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

January 13, 1999

SUBJECT: ISSUANCE OF AMENDMENT NO. 198 TO FACILITY OPERATING LICENSE NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. MA2225)

Dear Mr. Hutchinson:

The Commission has issued the enclosed Amendment No. 198 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 29, 1998 (2CAN069807).

The amendment modifies the TS surveillance requirements for SR 4.8.2.3.b.2, SR 4.8.2.3.c.4 and the Bases for TS 3.8.2.3 Action b. The licensee is planning to modify the 120 volt vital alternating current (ac) electrical distribution system by installing new inverters during the 2R13 refueling outage. Normally, the present inverters for ANO-2 are ac powered and automatically shift to direct current (dc) power on a loss of the ac source. The new inverters will be powered from the 125 dc system at all times.

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. 198 to NPF-6
2. Safety Evaluation
cc w/encls: See next page
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 13, 1999

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cc:

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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. 198
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 29, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

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

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

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

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

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

   2. Technical Specifications

      The Technical Specifications contained in Appendix A, as revised through Amendment No. 198 , 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 with implementation following the completion of the required modifications but prior to the restart from the 2R13 outage.

FOR THE NUCLEAR REGULATORY COMMISSION

M. Christopher Nolan

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: January 13, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 198

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 page(s) are also provided to maintain document completeness.

REMOVE PAGES	INSERT PAGES
3/4 8-9	3/4 8-9
B 3/4 8-2	B 3/4 8-2

SURVEILLANCE REQUIREMENTS (Continued)

2. There is no visible corrosion at battery terminals and connectors, or the connection resistance of these items is $\leq 150 \times 10^{-6}$ ohm, and

3. The average electrolyte temperature of 12 of the connected cells is above 60°F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,

2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material,

3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm, and

4. The battery charger will supply $\geq$ 300 amperes at $\geq$ 125 volts for $\geq$ 8 hours.

d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.

e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60-month interval this performance discharge test may be performed in lieu of the battery service test.

f. At least once per 18 months, during shutdown, performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TABLE 4.8-2

BATTERY SURVEILLANCE REQUIREMENTS

	CATEGORY A(1)	CATEGORY B(2)	
Parameter	LIMITS for each designated pilot cell	LIMITS for each connected cell	ALLOWABLE(3) VALUE for each connected cell
Electrolyte	>Minimum level indication mark, and ≤¼" above maximum level indication mark	>Minimum level indication mark, and ≤¼" above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥2.13 volts	≥2.13 volts(c)	>2.07 volts
Specific Gravity(a)	≥1.195(b)	≥1.190 Average of all connected cells >1.200	Not more than .020 below the average of all connected cells Average of all connected cells ≥1.190(b)

(a) Corrected for electrolyte temperature and level.
(b) Or battery charging current is less than 2 amps when on charge.
(c) Corrected for average electrolyte temperature.
(1) For any Category A parameter(s) outside the LIMIT(S) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their ALLOWABLE VALUES, and provided all Category A and B parameter(s) are restored to within LIMITS within the next 6 days.
(2) For any Category B parameter(s) outside the LIMIT(S) shown, the battery may be considered OPERABLE provided that the Category B parameters are restored to within LIMITS within 7 days.
(3) Any Category B parameter not within its ALLOWABLE VALUE indicates an inoperable battery.

BASES

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. The 480 volt air frame protective devices utilize electro-mechanical overcurrent elements which are mounted on the protective device and, in some instances, protective relays to trip the protective device. Actuation of the overcurrent element or relay will trip the protective device. The molded case protective devices utilize magnetic or thermal-magnetic overcurrent elements which are contained in the protective device. Actuation of each overcurrent element will trip the protective device.

TS 3.8.2.3 Action "b" requires the performance of SR 4.8.2.3.a.1 within one hour and at least once per 8 hours thereafter for a loss of one of the required full capacity chargers. If any Category A limit in Table 4.8-2 is not met while a charger is inoperable, the associated battery bank shall be declared inoperable and ACTION "a" entered. The Category A limits in Table 4.8-2 specify the normal limits for electrolyte level, float voltage and specific gravity for each designated pilot cell. When TS 3.8.2.3 ACTION "b" is entered without the associated battery bank being on float (i.e. charger not connected to the bus), pilot cell float voltage is determined by measuring pilot cell voltage. The term "full capacity charger" as used in TS 3.8.2.3 is defined as a charger that is capable of supplying an output of ≥ 300 amperes.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 198 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 29, 1998 (2CAN069807), 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 TS surveillance requirements SR 4.8.2.3.b2, SR 4.8.2.3.c.4 and the Bases for TS 3.8.2.3 Action "b" to allow the modification of ANO-2 120 volt vital alternating current (ac) electrical distribution system by installing new inverters during the coming refueling outage (2R13).

2.0 EVALUATION

2.1 TS Surveillance Requirement 4.8.2.3.b.2 - Battery Terminal Corrosion

The existing ANO-2 TS battery inspection SR 4.8.2.3.b.2 provides the necessary surveillance to detect conditions that can cause power losses due to corrosion at the terminals or connectors. The proposed change will revise SR 4.8.2.3.b.2 to read as follows: "There is no visible corrosion at battery terminals and connectors, or the connection resistance of these items is $\leq 150 \times 10^{-6}$ ohm." This SR has been modified to allow the determination of the resistance readings on the associated battery connections in addition to the corrosion inspection contained in the original surveillance requirement. This is consistent with similar requirements of NUREG-1432, "Standard Technical Specifications for Combustion Engineering Plants." The terminal resistance value of $\leq 150 \times 10^{-6}$ ohm is based on the values of the present limits in SR 4.8.2.3.c.3. The resistance measurements provide an indication of physical damage or abnormal deterioration of the terminal or connectors that could potentially degrade the performance of the battery. This change is an enhancement to the current TS. This change does not reduce the margin of safety specified in the TSs and does not represent a condition adverse to the health and safety of the public.

2.2 TS Surveillance Requirement 4.8.2.3.c.4 - Battery Charger Capacity

The present ANO-2 inverters are powered from their 480 volt normal ac source and automatically shift to direct current (dc) power on a loss of the normal ac source. The 125 volt

vital dc system loads are normally supplied by its associated battery charger, an additional "swing" battery charger can be placed in service on either of the vital dc buses to replace its associated normal battery charger. The licensee is planning to install new inverters which will not contain a rectifier circuit and will be, therefore, normally powered from the 125 volt vital dc system. The inverter replacement modification will increase the dc system loads which would exceed the capacity of the existing 200 ampere "swing" battery charger. As a result, SR 4.8.2.3.c.4 will be revised to require an increase in the minimum battery charger capacity from 200 to 300 amperes.

After the modification, the dc system will consist of one battery charger in service connected to its associated battery for each train and a second charger for each train as a standby. This standby charger on each train will be placed in service manually.

The existing chargers will be replaced with chargers of 400 ampere design capacity. The sizing of the new battery chargers will satisfy the R.G. 1.32 requirement as each charger will be able to furnish the energy for the largest combined demands of the loads while restoring the battery capacity from minimal charged state to the fully charged state.

The proposed periodic testing requirement of SR 4.8.2.3.c.4 of ≥300 ampere limits ensure that the chargers will perform their function. The additional 100 amperes will allow a faster battery recharge time and will allow available capacity for potential load growth of the dc system. This design change will adequately compensate for the inverter replacement and is acceptable. This change does not reduce the margin of safety specified in the TSs and does not represent a condition adverse to the health and safety of the public.

2.3 Bases for TS 3.8.2.3. Action b - Battery Surveillance Requirements

TS 3.8.2.3 Action "b" provides the required action to be taken in the event that one of the full capacity chargers is inoperable. This action requires the performance of SR 4.8.2.3.a.1 (verify the parameters in Table 4.8-2, BATTERY SURVEILLANCE REQUIREMENTS) within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8-2 is not met while a charger is inoperable, the associated battery bank shall be declared inoperable and ACTION "a" entered. The category A limits in Table 4.8-2 specify the normal limits for electrolyte level, float voltage and specific gravity for each designated pilot cell. When TS 3.8.2.3 ACTION "b" is entered without the associated battery bank being on float (i.e. charger not connected to the bus), pilot cell float voltage is determined by measuring pilot cell voltage. The term "full capacity charger" as used in TS 3.8.2.3 is defined as a charger that is capable of supplying an output of ≥ 300 amperes." Also Action "b" states that if any category A limits in Table 4.8-2 is not met while the charger is inoperable, the associated battery is inoperable.

Table 4.8-2 (BATTERY SURVEILLANCE REQUIREMENTS) is used to verify the operability of the battery when the battery is on float. The bases for TS 3.8.2.3 Action "b" adds clarification when the battery is not on float (charger not connected to the dc bus). The staff finds this change 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 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 (63 FR 56244). 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: Saba N. Saba

Date: January 13, 1999