May 19, 199

Mr. C. Randy Hutchinson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: CONTROL ROOM EMERGENCY VENTILATION SYSTEM (TAC NOS. M97528 AND M97533)

Dear Mr. Hutchinson:

The Commission has issued the enclosed Amendment No. 196 to Facility Operating License No. DPR-51 and Amendment No. 206 to Facility Operating License No. NPF-6 for the Arkansas Nuclear One, Units 1 and 2 (ANO-1, ANO-2). These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated December 19, 1996, as supplemented August 6 and December 3, 1998.

The amendments revise those TSs associated with the ANO-1 and ANO-2 control room emergency ventilation systems. The changes to the ANO-1 TS clarify the control room emergency habitability equipment requirements and make the requirements more consistent with those specified for ANO-2. In addition, the allowed outage time for one inoperable train of the emergency air conditioning system has been extended from 7 to 30 days for both ANO-1 and ANO-2.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,
ORIGINAL SIGNED BY
Nicholas D. Hilton, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-313 and 50-368
Enclosures: 1. Amendment No. 196 to DPR-51
2. Amendment No. 206 to NPF-6
3. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 196
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (the licensee) dated December 19, 1996, as supplemented August 6 and December 3, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. DPR-51 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 196 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A Gramm

Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: May 19, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 196

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
i	i
ii	ii
42b	42b
43c	43c
45d1	45d1
45f	45f
59a	59a
60	60
61	61
107	107
108	108
	108a

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3.5.1.13 Two control room ventilation radiation monitoring channels shall be operable whenever the reactor coolant system is above the cold shutdown condition or during handling of irradiated fuel.

3.5.1.14 The Main Steam Line Radiation Monitoring Instrumentation shall be operable with a minimum measurement range from 10^{-1} to 10^{4} mR/hr, whenever the reactor is above the cold shutdown condition.

3.5.1.15 Initiate functions of the EFIC system which are bypassed at cold shutdown conditions shall have the following minimum operability conditions:

a. "low steam generator pressure" initiate shall be operable when the main steam pressure exceeds 750 psig.

b. "loss of 4 RC pumps" initiate shall be operable when neutron flux exceeds 10% power.

c. "main feedwater pumps tripped" initiate shall be operable when neutron flux exceeds 10% power.

3.5.1.16 The automatic steam generator isolation system within EFIC shall be operable when main steam pressure is greater than 750 psig.

The principal function of the Control Room Isolation - High Radiation is to provide an enclosed environment from which the unit can be operated following an uncontrolled release of radioactivity. Due to the unique arrangement of the shared control room envelope, one control room isolation channel receives a high radiation signal from the ANO-1 control room ventilation intake duct monitor and the redundant channel receives a high radiation signal from the ANO-2 control room ventilation intake duct monitor. With no channel of the control room radiation monitoring system operable, the CREVS must be placed in a condition that does not require the isolation to occur (i.e., one operable train of CREVS is placed in the emergency recirculation mode of operation). Reactor operation may continue indefinitely in this state.

To support loss of main feedwater analyses, steam line/feedwater line break analyses, SBLOCA analyses, and NUREG-0737 requirements, the EFIC system is designed to automatically initiate EFW when:

1. all four RC pumps are tripped
2. both main feedwater pumps are tripped
3. the level of either steam generator is low
4. either steam generator pressure is low
5. ESAS ECCS actuation (high RB pressure or low RCS pressure)

The EFIC system is also designed to isolate the affected steam generator on a steam line/feedwater line break and supply EFW to the intact generator according to the following logic:

- If both SG's are above 600 psig, supply EFW to both SG's.
- If one SG is below 600 psig, supply EFW to the other SG.
- If both SG's are below 600 psig, but the pressure difference between the two SG's exceeds 100 psig, supply EFW only to the SG with the higher pressure.
- If both SG's are below 600 psig and the pressure difference is less than 100 psig, supply EFW to both SG's.

At cold shutdown conditions all EFIC initiate and isolate functions are bypassed except low steam generator level initiate. The bypassed functions will be automatically reset at the values or plant conditions identified in Specification 3.5.1.15. "Loss of 4 RC pumps" initiate and "low steam generator pressure" initiate are the only shutdown bypasses to be manually initiated during cooldown. If reset is not done manually, they will automatically reset. Main feedwater pump trip bypass is automatically removed above 10% power.

REFERENCE

FSAR, Section 7.1

Table 3.5.1-1 (cont'd)

OTHER SAFETY RELATED SYSTEMS (Cont'd)	1	2	3	4	5
Functional Unit	No. of channels	No. of channels for system trip	Min. operable channels	Min. degree of redundancy	Operator action if conditions of column 3 or 4 cannot be met
13. In core Thermocouples (core-exit thermocouples)	6/core quadrant	N/A	2/core quadrant	0	Note 22
14. Control Room Radiation Monitors	2	1	2	1	Note 17, 18
15. Reactor Vessel Level Monitoring System	2	N/A	2	0	Note 28, 29
16. Hot Leg Level Measurement System (HLLMS)	2	N/A	2	0	Note 28, 29
17. Main Steam Line Radiation Monitors	1 /steam line	N/A	1/steam line	0	Note 30

TABLE 3.5.1-1 (Cont'd)

12. With the number of operable channels less than required, either return the indicator to operable status within 24 hours, or verify the block valve closed and power removed within an additional 24 hours. If the block valve cannot be verified closed within the additional 24 hours, de-energize the electromatic relief valve power supply within the following 12 hours.

13. Channels may be bypassed for not greater than 30 seconds during reactor coolant pump starts. If the automatic bypass circuit or its alarm circuit is inoperable, the undervoltage protection shall be restored within 1 hour, otherwise, Note 14 applies.

14. With the number of channels less than required, restore the inoperable channels to operable status within 72 hours or be in HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

15. This trip function may be bypassed at up to 10% reactor power.

16. This trip function may be bypassed at up to 45% reactor power.

17. With no channel operable, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

18. With one channel inoperable, restore the inoperable channel to operable status within 7 days or within the next 6 hours initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

19. This function may be bypassed below 750 psig OTSG pressure. Bypass is automatically removed when pressure exceeds 750 psig.

20. With one channel inoperable, (1) either restore the inoperable channel to operable status within 7 days, or (2) prepare and submit a Special Report to the Commission pursuant to Specification 6.12.5 within 30 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status. With both channels inoperable, initiate alternate methods of monitoring the containment radiation level within 72 hours in addition to the actions described above.

21. With one channel inoperable, restore the inoperable channel to operable status within 30 days or be in hot shutdown within 72 hours unless containment entry is required. If containment entry is required, the inoperable channel must be restored by the next refueling outage. If both channels are inoperable, restore the inoperable channels within 30 days or be in HOT SHUTDOWN within 12 hours.

3.8.15 Storage in the spent fuel pool shall be restricted to fuel assemblies having initial enrichment less than or equal to 4.1 w/o U-235. The provisions of Specification 3.0.3 are not applicable.

3.8.16 Storage in Region 2 (as shown on Figure 3.8.1) of the spent fuel pool shall be further restricted by burnup and enrichment limits specified in Figure 3.8.2. In the event a checkerboard storage configuration is deemed necessary for a portion of Region 2, vacant spaces adjacent to the faces of any fuel assembly which does not meet the Region 2 burnup criteria (non-restricted) shall be physically blocked before any such fuel assembly may be placed in Region 2. This will prevent inadvertent fuel assembly insertion into two adjacent storage locations. The provisions of Specification 3.0.3 are not applicable.

3.8.17 The boron concentration in the spent fuel pool shall be maintained (at all times) at greater than 1600 parts per million.

3.8.18 During the handling of irradiated fuel, the control room emergency air conditioning system and the control room emergency ventilation system shall be operable as required by Specification 3.9.

Bases

Detailed written procedures will be available for use by refueling personnel. These procedures, the above specifications, and the design of the fuel handling equipment as described in Section 9.6 of the FSAR incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety. If no change is being made in core geometry, one flux monitor is sufficient. This permits maintenance on the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition.

The requirement that at least one decay heat removal loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel at the refueling temperature (normally 140°F), and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.(1)

The requirement to have two decay heat removal loops operable when there is less than 23 feet of water above the core, ensures that a single failure of the operating decay heat removal loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating decay heat removal loop, adequate time is provided to initiate emergency procedures to cool the core.

The shutdown margin indicated in Specification 3.8.4 will keep the core subcritical, even with all control rods withdrawn from the core.(2) Although the refueling boron concentration is sufficient to maintain the core keff ≤ 0.99 if all the control rods were removed from the core, only a few control rods will be removed at any one time during fuel shuffling and

3.9 CONTROL ROOM EMERGENCY VENTILATION AND AIR CONDITIONING SYSTEMS

Applicability

Applies to the operability of the control room emergency ventilation and air conditioning systems.

Objective

To ensure that the control room emergency ventilation and air conditioning systems will perform within acceptable levels of efficiency and reliability.

Specification

3.9.1 Control Room Emergency Air Conditioning System

3.9.1.1 Two independent trains of the control room emergency air conditioning system shall be operable whenever the reactor coolant system is above the cold shutdown condition or during handling of irradiated fuel.

3.9.1.2 With one train of control room emergency air conditioning inoperable, restore the inoperable train to Operable status within 30 days or be in at least Hot Shutdown within the next 6 hours and in Cold Shutdown within the following 30 hours.

3.9.2 Control Room Emergency Ventilation System

3.9.2.1 Two independent trains of the control room emergency ventilation system shall be operable whenever the reactor coolant system is above the cold shutdown condition or during handling of irradiated fuel.

3.9.2.2 With one train of control room emergency ventilation inoperable, restore the inoperable train to Operable status within 7 days or be in at least Hot Shutdown within the next 6 hours and in Cold Shutdown within the following 30 hours.

Bases

The control room emergency ventilation and air conditioning system is designed to isolate the combined control rooms to ensure that the control rooms will remain habitable for Operations personnel during and following all credible accident conditions and to ensure that the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system. The design configuration of the system is based on limiting the radiation exposure to personnel occupying the control room to 5 REM or less whole body, or its equivalent, in accordance with the requirements of General Design Criteria 19 of Appendix A, 10 CFR 50.

Unit 1 and Unit 2 control rooms are a single environment for emergency ventilation and air conditioning concerns. Since the control room emergency ventilation and air conditioning equipment is shared between units, the plant status of both units must be considered when determining applicability of the specification.

Due to the unique situation of the shared emergency ventilation and air conditioning equipment, the components may be cross fed from the opposite unit per predetermined contingency actions/procedures. Unit 1 may take credit for operability of these systems when configured to achieve separation and independence regardless of normal power and/or service water configuration. This will be in accordance with pre-determined contingency actions/procedures.

The control room emergency ventilation system consists of two independent filter and fan trains, two independent actuation channels and the Control Room isolation dampers. The control room dampers isolate the control room within 10 seconds of receipt of a high radiation signal.

If the actuation signal can not start the emergency ventilation recirculation fan, operating the affected fan in the manual recirculation mode and isolating the control room isolation dampers provides the required design function of the control room emergency ventilation system to isolate the combined control rooms to ensure that the control rooms will remain habitable for operations personnel during and following accident conditions. This contingency action should be put in place immediately (within 1 hour) to fully satisfy the design functions of the control room emergency ventilation system.

The control room emergency air conditioning system (CREACS) provides temperature control for the control room following isolation of the control room. It is manually started from the Unit 2 Control Room. The CREACS consists of two independent and redundant trains that provide cooling of recirculated control room air. A cooling coil and a water cooled condensing unit are provided for each system to provide suitable temperature conditions in the control room for operating personnel and safety related control equipment.

With both trains of the control room emergency ventilation and/or emergency air conditioning inoperable, the function of the control room emergency air systems have been lost, requiring immediate action to place the reactor in a condition where the specification does not apply.

4.10 CONTROL ROOM EMERGENCY VENTILATION AND AIR CONDITIONING SYSTEM SURVEILLANCE

Applicability

Applies to the surveillance of the control room emergency ventilation and air conditioning systems.

Objective

To verify an acceptable level of efficiency and operability of the control room emergency ventilation and air conditioning systems.

Specification

4.10.1 Each train of control room emergency air conditioning shall be demonstrated Operable:

a. At least once per 31 days on a staggered test basis by:

1. Starting each unit and

2. Verifying that each unit operates for at least 1 hour and maintains the control room air temperature ≤84°F D.B.

b. At least once per 18 months by verifying a system flow rate of 9900 cfm ±10%.

4.10.2 Each train of control room emergency ventilation shall be demonstrated Operable:

a. At least once per 31 days on a Staggered Test Basis by initiating, from the Control Room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes.

b. At least once per 18 months or 1)after any structural maintenance on the HEPA filter or charcoal adsorber housings, or 2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 2000 cfm ±10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of ASTM D3803-1989 when tested at 30°C and 95% relative humidity for a methyl iodide penetration of:

a. ≤2.5% for 2 inch charcoal adsorber beds, or

b. ≤0.5% for 4 inch charcoal adsorber beds.

3. Verifying a system flow rate of 2000 cfm ±10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of ASTM D3803-1989 when tested at 30°C and 95% relative humidity for a methyl iodide penetration of:

1. ≤ 2.5% for 2 inch charcoal adsorber beds, or

2. ≤ 0.5% for 4 inch charcoal adsorber beds.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches of water while operating at a flowrate of 2000 cfm ± 10%.

2. Verifying that on a Control Room ventilation high radiation test signal, the system 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.

e. After each complete or partial replacement of the HEPA filter bank by verifying that the HEPA filter banks remove ≥ 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 2000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove ≥ 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 2000 cfm ± 10%.

Bases

The purpose of the control room emergency ventilation system is to limit the particulate and gaseous fission products to which the control area would be subjected during an accidental radioactive release in or near the Auxiliary Building. The system is designed with 100 percent capacity filter trains which consist of a prefilter, high efficiency particulate filters, charcoal adsorbers and a fan.

Since the emergency ventilation system is not normally operated, a periodic test is required to insure operability when needed. During this test the system will be inspected for such things as water, oil, or other foreign material; gasket deterioration, adhesive deterioration in the HEPA units; and unusual or excessive noise or vibration when the fan motor is running. Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. Tests of the charcoal adsorbers with DOP aerosol shall be performed in accordance with ANSI N510 (1975) "Standard for Testing of Nuclear Air Cleaning Systems." Any HEPA filters found defective shall be replaced with filters qualified according to Regulatory Position C.3.d of Regulatory Guide 1.52. If laboratory test results are unacceptable, all charcoal adsorbents in the system shall be replaced with charcoal adsorbent qualified according to Regulatory Guide 1.52.

The operability of the control room emergency air conditioning Systems ensure that the ambient air temperature does not exceed the allowable temperature for the equipment and instrumentation cooled by this system and the Control Room will remain habitable for Operations personnel during and following all credible accident conditions.

Operation of the systems for 15 minutes every month will demonstrate operability of the emergency ventilation and emergency air conditioning systems. All dampers and other mechanical and isolation systems will be shown to be operable.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significant shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 206
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (the licensee) dated December 19, 1996, as supplemented August 6 and December 3, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-6 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 206, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A Gramm

Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: May 19, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 206

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
VIII	VIII
XIII	XIII
3/4 3-25	3/4 3-25
3/4 3-26	3/4 3-26
3/4 3-27	3/4 3-27
3/4 7-17	3/4 7-17
3/4 7-18	3/4 7-18
B 3/4 3-2	B 3/4 3-2
B 3/4 7-5	B 3/4 7-5
B 3/4 7-6	B 3/4 7-6
B 3/4 7-7	B 3/4 7-7

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

BASES

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
1. AREA MONITORS					
a. Spent Fuel Pool Area Monitor	1	Note 1	$\leq 1.5 \times 10^{-2}$ R/hr	10^{-4} - 10^{1} R/hr	13
b. Containment High Range	2	1, 2, 3 & 4	Not Applicable	1 - 10^{7} R/hr	18
2. PROCESS MONITORS					
a. Containment					
i. Gaseous Activity					
a) Purge & Exhaust Isolation	1	5 & 6	$\leq$ 2 x background	10 - 10^{6} cpm	16
b) RCS Leakage Detection	1	1, 2, 3 & 4	Not Applicable	10 - 10^{6} cpm	14
ii. Particulate Activity					
a) RCS Leakage Detection	1	1, 2, 3 & 4	Not Applicable	10 - 10^{6} cpm	14
b. Control Room Ventilation Intake Duct Monitors	2	Note 2	$\leq$ 2 x background	10 - 10^{6} cpm	17, 20
c. Main Steam Line Radiation Monitors	1/Steam Line	1, 2, 3, & 4	Not Applicable	10^{-1} - 10^{4} mR/hr	19

Note 1 - With fuel in the spent fuel pool or building.
Note 2 - MODES 1, 2, 3, 4, and during handling of irradiated fuel.

TABLE 3.3-6 (Continued)

TABLE NOTATION

ACTION 13 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.

ACTION 14 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 16 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, complete the following:

a. If performing CORE ALTERATIONS or moving irradiated fuel within the reactor building, secure the containment purge system or suspend CORE ALTERATIONS and movement of irradiated fuel within the reactor building.

b. If a containment PURGE is in progress, secure the containment purge system.

c. If continuously ventilating, verify the SPING monitor operable or perform the ACTIONS of 3.3.3.9, or secure the containment purge system.

ACTION 17 - With no channels OPERABLE, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

ACTION 18 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, (1) either restore the inoperable channel to OPERABLE status within 7 days or (2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to OPERABLE status. With both channels inoperable, initiate alternate methods of monitoring the containment radiation level within 72 hours in addition to the actions described above.

ACTION 19 - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements, initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours, and:

1) either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

ACTION 20 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 7 days, or within the next 6 hours initiate and maintain the control room emergency ventilation system in the recirculation mode of operation.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. AREA MONITORS				
a. Spent Fuel Pool Area Monitor	S	R	M	Note 1
b. Containment High Range	S	R Note 4	M	1, 2, 3, & 4
2. PROCESS MONITORS				
a. Containment				
i. Gaseous Activity				
a) Purge & Exhaust Isolation	Note 2	R	Note 3	5 & 6
b) RCS Leakage Detection	S	R	M	1, 2, 3, & 4
ii. Particulate Activity				
a) RCS Leakage Detection	S	R	M	1, 2, 3, & 4
b. Control Room Ventilation Intake Duct Monitors	S	R	M	Note 5
c. Main Steam Line Radiation Monitors	S	R	M	1, 2, 3, & 4

Note 1 - With fuel in the spent fuel pool or building.
Note 2 - Within 8 hours prior to initiating containment purge operations and at least once per 12 hours during containment purge operations.
Note 3 - Within 31 days prior to initiating containment purge operations and at least once per 31 days during containment purge operations.
Note 4 - Acceptable criteria for calibration are provided in Table II.F.1-3 of NUREG-0737.
Note 5 - MODES 1, 2, 3, 4, and during handling of irradiated fuel.

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION AND AIR CONDITIONING SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6.1 Two independent control room emergency ventilation and air conditioning systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, and during handling of irradiated fuel.

ACTION:

a. With one control room emergency air conditioning system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one control room emergency ventilation system inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one control room emergency air conditioning system and one control room emergency ventilation system inoperable, restore the inoperable control room emergency ventilation system to OPERABLE status within 7 days and restore the inoperable control room emergency air conditioning system to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.6.1.1 Each control room emergency air conditioning system shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Starting each unit from the control room, and

2. Verifying that each unit operates for at least 1 hour and maintains the control room air temperature $\leq 84^{\circ}F$ D.B.

b. At least once per 18 months by verifying a system flow rate of 9900 cfm ± 10%.

4.7.6.1.2 Each control room emergency air filtration system shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes.

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 2000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of ASTM D3803-1989 when tested at 30°C and 95% relative humidity for a methyl iodide penetration of:

   a. ≤ 2.5% for 2 inch charcoal adsorber beds, or

   b. ≤ 0.5% for 4 inch charcoal adsorber beds.

3. Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of ASTM D3803-1989 when tested at 30°C and 95% relative humidity for a methyl iodide penetration of:

   1. ≤ 2.5% for 2 inch charcoal adsorber beds, or

   2. ≤ 0.5% for 4 inch charcoal adsorber beds.

d. At least once per 18 months by:

   1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the system at a flow rate of 2000 cfm ± 10%.

   2. Verifying that on a control room high radiation test signal, the system 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.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove ≥ 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 2000 cfm ± 10%.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

The PURGE as defined in the definitions section is a release under a purge permit, whereas continuous ventilation is defined as operation of the purge system after the requirements of the purge permit have been satisfied. When securing the containment purge system to meet the ACTION requirements of this Specification, at least one supply valve and one exhaust valve is to be closed, and the supply and exhaust fans secured.

The principal function of the control room intake duct monitors is to provide an enclosed environment from which the unit can be operated following an uncontrolled release of radioactivity. Due to the unique arrangement of the shared control room envelope, one control room isolation channel receives a high radiation signal from the ANO-1 control room ventilation intake duct monitor and the redundant channel receives a high radiation signal from the ANO-2 control room ventilation intake duct monitor. With neither channel of the control room radiation monitoring system operable, the CREVS must be placed in a condition that does not require the isolation to occur (i.e., one operable train of CREVS is placed in the emergency recirculation mode of operation). Reactor operation may continue indefinitely in this state.

3/4.3.3.2 DELETED

3/4.3.3.3 DELETED

3/4.3.3.4 DELETED

3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criteria 19 of 10 CFR 50.

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION AND AIR CONDITIONING SYSTEM

The OPERABILITY of the control room emergency ventilation and air conditioning system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50.

Unit 1 and Unit 2 control rooms are a single environment for emergency ventilation and air conditioning concerns. Since the control room emergency ventilation and air conditioning equipment is shared between units, the plant status of both units must be considered when determining applicability of the specification.

Due to the unique situation of the shared emergency ventilation and air conditioning equipment, the components may be cross fed from the opposite unit per predetermined contingency actions/procedures. Unit 1 may take credit for operability of these systems when configured to achieve separation and independence regardless of normal power and/or service water configuration. This will be in accordance with pre-determined contingency actions/procedures.

The control room emergency ventilation system consists of two independent filter and fan trains, two independent actuation channels and the Control Room isolation dampers. The control room dampers isolate the control room within 10 seconds of receipt of a high radiation signal.

If the actuation signal can not start the emergency ventilation recirculation fan, operating the affected fan in the manual recirculation mode and isolating the control room isolation dampers provides the required design function of the control room emergency ventilation system to isolate the combined control rooms to ensure that the control rooms will remain habitable for operations personnel during and following accident conditions. This contingency action should be put in place immediately (within 1 hour) to fully satisfy the design functions of the control room emergency ventilation system.

The control room emergency air conditioning system (CREACS) provides temperature control for the control room following isolation of the control room. It is manually started from the Unit 2 Control Room. The CREACS consists of two independent and redundant trains that provide cooling of recirculated control room air. A cooling coil and a water cooled condensing unit are provided for each system to provide suitable temperature conditions in the control room for operating personnel and safety related control equipment.

With both trains of the control room emergency ventilation and/or emergency air conditioning inoperable, the function of the control room emergency air systems have been lost, requiring immediate action to place the reactor in a condition where the specification does not apply.

3/4.7.8 SHOCK SUPPRESSORS (SNUBBERS)

All snubbers are required OPERABLE to ensure that the structural integrity of the reactor coolant system and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed would have no adverse effect on any safety-related system.

The visual inspection frequency is based upon maintaining a constant level of snubber protection to systems. Therefore, the required inspection interval varies based upon the number of INOPERABLE snubbers found during the previous inspection in proportion to the sizes of the various snubber populations or categories and the previous inspection interval as specified in NRC Generic Letter 90-09, "Alternative Requirements For Snubber Visual Inspection Intervals and Corrective Actions". Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the result of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

When the cause of the rejection of a snubber is clearly established and remedied for that snubber and for any other snubbers that may be generically susceptible and verified by inservice functional testing, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those which are of a specific make or model and have the same design features directly related to rejection of the snubber by visual inspection, or are similarly located or exposed to the same environmental conditions such as temperature, radiation and vibration.

When a snubber is found inoperable, an engineering evaluation is performed, in addition to the determination of the snubber mode of failure, in order to determine if any safety-related component or system has been adversely affected by the inoperability of the snubber. The engineering evaluation is performed to determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

If a review and evaluation of an INOPERABLE snubber is performed and documented to justify continued operation and provided that all design criteria are met with the INOPERABLE snubber, then the INOPERABLE snubber would not need to be restored or replaced.

To provide further assurance of snubber reliability, a representative sample of the installed snubbers will be functionally tested during plant shutdowns at 18 month intervals. These tests will include stroking of the snubbers to verify proper piston movement, lock-up and bleed. Observed failures of these sample snubbers will require functional testing of additional units. To minimize personnel exposures, snubbers installed in areas which have high radiation fields during shutdown or in especially difficult to remove locations may be exempted from these functional testing requirements provided the OPERABILITY of these snubbers was demonstrated during functional testing at either the completion of their fabrication or at a subsequent date.

3/4.7.9 SEALED SOURCE CONTAMINATION

The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. This limitation will ensure that leakage from byproduct, source, and special nuclear material sources will not exceed allowable intake values.

3/4.7.10 FIRE SUPPRESSION SYSTEMS

DELETED

3/4.7.11 FIRE BARRIERS

DELETED

3/4.7.12 SPENT FUEL POOL STRUCTURAL INTEGRITY

The reinforcing steel in the walls of the spent fuel pool was erroneously terminated into the front face instead of the rear face of the adjoining walls during construction of the spent fuel pool. Therefore, the specified structural integrity inspections of the spent fuel pool are required to be performed to ensure that the pool remains safe for use and that it will adequately resist the imposed loadings. If no abnormal degradation is observed during the first five inspections, the inspection interval for subsequent routine inspections may be extended to at least once per 18 months or longer if justified by observed performance of the pool.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 196 TO

FACILITY OPERATING LICENSE NO. DPR-51 AND

AMENDMENT NO. 206 TO FACILITY OPERATING LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NOS. 1 AND 2

DOCKET NOS. 50-313 AND 50-368

1.0 INTRODUCTION

By letter dated April 4, 1995, as supplemented June 22, 1995, Entergy Operations, Inc. (the licensee) submitted a request for changes to the Arkansas Nuclear One, Units 1 and 2 (ANO-1, ANO-2), Technical Specifications (TSs). The requested changes revise those TSs associated with the ANO-1 and ANO-2 control room emergency ventilation systems. The changes to the ANO-1 TSs clarify the control room emergency habitability equipment requirements and make the requirements more consistent with those specified for ANO-2.

During subsequent discussions between ANO and the Nuclear Regulatory Commission (NRC) staff, the staff requested that the licensee revise the proposed control room filter testing requirements for ANO-1 and the existing control room filter testing requirements for ANO-2 to include the testing methodology of ASTM [American Society for Testing and Materials] D3803-1989, "Standard Test Method for Nuclear-Grade Activated Charcoal," as the laboratory testing standard. The staff also requested changes in the proposed ANO-1 and existing ANO-2 filter testing acceptance criteria.

The licensee superseded its April 4, 1995, amendment request by letter dated December 19, 1996, as supplemented August 6 and December 3, 1998. An additional change was requested for both the ANO-1 and ANO-2 TSs in the December 19, 1996, amendment request to extend the allowed outage time for one inoperable train of the emergency air conditioning system from 7 days to 30 days. The licensee also proposed changes to the Bases of the TSs in order to make the Bases consistent with the TS changes.

The August 6, 1998, letter incorporated the addition of a new radiation monitor in the ANO-1 control room normal air intake duct and ANO-2 operator's guidance as an enhancement in certain situations. The letter also revised the December 19, 1996, submittal pages to reflect the incorporation of ANO-1 Amendment 192 and ANO-2 Amendment 191, issued on July 13, 1998. The December 3, 1998, letter corrected a surveillance requirement reference table in the December 19, 1996, letter.

The August 6 and December 3, 1998, letters provided additional information that did not change the scope of the original Federal Register notice and did not change the staff's initial proposed no significant hazards consideration determination.

2.0 EVALUATION

2.1 Background

The current control room ventilation system has evolved from two subsystems, one for ANO-1 and another for ANO-2. Each subsystem includes a control room emergency ventilation system (CREVS) and a control room emergency air conditioning system (CREACS). Air conditioning for both control rooms under isolated control room conditions is maintained by package units located in the ANO-2 portion of the control room. The package air conditioners are normally powered from vital buses in ANO-2, but one package unit can be temporarily powered from a vital bus in ANO-1. The ANO-1 control room ventilation systems are described in ANO-1 Safety Analysis Report (SAR) Sections 1.7.2 and 9.7.2.1. The ANO-2 control room ventilation systems are described in ANO-2 SAR Sections 1.2.2.10.B and 9.4.1. The existing TSs for both ANO-1 and ANO-2 address the same equipment, but with different requirements. This complicates system functional performance with respect to how the system operates in the off-normal and emergency modes. The ANO-1 and ANO-2 control rooms are located adjacent to each other. The control panels and equipment are physically separated by glass doors to eliminate interaction between the ANO-1 and ANO-2 systems. The glass doors do not extend to the ceiling and are open at the top to allow the ventilation systems to be shared by the two control rooms, comprising a common control room ventilation envelope. One system is redundant to the other and, therefore, the TS for each unit's control room habitability system should address the same surveillance requirements (SRs) and acceptance criteria.

The CREVS is designed to reduce the potential control room operator dose from a radiological accident to within the General Design Criterion 19 limits. The CREVS consists of two redundant filter trains, both of which are located outside the ANO-1 section of the common control room. Each filter train includes a centrifugal fan, a roughing filter, a high efficiency particulate (HEPA) filter, and a charcoal adsorber. Besides recirculation and filtration of control room air, filtered outside makeup air is also provided to pressurize the control room in order to minimize unfiltered air in-leakage into the control room under isolated conditions. A new ANO-1 intake duct radiation monitor, identical to the ANO-2 intake duct radiation monitor, was installed to replace the existing area radiation monitor's input signal to the control room high radiation automatic isolation circuit. Additionally, the CREVS trains are normally isolated from the control room by dampers. In the event of detection of high radiation, the normal control room ventilation systems of both ANO-1 and ANO-2 are automatically isolated and both trains of the CREVS are automatically actuated.

The control room emergency ventilation system filtration train for each unit consists of an emergency filter and fan unit and its associated filters. The ANO-1 filter train is located above the ANO-1 control room in the computer room. Outside air, drawn from the computer room and turbine building, is supplied for ANO-1 control room makeup when the ANO-1 CREVS is placed in operation. The ANO-1 recirculated air flow is filtered by a roughing filter, a HEPA filter, and a 2-inch charcoal tray adsorber. The outside air supplied for makeup for ANO-1 is filtered through a roughing filter, a HEPA filter, and a 2-inch charcoal tray adsorber, mixed with the recirculated air flow, and then filtered again through a roughing filter, a HEPA filter, and a 2-inch recirculation charcoal tray adsorber. The licensee states that this arrangement results in filtering the makeup air flow through 4 inches of charcoal adsorber as defined in 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," Revision 2, March 1978, Table 2.

The ANO-2 filter train is located in the ANO-1 Auxiliary Building. The ANO-2 filter train rated flow consists of recirculation air, taken from and returned to the control room envelope, and outside air drawn from the ANO-1 Auxiliary Building and supplied for control room makeup when the ANO-2 CREVS is placed in operation. After mixing, the recirculated air and the makeup air flows for ANO-2 are filtered by a roughing filter, HEPA filter, and a 4-inch deep bed charcoal adsorber. The ANO-1 and ANO-2 emergency filter and fan unit trains are not equipped with heaters and are not designed to control the relative humidity of the ventilation flow stream.

Currently, TS 3.9 and TS 4.10 for ANO-1 and TS 3/4.7.6 for ANO-2 are written in such a way that ANO must test the charcoal from each unit twice using two different testing requirements.

2.2 Evaluation of Proposed Changes for ANO-1

The licensee proposes to revise the titles, applicability, and objectives of TS Sections 3.9 and 4.10 to refer to the control room emergency ventilation and air conditioning system rather than the control room emergency air conditioning and isolation system. The licensee also proposes to revise Table of Contents pages (i) and (ii) to reflect the new titles of Sections 3.9 and 4.10. The proposed changes are administrative and are acceptable to the staff.

The licensee proposes to separate TS 3.9.1 into TS 3.9.1 for the CREACS and TS 3.9.2 for the CREVS. The proposed change is administrative and is acceptable to the staff.

The licensee proposes to move existing TSs 3.9.1.a, 3.9.1.b, 3.9.1.c, 3.9.1.d, and 3.9.1.f to TS 4.10 because they are surveillance requirements associated with the CREVS. Specifically, the licensee proposes the following changes:

Current Specification	Equivalent Proposed Specification
3.9.1.a	4.10.2.b.1, 4.10.2.e, and 4.10.2.f
3.9.1.b	4.10.2.b.2 and 4.10.2.c
3.9.1.c	4.10.2.b.3
3.9.1.d	4.10.2.d.1
3.9.1.f	4.10.2.d.2

These proposed changes are administrative changes and are acceptable to the staff.

The licensee proposes to add TS 3.5.1.13 to specify that the radiation monitoring system instrumentation must be operable whenever the reactor coolant system is above the cold shutdown condition or during the handling of irradiated fuel. The current TS does not specifically require operability of the ANO-1 area radiation monitor. The licensee installed an intake duct radiation monitor for ANO-1, identical to the ANO-2 intake duct radiation monitor, to provide improved radiation detection capability and redundancy. For purposes of the TS, the ANO-1 intake duct radiation monitor's signal will replace the area radiation monitor's input signal to the control room isolation circuit. The incorporation of TS 3.5.1.13 results in a more

restrictive requirement than previously specified and assures the operability of the control room ventilation radiation monitoring system during those modes of operation in which the CREVS is required to be operable. The change is acceptable to the staff.

The licensee proposes to add the control room radiation monitor channels to TS Table 3.5.1-1, "Instrumentation Limiting Conditions for Operation," Other Safety Related Systems functional unit 14. The addition of the control room isolation on high radiation to Table 3.5.1-1 clearly defines the requirements for the control room radiation monitoring instrumentation systems and maintains consistency with TS 3.5.1.13 as previously discussed.

The licensee proposes to delete existing TS 3.9.1.e. Currently, TS 3.9.1.e requires that one circuit of the control room emergency air conditioning and isolation system be capable of automatic actuation whenever reactor building integrity is required. The licensee's submittal referred to TS 3.9.1.c; however, since the description of the requirement was correct, the staff identified the typographical error and verbally confirmed that it was an error with the licensee. The TS 3.9.1.e requirement will be maintained by the inclusion of proposed new TS 3.5.1.13, and the addition of the control room radiation monitor channels to TS Table 3.5.1-1, Other Safety Related Systems functional unit 14. Relocation of TS 3.9.1.e requirements to TS 3.5.1.13 and Table 3.5.1-1 is administrative and acceptable to the staff.

The licensee proposes to revise Note 17 of TS Table 3.5.1-1 for clarity by deleting the phrase, "...restore the inoperable channels to operable status, or...." Note 17 as currently worded could be interpreted as conflicting with Note 18. The revision clarifies that Note 17 applies if no channels are operable, and Note 18 applies if one channel is inoperable. The revision is administrative and is acceptable to the staff.

The licensee proposes to revise the Bases associated with proposed new TS 3.5.1.13 to replace the reference to the ANO-1 area radiation monitor with a reference to the ANO-1 control room ventilation intake duct monitor. The installation of the ANO-1 control room ventilation intake duct monitor was found acceptable under 10 CFR 50.59. For consistency in terminology, the licensee also proposes to replace the reference to the ANO-2 control room ventilation process monitor in its December 19, 1996, submittal with a reference to the ANO-2 control room ventilation intake duct monitor. The current ANO-1 TSs require operability of the radiation monitors only by requiring that the control room ventilation dampers be capable of isolating within 10 seconds after receipt of a high radiation signal. The proposed change in nomenclature of the radiation monitors is administrative in nature and is acceptable to the staff.

The licensee proposes to revise TS 3.9.1 to specify the Limiting Conditions for Operation and the Required Actions associated with the CREACS. The proposed revision combines the requirements of existing TSs 3.9.1 and 3.9.4 into proposed TS 3.9.1. This revision to TS 3.9.1 is administrative and is acceptable to the staff.

The licensee proposes to revise TS 3.9.2 to specify the Limiting Conditions for Operation and the Required Actions associated with the CREVS. The proposed revision combines the requirements of existing TSs 3.9.2 and 3.9.4 into proposed TS 3.9.2. These proposed changes are administrative changes and are acceptable to the staff.

The licensee proposes to delete current TS 3.9.4 and incorporate its requirements into proposed TSs 3.9.1 and 3.9.2, as previously described. The change is administrative and is acceptable to the staff.

The licensee proposes to revise TS 3.9.1 to extend the allowed outage time (AOT) for one inoperable train of the emergency air conditioning system from 7 to 30 days. This proposed TS change is consistent with NUREG-1430, Rev.1, "Standard Technical Specifications, Babcock and Wilcox Plants," and NUREG-1432, Rev.1, "Standard Technical Specifications, Combustion Engineering Plants." As stated in NUREG-1430, Section B 3.7.11, and NUREG-1432, Section B 3.7.12, the 30-day completion time is based on the low probability of an event occurring requiring control room isolation, the consideration that the remaining train can provide the required capabilities, and the alternate cooling means that are available. The extension of the AOT for one inoperable train of CREACS is acceptable to the staff.

The licensee proposes to revise the required actions of proposed TSs 3.9.1.2 and 3.9.2.2 for consistency with the associated limiting conditions for operation (LCOs). These LCOs require two independent trains of the CREVS and CREACS to be operable; however, the required actions require restoration of inoperable systems. The proposed required actions require the restoration of the inoperable train. Similarly, the licensee proposes to revise TS 4.10.2 to require each train of control room emergency ventilation to be demonstrated operable, rather than each system. The proposed changes are administrative and are acceptable to the staff.

The licensee proposes to delete TS 3.9.3. Currently, TS 3.9.3 provides the option of isolating the fire dampers or disabling the supply fan in order to accomplish sealing the control room in the event that the control room isolation dampers cannot automatically isolate the control room following a high radiation signal. Closing the fire dampers provides the intent of sealing the control room from a potentially toxic environment. This action is considered to be a contingency measure and has been deleted. Proposed TS 3.9.1, TS 3.9.2, and TS Table 3.5.1-1 functional unit 14 contain the operability requirements for the CREVS and CREACS and the required actions if a control room radiation monitor channel is inoperable. With no channel of the control room radiation monitoring system operable, the CREVS must be placed in a condition that does not require the isolation to occur (i.e., one operable train of CREVS is placed in the emergency recirculation mode of operation). Disabling the supply fan does not result in isolation of the normal control room ventilation, and this option is removed from the proposed TS. The proposed changes are acceptable to the staff.

The licensee proposes to add TS 3.8.18, which states that, "During the handling of irradiated fuel, the control room emergency air conditioning system and the control room emergency ventilation system shall be operable as required by Specification 3.9." The accident analysis for fuel handling in the reactor building assumes that the CREVS is actuated. Currently, TS 3.9.1 only requires CREACS and CREVS to be operable whenever reactor building integrity is required. The proposed change makes the ANO-1 TSs consistent with the fuel handling accident analysis and results in a more restrictive requirement than previously specified and is, therefore, acceptable to the staff.

The licensee proposes to combine the current TS surveillance requirements for the CREVS and CREACS TSs 4.10.1, 4.10.2, 4.10.3, and 4.10.4 into two new TSs 4.10.1 and 4.10.2 for CREVS and CREACS, respectively, as follows:

Current Specification	Equivalent Proposed Specification
4.10.1	4.10.2.d.1
4.10.2	4.10.2.d
4.10.3.a	4.10.2.b and 4.10.2.c
4.10.3.b	4.10.2.e
4.10.3.c	4.10.2.f
4.10.4	4.10.1.a.2 and 4.10.2.a

The proposed changes are administrative changes and are acceptable to the staff.

The licensee proposes to revise the Bases associated with TSs 3.5, 3.9, 4.10, and Table 3.5.1-1 to reflect the changes to these specifications, to address the common control room for the two units, and to clarify the contingency actions allowed for the control room habitability equipment in the event of equipment inoperability. The changes are administrative and are acceptable to the staff.

2.3 Evaluation of Proposed Changes for ANO-2

The licensee proposes to revise TS Table 3.3-6, "Radiation Monitoring Instrumentation," Item 2.b, "Control Room Ventilation Intake Duct Monitor," to consider both the ANO-1 and ANO-2 control room ventilation radiation monitor channels as redundant components. The TS has been revised to ensure consistency in specifying the requirements, required actions, and modes of applicability associated with the ANO-1 control room radiation monitor channel and the ANO-2 control room ventilation process monitor channel. The current TS requires one channel of control room ventilation intake duct monitor to be operable. The ANO-1 control room area monitor channel is not specifically identified in the current ANO-2 TS. Since the new ANO-1 control room ventilation intake duct monitor is identical to the existing ANO-2 duct monitor with respect to method of operation, sensitivity, and setpoint, the licensee proposes to revise the Item 2.b requirements to require two channels of control room ventilation intake monitors to be operable with a setpoint less than or equal to 2 times background and a measurement range of 10 to 10^6 counts per minute. Since the two monitors are identical, the proposed revision results in a more restrictive requirement than the current TS. The licensee also proposes to revise the ANO-2 TS Bases associated with TS 3/4.3.3.1 to replace the reference to the ANO-1 control room area radiation monitor with a reference to the ANO-1 control room ventilation intake duct monitor. For consistency in terminology, the licensee proposes to replace the reference to the ANO-2 control room ventilation monitor with a reference to the ANO-2 control room ventilation intake duct monitor. In this configuration, the control room ventilation intake duct monitor relies on its respective train of control room emergency ventilation system in order to perform its design function. The proposed AOT for both of these components has been revised and determined to be consistent to support this interdependence. The proposed change will take credit for the new ANO-1 control room ventilation intake duct monitor as a redundant component for the ANO-2 control room ventilation intake duct monitor. The proposed change is more restrictive and is acceptable to the staff.

The licensee proposes to revise TS Table 4.3-3, "Radiation Monitoring Instrumentation Surveillance Requirements," Item 2.b, "Control Room Ventilation Intake Duct Monitor," to reflect

the proposed changes in TS Table 3.3-6. This change will require both intake duct monitors to be tested. The changes are more restrictive and are acceptable to the staff.
The licensee proposes to change the titles of Table of Contents pages (VIII) and (XIII), and TS 3/4.7.6 to refer to the control room emergency ventilation and air conditioning system rather than the control room emergency air conditioning and air filtration system. These proposed changes are administrative changes and are acceptable to the staff.

The licensee proposes to revise TS 3.7.6.1 to refer to the control room emergency ventilation and air conditioning system. In addition, the licensee proposes to revise the Actions associated with TS 3.7.6.1 to separately specify the required actions for inoperable emergency air conditioning systems in Action a and inoperable emergency ventilation systems in Action b. The changes are made for consistency, are administrative, and are acceptable to the staff. The licensee proposes to revise the Mode of Applicability to require the operability of the system in Modes 1, 2, 3, and 4, and during the handling of irradiated fuel. The change is a more restrictive requirement than the current TS and requires the system to be operable in those plant modes in which a postulated accident could require system actuation. The change is acceptable to the staff.

The licensee proposes to revise TS 3.7.6.1 to specify the AOT for one inoperable train of CREACS from 7 to 30 days. This proposed TS change is consistent with NUREG-1430, Rev.1, "Standard Technical Specifications, Babcock and Wilcox Plants," and NUREG-1432, Rev.1, "Standard Technical Specifications, Combustion Engineering Plants." As stated in NUREG-1430, Section B 3.7.11, and NUREG-1432, Section B 3.7.12, the 30-day completion time is based on the low probability of an event occurring requiring control room isolation, the consideration that the remaining train can provide the required capabilities, and the alternate cooling means that are available. The extension of the AOT for one inoperable train of CREACS is acceptable to the staff.

In the August 6, 1998, revised amendment request, the licensee proposes to add an additional required action to TS 3.7.6.1. The required actions proposed in the December 19, 1996, submittal provide direction to the operator in the event one control room emergency air conditioning system or one control room emergency ventilation system is inoperable. The proposed required actions did not provide explicit direction to the operator in the event one control room emergency air conditioning system and one control room emergency ventilation system are inoperable. This condition could be interpreted as requiring entry into LCO 3.0.3. The proposed additional required action (Action c) requires restoration of the inoperable control room emergency ventilation system within 7 days and restoration of the inoperable control room emergency air conditioning system within 30 days, or place the unit in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours. During the review of Action c, the staff determined that the control room emergency ventilation systems and control room emergency air conditioning systems are independent systems. Therefore, the proposed Action c is an acceptable clarification to prevent an unnecessary entry into LCO 3.0.3. The proposed required action is consistent with proposed ANO-1 TSs 3.9.1 and 3.9.2 and NUREG-1432, Rev.1, Sections B 3.7.11 and B 3.7.12. The proposed Action c is considered to be an administrative clarification and is acceptable to the staff.

The licensee proposes to revise the Bases for TS 3/4.7.6 to reflect the change in title for that section, to address the common control room for the two units, and to include clarification of the

contingency actions allowed for the control room habitability equipment in the event of equipment inoperability. The changes are administrative and are acceptable to the staff.

2.4 Inplace Filter Testing

2.4.1 ANO-1 Inplace Filter Testing

Currently, TS 3.9.1.a requires that the results of the inplace cold dioctyl phthalate (DOP) and halogenated hydrocarbon tests at design flow (±10 percent) on HEPA filters and charcoal adsorber banks shall show greater than or equal to 99 percent DOP removal and greater than or equal to 99 percent halogenated hydrocarbon removal. Additionally, TSs 4.10.3.b and 4.10.3.c require cold DOP testing of the HEPA filter bank and halogenated hydrocarbon testing of the charcoal adsorber bank after each complete or partial replacement or after any structural maintenance on the system housing.

The licensee proposes to relocate the requirements of TS 3.9.1.a to TS 4.10.2.b.1. The proposed TS 4.10.2.b.1 requires verification, at least once per 18 months, or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system, that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide (RG) 1.52, Revision 2, March 1978, and the system flow rate is 2000 cubic feet per minute (cfm) ±10 percent. These RG 1.52 positions require removal of 99.95 percent of the DOP and hydrocarbon when they are tested in place in accordance with American National Standards Institute (ANSI) N510-1975 while operating the system at a flow rate of 2000 cfm ±10 percent. The proposed TS is more conservative than the existing TS, specifically conforms with the guidance of RG 1.52 and requirements of ANSI N510-1975, and is consistent with ANO-2 TS requirements. Therefore, it is acceptable to the staff.

Additionally, the requirements of TSs 4.10.3.b and 4.10.3.c are relocated to TSs 4.10.2.e and 4.10.2.f for testing of the HEPA and charcoal adsorber banks with the specified testing requirements for removal of 99.95 percent of the DOP and hydrocarbon when they are tested in place, in accordance with ANSI N510-1975, while operating the system at a flow rate of 2000 cfm ±10 percent. This proposed change conforms with the guidance of RG 1.52, the requirements of ANSI N510-1975, and is consistent with ANO-2 TS requirements; therefore, the proposed change is acceptable to the staff.

2.4.2 ANO-2 Inplace Filter Testing

ANO-2 inplace filter testing TS 4.7.6.1.2.b.1 is unchanged. TS 4.7.6.1.2.e specifies the DOP testing requirements for the HEPA filter banks following a complete or partial replacement. The licensee proposes to revise the acceptance criteria from 99 percent DOP removal (1 percent penetration) to 99.95 percent DOP removal (0.05 percent penetration) in accordance with Regulatory Position C.5.c of RG 1.52, Revision 2. The change is a more restrictive testing requirement and is acceptable to the staff.

2.5 Laboratory Testing

2.5.1 ANO-1 Current TS for Laboratory Testing

ANO-1 TSs 3.9.1.b and 4.10.3.a require that laboratory analyses of the carbon samples use the test procedures of Military Specification RDT M 16-1T, "Gas Phase Adsorbents for Trapping Radioactive Iodine and Iodine Components" (date not indicated), but specifies that the test is to be conducted at 52 °C and 95 percent relative humidity (RH). The essential elements of this test are as follows:

- 95 percent RH,
- 5-hour pre-equilibration (pre-sweep) time, with air at 52 °C and 95 percent RH,
- 2-hour challenge, with gas at 52 °C and 95 percent RH, and
- a 2-hour elution (post-sweep) time, with air at 52 °C and 95 percent RH.

2.5.2 ANO-2 Current TS for Laboratory Testing

ANO-2 TSs 4.7.6.1.2.b.2 and 4.7.6.1.2.c require that laboratory analyses of carbon samples use the test procedures and meet the acceptance criteria of Regulatory Position C.6.a of RG 1.52, Revision 2. Regulatory Position C.6.a refers to Table 2 of RG 1.52. Table 2 references Test 5.b of Table 5-1 of ANSI N509-1976, "Nuclear Power Plant Air-Cleaning Units and Components." Test 5.b references the test method from paragraph 4.5.3 of Military Specification RDT M 16-1T, "Gas Phase Adsorbents for Trapping Radioactive Iodine and Iodine Components" (date not indicated), but specifies that the test is to be conducted at 80 °C and 95 percent RH with preloading and postloading sweep at 25 °C. This test is referred to as the "25-80-25 test." The essential elements of this test are as follows:

- 95 percent RH,
- 5-hour pre-equilibration (pre-sweep) time, with air at 25 °C and 95 percent RH,
- 2-hour challenge, with gas at 80 °C and 95 percent RH, and
- a 2-hour elution (post-sweep) time, with air at 25 °C and 95 percent RH.

2.5.3 ANO-1 and ANO-2 Proposed TS for Laboratory Testing

The licensee proposes to relocate the requirements of TSs 3.9.1.b and 4.10.3.a to TSs 4.10.2.b.2 and 4.10.2.c for ANO-1, and to revise existing TSs 4.7.6.1.2.b.2 and 4.7.6.1.2.c for ANO-2. The proposed surveillance requirement also requires that samples be obtained as described in RG 1.52, Revision 2, but specifies that the samples be tested in accordance with American Society for Testing and Materials (ASTM) D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon," at 30 °C and 95 percent RH. ASTM D3803-1989 is updated guidance based on an NRC verification and validation effort on ASTM D3803-1979, which is updated guidance based on RDT M16-1T. The essential elements of the proposed TS changes for testing per ASTM D3803-1989 are:

- 95 percent RH,
- 2-hour thermal stabilization, at 30 °C,
- 16-hour pre-equilibration (pre-sweep) time, with air at 30 °C and 95 percent RH,
- 2-hour equilibration time, with air at 30 °C and 95 percent RH,
- 1-hour challenge, with gas at 30 °C and 95 percent RH, and
- a 1-hour elution (post-sweep) time, with air at 30 °C and 95 percent RH.

The major differences between the current and proposed TS requirements for carbon testing are:

MAJOR DIFFERENCES	Proposed TS	Current TS	
		Unit 1	Unit 2
Pre-Equilibration (Pre-Sweep) Temperature	30 °C	52 °C	25 °C
Challenge Temperature	30 °C	52 °C	80 °C
Elution (Post-Sweep) Temperature	30 °C	52 °C	25 °C
Relative Humidity	95%	95%	70%
Total Pre-Test Equilibration	18 hours	5 hours	5 hours
Tolerances of Test Parameters	Smaller	Larger	Larger

The following discussion demonstrates that these differences make the proposed TS more conservative than the current TS requirements.

ASTM D3803-1989 challenges the representative charcoal samples at 30 °C rather than at 52 °C for ANO-1. In addition, ASTM D3803-1989 specifies a test temperature of 30 °C for both the pre-test and post-test sweeps rather than 52 °C for ANO-1. The quantity of water retained by charcoal is dependent on temperature, with less water being retained as the temperature rises. The water retained by the charcoal decreases its efficiency in adsorbing other contaminants. Because most charcoal is anticipated to be challenged at a temperature closer to 30 °C rather than 52 °C, the lower temperature test condition of ASTM D3803-1989 will yield more realistic results than a test performed at 52 °C.

ASTM D3803-1989 challenges the representative charcoal samples at 30 °C rather than at 80 °C for ANO-2. ASTM D3803-1989 specifies a test temperature of 30 °C for both the pre- and post-test sweeps rather than 25 °C for ANO-2. There is little difference in the adsorption behavior of charcoal at the 25 °C and 30 °C temperatures. A temperature of 25 °C is more conservative; however, the increase from 25 °C to 30 °C does not represent a significant variation in the test results. As previously stated, the quantity of water retained by charcoal is

dependent on temperature, with less water being retained as the temperature rises. The water retained by the charcoal decreases its efficiency in adsorbing other contaminants. Because most charcoal is anticipated to be challenged at a temperature closer to 30 °C rather than 80 °C, the lower temperature test condition of ASTM D3803-1989 will yield more realistic results than a test performed at 80 °C.

ASTM D3803-1989 provides results that are reproducible compared to RDT M16-1T because it has smaller tolerances on various test parameters, and it requires that the charcoal sample be pre-equilibrated for a much longer period. The longer pre-equilibration time is more conservative because it will completely saturate the representative charcoal sample until it is in the condition to which the subject charcoal adsorbers are expected to be exposed during design-basis conditions. During the pre-equilibration, the charcoal is exposed to a flow of air controlled at the test temperature and RH before the challenge gas is fed through the charcoal. The purpose of the pre-equilibration phase of the test is to ensure that the charcoal has stabilized at the specified test temperature and RH for a period of time that results in the charcoal adsorbing all the available moisture before the charcoal is challenged with methyl iodide. Hence, the proposed testing in accordance with ASTM D-3803-1989 standard would result in a more realistic prediction of the capability of the charcoal.

In addition, proposed ANO-1 TSs 4.10.2.b.2 and 4.10.2.c and ANO-2 TSs 4.7.6.1.2.b.2 and 4.7.6.1.2.c require that the laboratory testing of charcoal samples show an acceptable methyl iodide penetration. In the licensee's dose analysis, the ANO-1 charcoal beds (each with a depth of 2 inches) and the ANO-2 charcoal bed (with a depth of 4 inches) are credited with a filter efficiency of 95 percent and 99 percent, respectively. The licensee's proposed acceptance criterion is a methyl iodide penetration of less than 2.5 percent for ANO-1 and less than 0.5 percent for ANO-2. The proposed acceptance criterion includes a safety factor of two which provides the staff with a degree of assurance that, at the end of the operating cycle, the charcoal will be capable of performing at a level at least as good as that assumed in the licensee's dose analysis. This factor of safety is acceptable based on the accuracy of test results obtained using the ASTM D3803-1989 standard.

On the basis of the preceding discussion, the proposed test methods and acceptance criteria for the laboratory testing of a representative carbon sample in TSs 4.10.2.b.2 and 4.10.2.c for ANO-1 and TSs 4.7.6.1.2.b.2 and 4.7.6.1.2.c for ANO-2 are acceptable to the staff.

2.6 Evaluation Summary

The proposed changes in the Table of Contents for both ANO-1 and ANO-2 and in ANO-1 TSs 3.9 and 4.10 are administrative changes and are acceptable. The proposed change to ANO-1 TS 3.8.18 is consistent with the fuel handling accident analysis and results in a more restrictive requirement than previously specified and is acceptable. The proposed change to ANO-1 TS 3.9.1 and ANO-2 TS 3.7.6.1 to extend the AOT for one inoperable train of emergency air conditioning system from 7 to 30 days is consistent with the 30-day completion time approved in NUREG-1430 and NUREG-1432 and is acceptable.

The proposed change to ANO-1 TS 4.10.2 concerning the inplace filter testing is a more conservative test requirement and is acceptable. Specifically, it conforms with the guidance of RG 1.52 and requirements of ANSI N510-1975, and is consistent with ANO-2 TS requirements. The proposed change to ANO-1 TS 4.10.2 and ANO-2 TS 4.7.6.1.2 concerning the laboratory

testing of a representative carbon sample testing, is in accordance with ASTM D-3803-1989 standard, would result in a more realistic prediction of the capability of the charcoal, and is acceptable.

On the basis of the preceding evaluation, the staff has concluded that the proposed TS changes are acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arkansas State official was notified of the proposed issuance of the amendment. The State official had no comment.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding (62 FR 4348, January 29, 1997). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (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 be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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