

December 15, 1992

Docket No. 50-368

Mr. Jerry W. Yelverton
Vice President, Operations ANO
Entergy Operations, Inc.
Route 3 Box 137G
Russellville, Arkansas 72801

Dear Mr. Yelverton:

SUBJECT: ISSUANCE OF AMENDMENT NO. 141 TO FACILITY OPERATING LICENSE
NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M77957)

The Commission has issued the enclosed Amendment No. 141 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 October 9, 1990, as supplemented by letters dated May 12, and September 28, 1992.

The amendment revises TS 3/4.8.1, "A.C. Sources," to achieve consistency with Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability." The changes are intended to reduce testing of the emergency diesel generators (EDGs) and improve their reliability. Editorial changes are also made.

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:
Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 141 to NPF-6
- 2. Safety Evaluation

cc w/enclosures:
See next page

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| Docket File | NRC/Local PDR | PD4-1 Reading | R. Twigg |
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| P. Noonan | ACRS(10)(MSP315) | OGC(MS15B18) | |
| D. Hagan(MS3206) | G. Hill(4) | Wanda Jones(MS7103) | |
| C. Grimes(MS11E22) | PD4-1 Plant File | OPA(MS2G5) | |
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| NAME | PNoonan | RTwigg | TAlexion | | JLarkins |
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 15, 1992

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Vice President, Operations ANO
Energy Operations, Inc.
Route 3 Box 137G
Russellville, Arkansas 72801

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The amendment revises TS 3/4.8.1, "A.C. Sources," to achieve consistency with Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability." The changes are intended to reduce testing of the emergency diesel generators (EDGs) and improve their reliability. Editorial changes are also made.

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,

A handwritten signature in cursive script that reads "Thomas W. Alexion".

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 141 to NPF-6
2. Safety Evaluation

cc w/enclosures:
See next page

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Arkansas Nuclear One, Unit 2

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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. 141
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 October 9, 1990, as supplemented by letters dated May 12, and September 28, 1992, 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. 141, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 15, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 141

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.

REMOVE PAGES

3/4 8-1
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INSERT PAGES

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3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system and
- b. Two separate and independent diesel generators each with:
 1. A day fuel tank containing a minimum volume of 280 gallons of fuel (equivalent to 50% of indicated tank volume),
 2. A separate fuel storage system containing a minimum volume of 22,500 gallons of fuel (equivalent to 100% of indicated tank level), and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If either diesel generator has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirement 4.8.1.1.2.a.4 separately for each diesel generator (unless it is already operating) within 24 hours. Restore the offsite A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of the above required A.C. electrical power source inoperable, demonstrate the OPERABILITY of both the offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator (unless it has been successfully tested in the last 24 hours or is already operating) by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

- c. With one offsite A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and, if the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours (unless it is already operating or has been tested within the last 8 hours). Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both offsite circuits and both diesel generators to OPERABLE status within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With two offsite A.C. circuits of the above required A.C. electrical power sources inoperable perform Surveillance Requirement 4.8.1.1.2.a.4 on the diesel generators within the next 8 hours (unless the diesel generators are already operating or have been successfully tested within the past 8 hours). Restore one of the inoperable offsite A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both A.C. circuits within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generators within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE: (Note 1)

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in the day fuel tank.
 2. Verifying the fuel level in the fuel storage tank.
 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 a standby condition and accelerates to at least 900 rpm in ≤ 15 seconds. (Note 2)
 5. Verifying the generator is synchronized, loaded to an indicated 2600 to 2850 Kw and operates for ≥ 60 minutes. (Notes 3 & 4)
 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.

Note 1

All planned diesel generator starts for the purposes of these surveillances may be preceded by prelube procedures.

Note 2

This diesel generator start from a standby condition in ≤ 15 sec. shall be accomplished at least once every 184 days. All other diesel generator starts for this surveillance may be in accordance with vendor recommendations.

Note 3

Diesel generator loading may be accomplished in accordance with vendor recommendations such as gradual loading.

Note 4

Momentary transients outside this load band due to changing loads will not invalidate the test. Load ranges are allowed to preclude overloading the diesel generators.

ELECTRICAL POWER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

- 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 ± 500 volts and frequency at 60 ± 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.
 - b. Verifying the diesel starts from a standby condition on the undervoltage 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 ≥ 5 minutes while its generator is loaded with the shutdown loads.
 6. Verifying that on a Safety Injection Actuation Signal (SIAS) actuation test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for ≥ 5 minutes.

SURVEILLANCE REQUIREMENTS (Continued)

7. 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.
8. Simulating a loss of offsite power in conjunction with SIAS and:
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel starts from a standby condition on the auto-start signal, energizes the emergency busses with permanently connected loads, energizes the auto-connected emergency (accident) loads through the Time Delay Relays and operates for ≥ 5 minutes while its generator is loaded with the emergency loads.
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 an indicated 3000 to 3200 Kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 2600 to 2850 Kw (Notes 3 & 4). Within 5 minutes after completing this 24 hour test, repeat Specification 4.8.1.1.2.c.5. (Note 5)
10. Verifying that the auto-connected loads to each diesel generator do not exceed the 2 hour rating of 3135 Kw.

Note 3

Diesel generator loading may be accomplished in accordance with vendor recommendations, such as gradual loading.

Note 4

Momentary transients outside this load band due to changing loads will not invalidate the test. Load ranges are allowed to preclude overloading the diesel generators.

Note 5

If this test is not satisfactorily completed, it is not necessary to repeat the preceding 24 hour test, instead, the diesel generator may be operated at 2600 to 2850 Kw until internal temperatures stabilize but not less than 2 hours, then perform test 4.8.1.1.2.c.5 within 5 minutes.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

11. Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - b) Transfer its loads to the offsite power source, and
 - c) Proceed through its shutdown sequence.
 12. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the auto-connected emergency (accident) loads with offsite power.
 13. Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.
 - d. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 900 rpm in ≤ 15 seconds.
- 4.8.1.1.3 Reports - See Specification 6.9.1.5.d.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

| <u>Number of Failures In Last 20 Valid Tests*</u> | <u>Number of Failures In Last 100 Valid Tests*</u> | <u>Test Frequency</u> |
|---|--|----------------------------|
| ≤ 1 | ≤ 4 | At least once per 31 days |
| ≥ 2 | ≥ 5 | At least once per 7 days** |

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Guide 1.108, where the last 20/100 tests are determined on a per diesel generator unit basis.

**This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less and the number of failures in the last 100 valid demands has been reduced to four or less.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source. ACTION requirements are consistent with Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability."

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies", March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Revision 1, August 1977 and Generic Letter 84-15. Load Ranges provided in surveillances are allowed to avoid routine overloading of diesel generators. Load in excess of these load ranges for special testing, momentary variation due to changing bus loads, or short term variations shall not invalidate surveillance tests. For the purpose of surveillance testing, the term "standby condition" is defined as the approximate temperature range of the jacket cooling water and engine lube oil sump normally maintained by the engine keep warm systems. An exception to this definition is the engine conditions that exist when performing the hot restart test following the 24 hour EDG endurance run. When performing this test, the engine is near normal operating temperature when in a "standby condition". Additionally, this definition includes the allowance to perform engine prelubrication prior to all planned test starts.

The Diesel Generator Test Schedule, Table 4.8-1 has been developed for the purpose of determining testing requirements based on the number of failures and valid tests using the example provided in Generic Letter 84-15 using a per diesel generator unit basis. The criteria of R.G.1.108 position C.2.e is used for criteria determination.

Containment electrical penetrations and penetration conductors are protected by either de-energizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 141 TO

FACILITY OPERATING LICENSE NO. NPF-6

ENERGY OPERATIONS, INC.,

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated October 9, 1990, as supplemented by letters dated May 12, and September 28, 1992, Entergy Operations, Inc. (the licensee) submitted a request for changes to the Arkansas Nuclear One, Unit No. 2 (ANO-2) Technical Specifications (TS). The requested changes would revise TS 3/4.8.1, "A.C. Sources," to achieve consistency with Generic Letter (GL) 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability." The changes are intended to reduce testing of the emergency diesel generators (EDGs) and improve their reliability. Editorial changes are also made.

The May 12, and September 28, 1992, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

Change 1

Replace TS 3.8.1.1 Action a with the following:

- a. With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If either diesel generator has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirement 4.8.1.1.2.a.4 separately for each diesel generator (unless it is already operating) within 24 hours. Restore the offsite A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of both the offsite A.C. circuits by performing Surveillance Requirement

4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator (unless it has been successfully tested in the last 24 hours or is already operating) by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The above change splits the existing Action a into separate Actions a and b and negates required diesel generator testing for certain conditions (i.e., EDG inoperability due to preplanned maintenance or successful recent testing). This meets the intent of the recommendations for reduced EDG testing contained in GL 84-15 and is consistent with the current staff position which is when an EDG is inoperable, the redundant EDG is required to be tested primarily to ensure that common-mode failure mechanisms do not exist. However, when an EDG is intentionally rendered inoperable for testing or maintenance, where the cause of the inoperability is readily known, there is no need for such additional testing. Therefore this change is considered acceptable.

Change 2

Replace current TS 3.8.1.1 Action b with the following:

- c. With one offsite A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and, if the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours (unless it is already operating or has been tested within the last 8 hours). Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both offsite circuits and both diesel generators to OPERABLE status within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

This change contains several minor editorial revisions and negates required diesel generator testing for certain conditions. The change meets the intent of GL 84-15 and is consistent with the current staff position as stated above in Change 1. Therefore, this change is considered acceptable.

Change 3

Replace current TS 3.8.1.1 Action c with the following:

- d. With two offsite A.C. circuits of the above required A.C. electrical power sources inoperable perform Surveillance Requirement 4.8.1.1.2.a.4 on the diesel generators within the next 8 hours (unless the diesel generators are already operating or have been successfully tested within the past 8 hours). Restore one of the inoperable offsite A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both A.C. circuits within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The above change contains several minor editorial revisions and negates required diesel generator testing for certain conditions. This meets the intent of GL 84-15 and is consistent with the current staff position which is based on the requirement that EDG operability be demonstrated by a simple test every 31 days during normal operation. Since the loss of two offsite sources degrades the overall plant electrical system significantly, it is desirable to provide additional assurance of the availability of the remaining ac power sources. Based on this, the staff has determined that it is prudent to demonstrate EDG operability within 8 hours when two offsite sources are inoperable. Therefore this change is considered acceptable.

Change 4

Replace current TS 3.8.1.1 Action d with the following:

- e. With two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generators within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

This change contains several minor editorial revisions and is acceptable.

Change 5

At the end of the first line under Specification 4.8.1.1.2, add "(Note 1)." Also add the following new footnote as the reference:

Note 1

All planned diesel generator starts for the purposes of these surveillance may be preceded by prelube procedures.

This change meets the intent of the recommendations for reduced cold fast starts contained in GL 84-15 and is consistent with the current staff position based on plant operating experience which has demonstrated that failure to prelube EDGs can eventually cause catastrophic EDG failures. On this basis, engine prelube is encouraged as a means of improving EDG reliability. Occasional EDG starts without prelube (i.e., actual demand tests) can be tolerated only on a limited basis. Operating experience and test results have demonstrated that EDGs will start within their required time (usually 10 seconds) without prelube. Engine prelube does not invalidate EDG test results but does enhance the overall EDG reliability. Therefore this change is considered acceptable.

Change 6

In TS 4.8.1.1.2.a.4 delete "ambient" and substitute "from a standby condition" following "starts." Also add "(Note 2)" at the end of this specification. Add the following new footnote as the reference:

Note 2

This diesel generator start from a standby condition in ≤ 15 sec. shall be accomplished at least once every 184 days. All other diesel generator starts for this surveillance may be in accordance with vendor recommendations.

This change meets the intent of the recommendations for reduced cold fast starts contained in GL 84-15 and is consistent with the current staff position intended to reduce confusion associated with the term "ambient." Some licensees have disabled the EDG keep-warm system prior to conducting EDG surveillance tests because they considered "ambient" to be room or outside air temperature. This practice resulted in an excessive number of "cold-start" tests. The term "standby" properly reflects the intended conditions for these tests and ensures that the tests will be conducted from a prewarmed condition which enhances overall EDG reliability. Therefore this change is considered acceptable.

Change 7

In TS 4.8.1.1.2.a.5 delete "2850 Kw in ≤ 60 seconds" and substitute "an indicated 2600 to 2850 Kw." Add "(Notes 3 & 4)" at the end of this specification. Also add the following new footnotes as the references:

Note 3

Diesel generator loading may be accomplished in accordance with vendor recommendations such as gradual loading.

Note 4

Momentary transients outside this load band due to changing loads will not invalidate the test. Load ranges are allowed to preclude overloading the diesel generators.

This change meets the intent of the recommendations for reduced cold fast starts contained in GL 84-15 and is consistent with the current staff position based on the following.

The original specification identified the EDG loading condition for testing as equal to or greater than 2850 kW. To satisfy this condition, operators would often run the EDG at a much greater load value which led to overload situations. Such practices caused accelerated engine wear and reduced EDG reliability. By using a load range for the required test condition, the test objectives will be satisfied without overloading the EDG. Further, operating an EDG at 90% of its rated load will provide an adequate demonstration of the EDG's capability to operate at 100% load. The specified load range envelopes 90% to 100% of its rated load and is considered acceptable.

The change also specifies a rate of EDG loading in accordance with the EDG manufacturer's recommendations. The intent of the fast loading originally required in this specification (i.e., zero to full load in less than or equal to 60 seconds) was to roughly simulate the sequencing of loads onto the EDG during an actual emergency situation which generally takes in the neighborhood of about 60 seconds to complete. The fast loading requirement however meant that an operator had to quickly ramp up the load on the EDG in less than 60 seconds using the EDG governor speed adjust rheostat while avoiding overloading on the machine. Because of the difficulty some operators had in managing this and because 1) load sequencing tests required by technical specifications at 18-month intervals also somewhat simulate the same thing, 2) the rapid loading although only required every six months could be viewed as detrimental to EDG reliability, and 3) the rapid loading test did not necessarily challenge all the EDG auxiliary and control systems in the same manner as an actual load sequencing would, the staff has concurred with deletion of the fast loading requirement when requested by licensees. Therefore this change is considered acceptable.

The note allowing momentary transients outside the load band is appropriate because of the dynamic nature of the grid to which the EDG is paralleled for loading. Grid changes may effect EDG loading to the extent that the load would be outside the allowed band. This does not represent a malfunction of the EDG. Adequate time is also allowed for the operator to adjust the load to within the required load range.

Change 8

In TS 4.8.1.1.2.c.5.b delete "ambient" and substitute "a standby" in the first line. Add: "undervoltage" before "auto-start" in the second line.

This change is editorial in nature and adds clarification to the Technical Specification. The change from "ambient" to "standby" is acceptable as discussed in Change 6 previously.

Change 9

In TS 4.8.1.1.2.c.6 delete "an ESF" and substitute "a Safety Injection Actuation Signal (SIAS)" in the first line.

This change is editorial in nature and clarifies the TS and is, therefore, considered acceptable.

Change 10

Move TS 4.8.1.1.2.c.8.c and renumber as TS 4.8.1.1.2.c.7.

This change is editorial in nature and is, therefore, acceptable.

Change 11

In TS 4.8.1.1.2.c.8 delete "an ESF" and substitute "SIAS" in the first line. Also place an ":" at the end of the second line.

This change is editorial in nature and is therefore acceptable.

Change 12

In TS 4.8.1.1.2.c.8.b delete "ambient" and substitute "a standby" in the first line. Also delete "load sequencer" and substitute "Time Delay Relays" in the fifth line.

This change is editorial in nature and adds clarification to the Technical Specification. The change from "ambient" to "standby" is acceptable as discussed in Change 6 previously.

Change 13

In TS 4.8.1.1.2.c.9 delete "3135 Kw" and substitute "an indicated 3000 to 3200 Kw." Also delete "2850 Kw" and substitute "an indicated 2600 to 2850 Kw (Notes 3 & 4)." Add the following new footnotes as the references:

Note 3

Diesel generator loading may be accomplished in accordance with vendor recommendations such as gradual loading.

Note 4

Momentary transients outside this load band due to changing loads will not invalidate the test. Load ranges are allowed to preclude overloading the diesel generators.

This change meets the intent of the recommendations for reduced cold fast starts contained in GL 84-15 and is consistent with the current staff position based on the following.

The original specification identified the EDG loading condition for the first two hours of the test as 3135 kW which is 110% of continuous duty rating of the EDG. The new proposed band for loading is 3000 kW to 3200 kW which is 105% to 112% of the EDG's continuous duty rating which envelopes the original load value while allowing for some minor variations in the EDG loading due to grid changes during the test. The change from 2850 kW to 2600 to 2850 kW for the remaining 22 hours of the test is acceptable as discussed previously in Change 7.

The change also specifies a rate of EDG loading in accordance with the EDG manufacturer's recommendations. The acceptability for this change is as discussed previously in Change 7.

The acceptability for the note allowing momentary transients outside the load band is as discussed previously in Change 7.

Change 14

In the last line of TS 4.8.1.1.2.c.9 delete "repeat Specification 4.8.1.1.2.c.5" and substitute "perform Specification 4.8.1.1.2.c.5."

Although this change appears to be editorial in nature, it does contain a subtlety. TS 4.8.1.1.2.c.5 is intended to be a "cold" (normal standby condition) start test of the diesel generator performed once every 18 months. It is also to be performed again as a "warm" start test following the 24-hour test. If the word "perform" is substituted for "repeat," the licensee could claim that TS 4.8.1.1.2.c.5 needs to be performed only once to satisfy the 18-month surveillance requirements. This is not the staff's intent and therefore we find the change unacceptable. However, by letter dated September 28, 1992, the licensee has replaced the word "perform" with "repeat" and the change is now acceptable.

Change 15

At the end of TS 4.8.1.1.2.c.9 add "(Note 5)." Also add the following new footnote as the reference:

Note 5

If this test is not satisfactorily completed, it is not necessary to repeat the preceding 24 hour test, instead, the diesel generator may be operated at 2600 to 2850 Kw until internal temperatures stabilize but not less than 2 hours, then perform test 4.8.1.1.2.c.5 within 5 minutes.

This change is consistent with the current staff position that the whole 24-hour test does not need to be repeated if just the loss-of-offsite-power test is failed; that is, just the loss-of-offsite-power test needs to be

repeated after the diesel generator has been operated for ≥ 2 hours at full load. Therefore, we find this change acceptable.

Change 16

In TS 4.8.1.1.2.c.12 delete "emergency loads" and substitute "auto-connected emergency (accident) loads" in the fifth line.

This change is editorial in nature, clarifies the TS, and is, therefore, considered acceptable.

Change 17

Delete existing Table 4.8-1 in its entirety and substitute the following:

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

| <u>Number of Failures In Last 20 Valid Tests*</u> | <u>Number of Failures In Last 100 Valid Tests*</u> | <u>Test Frequency</u> |
|---|--|------------------------------|
| ≤ 1 | ≤ 4 | At least once per 31 days |
| ≥ 2 | ≥ 5 | At least once per 7 days |

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Guide 1.108, where the last 20/100 tests are determined on a per diesel generator unit basis.

This change follows the guidance contained in GL 84-15 and is therefore acceptable provided that a "***" is added following "7 days" in the table and the following footnote is added as the reference:

**This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

By letter dated September 28, 1992, the licensee incorporated the above footnote with the additional statement "...and the number of failures in the last 100 valid demands has been reduced to four or less." This change further clarifies the TS, follows the guidance contained in GL 84-15, and is acceptable.

Change 18

In the Bases 3/4.8 on page B 3/4 8-1 at the end of the second paragraph, add the following:

ACTION requirements are consistent with Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability."

At the end of the fourth paragraph, add the following:

and Generic Letter 84-15. Load ranges provided in surveillances are allowed to avoid routine overloading of diesel generators. Load in excess of these load ranges for special testing, momentary variation due to changing bus loads, or short term variations shall not invalidate surveillance tests. For the purpose of surveillance testing, the term "standby condition" is defined as the approximate temperature range of the jacket cooling water and engine lube oil sump normally maintained by the engine keep warm systems. An exception to this definition is the engine conditions that exist when performing the hot restart test following the 24 hour EDG endurance run. When performing this test, the engine is near normal operating temperature when in a "standby condition". Additionally, this definition includes the allowance to perform engine prelubrication prior to all planned test starts.

The Diesel Generator Test Schedule, Table 4.8-1, has been developed for the purpose of determining testing requirements based on the number of failures and valid tests using the example provided in Generic Letter 84-15 using a per diesel generator unit basis. The criteria of R.G. 1.108 Position C.2.e is used for criteria determination.

This change is editorial in nature, reflects the current staff requirement for EDG testing, and is consistent with the changes approved with this TS amendment. On this basis it is 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 (55 FR 49450). 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: F. Burrows

Date: December 15, 1992