Docket No. 50-368 February 3, 1994

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. 156 TO FACILITY OPERATING LICENSE NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M85871)

The Commission has issued the enclosed Amendment No. 156 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 February 24, 1993.

The amendment revises the containment internal pressure lower limit of TS Figure 3.6-1 from 12.8 to 13.2 psia.

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. 156 to NPF-6
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION:

Docket File	NRC/Local PDR	PD4-1 Reading	R. Jones
T. Alexion (2)	E. Adensam	J. Roe	R. Barrett
P. Noonan	ACRS (10) (P315)	OGC(15B18)	W. Long
D. Hagan (3206)	G. Hill (2)	T. Stetka, RIV	C. Liang
C. Grimes (11E22)	OPA (2G5)	OC/LFMB (4503)	

OFC	LA/PD4-1	PM/PD4-1	BC/SRXB	OGC	D/PD4-1
NAME	PNoonan	TAlexion/vw	RJones	C Marco	WBeckner
DATE	1/13/94	1/13/94	1/13/94	1/14/94	2/3/94
COPY	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO

OFFICIAL RECORD COPY Document Name: AR285871.AMD

100014
9402140117 940203
PDR ADOCK 05000368
P PDR

NRC FILE CENTER COPY

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

February 3, 1994

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. 156 TO FACILITY OPERATING LICENSE NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M85871)

The Commission has issued the enclosed Amendment No. 156 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 February 24, 1993.

The amendment revises the containment internal pressure lower limit of TS Figure 3.6-1 from 12.8 to 13.2 psia.

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,

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. 156 to NPF-6
2. Safety Evaluation

cc w/enclosures:
See next page

cc:

Mr. Harry W. Keiser, Executive Vice
President & Chief Operating Officer
Entergy Operations, Inc.
P. O. Box 31995
Jackson, Mississippi 39286

Mr. Charles B. Brinkman, Manager
Washington Nuclear Operations
ABB Combustion Engineering
Nuclear Power
12300 Twinbrook Parkway, Suite 330
Rockville, Maryland 20852

Mr. Nicholas S. Reynolds
Winston & Strawn
1400 L Street, N.W.
Washington, D.C. 20005-3502

Mr. Robert B. Borsum
Licensing Representative
B&W Nuclear Technologies
1700 Rockville Pike, Suite 525
Rockville, Maryland 20852

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
1 Nuclear Plant Road
Russellville, Arkansas 72801

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Honorable C. Doug Luningham
County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

Ms. Greta Dicus, Director
Division of Radiation Control
and Emergency Management
Arkansas Department of Health
4815 West Markham Street
Little Rock, Arkansas 72205-3867

Mr. Jerrold G. Dewease
Vice President, Operations Support
Entergy Operations, Inc.
P. O. Box 31995
Jackson, Mississippi 39286

Mr. Robert B. McGehee
Wise, Carter, Child & Caraway
P. O. Box 651
Jackson, Mississippi 39286

Admiral Kinnaird R. McKee, USN (Ret)
214 South Morris Street
Oxford, Maryland 21654

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. **156**
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 February 24, 1993, 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.

9402140120 940203
PDR ADOCK 05000368
P PDR

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. **156**, 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

Thomas W. Alexion

for William D. Beckner, 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: **February 3, 1994**

ATTACHMENT TO LICENSE AMENDMENT NO. 156

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	INSERT PAGE
3/4 6-7	3/4 6-7

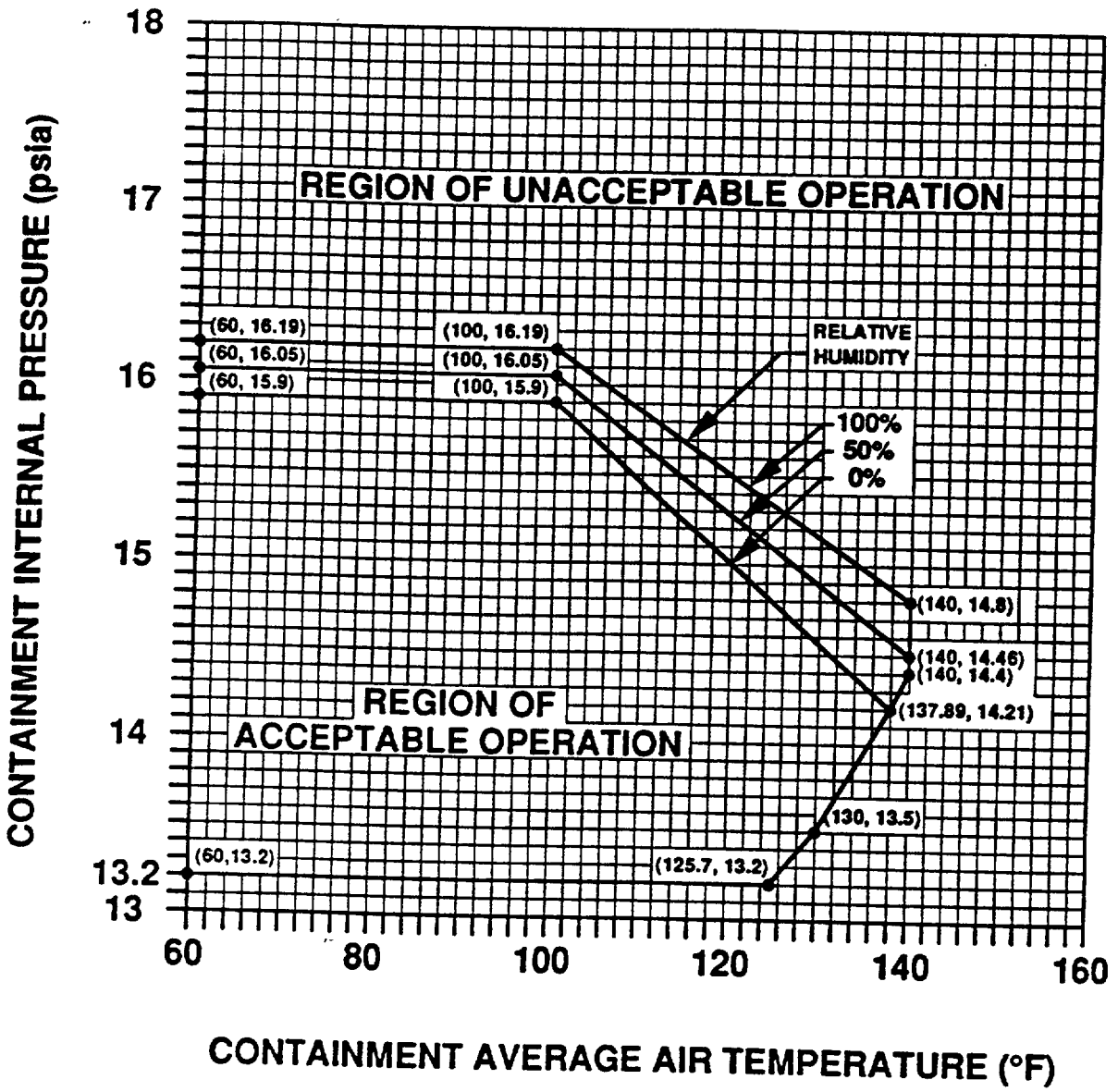

FIGURE 3.6 - 1

CONTAINMENT INTERNAL PRESSURE VS. CONTAINMENT AVERAGE AIR TEMPERATURE

NOTE: Instrument Error is not Included on Curve

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.5 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.5.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5.1 Containment Tendons The containment tendons' structural integrity shall be demonstrated at the end of one, three and five years following the initial containment structural integrity test and at five year intervals thereafter. The tendons' structural integrity shall be demonstrated by a visual examination (to the extent practical and without dismantling load bearing components of the anchorage) of a representative sample* of at least 21 tendons (6 dome, 5 vertical, and 10 hoop) and verifying no abnormal degradation. Unless there is evidence of abnormal degradation of the containment tendons during the first three tests of the tendons, the number of tendons examined during subsequent tests may be reduced to a representative sample of at least 9 tendons (3 dome, 3 vertical and 3 hoop).

*For each inspection, the tendons shall be selected on a random but representative basis so that the sample group will change somewhat for each inspection; however, to develop a history of tendon performance and to correlate the observed data, one tendon from each group (dome, vertical, and hoop) may be kept unchanged after the initial selection.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO.156 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 February 24, 1993, 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 the containment internal pressure lower limit of TS Figure 3.6-1 from 12.8 to 13.2 psia.

2.0 BACKGROUND

In each of the past operational cycles, the licensee has re-evaluated the postulated large-break loss-of-coolant accident (LBLOCA) to incorporate the changes made in fuel design and core physics parameters. The results of each LBLOCA reanalysis confirmed that the acceptance criteria are met. However, operating margin to the linear heat rate limit assumed in the LBLOCA analysis has been used to offset any changes that cause peak clad temperature (PCT) to increase. The latest LBLOCA analysis is based on a peak linear heat rate of 12.1 kW/ft (the current TS value). This was reduced from the 14.5 kW/ft assumed in the original safety analysis report (SAR) LBLOCA analysis.

By letter dated February 24, 1993, the licensee submitted its updated LBLOCA analysis. The CENPD-132 Supplement 3-P-A methodology was used in this updated analysis, as required. This LBLOCA reanalysis consolidated all of the changes and discrepancies that were identified over the years and restored operating margin to the linear heat rate limit (the new limit is 13.5 kW/ft). Also, the input parameters were reviewed and adjusted accordingly to accommodate potential future changes. A steam generator tube plugging limiting of 10% is one of the potential changes that has been incorporated into the new LBLOCA analysis. The new LBLOCA analysis assumes an initial containment pressure of 13.2 psia, that is higher than the present TS limit of 12.8 psia. Therefore, the licensee requested a change to TS Figure 3.6-1 to reflect a higher minimum containment pressure of 13.2 psia, consistent with the assumption used in the new LBLOCA analysis.

9402140121 940203
PDR ADOCK 05000368
P PDR

3.0 DISCUSSION

The ANO-2 LBLOCA analysis has been reevaluated utilizing the latest approved Combustion Engineering evaluation model, CENPD-132 Supplement 3-P-A. Changes to input parameters were made in the following areas: 1) latest evaluation model updates, 2) past cycle changes, 3) present plant data, and 4) anticipated plant changes. Changes to the evaluation model which impact the input parameters are the limiting single failure, analytical nodalization modifications and axial power distribution.

A new limiting failure of "no single failure" is referenced in CENPD-132 Supplement 3-P-A. This new assumption allows all High Pressure Safety Injection (HPSI) and Low Pressure Safety Injection (LPSI) pumps to operate, increasing the injection flow out the break and reducing containment pressure. This encourages more flow out the break, promoting a less rapid core reflood and resulting in higher PCTs. The nodalization changes in the reactor vessel lower plenum region and broken pump discharge leg are also incorporated into the input parameters. All of the changes which have been made over the past 10 cycles (as documented in cycle-specific reload reports, such as, difference in fuel pin conditions, fuel batches with HID-1 spacer grids, removal of hot rod augmentation penalty, reduction of the linear heat rate, reduction in the initial containment temperature and pressure) are incorporated into the new LBLOCA analysis.

As discussed in Standard Review Plan Section 6.2.1, an increase in the initial containment pressure assumed in a loss-of-coolant accident (LOCA) analysis also affects the calculated value of the resulting fuel PCT. The increased initial containment pressure (and therefore, a greater mass of non-condensible gases in the containment) results in a higher containment pressure profile throughout the accident. This higher containment pressure discourages flow out the break and promotes a more rapid core reflood, reducing the fuel PCT calculated by the LOCA evaluation model. A higher initial containment pressure thus has a conservative or beneficial effect on fuel performance during a LOCA.

4.0 EVALUATION

4.1 LBLOCA Analysis

Although the effect of the initial containment pressure increase (by itself) is to lower PCT, the net effect of all the changes in this LOCA reanalysis is as follows. A 0.6 square feet Double Ended Guillotine break in the Pump Discharge (DEG/PD) has been determined as the limiting break in the new LBLOCA analysis. The results of this new analysis show an increase in PCT from 2086°F (cycle 10 reload analysis) to 2142°F, which is below the 2200°F limit defined in 10 CFR 50.46. The maximum clad oxidation was calculated as 8.9 percent and maximum core wide oxidation is less than 0.843 percent. These values are also within the acceptance criteria for a LBLOCA accident. The staff has reviewed the licensee's submittal and finds that the input parameters used in the new analysis are reasonable and the results of the licensee's new LBLOCA analysis meet the acceptance criteria defined in 10 CFR 50.46 and are acceptable.

4.2 Containment Analysis

Although increased containment pressure has a beneficial effect on PCT, it has an adverse effect on the containment pressure vessel response. An increase in initial air mass results in a greater peak containment pressure in the event of a pipe rupture. For this reason, the TSs also establish an upper bound or maximum containment operating pressure. The proposed new lower limit assumed in the LOCA analysis remains less than the upper limit assumed in the containment analysis. Thus, the staff finds that no TS changes relating to the containment analysis are required, nor is a containment reanalysis required.

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. 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 (58 FR 16858). 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.

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: C. Liang, SRXB
W. Long, SCSB
T. Alexion, PD IV-1

Date: February 3, 1994