

December 17, 2001

Mr. Craig G. Anderson  
Vice President, Operations ANO  
Entergy Operations, Inc.  
1448 S. R. 333  
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 2 - ISSUANCE OF AMENDMENT RE:  
EMERGENCY DIESEL GENERATOR (EDG) TECHNICAL SPECIFICATIONS  
(TAC NO. MB2225)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment No. 237 to Facility Operating License No. NPF-6 for 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 12, 2001, as supplemented by letters dated October 15 and November 16, 2001.

The amendment revises certain EDG TSs to remove the requirement for an accelerated test frequency, remove the requirement to subject the EDGs to an inspection in accordance with the manufacturer's recommendations, allow that certain EDG tests may be done in modes other than shutdown, and remove the EDG special reporting requirements.

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,

*/RA/*

Thomas W. Alexion, Project Manager, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures:

1. Amendment No. 237 to NPF-6
2. Safety Evaluation

cc w/encls: See next page

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DISTRIBUTION

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PUBLIC	RidsNrrPMTAlexion
PDIV-1 RF	RidsNrrLADJohnson
RidsNrrDripRtsb (WBeckner)	O.Chopra
RidsNrrDlpmPdiv (SRichards)	RidsRgn4MailCenter (KBrockman)
RidsOgcRp	L.Hurley,RIV
RidsAcrcAcnwMailCenter	D. Bujol,RIV
G.Hill(2)	D. Shum
RidsNrrDlpmPdivLpdiv1 (RGramm)	

Accession No.: ML013530003

\*see previous concurrence, #SE input date

OFFICE	PDIV-1/PM	PDIV-1/LA	SPLB/(A)SC	EEIB/SC	OGC	PDIV-1/SC
NAME	TAlexion	DJohnson	BThomas*	CHolden#	MO'Neill	RGramm
DATE	11/21/01	11/28/01	11/19/01	11/20/01	12/14/01	12/17/01

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ENERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 237  
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 12, 2001, as supplemented by letters dated October 15 and November 16, 2001, 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. 237 , 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 17, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 237

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

3/4 8-2a  
3/4 8-3  
3/4 8-4  
3/4 8-4a  
3/4 8-4b  
6-15  
B 3/4 8-1

Insert

3/4 8-2a  
3/4 8-3  
3/4 8-4  
3/4 8-4a  
---  
6-15  
B 3/4 8-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 237 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 12, 2001, as supplemented by letters dated October 15 and November 16, 2001, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Arkansas Nuclear One, Unit No. 2 (ANO-2), Technical Specifications (TSs). The requested changes would revise certain Emergency Diesel Generator (EDG) TSs to remove the requirement for an accelerated test frequency, remove the requirement to subject the EDGs to an inspection in accordance with the manufacturer's recommendations, allow that certain EDG tests may be done in modes other than shutdown, and remove the EDG special reporting requirements.

The October 15, 2001, supplemental letter provided responses to Nuclear Regulatory Commission (NRC or the Commission) staff questions, withdrew a proposed change to TS 4.8.1.1.1.b to correct a typographical error that does not exist, and proposed a change to TS 6.9.1.5.a to correct a typographical error that does exist. The November 16, 2001, supplemental letter withdrew the portion of proposed TS 4.8.1.1.2.c.9 that would have allowed the EDG test at the 2-hour rating to be performed anytime during the endurance run. The October 15 and November 16, 2001, supplemental letters provided clarifying information and revised TSs that did not change the scope of the original *Federal Register* notice (66 FR 36340, July 11, 2001) or the initial no significant hazards consideration determination.

2.0 BACKGROUND

The proposed change would revise TS Surveillance Requirements (SRs) 4.8.1.1.2.a, 4.8.1.1.2.c, 4.8.1.1.3, and TS 6.9.1.5.d. The proposed changes would allow certain EDG SRs to be performed when the plant is operating instead of shut down, as currently required. The licensee states that performing these surveillances during any mode of operation would provide additional flexibility in the scheduling of maintenance activities, reduce plant refueling outage duration, and improve EDG availability when the plant is shut down. Additional changes will remove EDG accelerated testing and special reporting requirements, and the SR to perform

EDG inspections. This request is similar to a Millstone Nuclear Power Station, Unit 3, application that was approved by NRC staff on February 2, 2001.

### 3.0 DISCUSSION

Normally, power to ANO-2 electrical buses is supplied via the unit auxiliary transformer (UAT). Two offsite power sources, startup transformer #3 (SU3) and startup transformer #2 (SU2), are available to supply power to the unit when the UAT is not available. With the UAT supplying house loads, if the plant trips, the house loads transfer automatically to SU3.

ANO-2 is equipped with two seismically qualified, Class 1E diesel driven generators that supply backup electrical power to the 4160 volt (V) engineered safety features (ESF) alternating current (AC) buses. Each engine is designed to automatically start and tie-on to its respective 4160 V ESF bus in the event of a bus under-voltage condition on either the 4160 V bus or 480 V motor control center. The EDGs also receive an auto start command on a safety injection actuation signal, but will not load unless a bus under-voltage condition exists.

Each EDG starts automatically upon receipt of a start demand and attains rated speed and voltage within 15 seconds, and sequentially accepts ESF loads. Each EDG has a continuous rating of 2850 kilowatts (kW) and a 7-day rating of 3250 kW. Under procedurally controlled conditions, the EDGs may be aligned to supply the adjacent ESF bus via cross-tie breakers or back feed the non-Class 1E 4160 V bus to power non-ESF loads.

In addition to the EDGs, ANO-2 has installed an alternate AC (AAC) source pursuant to the requirements of Title 10 of the *Code of Federal Regulations* (CFR) Section 50.63, "Loss of all alternating current power." The AAC source is a diesel generator (DG) rated at 4400 kW continuous output and 5320 kW overload. The AACDG is capable of supplying 4160 V power to Arkansas Nuclear One, Unit 1 (ANO-1) vital buses A3 or A4, or ANO-2 vital buses 2A3 or 2A4. The design consideration for the AACDG assumed the DG would be started from the control room and available to power the vital buses within 10 minutes of the diagnosis of a station blackout condition.

The AACDG is completely independent from offsite power and the EDGs, with the exception of the bulk fuel oil storage system. The AACDG, all support systems, and attendant electrical buses are housed in a dedicated building located outside the power block, inside the protected area fence. The AACDG is manually started and loaded. Operation and loading of the AACDG can be performed from the ANO-2 control room or locally.

### 4.0 EVALUATION

The licensee has proposed the following changes to the ANO-2 TSs:

#### SR 4.8.1.1.2.a

This SR currently requires that each EDG be demonstrated operable in accordance with the frequency specified in Table 4.8-1 on a staggered test basis. The licensee has proposed to delete Table 4.8-1 (see evaluation of SR 4.8.1.1.3 below), which requires accelerated testing of the EDGs based on EDG failures, and requires performance of the specified SRs at least once

per 31 days on a staggered test basis. The proposed change will modify this SR by replacing the phrase "In accordance with the frequency specified in Table 4.8-1" with the phrase "At least once per 31 days...." The 31-day test frequency is the same as currently required. Since the removal of this table is consistent with the guidance contained in Generic Letter (GL) 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators," dated May 31, 1994, the staff finds this change to be acceptable.

#### SR 4.8.1.1.2.c

This SR currently requires performance of several SRs "during shutdown." The licensee has proposed changes to SRs 4.8.1.1.2.c.9, 4.8.1.1.2.c.10, and 4.8.1.1.2.c.13 (discussed below), which would allow performance of these SRs during modes other than shutdown. Therefore, the licensee has proposed to eliminate the phrase "during shutdown" from SR 4.8.1.1.2.c and include the phrase "during shutdown" only in those specific SRs still requiring performance "during shutdown." The staff finds the proposed change to be administrative and acceptable.

#### SR 4.8.1.1.2.c.1

This SR currently requires performance of EDG inspections, every 18 months, in accordance with procedures prepared in conjunction with the recommendations of the manufacturer. The licensee has proposed to remove this SR from the TSs. The licensee states this SR is a maintenance activity that does not verify operability of the EDG, and that the manufacturer's recommended inspections required by this surveillance are included in plant procedures. Further, the removal of the TS requirement to perform EDG inspections will not change any of the inspection requirements contained in the surveillance procedures, and any change to the surveillance procedures will require an evaluation in accordance with 10 CFR 50.59, "Changes, tests and experiments." Based on the above, the staff finds the proposed change to be consistent with GL 95-10, "Relocation of Selected Technical Specifications Requirements Related to Instrumentation," and acceptable. The proposed change is also consistent with NUREG-1432, "Standard Technical Specifications for Combustion Engineering Plants."

#### SR 4.8.1.1.2.c.9

This SR currently requires, at least once per 18 months, during shutdown, verification that the DG operates for at least 24 hours. During the first 2 hours of this test, the DG shall be loaded to an indicated 3000 to 3200 kW, and during the remaining 22 hours of this test, the DG shall be loaded to an indicated 2600 to 2850 kW. The licensee has proposed to perform this surveillance during any mode of operation, including power operation. The licensee states that performing this test during power operation would allow increased flexibility in the scheduling and performance of surveillance activities. It also improves EDG availability during shutdown modes and reduces the outage scope.

During the 24-hour functional test, the EDGs are loaded by paralleling with the offsite power system. Only one EDG is paralleled to the offsite source at any one time. Thus, the testing does not affect the independent safe shutdown capabilities of the remaining EDG or the emergency bus. In the event of an accident, with an EDG operating in the test mode and offsite power available, the emergency actuation signal overrides the test mode, returns the EDG to standby operation, and the EDG remains available to supply the associated emergency bus

should a bus under-voltage occur. This transfer is tested once per refueling cycle in accordance with SR 4.8.1.1.2.c.12. In the event of a loss of offsite power (LOOP), while the EDG is paralleled to the grid without an accident, the EDG output breaker will trip on either generator lockout relay or actuation of either of the startup transformer lockout relays. Thus, while the EDG is operating in the test mode, it will be available to perform its intended safety function in the event of an accident or a LOOP.

Additionally, the following design features at ANO-2 assure that the proposed change to allow this surveillance to be performed during power operation rather than shutdown, would not have an unacceptable effect on the overall safety of the plant:

- 1) Plant procedures prohibit the opposite train EDG from being in the test mode simultaneously with the tested EDG.
- 2) The AACDG will be available during the performance of this test. The AACDG is capable of supplying 4160 V power to ANO-1 vital buses A3 or A4, or ANO-2 vital buses 2A3 or 2A4.
- 3) The EDG would not be tested during unstable grid or severe weather conditions.

The staff finds that the performance of the 24-hour EDG functional test during any mode of operation, including power operation, is acceptable due to the following provisions: 1) the EDGs are equipped with a design feature that allows the EDGs to automatically switch from the test mode to the standby mode on the receipt of an accident signal or LOOP, 2) during the 24-hour test of an EDG, no other EDG is operated in parallel with the offsite power grid, and 3) availability of an AACDG capable of powering an ANO-2 safety bus in the event of a station blackout.

Additionally, this SR requires that within 5 minutes of completing the 24-hour test, performance of SR 4.8.1.1.2.c.5, which requires verification that on a LOOP, the emergency busses are de-energized, loads are shed from the emergency buses, and the EDG starts and energizes the emergency buses. The licensee has proposed to delete this SR and replace it with SR 4.8.1.1.2.a.4, which requires that the EDG starts from a standby condition and accelerates to at least 900 rpm in  $\leq 15$  seconds. The staff finds the proposed change to be acceptable because the purpose of this part of SR 4.8.1.1.2.c.9 is to verify that the EDG can restart from hot conditions; therefore, it does not matter whether the EDG started by performance of SR 4.8.1.1.2.c.5 or 4.8.1.1.2.a.4. This change is also consistent with NUREG-1432.

#### SR 4.8.1.1.2.c.10

This SR currently requires, at least once per 18 months, during shutdown, verification that the auto-connected loads to each diesel generator do not exceed the 2-hour rating of 3135 kW. The licensee has proposed to remove the "during shutdown" restriction from the TS. The licensee states that this surveillance is performed using engineering calculations and these calculations can be reviewed at any time. Also, deleting the restriction to perform this test only during shutdown will allow flexibility in scheduling manpower. The staff agrees that the calculations to verify EDG loading can be performed at any time without posing any threat to the safety of the plant. Therefore, performance of this surveillance during any mode of

operation, including power operation, is acceptable.

#### SR 4.8.1.1.2.c.13

This SR currently requires verification, at least once per 18 months, during shutdown, that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each EDG via the installed cross-connection lines. The licensee has proposed to perform this SR during any mode of operation, including power operation. The licensee states that the verification of the ability to transfer fuel oil from each fuel oil storage tank to each EDG fuel oil day tank requires opening two in-series discharge cross-connect valves, starting the fuel transfer pump on each train, and observing a change in level in each of the fuel day tanks. One EDG will be considered inoperable during the performance of this test. Further, this test can be completed in less than 2 hours. The staff finds that, since this test can be accomplished in a short period of time (i.e., within the 72-hour EDG allowed outage time in TS 3.8.1.1) without posing any threat to the safety of the plant, performance of this surveillance during any mode of operation, including power operation, is acceptable.

#### SR 4.8.1.1.3 and TS 6.9.1.5.d

The licensee has proposed to delete SR 4.8.1.1.3, "Reports," which also results in the deletion of TS 6.9.1.5.d and Table 4.8-1, "Diesel Generator Test Schedule," from the TSs. The proposed change to delete the EDG data report, which provides the number of valid tests and number of valid failures for each EDG, and Table 4.8-1, which requires accelerated testing of the EDGs based on the number of failures in the last 20 or 100 tests, are consistent with GL 94-01. As part of the resolution of Generic Safety Issue B-56, "Diesel Generator Reliability," the staff concluded that licensees may propose TS changes to remove special reporting requirements for EDGs from their TSs. Licensees may also request relief from a docketed commitment for accelerated testing (Table 4.8-1) of EDGs and reporting each EDG failure to the NRC (SR 4.8.1.1.3). The staff approval of this option was contingent upon a commitment to implement a maintenance program for monitoring and maintaining EDG performance in accordance with the provisions of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," and the guidance contained in Regulatory Guide (RG) 1.160, "Monitoring the effectiveness of Maintenance at Nuclear Power Plants."

All licensees, including ANO-2, have implemented the Maintenance Rule in accordance with the requirements of 10 CFR 50.65, utilizing the guidance contained in RG 1.160. Based on the above, the staff finds the proposed changes to be consistent with GL 94-01 and acceptable.

#### TS 6.9.1.5.a

The licensee has proposed to correct a typographical error by changing the word "form" to "from." This word is used in a phrase, and would change the phrase from "...the total whole body dose received form external sources..." to "...the total whole body dose received from external sources...." This change is acceptable because doses are received from sources.

## Evaluation Summary

Based on the considerations discussed above, the staff finds that the proposed changes are acceptable.

### 5.0 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.

### 6.0 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 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 (66 FR 36340, dated July 11, 2001). The amendment also relates to changes in recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10). 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.

### 7.0 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 Contributors: O. Chopra  
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Date: December 17, 2001

Arkansas Nuclear One

cc:

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