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2CAN100901

October 16, 2009

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Request for Relief VRR-ANO2-2009-1
Frequency of Leak Rate Testing of the
Service Water Boundary Isolation Valves
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

- REFERENCES
1. Entergy letter to the NRC, dated August 21, 2008, "Request for Relief Request VRR-ANO2-2008-1 Frequency of Leak Rate Test of the Service Water Boundary Isolation Valves" (2CAN080803)
 2. NRC letter to Entergy, dated August 5, 2009, "Arkansas Nuclear One, Unit 2 – Request for Alternative VRR-ANO2-2008-1 For the Third 10-Year Inservice Testing Interval" (TAC NO. MD9503) (2CNA080901)

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(a)(3)(ii), Entergy Operations, Inc. (Entergy) requests an alternative for the Inservice Testing Program. The proposed alternative is requested when using the requirements of American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code, 2004 Edition, pertaining to the frequency of the leak rate test for two service water boundary isolation valves at Arkansas Nuclear One, Unit 2 (ANO-2). Section ISTC(a) of the ASME OM Code, 2004 Edition requires that Category A valves, with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J program, shall be tested to verify their seat leakages are within acceptable limits and that the tests shall be conducted at least once every 2 years.

The proposed test frequency is to perform the test at least once every three (3) years for these valves. This request impacts only these two valves and would allow ANO-2 to test one valve per refueling outage instead of both valves in the same outage. The proposed alternate testing frequency provides adequate assurance of the valve's integrity, and minimizes the vulnerability of the unit during refueling outages. Request for Relief VRR-ANO2-2009-1 is provided as the attachment to this letter.

This letter contains no new commitments.

This request is essentially the same request made in Reference 1 and approved by the NRC in Reference 2. The current request is for the fourth 10-year interval and intervals into extended plant life. The fourth interval begins on March 26, 2010.

Entergy requests approval of the proposed request for alternative by January 15, 2011, in order to support the spring 2011 refueling outage for ANO-2. Although this request is neither exigent nor emergency, your prompt review is requested.

If you have any questions or require additional information, please contact me.

Sincerely,



DBB/rwc

Attachment: Request for Relief VRR-ANO2-2009-1

cc: Mr. Elmo E. Collins
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ATTACHMENT TO

2CAN100901

**REQUEST FOR RELIEF
VRR-ANO2-2009-1**

10 CFR 50.55a Request Number VRR-ANO2-2009-1

Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)

10 CFR 50.55a Request Title: Frequency of Leak Rate Testing of the
SW Boundary Isolation Valves

PLANT/UNIT:	Arkansas Nuclear One, Unit 2, Docket No. 50-368, License No. NPF-6
INTERVAL:	Fourth 120-Month Inservice Testing interval and future intervals until the End of Life for ANO-2.
COMPONENTS AFFECTED:	<p>Valves: 2CV-1541-1 and 2CV-1560-2</p> <p>System: Service Water (SW)</p> <p>Valves 2CV-1541-1 and 2CV-1560-2 have a primary active open safety function on a Main Steam Isolation Signal (MSIS) or a Safety Injection Actuation Signal (SIAS) to direct the SW return flow from Return Header #1 or #2, respectively, to the Emergency Cooling Pond (ECP). These valves have a secondary active closed safety function to isolate a ruptured SW header to ensure long-term cooling capability is maintained. These valves serve as a SW boundary isolation valves and their leakage has been determined to be consequential.</p> <p>(The above valves are American Society of Mechanical Engineers (ASME) Code Class 3, OM Code Category A motor operated valves)</p>
CODE EDITION AND ADDENDA:	ASME Operations and Maintenance (OM) Code 2004 Edition
REQUIREMENTS:	The code of record governing the fourth 10-year Inservice Testing (IST) interval for valves at Arkansas Nuclear One, Unit 2 (ANO-2), is the ASME OM Code, 2004 Edition. The 2004 Edition of the OM Code Section ISTC-3630(a) requires that Category A valves, with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J program, shall be tested to verify their seat leakages are within acceptable limits and that the tests shall be conducted at least once every 2 years.
REASON FOR RELIEF REQUEST:	<p>Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of the 2004 Edition of the OM Code Section ISTC-3630(a) pertaining to the frequency of the leak rate test for valves 2CV-1541-1 and 2CV-1560-2 (as listed above).</p> <p>There are a total of 21 ANO-2 SW boundary isolation valves. These valves are leak tested to verify seat leakage does not exceed the leakage allowed based on maintaining the minimum volume of water in the ECP to meet the Design Basis Accident requirements.</p>

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Valves 2CV-1541-1 and 2CV-1560-2 are two of these 21 valves. They are normally closed motor-operated 18" Tricentric stainless steel butterfly stop valves. As stated above, they have a primary active open safety function to direct the SW return flow to the ECP, a secondary active closed safety function to isolate a ruptured SW header to ensure the long-term cooling capability is maintained, and serve as a SW boundary isolation valves.

Provided below is a description of how performing the leak rate test on both of the subject valves in the same outage causes unnecessary challenges to safety systems on both units.

These valves can only be tested when the unit is shutdown in Modes 5 or 6 and with the associated SW loop out of service, one at a time. Normally these valves are tested during refueling outages. The entire loop of SW is required to be removed from service and drained empty to perform this test. In doing this, all the loads on that particular SW loop are declared inoperable which may include the associated emergency control room chiller, the associated emergency diesel generator, the backup SW train for cooling the spent fuel pool, and the standby shutdown cooling train. Declaring the emergency control room chillers inoperable requires ANO-1 to enter into Technical Specification action statements since this equipment is used for cooling both ANO control rooms.

Most importantly, the removal of a SW loop from operation reduces the defense in depth for loss of decay heat removal events by removing its cooling water source and its emergency diesel generator as a backup power source. The emergency diesel generator also supplies a backup power supply to the standby shutdown cooling train. Removal of the SW loop from operation also removes the backup cooling water train from the spent fuel pool during outage conditions when the spent fuel pool heat load is the highest. This unnecessarily increases the risk and vulnerability of ANO-2 during a refueling outage.

These actions and vulnerabilities are repeated when the other valve is tested during the same outage.

It is estimated to take approximately 125 man-hours to perform the test. This is approximately \$4400 per valve for the test. Each test takes approximately two (2) days to perform. To remove one loop of SW from service, the estimated dose consequence is less than 10 mrem.

NUREG-1482, Revision 1, "Guidelines for Inservice Testing at Nuclear Power Plants" was reviewed for a definition of "hardship". Hardship is

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**PROPOSED
ALTERNATIVE
AND BASIS:**

interpreted to mean a high degree of difficulty or an adverse impact on plant operation. The above hardships can be significantly reduced using the modified test frequency without decreasing the level of quality or safety.

Entergy proposes an alternate test frequency for performing leak rate tests for valves 2CV-1541-1 and 2CV-1560-2. Specifically, Entergy proposes to test one valve each refueling outage. This would alter the frequency to once every three (3) years.

Entergy believes the current requirement for leak rate testing the identified valves every two years (i.e., testing both valves every refueling outage) results in a hardship without a compensating increase in the level of quality or safety. Entergy also believes that the proposed alternative of performing the leak rate test once every three years (i.e., testing one valve each refueling outage) provides reasonable assurance that the valves described herein are periodically leak tested and maintained leak tight.

This request for relief is from the frequency of the leak rate test only. The full stroke test of these valves will continue to occur every three months. The acceptance criteria of the full stroke and the leak rate tests nor the required corrective actions if the acceptance criterion is violated are not being changed. The test methods for the full stroke test and the leak rate test are not being changed due to this request.

The ECP is shared between ANO-1 and ANO-2. The design basis for the ECP is that it be capable of dissipating the heat from an accident on one unit, permit the concurrent safe shutdown and cool down of the remaining unit, and maintain both in a safe shutdown condition. The capacity of the ECP is to be sufficient to provide cooling both for the period of time needed to evaluate the situation and for the period of time needed to take corrective action.

The inventory analysis for the ECP assumes a total loss of 30 gallons per minute (gpm) from the boundary valves of both units combined. Currently, the analysis assumes the allowable leakage to be evenly distributed among the valves, or 2.5 gpm per valve. Even distribution of the allowed leakage is not a design requirement for operability of the individual valves, provided total leakage is being monitored and margin is being maintained from the allowable.

While it is acceptable for individual valve leakage limits to be greater than those calculated from even distribution of the total, the valve limits need to be below the total ECP allowable leakage to avoid masking and shadowing concerns. Total leakage from the valves on each system is monitored to ensure the limit assumed in the ECP inventory analysis is

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not exceeded. Thus, the limit for operability for an individual valve also needs to be below the limit for the system. In addition, it is desirable to establish a maintenance limit (Acceptable Normal Range) to initiate corrective maintenance at a leakage threshold above what would normally be expected for the valve and below the operability threshold.

The allowable leakage below which corrective maintenance is not required is established to be less than 1.5 gpm. This is the "Acceptable Normal Range". The SW boundary isolation valves have been replaced in previous cycles with metal seats (or metal/graphite laminated layers) to reduce the potential for gross leakage from failure modes of soft seats (i.e., rubber lined butterfly valves) tearing away from the valve body. The performance history (recent history summarized in the table below) has been reviewed and the valves should be readily capable of performing with less than 1.5 gpm leakage.

Test Date	2CV-1541-1		2CV-1560-2	
	Normal Rate (gpm)	Acceptable Rate (gpm)	Normal Rate (gpm)	Acceptable Rate (gpm)
10/10/2003	0.25	1.5	0	1.5
04/07/2005	0	1.5	0	1.5
10/20/2006	0	1.5	0	1.5
04/04/2008	0	1.5	1.25	1.5
09/08/2009	0	1.5	N/A	1.5

This threshold initiates corrective maintenance at leakage levels below the currently established 2.5 gpm limit. Corrective maintenance will typically be performed during the outage that leakage exceeding 1.5 gpm is detected. However, the corrective maintenance may be scheduled during the following outage to better align with train maintenance and other preventative maintenance schedules provided the Limiting Range of Operability is not exceeded and the as-left total system leakage can be maintained below the Acceptable Normal Range (< 10 gpm / system).

The valve operability threshold is greater than or equal to 9.0 gpm, or 30% of the assumed ECP inventory loss to SW boundary valves. This threshold, being only 30% of the total assumed inventory loss for the ECP, provides conservatism to the total allowed leakage for establishing a functional failure criterion for the ECP boundary isolation valves.

One of the two valves will be leak tested each refueling outage on a rotating basis in accordance with current plant procedures. If problems

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are found with the sample valve that results in leakage in excess of the limiting value for operability described in the test procedure, both valves will be tested during the same outage to verify operability.

As is evident from the information above, these valves have a history of having very little leakage, always within the acceptance criteria. There are no plans in the foreseeable future that would require these valves to be changed or replaced.

Based on the determination that compliance with the OM Code Section ISTC(a) requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii).

DURATION: This relief will be effective for ANO-2's Fourth Inservice Testing interval and future intervals until the End of Life for ANO-2. The fourth interval starts on March 26, 2010.

PRECEDENTS: A similar request was approved by the NRC in NRC letter to Entergy, dated August 5, 2009, "Arkansas Nuclear One, Unit 2 – Request for Alternative VRR-ANO2-2008-1 For the Third 10-Year Inservice Testing Interval (TAC NO. MD9503) (2CNA080901) for ANO-2's Third 10-Year Interval"

REFERENCES: Revision 0 of NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, Published April 1995

Revision 1 of NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, Final Report, Published January 2005

Letter from NRC's Mr. R. A. Gramm to ANO's Mr. C. G. Anderson dated March 31, 2000

Entergy letter to the NRC, dated August 21, 2008, "Request for Relief Request VRR-ANO2-2008-01 Frequency of Leak Rate Test of the Service Water Boundary Isolation Valves" (2CAN080803)

NRC letter to Entergy, dated August 5, 2009, "Arkansas Nuclear One, Unit 2 – Request for Alternative VRR-ANO2-2008-1 For the Third 10-Year Inservice Testing Interval" (TAC NO. MD9503) (2CNA080901)

STATUS: Submitted for Nuclear Regulatory Commission review and approval by 2CAN100901.