, with four exceptions.

RG 1.163 specifies an extension in Type A frequency to at least one test in ten years based upon two consecutive successful tests.

By letter dated November 2, 1995, the NRC transmitted to NEI the final agreed upon TSs that would serve as the model for licensees to develop plant-specific TS in preparing amendment requests to implement Option B.

By letter dated April 11, 1996, Entergy Operations, Inc. (Entergy) submitted a TS change request concerning the implementation of 10 CFR 50, Appendix J, Option B. In their Safety Evaluation (SE) approving this request (letter dated October 3, 1996), the NRC noted the proposed TS changes are in compliance with the requirements of 10 CFR 50, Appendix J, Option B, and consistent with the guidance in RG 1.163. Despite the different format of the ANO-2 TSs, all of the important elements of the guidance provided in the staff's letter to NEI dated November 2, 1995, are included in the proposed TS.

With the approval of the TS change request, ANO-2 transitioned to a performance – based ten year frequency for the Type A tests.

Section 9.1 of NEI 94-01, Revision 0 specifies that the intervals for Type A testing may be extended by up to 15 months. However, it continues by stating:

This option should be used only in cases where refueling schedules have been changed to accommodate other factors.

The position of Section 9.1 was re-affirmed in the response to Question 37 in the Appendix J Workshop (NEI Appendix J Workshop, Questions and Answers, dated December 7-8, 1995) Questions and Answers issued March 19, 1996, by the NEI Task Force on Appendix J stated below:

- Question 37-B: Also, if a 10 year type A interval falls between refuel outages, how long may the interval be extended?
- Response 37-B: NEI 94-01, Section 9.1, provides for extending the intervals for the Type A tests by up to 15 months, not 25%. This option should be used only in cases where refueling schedules have been changed to accommodate other factors. The Type A test should be scheduled for the outage preceding the 10 year anniversary of the last Type A test.

The purpose of this restriction was to prevent a licensee from arbitrarily adding the 15 months on to every testing interval, which would effectively change the interval permanently to 11.25 years.

Based on a conservative application of NEI 94-01, Revision 0 and the published Questions and Answers, ANO-2 believes that the 15 month extension would not apply in this particular circumstance. Accordingly, due to this conservative interpretation, ANO-2 is requesting an amendment to its TS to extend the test frequency one time.

# 4.0 TECHNICAL ANALYSIS

Primary containment provides an essentially leak-tight barrier against the uncontrolled release of radioactivity into the environment following a design basis accident. The testing requirements of 10 CFR 50, Appendix J, provide assurance that leakage from the primary containment, including systems and components that penetrate the containment, does not exceed the allowable leakage values specified in the TS.

The proposed change to extend the ILRT surveillance interval through the end of the 2R21 refueling outage is justified based on the results of previous ILRTs, containment inspection programs, and a risk evaluation.

# 4.1 <u>Previous ILRT Results</u>

Previous ILRT testing confirmed that the ANO-2 containment structure leakage is acceptable, with considerable margin, with respect to the TS acceptance criterion of 0.1% of containment air weight at the design basis loss of coolant accident pressure.

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The first ANO-2 ILRT was performed on May 31, 1981. ANO-2 performed ILRTs on May 1, 1985; April 22, 1988; April 9, 1991 and March 17, 1994. The last ILRT was completed on November 30, 2000, after the installation of the replacement steam generators and closure of the construction opening made in the containment structure to support the replacement of the steam generators. In addition, the test was performed at the new higher design pressure of 58 psig. There have been no failed ILRTs at ANO-2.

Containment penetration (Type B and C) testing is being performed in accordance with Option B of 10 CFR 50, Appendix J. The current total penetration leakage on a minimum path basis is less than 10% of the leakage allowed for containment integrity.

No modifications that require a Type A test are planned prior to 2R21, when the next Type A test will be performed under this proposed change. Any unplanned modifications to the containment prior to the next scheduled Type A test would be subject to the special testing requirements of Section IV.A of 10 CFR 50, Appendix J. There have been no pressure or temperature excursions in the containment which could have adversely affected containment integrity. There is no anticipated addition or removal of plant hardware within containment which could affect leak-tightness.

# 4.2 <u>Containment Inspection Programs</u>

ANO-2 has established procedures for performing visual examinations of the accessible surfaces of the containment for detection of structural problems. RG 1.163, Regulatory Position C.3 specifies that these examinations should be conducted prior to initiating a Type A test and during two other outages before the next Type A test if the interval for the Type A test has been extended to ten years in order to allow for early detection of evidence of structural deterioration. These visual examinations have been completed, with no significant defects noted to date.

The ASME Section XI Program requires that the steel containment vessel be examined in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, and associated modifications and limitations imposed by 10 CFR 50.55a(b)(2). Details of the containment inservice inspection program are described in the ANO-2 Containment Inservice Inspection (CISI).

ANO has requested approval of a proposed alternative to the ANO-1 and ANO-2 Containment Inservice Inspection interval. As part of their review, the NRC issued a set of Request for Additional Information (RAI). One of the RAIs was "For all past surveillances, please provide pertinent information for both ANO-1 and ANO-2 post-tensioning systems which show satisfaction of the applicable acceptance criteria for the wire tests, corrosion protection medium evaluations, concrete inspections and anchor assembly verification." ANO responded to those RAIs in a letter dated July 23, 2008 (0CAN070801).

The testing frequency for Type B and C tests is not affected by this requested amendment to extend the Type A test interval from 120 months (10 years) to approximately 135 months.

#### 4.3 Risk Discussion

The allowed frequency for Type A testing was based upon a generic evaluation documented in NUREG-1493. NUREG-1493 made the following observations with regard to decreasing the test frequency:

- "Reducing the Type A (ILRT) testing frequency to one per twenty years was found to lead to an imperceptible increase in risk. The estimated increase in risk is small because ILRTs identify only a few potential leakage paths that cannot be identified by Type B and C testing, and the leaks that have been found by Type A tests have been only marginally above the existing requirements. Given the insensitivity of risk to containment leakage rate, and the small fraction of leakage detected solely by Type A testing, increasing the interval between ILRT testing has minimal impact on public risk."
- "While Type B and C tests identify the vast majority (greater than 95%) of all potential leakage paths; performance-based alternatives are feasible without significant risk impacts. Since leakage contributes less than 0.1 percent of overall risk under existing requirements, the overall effect is very small."

The surveillance frequency for Type A testing in NEI 94-01 is at least once per ten years based on an acceptable performance history.

In the Safety Evaluation (SE) for Amendment 215 to the Vermont Yankee Operating License, the Staff stated the safety and risk significance of the 15 month extension allowed by NEI 94-01, Revision 0 has already been incorporated into the models used to determine the acceptability of the testing interval.

Based on the information above, the proposed 15 month extension is bounded by the 15 month extension currently authorized within NEI 94-01.

# 5.0 REGULATORY ANALYSIS

# 5.1 Applicable Regulatory Requirements / Critera

The proposed change has been evaluated to determine whether applicable regulations and requirements continue to be met.

10 CFR 50.54(o) requires primary reactor containments for water-cooled power reactors to be subject to the requirements of Appendix J to 10 CFR 50, "Leakage Rate Testing of Containment of Water Cooled Nuclear Power Plants." Appendix J specifies containment leakage testing requirements, including the types of tests required to ensure the leak-tight integrity of the primary reactor containment and systems and components which penetrate the containment. In addition, Appendix J discusses leakage rate acceptance criteria, test methodology, frequency of testing and reporting requirements for each type of test.

As discussed earlier, RG 1.163 was developed to endorse NEI 94-01, Revision 0 with certain modifications and additions.

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The adoption of the Option B performance-based containment leakage rate testing for Type A testing did not alter the basic method by which Appendix J leakage rate testing is performed; however, it did alter the frequency at which Type A, B, and C containment leakage tests must be performed. Under the performance-based option of 10 CFR 50, Appendix J, test frequency is based upon an evaluation that reviews "as-found" leakage history to determine the frequency for leakage testing which provides assurance that leakage limits will be maintained. The change to the Type A test frequency did not directly result in an increase in containment leakage.

Based on the considerations above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will continue to be conducted in accordance with the site licensing basis, and (3) the approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

In conclusion, Entergy has determined that the proposed change does not require any exemptions or relief from regulatory requirements, other than the TS, and does not affect conformance with any regulatory requirements / criteria.

#### 5.2 No Significant Hazards Consideration

A change is proposed to the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications to extend the Type A test required by TS 6.5.16 by approximately 15 months,

Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as described below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed exemption involves a one-time extension to the current interval for Type A containment testing. The current test interval of 120 months (10 years) would be extended on a one-time basis to no longer than approximately 135 months from the last Type A test. The proposed extension does not involve a physical change to the plant or a change in the manner in which the plant is operated or controlled. The containment is designed to provide an essentially leak tight barrier against the uncontrolled release of radioactivity to the environment for postulated accidents. As such, the reactor containment itself and the testing requirements invoked to periodically demonstrate the integrity of the reactor containment exist to ensure the plant's ability to mitigate the consequences of an accident, and do not involve the prevention or identification of any precursors of an accident. Therefore, this proposed extension does not involve a significant increase in the probability of an accident previously evaluated nor does it create the possibility of a new or different kind of accident.

This proposed extension is for the Type A containment leak rate tests only. The Type B and C containment leak rate tests will continue to be performed at the frequency currently required by the ANO-2 TS. As documented in NUREG 1493, Type B and C

tests have identified a very large percentage of containment leakage paths and that the percentage of containment leakage paths that are detected only by Type A testing is very small. ANO-2's Type A test history supports this conclusion.

The integrity of the reactor containment is subject to two types of failure mechanisms which can be categorized as (1) activity based and (2) time based. Activity based failure mechanisms are defined as degradation due to system and / or component modifications or maintenance. Local leak rate test requirements and administrative controls such as configuration management and procedural requirements for system restoration ensure that containment integrity is not degraded by plant modifications or maintenance activities. The design and construction requirements of the containment itself combined with the containment inspections performed in accordance with ASME, Section XI, the Maintenance Rule, and Licensing commitments serve to provide a high degree of assurance that the containment will not degrade in a manner that is detectable only by a Type A test. Based on the above, the proposed extension does not involve a significant increase in the consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed revision to the TS involves a one-time extension to the current interval for Type A containment testing. The reactor containment and the testing requirements invoked to periodically demonstrate the integrity of the reactor containment exist to ensure the plant's ability to mitigate the consequences of an accident and do not involve the prevention or identification of any precursors of an accident. The proposed TS change does not involve a physical change to the plant or the manner in which the plant is operated or controlled. Therefore, the proposed TS change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

The proposed change to the TS involves a one-time extension to the current interval for Type A containment testing. The proposed TS change does not involve a physical change to the plant or a change in the manner in which the plant is operated or controlled. The specific requirements and conditions of the Primary Containment Leak Rate Testing Program, as defined in the TS, exist to ensure that the degree of reactor containment structural integrity and leak-tightness that is considered in the plant safety analysis is maintained. The overall containment leak rate limit specified by TS is maintained. The proposed change involves only the extension of the interval between Type A containment leak rate tests. The proposed surveillance interval extension is bounded by the 15 month extension currently authorized within NEI 94-01, Revision 0. Type B and C containment leak rate tests will continue to be performed at the frequency currently required by TS. Industry experience supports the conclusion that Type B and C testing detects a large percentage of containment leakage paths and that the percentage of containment leakage paths that are detected only by Type A testing is small. The containment inspections performed in accordance with ASME, Section XI and the Maintenance Rule serve to provide a high degree of assurance that the containment will not degrade in a manner that is detectable only by Type A testing. The

combination of these factors ensures that the margin of safety that is in plant safety analysis is maintained. The design, operation, testing methods and acceptance criteria for Type A, B, and C containment leakage tests specified in applicable codes and standards will continue to be met, with the acceptance of this proposed change, since these are not affected by changes to the Type A test interval. Therefore, the proposed TS change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

#### 5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

# 6.0 PRECEDENCE

This request is similar in nature to the license amendment authorized by the NRC on December 29, 1994 (Accession Number 9501090321), for Nine Mile Point Unit 1 and the license amendment authorized by the NRC on June 2, 2003 (TAC No. MB6507), for Vermont Yankee Power Station.

Attachment 2

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Proposed Technical Specification Changes

#### 6.5.16 Containment Leakage Rate Testing Program

A program shall 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. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, except that the next Type A test performed after the November 30, 2000 Type A test shall be performed no later than February 29, 2012.

In addition, the containment purge supply and exhaust isolation valves shall be leakage rate tested prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days.

The peak calculated containment internal pressure for the design basis loss of coolant accident, P<sub>a</sub>, is 58 psig.

The maximum allowable containment leakage rate,  $L_a$ , shall be 0.1% of containment air weight per day at  $P_a$ .

Leakage rate acceptance criteria are:

- a. Containment leakage rate acceptance criteria is  $\leq 1.0 L_a$ . During the first unit startup following each test performed in accordance with this program, the leakage rate acceptance criteria are < 0.60 L<sub>a</sub> for the Type B and Type C tests and  $\leq 0.75 L_a$  for Type A tests.
- b. Air lock acceptance criteria are:
  - 1. Overall air lock leakage rate is  $\leq 0.05 L_a$  when tested at  $\geq P_a$ .
  - 2. Leakage rate for each door is  $\leq$  0.01 L<sub>a</sub> when pressurized to  $\geq$  10 psig.

The provisions of Specification 4.0.2 do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program.

The provisions of Specification 4.0.3 are applicable to the Containment Leakage Rate Testing Program.