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1CAN060302

June 30, 2003

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

SUBJECT: License Amendment Request to Add a New Control Room Emergency Ventilation System Surveillance Requirement
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License Number DPR-51

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment to the Arkansas Nuclear One, Unit 1 (ANO-1). The proposed change will add a new Surveillance Requirement (SR) 3.7.9.5 to provide an appropriate testing range for 2VSF-9, one of two Control Room Emergency Ventilation System (CREVS) trains. SR 3.7.9.4, which was added during the conversion of the ANO-1 Technical Specifications (TSs) to the improved standard format, included a testing range based on the design parameters of VSF-9, the redundant fan in the CREVS. Due to design differences, the fans do not have the same makeup flow rate. The proposed change will designate that SR 3.7.9.4 is applicable to VSF-9. A justification of the change is provided in Attachment 1 and a marked up page of the TS is included as Attachment 2. Entergy will also be revising the applicable TS Bases when this amendment is implemented; a mark-up of the revised Bases pages is included in Attachment 3 for information only.

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 this change involves no significant hazards considerations. The bases for these determinations are included in Attachment 1.

The proposed change does not include any new commitments.

Entergy requests approval of the proposed amendment by December 11, 2003. Although this request is neither exigent nor emergency, your prompt review is requested. Once approved, the amendment shall be implemented within 30 days.

Amendment 215 to the ANO-1 TSs which incorporated SR 3.7.9.4, was implemented July 8, 2002. In accordance with License Condition 2.C.(5) included in Amendment 215, SR 3.7.9.4, which has a frequency of 18 months, is not required to be performed until January 8, 2004. The proposed new SR 3.7.9.5 will be considered by ANO as a new surveillance implemented at the same time and, therefore, will be required to be performed for the first time by January 8, 2004.

If you have any questions or require additional information, please contact Dana Millar at 601-368-5445.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 30, 2003.

Sincerely,

CGA/dm

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. Changes to Technical Specification Bases Pages – For Information Only

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Attachment 1

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Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License DPR-51 for Arkansas Nuclear One, Unit 1 (ANO-1).

The proposed change will revise the Operating License to add a new Surveillance Requirement (SR) for the Control Room Emergency Ventilation System (CREVS) and to correct the existing SR. The CREVS consists of two trains designated as VSF-9 and 2VSF-9. A new surveillance was added to the ANO-1 Technical Specifications (TS) during the conversion of the ANO-1 TSs to the improved standard TSs (ITS). The conversion was approved by the NRC with the issuance of Amendment 215 and the change was implemented in July 2002. The SR, included in the conversion, incorporated the parameters applicable to one train of the CREVS (VSF-9). The second train (2VSF-9), which is of a different design and has different acceptance criteria, was not reflected in the conversion.

A change is also proposed to the associated TS Bases. A markup of the proposed TS Bases change is included for information only.

2.0 PROPOSED CHANGE

The proposed change will modify SR 3.7.9.4 to associate the acceptance criteria with the VSF-9 filter train only. A new SR 3.7.9.5 will be added for the 2VSF-9 filter train to reflect the applicable acceptance criteria.

SR 3.7.9.4 currently states: "Verify that the system makeup flow rate is $\geq$ 300 and $\leq$ 366 cfm when supplying the control room with outside air." The proposed change to this SR will replace "the system" with "VSF-9" resulting in the wording as follows: "Verify that VSF-9 makeup flow rate is $\geq$ 300 and $\leq$ 366 cfm when supplying the control room with outside air."

The proposed new SR 3.7.9.5 will state: "Verify that 2VSF-9 makeup flow rate is $\geq$ 418.5 and $\leq$ 511.5 cfm when supplying the control room with outside air."

The Bases for TS 3.7.9 will also be revised. The SR basis will be expanded to address the test and acceptance criteria for both trains. A mark-up of the affected Bases pages is provided for information in Attachment 3.

3.0 BACKGROUND

The CREVS is a shared system which provides a protected environment from which the operators in the ANO-1 and Arkansas Nuclear One, Unit 2 (ANO-2) control rooms can control their respective units. Upon receipt of a unit-specific high radiation signal or high chlorine concentration, the control room envelope is isolated, the associated normal control room ventilation system is shutdown, and the associated unit's CREVS is started.

The CREVS consists of two independent filter trains. One train (VSF-9) consists of a fan, one filter unit assembly rated for 2000 cubic feet per minute (cfm) and an outside air filter unit rated for 333 cfm. Both of these filter unit assemblies are comprised of the necessary roughing filters, high efficiency particulate air (HEPA) filters, and 2-inch charcoal tray adsorber. The other train (2VSF-9) consists of a fan, roughing filters, HEPA filters, and a 4-inch deep bed charcoal

adsorber rated for 2000 cfm. An outside air damper with the accompanying ductwork is connected to 2VSF-9. For either fan outside air, used for pressurization, is filtered through a total of four inches of charcoal adsorber and the recirculation air goes through at least two inches of charcoal bed. Due to space limitations, the two filter trains were designed differently.

The control room emergency air filtering system is based on a filtered recirculation rate equivalent to three room air changes per hour for the combined control room volume. The filter banks are sized for maximum efficiency. The control room is designed to minimize air in-leakage by pressurizing the room with outside makeup air through either of the two emergency air filter trains.

A detailed description of the CREVS is included in the ANO-1 and ANO-2 Safety Analysis Reports (SARs). A change to the ANO-1 and ANO-2 SARs will be performed to clarify the differences in makeup flow rates.

In the analysis of control room dose at ANO, it has historically been assumed that VSF-9 was in operation, because given the same makeup flow rate, the VSF-9 train yields less cleanup of iodine than does the 2VSF-9. Although both trains meet the design intent for control room habitability, the VSF-9 train is limiting since it has a 2-inch recirculation charcoal bed compared to a 4-inch bed on the Unit 2 system. Therefore, in the control room analysis, the Unit 1 train was assumed to be operating with a 95% recirculation filter efficiency. Because the makeup and recirculation flow rate for 2VSF-9 both flow through a 4-inch bed, a 99% recirculation efficiency was used for the 2VSF-9 train.

Calculations have been performed which illustrate that at 10 cfm unfiltered in-leakage, with identical flow rates assumed for makeup and recirculation, and with a 95% recirculation efficiency used for VSF-9 and a 99% recirculation efficiency used for 2VSF-9, the Iodine Protection Factor (IPF) would be 144.5 for VSF-9, while 2VSF-9 yields a higher (better) IPF of 149.5. Additional calculations were performed which indicated that with the higher makeup airflow proposed as the acceptance criteria for 2VSF-9, the conclusion that VSF-9 is more limiting than 2VSF-9 remains valid for any assumed unfiltered in-leakage. Therefore, the higher makeup flow rate proposed for 2VSF-9 does not impact the evaluation of control room dose since calculations demonstrate that the assumption that VSF-9 is operating is shown to be bounding.

SR 3.7.9.4 Background

Prior to the conversion of the ANO-1 TS to the ITS, the ANO-1 TS did not include a SR to verify the ability of the CREVS to provide outside air at a designated flow rate. Periodic tests were performed on VSF-9, however, to support filter operability determinations. Because the outside makeup air for 2VSF-9 is not designed with a separate filter unit, periodic tests to measure makeup airflow were not necessary to support filter testing.

The improved standard TS for Babcock and Wilcox plants (NUREG-1430) includes two alternative SRs for the CREVS to provide assurance of control room boundary integrity. During the ITS conversion it was recognized that Section 6.4, revision 2, of the Standard Review Plan (SRP) (dated July 1981) recommends that a makeup flow measurement test be performed periodically (every 18 months) for control rooms, like ANO-1, which are designed for a pressurization rate of greater than or equal to 0.5 volume changes per hour. Although the ANO-1 Operating License pre-dates the SRP, the incorporation of the SR provided added

assurance that the control room would be supplied with sufficient outside air to provide a pressurized environment.

The SR was added considering the outside makeup airflow associated with VSF-9; however, it was not written considering the outside makeup airflow associated with 2VSF-9.

ITS implementation guidance was included in License Condition 2.C.(5) upon approval of the improved TS (Amendment 215). A schedule for performing the SRs was included which specifically stated:

> "For SRs that are new in this amendment, the first performance shall be due at the end of the first surveillance interval, which begins on the date of implementation of this amendment."

Amendment 215 was implemented July 8, 2002. Therefore, in accordance with the License Condition, SR 3.7.9.4, which has a frequency of 18 months, is not required to be performed until January 8, 2003. The proposed new SR 3.7.9.5 will be considered by ANO as a new surveillance implemented at the same time and, therefore, will be required to be performed for the first time by January 8, 2003.

In the fall of 2001 following NRC approval of the ANO-1 TS conversion to ITS, but prior to the ITS implementation, a tracer gas test was performed, which included in part a measurement of the makeup air flow rate for 2VSF-9. Test results indicated that the control room unfiltered in-leakage was minimal when 2VSF-9 was in service with a makeup flow rate of approximately 465 cfm. The test also demonstrated about 30 cfm unfiltered in-leakage when VSF-9 was in service with approximately 333 cfm makeup air flow. On the basis of the tracer gas test results, interim compensatory measures were put in place for ANO-1 to ensure control room doses were within General Design Criterion (GDC) 19. The compensatory measures are captured in ANO's corrective action program (CR-ANO-C-2001-0607). The test confirmed that the safety function of the CREVS provided a safe environment for the control room operator with 2VSF-9 in operation. Therefore, the proposed acceptance criteria for the new SR will be established at $465 \pm 10\%$.

4.0 TECHNICAL ANALYSIS

The proposed change clarifies that SR 3.7.9.4 applies specifically to VSF-9 and adds SR 3.7.9.5 to invoke a similar test and appropriate acceptance criteria for 2VSF-9. As noted in the current Bases for the existing SR, CREVS makeup air flow is one of the factors that influence the operator dose consequences following an accident. The primary safety function for the CREVS is to provide a protected environment from which the operators can control the unit following an accident involving an uncontrolled release of radioactivity. The requirements for this function are established in 10 CFR 50, Appendix A, GDC 19.

The change to clarify that the current acceptance criteria of SR 3.7.9.4 is applicable to VSF-9 is being made to correct the SR approved as part of the ANO-1 conversion to the ITS. This SR was a new requirement established in TS Amendment 215, which was the approval of the TS conversion. The SR words proposed during the conversion recognized the design criteria that were applicable to VSF-9. The SR did not recognize the design differences of 2VSF-9. A key difference is the separate makeup air flow path filter that is provided for VSF-9, but not for 2VSF-9. The SR acceptance criteria were derived based on design requirements established

for the VSF-9 makeup filter. The current SR as written is applicable to VSF-9 and the proposed change will clarify such. The change is considered an administrative change.

The new SR will be addressed from two aspects: the fact that it is an additional requirement to address an omission in Amendment 215, and the differences between the ANO-1 and ANO-2 filter trains.

The addition of the new SR for the second CREVS train (2VSF-9) is a correction of the existing requirement. During the ITS conversion, Entergy negotiated the makeup air flow test as a means of assessing boundary integrity. The standard TS provided an accepted means for performing this assessment until the NRC and the industry working groups regarding control room habitability issues could develop an acceptable resolution. The SR developed for the ANO-1 TS, however, seemed to have been derived considering the design requirements for VSF-9 and no consideration was apparently given to the different design of 2VSF-9. The test required by the new SR is acceptable in that it establishes an equivalent SR to that approved for the ANO-1 train in Amendment 215 (SR 3.7.9.4). The addition of the SR is considered to be a more restrictive requirement in that it invokes an SR that was omitted during the ANO-1 TS conversion process.

The new SR utilizes different acceptance criteria from the current SR 3.7.9.4. This is in recognition of the design differences between the two filter trains. As described in the Background section above, the ANO-1 filter train (VSF-9) includes an additional filter unit in the makeup air flow path. The makeup airflow for the ANO-2 filter train (2VSF-9) was measured while performing a tracer gas test in November, 2001. The flow results indicate that typically a makeup flow rate of greater than or equal to 418.5 cfm and less than 511.5 cfm (465 cfm $\pm$ 10%) passes through the outside air supply air duct. Therefore, the proposed change will request this flow rate band for 2VSF-9. No change is proposed to the current band listed in SR 3.7.9.4 other than to designate that the limits are applicable to VSF-9.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met. The primary regulation related to the Control Room Emergency Ventilation System (CREVS) and its design and safety functions is 10 CFR 50, Appendix A, General Design Criterion (GDC) 19. This GDC requires, in part, that adequate radiation protection be provided to the operators to permit access and occupancy of the control room under accident conditions. In particular, it requires that the operators not be subject to radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body for the duration of the accident. An exposure of 30 rem is generally accepted as the equivalent dose to the thyroid.

An in-leakage test of the control room was performed in 2001. This testing demonstrated that, with selected compensatory measures in place, control room in-leakage for the ANO-1 limiting design basis accident would not lead to operator exposures in excess of the GDC 19 criteria. No compensatory measures are needed to satisfy GDC 19 criteria for the ANO-2 limiting design basis accident.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, and do not affect conformance with any GDC differently than described above.

5.2 No Significant Hazards Consideration

The proposed change will modify an existing Surveillance Requirement (SR) and add a new SR to the Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specifications (TSs). The SRs are related to the Control Room Emergency Ventilation System (CREVS), which consists of two filter trains designated as VSF-9 and 2VSF-9. The acceptance criteria of the current SR are applicable to VSF-9 and will be so designated in the proposed change. A new SR is proposed for 2VSF-9. The new SR will result in a higher makeup air flow for 2VSF-9 than is currently approved for VSF-9.

Entergy Operations, Inc. (Entergy) 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 discussed below:

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

   Response: No.

   The purpose of the CREVS is to provide airborne radiological protection for operations from the control room for the design basis loss of coolant accident fission product release and for a fuel handling accident. The proposed change continues to assure that the control room operator will be protected from the dose consequences related to either of these accidents.

   Therefore, the proposed change does not involve a significant increase in the probability or 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?

   Response: No.

   The proposed change will establish appropriate outside air makeup flow rates for the 2VSF-9 fan unit. This criterion has been evaluated and determined to continue to provide protection to the control room operator in accordance with General Design Criteria 19. The proposed change is not an accident initiator. No modifications to the system are proposed which would create the possibility of a new or different kind of accident.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   Response: No.

The proposed change will establish the allowable makeup airflow into the control room when the 2VSF-9 CREVS train is in operation. Calculations have been performed which demonstrate that the proposed flow criteria provides increased protection for the control room operator.

Therefore, the proposed 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.

Attachment 2

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Proposed Technical Specification Changes (mark-up)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two CREVS trains inoperable during movement of irradiated fuel assemblies.	E.1 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two CREVS trains inoperable during MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Operate each CREVS train for ≥ 15 minutes.	31 days
SR 3.7.9.2	Perform required CREVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.9.3	Verify the CREVS automatically isolates the Control Room and switches into a recirculation mode of operation on an actual or simulated actuation signal.	18 months
SR 3.7.9.4	Verify ~~the system~~VSF-9 makeup flow rate is ≥ 300 and ≤ 366 cfm when supplying the control room with outside air.	18 months
SR 3.7.9.5	Verify 2VSF-9 makeup flow rate is ≥ 418.5 and ≤ 511.5 cfm when supplying the control room with outside air.	18 months

Attachment 3

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Changes to Technical Specification Bases Pages
For Information Only

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.2

This SR verifies that the required CREVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal. Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.9.3

This SR verifies that the CREVS automatically isolates the Control Room within 10 seconds and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks on an actual or simulated actuation signal. The Frequency of 18 months is consistent with the guidance provided in Regulatory Guide 1.52 (Ref. 3).

SR 3.7.9.4 and SR 3.7.9.5

~~This~~ These SR~~s verifies~~ verify the ability of the CREVS to provide outside air at a flow rate ~~of approximately 333 cfm ±10%.~~ consistent with their safety function to protect the operator from radiological exposure by minimizing unfiltered air in-leakage in the event of an accident. Many factors must be taken into account to determine the overall expected dose consequences for control room personnel during various off-normal events. The CREVS makeup airflow and filter efficiency are ~~is one~~ two of the~~se~~ factors that must be considered. ~~Excessive makeup air or the inability of the CREVS units to supply design flow rates could result in an increase in the overall dose consequence to control room personnel~~ Makeup airflow, which is filtered outside air, is drawn into the control room recirculated airflow to pressurize the control room in order to reduce the potential for unfiltered in-leakage.~~.~~ The flow verification ensures that an assumed amount of makeup air is available to account for boundary leak paths. ~~If control room boundary leakage to adjacent areas is minimal, the makeup airflow rate will decrease accordingly as the differential pressure between the control room and adjacent areas increases. Therefore, the verification of makeup airflow capability may require creating leak paths (opening a door) when the control room envelope leak paths are minimal.~~ The flowrate verification is consistent with SRP Section 6.4 (Reference 4) for those control rooms having a design makeup rate of ≥ 0.5 volume changes per hour. Due to design variations between the filter trains, the acceptance criteria for each train are different. SR 3.7.9.4 verifies VSF-9 makeup air flow accounting for a separate makeup air filter in the acceptance criteria. SR 3.7.9.5 verifies 2VSF-9 makeup air flow which is based on expected flow rates through the flow path. The Frequency of 18 months is considered adequate to detect any degradation of the outside air flow rate before it is reduced to a point at which sufficient pressurization will not occur.

SURVEILLANCE REQUIREMENTS (continued)

REFERENCES

1. SAR, Section 9.7.

2. 10 CFR 50.36.

~~REFERENCES (continued)~~

3. Regulatory Guide 1.52, “Design, Testing, and Maintenance Criteria for Post Accident Engineered Safety Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light Water Cooled Nuclear Power Plants,” Rev. 2, March 1978.

4 Standard Review Plan, Section 6.4, "Control Room Habitability System," Rev. 2, July 1981.