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

December 29, 1998

SUBJECT: ISSUANCE OF AMENDMENT NO. 195 TO FACILITY OPERATING LICENSE NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M99336)

Dear Mr. Hutchinson:

The Commission has issued the enclosed Amendment No. 195 to Facility Operating License No. NPF-6 for the Arkansas Nuclear One, Unit No. 2 (ANO-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 28, 1997 (2CAN079702).

The amendment modifies the actions associated with Technical Specification (TS) Table 3.3-1 for the Reactor Protective Instrumentation and TS Table 3.3-3 for the Engineered Safety Feature Actuation System Instrumentation.

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

Sincerely,

ORIGINAL SIGNED BY:

M. Christopher Nolan, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-368
Enclosures: 1. Amendment No. 195 to NPF-6
2. Safety Evaluation
cc w/encls: See next page
DISTRIBUTION:

Docket File	PUBLIC	PD4-1 r/f
C. Marschall	C. Hawes	ACRS
OGC(15B18)	G. Hill (2)	T. Gwynn, RIV
W. Beckner	C. Nolan (2)	J. Kilcrease, RIV f/r
E. Adensam (EGA1)	L. Hurley, RIV	T. Harris (TLH3)

DFO1

DOCUMENT NAME: g:\ano2fina\AR299336.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	PM:PDIV-1	E	LA:PDIV-1	E	C:HICB	E	OGC MD		D:PDIV-1	E
NAME	CNolan		EBarnhill EP		JWermiel		SMutz		JHannon	
DATE	12/15 /98		12/15 /98		12/16 /98		12/23 /98		12/28 /98	

OFFICIAL RECORD COPY

9901050333 981229
PDR ADOCK 05000368
P PDR

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

December 29, 1998

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

SUBJECT: ISSUANCE OF AMENDMENT NO. 195 TO FACILITY OPERATING LICENSE NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M99336)

Dear Mr. Hutchinson:

The Commission has issued the enclosed Amendment No. 195 to Facility Operating License No. NPF-6 for the Arkansas Nuclear One, Unit No. 2 (ANO-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 28, 1997 (2CAN079702).

The amendment modifies the actions associated with Technical Specification (TS) Table 3.3-1 for the Reactor Protective Instrumentation and TS Table 3.3-3 for the Engineered Safety Feature Actuation System Instrumentation.

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

Sincerely,

M. Christopher Nolan, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures: 1. Amendment No. 195 to NPF-6
2. Safety Evaluation

cc w/encls: See next page

cc:

Executive Vice President
& Chief Operating Officer
Entergy Operations, Inc.
P. O. Box 31995
Jackson, MS 39286-199

Director, Division of Radiation
Control and Emergency Management
Arkansas Department of Health
4815 West Markham Street, Slot 30
Little Rock, AR 72205-3867

Winston & Strawn
1400 L Street, N.W.
Washington, DC 20005-3502

Manager, Rockville Nuclear Licensing
Framatone Technologies
1700 Rockville Pike, Suite 525
Rockville, MD 20852

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P. O. Box 310
London, AR 72847

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

County Judge of Pope County
Pope County Courthouse
Russellville, AR 72801

Vice President, Operations Support
Entergy Operations, Inc.
P. O. Box 31995
Jackson, MS 39286-1995

Wise, Carter, Child & Caraway
P. O. Box 651
Jackson, MS 39205

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. 195
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 July 28, 1997, 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. 195 , 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 to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

M. Christopher Nolan, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: December 29, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 195

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Revise the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE PAGES	INSERT PAGES
3/4 3-5	3/4 3-5
3/4 3-5a	3/4 3-5a
3/4 3-14	3/4 3-14
3/4 3-15	3/4 3-15
B 3/4 3-1a	B 3/4 3-1a
B 3/4 3-1b	B 3/4 3-1b

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

ACTION 2 - With the number of channels OPERABLE one less than the Total Number of Channels, operation in the applicable MODES may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed for greater than 48 hours, the desirability of maintaining this channel in the bypassed condition shall be reviewed at the next regularly scheduled PSC meeting in accordance with the QA Manual Operations. The channel shall be returned to OPERABLE status prior to startup following the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	Functional Unit Bypassed
1. Linear Power (Subchannel or Linear)	Linear Power Level - High Local Power Density - High DNBR - Low Log Power Level - High*
2. Pressurizer Pressure - NR	Pressurizer Pressure - High Local Power Density -High DNBR - Low
3. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
4. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
5. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
6. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
7. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)
8. Core Protection Calculator	Local Power Density - High DNBR - Low

* Only for failure common to both linear power and log power.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, operation in the applicable MODES may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour, and

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Linear Power (Subchannel or Linear)	Linear Power Level - High Local Power Density - High DNBR - Low Log Power Level - High**
2. Pressurizer Pressure - NR	Pressurizer Pressure - High Local Power Density -High DNBR - Low
3. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
4. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
5. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
6. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
7. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)
8. Core Protection Calculator	Local Power Density - High DNBR - Low

Operation in the applicable MODES may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent operation in the applicable MODES may continue if one channel is restored to OPERABLE status and the provisions of ACTION 2 are satisfied.

** Only for failure or activities common to both linear power and log power.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	1/Bus	2/Bus	1, 2, 3	9
b. 460 volt Emergency Bus Undervoltage (Degraded Voltage)	1/Bus	1/Bus	1/Bus	1, 2, 3	9
8. EMERGENCY FEEDWATER (EFAS)					
a. Manual (Trip Switches)	2 sets of 2 per S/G	2 sets of 2 per S/G	2 sets of 2 per S/G	1, 2, 3, 4	9
b. SG Level and Pressure (A/B) - Low and ΔP (A/B) - High	4/SG	2/SG	3/SG	1, 2, 3, 4	10,11
c. SG Level (A/B) - Low and No S/G Pressure - Low Trip (A/B)	4/SG	2/SG	3/SG	1, 2, 3, 4	10,11
d. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3, 4	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

TABLE NOTATION

(a) Trip function may be bypassed in this MODE when pressurizer pressure is below 400 psia; bypass shall be automatically removed when pressurizer pressure is ≥ 500 psia.

(b) An SIAS signal is first necessary to enable CSAS logic.

(c) Remote manual not provided for RAS. These are local manuals at each ESF auxiliary relay cabinet.

ACTION STATEMENTS

ACTION 9 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 10 - With the number of channels OPERABLE one less than the Total Number of Channels, operation in the applicable MODES may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed for greater than 48 hours, the desirability of maintaining this channel in the bypassed condition shall be reviewed at the next regularly scheduled PSC meeting in accordance with the QA Manual Operations. The channel shall be returned to OPERABLE status prior to startup following the next COLD SHUTDOWN.

If an inoperable Steam Generator ΔP or RWT Level - Low channel is placed in the tripped condition, remove the inoperable channel from the tripped condition within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	Functional Unit Bypassed
1. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
2. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
3. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
4. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
5. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)

TABLE NOTATION

ACTION 11 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, operation in the applicable MODES may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour, and

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
2. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
3. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
4. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
5. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)

If an inoperable Steam Generator ΔP or RWT Level - Low channel is placed in the tripped condition, remove the inoperable channel from the tripped condition within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Operation in the applicable MODES may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent operation in the applicable MODES may continue if one channel is restored to OPERABLE status and the provisions of ACTION 10 are satisfied.

ACTION 12 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing provided the other channel is OPERABLE.

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. SAFETY INJECTION (SIAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Containment Pressure - High	≤ 18.3 psia	≤ 18.490 psia
c. Pressurizer Pressure -Low	≥1717.4 psia (1)	≥1686.3psia (1)
2. CONTAINMENT SPRAY (CSAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Containment Pressure -- High-High	≤ 23.3 psia	≤ 23.490 psia
3. CONTAINMENT ISOLATION (CIAS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Containment Pressure - High	≤ 18.3 psia	≤ 18.490 psia

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and bypasses ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. The triannual channel functional testing frequency is to be performed on a STAGGERED TEST BASIS.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. The RPS and ESFAS response time tables have been relocated to the Safety Analysis Report (SAR). No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

BASES

Plant Protective System (PPS) logic is designed for operation as a 2-out-of-3 logic, although normally it is operated in a 2-out-of-4 mode.

The RPS Logic consists of everything downstream of the bistable relays and upstream of the Reactor Trip Circuit Breakers. The RPS Logic is divided into two parts, Matrix Logic, and Initiation Logic. Failures of individual bistables and their relays are considered measurement channel failures.

The ESFAS Logic consists of everything downstream of the bistable relays and upstream of the subgroup relays. The ESFAS Logic is divided into three parts, Matrix Logic, Initiation Logic, and Actuation Logic. Failures of individual bistables and their relays are considered measurement channel failures.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to, but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition since they are addressed as part of the measurement channel.

Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and the initiation relays (including contacts).

ESFAS Actuation Logic consists of all circuitry housed within the Auxiliary Relay Cabinets (ARCs) used to house the ESF Function; excluding the subgroup relays, and interconnecting wiring to the initiation relay contacts mounted in the PPS cabinet.

For the purposes of this LCO, de-energization of up to three matrix power supplies due to a single failure, such as loss of a vital instrument bus, is to be treated as a single matrix channel failure, providing the affected matrix relays de-energize as designed to produce a half-trip. Although each of the six matrices within an ESFAS Function (e.g., SIAS, MSIS, CSAS, etc.) uses separate power supplies, the matrices for the different ESFAS Functions share power supplies. Thus, failure of a matrix power supply may force entry into the Condition specified for each of the associated ESFAS Functional Units.

Table 3.3-3 Action 10 allows for continued operation in the applicable MODES with the number of channels OPERABLE one less than the Total Number of Channels provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour.

If an inoperable Steam Generator ΔP or Refueling Water Tank (RWT) Level - Low channel is placed in the tripped condition, it must be removed from the tripped condition within 48 hours or the plant must be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. This condition is limited to 48 hours because of the single failure vulnerability that exists with one of the Steam Generator ΔP or RWT Level - Low channels in the trip condition.

Operation with a channel of Steam Generator ΔP (EFAS 1 or EFAS 2) in the tripped condition renders EFAS susceptible to single failure scenarios. With a channel of Steam Generator ΔP in trip, certain single failures concurrent with a MSIS actuation can result in initiation of EFW to a faulted Steam Generator. Other single failures can result in failure of automatic control of Steam Generator level and could allow Steam Generator overfill. Placing a channel of Steam Generator ΔP in the tripped condition is acceptable for up to 48 hours because operating experience has demonstrated the low probability of the above single failure scenarios to occur.

Operation with a channel of RWT Level - Low in the tripped condition renders the RAS susceptible to a single failure scenario. With a channel of RWT Level - Low in trip, concurrent with the injection phase of a valid SIAS actuation, and a single failure of another RWT Level - Low channel would result in a RAS Actuation. These sequence of events would cause the ECCS suction to be shifted from the RWT to the containment sump prematurely. Placing a channel of RWT Level - Low in the tripped condition is acceptable for up to 48 hours because operating experience has demonstrated the low probability of the above single failure scenario to occur.

Table 3.3-3 Action 11 allows for continued operation in the applicable MODES with the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, provided the following conditions are satisfied; One of the inoperable channels has been bypassed and the other inoperable channel has been placed in the tripped condition within 1 hour, and all functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition. An inoperable channel may be placed in the trip condition to allow another channel to be bypassed for testing or repair purposes.

If an inoperable Steam Generator ΔP or RWT Level - Low channel is placed in the tripped condition, it must be removed from the tripped condition within 48 hours or the plant must be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. This condition is limited to 48 hours because of the single failure vulnerability that exists with one of the Steam Generator ΔP or RWT Level - Low channels in the trip condition.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 195 TO

FACILITY OPERATING LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated July 28, 1997 (2CAN079702), Entergy Operations, Inc. (the licensee) submitted a request for changes to the Technical Specifications for Arkansas Nuclear One, Unit 2. The requested changes would modify the actions associated with Technical Specification (TS) Table 3.3-1 for the Reactor Protective Instrumentation and TS Table 3.3-3 for the Engineered Safety Feature Actuation System Instrumentation.

2.0 EVALUATION

2.1 Refueling Water Tank Level - Low Signal

The recirculation actuation signal (RAS) is initiated by a 2 out of 4 logic for the refueling water tank (RWT) low level signal. The RAS system is designed to change the mode of operation of the emergency core cooling system (ECCS) from the injection phase to the recirculation phase during a loss-of-coolant accident (LOCA). At the onset of the recirculation phase, the RAS automatically stops the low pressure safety injection (LPSI) pumps and shifts the suction for the high pressure safety injection (HPSI) pumps and the containment spray (CS) pumps from the RWT to the containment sump. RAS is designed to actuate when the inventory of the RWT is nearly depleted, thereby ensuring the containment sump will have adequate inventory to supply the HPSI and CS pumps during the recirculation phase.

TS Table 3.3-3 Actions 10 and 11 allow one channel of RWT Level - Low to be placed in the tripped condition. With one channel in the tripped condition, a single failure of a second channel of RWT Level - Low could cause RAS actuation before the RWT level reaches the low level setpoint. If this were to occur during a LOCA, the HPSI pumps and CS pumps could have their suctions supplied by an inadequate suction source, possibly removing both trains of ECCS and CS from service.

TS Table 3.3-3 Action 10 allows placing a channel of RWT Level - Low in the tripped condition until the end of the operating cycle (up to approximately 18 months). TS Table 3.3-3 Action 11

allows placing one channel of RWT Level - Low in bypass and another channel in trip until the next channel functional test (up to one month). The proposed Actions 10 and 11 will reduce the time a RWT Level - Low can be in the tripped condition to 48 hours. Additionally, proposed Actions 10 and 11 require that, if the inoperable channel of RWT Level - Low is not removed from the tripped condition within 48 hours, the unit be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The 48-hour allowed time was selected because it is the current allowed outage time for other reactor protection system (RPS) and engineered safety features actuation system (ESFAS) instrumentation for conditions susceptible to a single failure following an initiating event. This time period is also consistent with the allowed time for a channel to be in trip for the analog ESFAS instrumentation listed in NUREG-1432, "Standard Technical Specifications for Combustion Engineering Plants." Operating experience has demonstrated the very small probability of a random failure of another RWT Level - Low channel in a given 48-hour period. The requirement to be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours is consistent with the requirements for other RPS and ESFAS instrumentation and is consistent with the actions in NUREG-1432.

The proposed changes do not modify the design or configuration of the plant. The proposed changes provide a more restrictive time limit for a channel of RWT Level - Low to be in a tripped condition than is currently allowed by the TS. By reducing the allowed time, the probability is reduced that a single failure of another channel would result in an early RAS actuation during the injection phase of a LOCA. The staff finds the proposed changes acceptable.

2.2 Steam Generator Differential Pressure Signal

The emergency feedwater actuation system (EFAS) is designed to provide emergency feedwater (EFW) to the steam generators (SGs), and to prevent feeding a faulted SG during a main steam line break (MSLB) event. EFAS is comprised of two trains: EFAS 1 controls EFW to SG 1 (A) and EFAS 2 controls EFW to SG 2 (B). EFAS starts the EFW pumps, determines whether the SG is intact, and opens the EFW valves to the intact SG.

Each train of EFAS is comprised of four channels and is actuated by a 2 out of 4 logic. Each channel monitors for low SG level, low SG pressure, and high differential pressure between the SGs (SG D/P). EFAS is initiated to SG 1 either by a low SG level coincident with no low pressure on SG 1, or by a low SG level coincident with a SG D/P with the higher pressure in SG 1 (the intact SG). An identical EFAS is generated for SG 2.

TS Table 3.3-3 Actions 10 and 11 allow the placement of one channel of SG D/P in the tripped condition. With one channel in a tripped condition, a single failure of a second channel of SG D/P could result in EFAS being unable to detect whether the SG is faulted. If this were to occur during a MSLB, it could result in the inappropriate feeding of a faulted SG.

TS Table 3.3-3 Action 10 allows placing a channel of SG D/P in the tripped condition until the end of the operating cycle (up to approximately 18 months). TS Table 3.3-3 Action 11 allows placing one channel of SG D/P in bypass and another channel in trip until the next channel

functional test (up to one month). The proposed Actions 10 and 11 will reduce the time a SG D/P can be in the tripped condition to 48 hours. Additionally, proposed Actions 10 and 11 require that, if the inoperable channel of SG D/P is not removed from the tripped condition within 48 hours, the unit be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The 48-hour allowed time was selected because it is the current allowed outage time for other RPS and ESFAS instrumentation for conditions susceptible to a single failure following an initiating event. This time period is also consistent with the allowed time for a channel to be in trip for the analog ESFAS instrumentation listed in the NUREG-1432, "Standard Technical Specifications for Combustion Engineering Plants." Operating experience has demonstrated the very small probability of a random failure of another SG D/P channel in a given 48-hour period. The requirement to be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours is consistent with the requirements for other RPS and ESFAS instrumentation and is consistent with the actions in NUREG-1432.

The proposed changes do not modify the design or configuration of the plant. The proposed changes provide a more restrictive time limit for a channel of SG D/P to be in a tripped condition than is currently allowed by the TS. By reducing the allowed time, the probability is reduced that a single failure of another channel would result in inappropriate feeding of a faulted steam generator during a MSLB. The staff finds the proposed changes acceptable.

2.3 Administrative Changes

TS Table 3.3-1 Actions 2 and 3 and TS Table 3.3-3 Actions 10 and 11 are applicable to functional units that are required in Modes 1, 2, 3 and/or 4. However, these actions only specify that STARTUP and POWER OPERATION, which are defined in TS Table 1.1 as Modes 2 and 1, respectively, may continue provided certain actions are satisfied which could be misinterpreted to exclude Modes 3 and/or 4 operations. The proposed actions will specify that "operation in the applicable MODES" may continue provided certain actions are satisfied. This more clearly includes the range of applicable modes for each functional unit.

The proposed changes are administrative in nature and do not affect plant equipment or operations. These changes are consistent with the latest revision of the NUREG-1432. The staff finds the proposed changes 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 comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no signi-

ficant 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (62 FR 45456). Accordingly, the amendment meets 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 amendment.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Bailey

Date: December 29, 1998