

Docket No. 50-368

December 17, 1991

Mr. Neil S. Carns  
Vice President, Operations ANO  
Entergy Operations, Inc.  
Route 3 Box 137G  
Russellville, Arkansas 72801

Dear Mr. Carns:

SUBJECT: ISSUANCE OF AMENDMENT NO. 127 TO FACILITY OPERATING LICENSE  
NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M80705)

The Commission has issued the enclosed Amendment No. 127 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 June 18, 1991.

The amendment revises TS Section 4.8.1.1.2.C.8.c to provide for conserving starting air for emergency diesel generators in case an engine fails to start on a safety injection actuation signal.

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

Sheri R. Peterson, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III, IV, and V  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 127 to NPF-6
- 2. Safety Evaluation

cc w/enclosures:

See next page

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GPA/PA(MS2G5)	ARM/LFMB(MS4503)	T. Westerman, RIV	

*see wholly concurrence*

OFC	:PD4-1/LA	:PD4-1/PM	:OGC*	:PD4-1/D
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DATE	:12/13/91	:12/13/91	:12/9/91	:12/17/91

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

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Sincerely,

A handwritten signature in cursive script that reads "Sheri R. Peterson".

Sheri R. Peterson, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III, IV, and V  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 127 to NPF-6
2. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Neil S. Carns  
Entergy Operations, Inc.

Arkansas Nuclear One, Unit 2

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County Judge of Pope County  
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Arkansas Department of Health  
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Little Rock, Arkansas 72205-3867



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

ENERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 127  
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 June 18, 1991, 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.127, 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 the next refueling outage, currently scheduled for August 1992, in which the applicable design change for this license amendment will be implemented.

FOR THE NUCLEAR REGULATORY COMMISSION



John T. Larkins, Director  
Project Directorate IV-1  
Division of Reactor Projects III, IV, and V  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 17, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 127

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Revise the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by Amendment number and contains a vertical line indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

REMOVE PAGE

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INSERT PAGE

3/4 8-4

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- b. Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected shutdown loads through the time delay relays and operates for  $\geq 5$  minutes while its generator is loaded with the shutdown loads.
- 6. Verifying that on an ESF actuation test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for  $\geq 5$  minutes.
- 7. Deleted
- 8. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and
  - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
  - b) Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for  $\geq 5$  minutes while its generator is loaded with the emergency loads.
  - c) Verifying that all diesel generator trips, except engine overspeed, lube oil pressure, generator differential, and engine failure to start, are automatically bypassed upon a Safety Injection Actuation Signal.
- 9. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to 3135 Kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to 2850 Kw. Within 5 minutes after completing this 24 hour test, repeat Specification 4.8.1.1.2.c.5.

## ELECTRICAL POWER SYSTEM

### SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.
  4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in  $\leq 15$  seconds.
  5. Verifying the generator is synchronized, loaded to 2850 Kw in  $\leq 60$  seconds, and operates for  $\geq 60$  minutes.
  6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- c. At least once per 18 months during shutdown by:
1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
  2. Verifying that the automatic sequence time delay relays are OPERABLE at their setpoint  $\pm 10\%$  of the elapsed time for each load block.
  3. Verifying the generator capability to reject a load of  $> 596$  kw and maintain voltage at  $4160 \pm 500$  volts and frequency at  $60 \pm 3$  Hz.
  4. Verifying the generator capability to reject a load of 2850 Kw without exceeding 75% of the difference between nominal speed and the overspeed trip setpoint, or 15% above nominal, whichever is lower.
  5. Simulating a loss of offsite power by itself, and:
    - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 127 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 June 18, 1991, Entergy Operations, Inc. (the licensee) submitted a request to change the Arkansas Nuclear One, Unit No. 2 (ANO-2) Technical Specifications (TS) for emergency diesel generator (EDG) surveillance testing. The proposed change would add the engine "failure to start" protective trip to the selected group of automatic EDG trips that would not be bypassed on receipt of a safety injection actuation signal (SIAS). The change requires a design modification to remove the desired trip function from the present bypass circuitry.

The NRC staff has reviewed the proposed change and has provided the following evaluation.

2.0 EVALUATION

Surveillance Requirement 4.8.1.1.2.C.8.c specifies verification that all diesel generator protective trips are automatically bypassed by a SIAS coincident with a loss of offsite power condition, except trips for engine overspeed, lube oil pressure, and generator differential.

The current design of the EDG starting circuit bypasses the start failure relay action on a SIAS. The licensee requests that the start failure function be added to those EDG protective trips not automatically bypassed on a SIAS. The licensee's reasoning is as follows:

In the case of a SIAS in conjunction with a loss of offsite power, the EDG will continue to crank until all air is depleted. If the EDG does not start initially in a loss of offsite power condition concurrent with a SIAS, there would be no power available for the air compressors to recharge the air tanks for a subsequent restart after correcting the cause of the starting problem. The intent of the subject change is to preserve engine starting air for additional restart attempts when failure to start results from minor and spurious sources.

The staff position on bypass of EDG protective trips is contained in Regulatory Guide 1.9, Revision 2, Position 7, which recommends that the EDG be automatically tripped on engine overspeed and generator differential overcurrent. All other EDG protective trips should be handled in one of two ways: 1) a trip should be implemented with two or more measurements for each trip actuation; or 2) a trip may be bypassed under accident conditions, provided that the operator has sufficient time to react appropriately to an abnormal EDG condition. The design of the bypass circuitry should include the capability for 1) testing the status and operability of the bypass circuits, 2) alarming in the control room for abnormal values of all bypass parameters, and 3) manually resetting the trip bypass function.

The reason for bypassing non-critical protective functions is to ensure that that the EDG will be available to mitigate the consequences of a design basis accident (DBA). EDG availability to mitigate a DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to EDG operation.

The licensee states that the engine start failure trip function is initiated from coincidence logic employing two measurements (engine speed and coolant pressure). The licensee asserts that a start failure trip is generated only under the following conditions: 1) engine speed greater than 250 rpm and 2) jacket coolant pressure greater than 8 psig.

Our review of the licensee's submittal and of other information obtained during subsequent teleconferences with the licensee's representatives indicates that the proposed design does not meet the conventional coincidence logic requirement for the independent measurements used to generate the trip parameter. In fact, after an engine start, the start failure trip is generated within 10 seconds unless interrupted by an engine-speed-greater-than-250-rpm signal or a jacket-coolant-pressure-greater-than-8-psig signal. It is the absence of both parameters that constitutes the start failure trip condition. Thus, the proposed design change does not introduce the potential--noted in Position 7 of Regulatory Guide 1.9--for spurious tripping of the diesel generator.

We have reviewed the licensee's submittal and have concluded that the proposed design change meets the intent of Regulatory Guide 1.9 and will enhance EDG availability during a spurious failure to start condition coincident with a loss of offsite power condition by conserving the engine-starting air supply. The change is therefore 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 and changes in surveillance requirements. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (FR citation). 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: R. Jenkins

Date: December 17, 1991