Entergy

Entergy Operations, Inc.
1340 Echelon Parkway
Jackson, MS 39213-8298
Tel 601 368 5758

Michael A. Krupa
Director
Nuclear Safety & Licensing

1CAN120301

December 16, 2003

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

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

REFERENCES:
1. Entergy letter to the NRC dated June 30, 2003, "License Amendment Request to Add a New Control Room Emergency Ventilation System Surveillance Requirement" (1CAN060302)
2. Entergy letter to the NRC dated July 3, 2001, "Radiological Dose Consequence Calculations to Support Power Uprate" (2CAN070103)
3. Entergy letter to NRC dated January 14, 2002, "Submittal of Tracer Gas Test Results and Action Plan for ANO-2 Control Room Habitability for Power Uprate" (2CAN010201)
4. Entergy letter to NRC dated August 28, 2003, "Response to Generic Letter 2003-01, Arkansas Nuclear One, Units 1 & 2" (0CAN080304)

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specifications (TSs) to add a new Surveillance Requirement (SR) 3.7.9.5 to provide an appropriate testing range for 2VSF-9, one of the two Control Room Emergency Ventilation System (CREVS) trains.

On November 5, 2003, Entergy and members of your staff held a call to discuss the operator dose in relationship to General Design Criteria (GDC) 19 and the design basis value for inleakage for the ANO control room envelope. As a result of the call, two questions were determined to require formal response. Entergy's response is contained in the attachment to this letter.

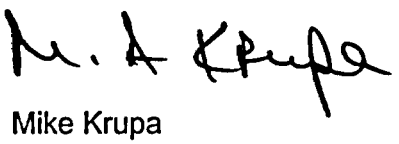
There are no technical changes proposed. The original no significant hazards consideration included in Reference 1 is not affected by any information contained in the supplemental letter. There are no new commitments contained in this letter.

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

A001

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 16, 2003

Sincerely,



Mike Krupa
Director, Nuclear Safety and Licensing

MAK/dm

Attachments:
1. Response to Request For Additional Information

cc: Dr. Bruce S. Mallett
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

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

U. S. Nuclear Regulatory Commission
Attn: Mr. John L. Minns
MS O-7 D1
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

To

1CAN120301

Response to Request for Additional Information

Response to Request for Additional Information Related to Adding a New Control Room Emergency Ventilation System Surveillance Requirement

Question 1:

The proposed change in the technical specification allowable flow rate for 2VSF-9 is acceptable if it can be shown that the control room operator doses for ANO Units 1 and 2 meet GDC 19 with the proposed change. The submittal which supports this change contains no demonstration that the control room operator doses meet GDC 19. Please provide calculations which demonstrate that the control room operator doses meet GDC 19 with the proposed change. The calculations should include information and insights acquired from the control room envelope inleakage testing of the ANO Units 1 and 2 control rooms and ventilation filter trains.

Response 1:

By letter dated July 3, 2001 (Reference 2), Entergy provided calculations of the postulated consequences to the control room operators of the ANO-2 fuel handling accident, maximum hypothetical accident (MHA) (which is the loss of coolant accident), steam generator tube rupture, and control element assembly ejection accidents. These calculations were based upon no unfiltered inleakage into the control room envelope and 10 cubic feet per minute (cfm) of inleakage due to ingress/egress into the envelope.

In November 2001, tracer gas tests of the common control room envelope were performed to determine the control room envelope's inleakage characteristics. The tracer gas test resulted in measured unfiltered inleakage of 40 cfm (including 10 cfm due to ingress / egress).

By letter dated January 14, 2002 (Reference 3) and by NRC approval dated April 24, 2002, Entergy established a limit for ANO-2 of 61 cfm control room inleakage. ANO-2 is currently in compliance with General Design Criteria (GDC) 19 dose guidelines without requiring any credit for compensatory measures.

As described by letter to the NRC dated August 28, 2003 (Reference 4), ANO-1 is presently in an operable but degraded condition with measured unfiltered inleakage of 40 cfm (including 10 cfm due to ingress / egress), which is in excess of the 10 cfm described in the ANO-1 Safety Analysis Report (SAR) and the 26 cfm determined to be the maximum acceptable unfiltered inleakage to meet GDC 19 limits without compensatory measures following an ANO-1 MHA in the operability evaluation. With the use of potassium iodide (KI) as a compensatory measure, Entergy calculations demonstrate that GDC 19 limits are met with unfiltered inleakage $\leq$ 340 cfm for the ANO-1 MHA.

61 cfm Unfiltered Inleakage (ANO-2 limit)

Following an MHA, the assumptions and resulting dose consequences to the control room operator are as follows with 61 cfm unfiltered inleakage.

	VSF-9 in service	**2VSF-9 in service**
Unfiltered Inleakage	61 cfm	61 cfm
Filtered Air	333 cfm	465 cfm
Recirculation efficiency	95% (2" recirculation bed)	99% (4" recirculation bed)
ANO-1 MHA with KI administered		
Thyroid (Rem)	6.324	6.244
Whole Body (Rem)	1.252	1.335
Skin (Rem)	43.49	45.85
ANO-2 MHA – KI not required		
Thyroid (Rem)	29.62	29.232
Whole Body (Rem)	0.140	0.149
Skin (Rem)	4.845	5.088

Maximum unfiltered inleakage with ANO-1 MHA, KI administered

By letter to the NRC dated August 28, 2003 (Reference 4), Entergy provided notification that with the use of potassium iodide (KI), the GDC 19 limits are satisfied with unfiltered air inleakage less than or equal to 340 cfm for the ANO-1 MHA.

ANO-1 MHA with KI administered		
	VSF-9 in Service	**2VSF-9 in Service**
Unfiltered Inleakage	≤ 340 cfm	≤ 340 cfm
Filtered Air	333 cfm	465 cfm
Recirculation efficiency	95% (2" recirculation bed)	99% (4" recirculation bed)
Thyroid (Rem)	29.671	28.935
Whole Body (Rem)	1.408	1.449
Skin (Rem)	47.820	49.03

Note that the control room thyroid dose for meeting GDC 19 guideline values is lower when 2VSF-9 is considered to be in service. To further substantiate that operation of VSF-9 is bounding, the iodine protection factors (IPF) for both configurations were calculated. With 61 cfm of unfiltered inleakage, the IPF for VSF-9 operation is 30.74 and for 2VSF-9 operation is 31.16. With 340 cfm unfiltered inleakage, the IPF for VSF-9 operation is 6.57 and for 2VSF-9 operation is 6.74. By contrast, in the current ANO-1 licensing basis calculations, which assume 10 cfm unfiltered inleakage and 333 cfm filtered air with either fan in operation, the IPF for VSF-9 operation is 144. 53 and for 2VSF-9 operation is 149.54.

Question 2:

Attachment 1 to the June 30, 2003 letter seems to imply that the design basis value for inleakage for the ANO control room envelope is 40 cfm. The last paragraph in Section 3.7.9.4 Background refers to a test with VSF-9 operating which showed an inleakage of 30 cfm into the ANO control room envelope. This 30 cfm with another 10 cfm included for ingress/egress of the control room envelope would seem to imply a licensing basis inleakage number of 40 cfm. Previously, a January 31, 2002 Entergy letter indicated that the licensing basis value for inleakage was 61. The staff is unaware of any licensing action which has changed the value from 61 cfm. Entergy should provide a clarification to their amendment request which clearly delineates that the licensing basis value for inleakage to the control room envelope at ANO to be 61 cfm.

Response 2:

The ANO-1 and ANO-2 control rooms are located adjacent to each other within a common control room envelope. The licensing basis for each unit considered the accidents for the specific unit, i.e., the licensing basis for ANO-1 considers the ANO-1 accidents and the licensing basis for ANO-2 considers the ANO-2 accidents. This results in two different licensing basis values for unfiltered air inleakage into the control room envelope for ANO-1 and ANO-2.

For ANO-1 the current design and licensing basis is zero unfiltered inleakage plus an allowance of 10 cfm for ingress/egress of the control room envelope. The results of the tracer gas test, performed in November, 2001, indicated measured unfiltered inleakage to be 40 cfm, including 10 cfm for ingress/egress. ANO-1 is presently in an operable but degraded condition as described in the response to question 1, relying on credit for KI as a compensatory measure to show compliance with GDC 19 following an ANO-1 MHA. By letter to the NRC dated August 28, 2003, (Reference 4), Entergy described a plan to retire this compensatory measure for ANO-1, including a commitment to submit calculations for ANO-1 using the guidance for Regulatory Guide 1.195 to derive a limiting unfiltered inleakage into the control room envelope to meet the control room dose acceptance criteria without reliance on KI administration by June 30, 2004.

Prior to April 24, 2002 (NRC SER related to Amendment 244), the ANO-2 licensing basis for unfiltered inleakage into the control room was zero unfiltered inleakage plus an allowance of 10 cfm for ingress/egress of the control room envelope. As previously stated, the results of the tracer gas test, performed in November, 2001, indicated measured unfiltered inleakage was 40 cfm. Entergy revised the ANO-2 licensing bases for unfiltered inleakage to 61 cfm based on the ANO-2 MHA (Reference 3). This remains the licensing basis value for ANO-2.

It is not the intention of the June 30, 2003 amendment request to revise the licensing basis of either unit.