



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20545

May 6, 1988

Docket

Docket No. 50-368

Mr. T. Gene Campbell
Vice President - Nuclear
Operations
Arkansas Power and Light Company
P. O. Box 551
Little Rock, Arkansas 72203

Dear Mr. Campbell:

SUBJECT: REQUEST FOR TEMPORARY WAIVER OF COMPLIANCE FROM
TECHNICAL SPECIFICATION 3.1.3.4 REGARDING CONTROL
ROD DROP TIME - ARKANSAS NUCLEAR ONE, UNIT 2

The staff has reviewed your request for a temporary waiver of compliance from Technical Specification (TS) 3.1.3.4 submitted in your May 5, 1988 letter. Our evaluation of this request and the supporting information supplied with it is presented below.

We recognize that by choosing to utilize the new test method for measuring control rod drop times you were acting in the interest of safety in that the tripping of all control rods simultaneously using the reactor trip circuit breakers duplicates what actually occurs on a reactor trip. The previous method of testing only involved tripping one control rod at a time using the individual rod drive power supply breakers. However, as a result of using the new test method, you determined that the electromagnetic decay times of the control element drive mechanism (CEDM) holding coils are approximately 0.25 seconds greater than under the previous test method. These longer decay times (defined as the time between interruption of power to the CEDM and the unlatching of the control rod) are representative of the actual performance of the CEDMs on a reactor trip and make obsolete rod drop test results from previous cycles. The increase in rod drop time over previous cycles was found to be fairly uniform for all control rods, as can be seen from the test data supplied in the submittal. You stated that the cause of the increase in CEDM coil decay time appeared to be inherent in the design of the CEDM circuitry; with all of the individual rod breakers closed, the CEDM coil shunt resistance circuits are essentially bypassed, resulting in a lower resistance decay path and therefore a smaller time constant. Based on the test data and discussions submitted we concur with your determination of the cause of the time increase, and also that the possibility of mechanical binding has been ruled out.

This increase in CEDM coil decay time resulted in approximately 10 percent of your control rod drop times exceeding the 3.0 second limit of Technical Specification 3.1.3.4. In your letter you reported the results of your evaluation of the effect of these longer rod drop times on the plant safety analysis for low power events up to 30 percent rated power. You also indicated that you would therefore limit your power level to no higher than 30 percent rated power and would not go above 30 percent rated power without prior Commission approval.

8805180082 880506
PDR ADDCK 05000368
P PDR

The staff has reviewed the evaluation of the Arkansas Nuclear One, Unit 2 (ANO-2) Final Safety Analysis Report (FSAR) safety analysis events initiated at power levels below 30 percent of rated power, which are most adversely affected by the measured increase in rod drop times. These events are the uncontrolled rod withdrawal, both from a subcritical condition and from a critical condition at 1 percent power, and the zero power control rod ejection. The reevaluation of these low power events, which incorporated the increased measured rod drop times in a conservative manner, also incorporated a revised control rod reactivity versus position curve based on space-time neutron kinetics calculations rather than the previously used steady-state static neutron calculations. The staff has previously approved this methodology to determine control rod scram characteristics for other Combustion Engineering designed plants such as Palo Verde, San Onofre, Waterford-3, Calvert Cliffs, and St. Lucie and finds it acceptable for application to ANO-2. This methodology results in a more realistic determination of scram insertion data which has been shown to more than offset the increased control rod drop times during the initial scram time interval of importance. Because of this, the staff concludes that the previously determined consequences of these limiting low power events remain bounding. We therefore conclude that you can safely proceed with zero power physics testing in Mode 2 and then proceed into Mode 1 operation at no higher than the 30 percent power test plateau, as you requested.

As stated to you by telephone at approximately 7:45 p.m. (EST) on May 5, 1988, your request for a temporary waiver of compliance from Technical Specification 3.1.3.4 is therefore granted until 5:00 p.m. (EST) on May 12, 1988, subject to the following conditions.

- (1) Reactor power shall be restricted to no greater than 30 percent rated power.
- (2) A Technical Specification Change Request specifying a new requirement for rod drop time must be submitted no later than 5:00 p.m. (EST) May 9, 1988.

We will advise you of our decision concerning the acceptability of your request for an emergency technical specification change once our review is completed.

Sincerely,

15
 Jose A. Calvo, Director
 Project Directorate - IV
 Division of Reactor Projects - III,
 IV, V and Special Projects

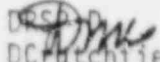
cc: See next page

DISTRIBUTION

Docket File	NRC PDR	Local PDR	PD4 Reading
L. Rubenstein	J. Calvo	P. Noonan	C. Harbuck
G. Dick	L. Kopp	W. Hodges	J. Callan, RIV
D. Crutchfield	L. Rubenstein	OGC-Rockville	E. Jordan
J. Partlow	ACRS (10)	PD4 Plant File	

*See previous concurrences:

PD4/LA*	PD4/PM*	PD4/D*	OGC*	SRXB*	SRXB*	RIV ^{add} by telcom
PNoonan	CHarbuck:sr	JCalvo	WHodges	LKopp	for JCallan	
05/06/88	05/06/88	05/06/88	05/06/88	05/06/88	05/06/88	05/06/88

DR4A*	
LRubenstein	DCrutchfield
05/06/88	05/6/88

The staff has reviewed the evaluation of the Arkansas Nuclear One, Unit 2 (ANO-2) Final Safety Analysis Report (FSAR) safety analysis events initiated at power levels below 30 percent of rated power, which are most adversely affected by the measured increase in rod drop times. These events are the uncontrolled rod withdrawal, both from a subcritical condition and from a critical condition at 1 percent power, and the zero power control rod ejection. The reevaluation of these low power events, which incorporated the increased measured rod drop times in a conservative manner, also incorporated a revised control rod reactivity versus position curve based on space-time neutron kinetics calculations rather than the previously used steady-state static neutron calculations. The staff has previously approved this methodology to determine control rod scram characteristics for other Combustion Engineering designed plants such as Palo Verde, San Onofre, Waterford-3, Calvert Cliffs, and St. Lucie and finds it acceptable for application to ANO-2. This methodology results in a more realistic determination of scram insertion data which has been shown to more than offset the increased control rod drop times during the initial scram time interval of importance. Because of this, the staff concludes that the previously determined consequences of these limiting low power events remain bounding. We therefore conclude that you can safely proceed with zero power physics testing in Mode 2 and then proceed into Mode 1 operation at no higher than the 30 percent power test plateau, as you requested.

As stated to you by telephone at approximately 7:45 p.m. (EST) on May 5, 1988, your request for a temporary waiver of compliance from Technical Specification 3.1.3.4 is therefore granted, subject to the following conditions.

- (1) Reactor power shall be restricted to no greater than 30 percent rated power.
- (2) A Technical Specification Change Request specifying a new requirement for rod drop time must be submitted no later than 5:00 p.m. (EST) May 9, 1988.

~~(3) This temporary waiver of compliance will expire at 5:00 p.m. (EST) on May 12, 1988.~~

We will advise you of our decision concerning the acceptability of your request for an emergency technical specification change once our review is completed.

Sincerely,

Jose A. Calvo, Director
 Project Directorate - IV
 Division of Reactor Projects - III,
 IV, V and Special Projects

cc: See next page

DISTRIBUTION

Docket File	NRC PDR	Local PDR	PD4 Reading
L. Rubenstein	J. Calvo	P. Noonan	C. Harbuck
G. Dick	L. Kopp	W. Hodges	J. Callan, RIV
D. Crutchfield	L. Rubenstein	CGC-Rockville	E. Jordan
J. Partlow	ACRS (10)	PD4 Plant File	

PD4/LA
 PNoonan
 05/06/88

PD4/PM
 CHarbuck:sr
 05/06/88

PD4/D
 JCalvo
 05/06/88

OGC
 WHodges
 05/06/88

SRXB
 LKopp
 05/06/88

RIV
 JCallan
 05/06/88

DR4A
 LRubenstein
 05/06/88

DRSP:D
 DCrutchfield
 05/06/88

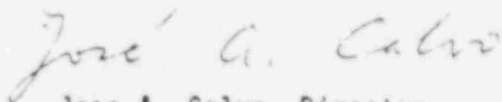
The staff has reviewed the evaluation of the Arkansas Nuclear One, Unit 2 (ANO-2) Final Safety Analysis Report (FSAR) safety analysis events initiated at power levels below 30 percent of rated power, which are most adversely affected by the measured increase in rod drop times. These events are the uncontrolled rod withdrawal, both from a subcritical condition and from a critical condition at 1 percent power, and the zero power control rod ejection. The reevaluation of these low power events, which incorporated the increased measured rod drop times in a conservative manner, also incorporated a revised control rod reactivity versus position curve based on space-time neutron kinetics calculations rather than the previously used steady-state static neutron calculations. The staff has previously approved this methodology to determine control rod scram characteristics for other Combustion Engineering designed plants such as Palo Verde, San Onofre, Waterford-3, Calvert Cliffs, and St. Lucie and finds it acceptable for application to ANO-2. This methodology results in a more realistic determination of scram insertion data which has been shown to more than offset the increased control rod drop times during the initial scram time interval of importance. Because of this, the staff concludes that the previously determined consequences of these limiting low power events remain bounding. We therefore conclude that you can safely proceed with zero power physics testing in Mode 2 and then proceed into Mode 1 operation at no higher than the 30 percent power test plateau, as you requested.

As stated to you by telephone at approximately 7:45 p.m. (EST) on May 5, 1988, your request for a temporary waiver of compliance from Technical Specification 3.1.3.4 is therefore granted until 5:00 p.m. (EST) on May 12, 1988, subject to the following conditions.

- (1) Reactor power shall be restricted to no greater than 30 percent rated power.
- (2) A Technical Specification Change Request specifying a new requirement for rod drop time must be submitted no later than 5:00 p.m. (EST) May 9, 1988.

We will advise you of our decision concerning the acceptability of your request for an emergency technical specification change once our review is completed.

Sincerely,



Jose A. Calvo, Director
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects

cc: See next page

Mr. T. Gene Campbell
Arkansas Power & Light Company

Arkansas Nuclear One, Unit 2

cc:

Mr. Dan R. Howard, Manager
Licensing
Arkansas Nuclear One
P. O. Box 608
Russellville, Arkansas 72801

Mr. Charles B. Brinkman, Manager
Washington Nuclear Operations
C-E Power Systems
7910 Woodmont Avenue
Suite 1310
Bethesda, Maryland 20814

Mr. James M. Levine, Executive Director
Site Nuclear Operations
Arkansas Nuclear One
P. O. Box 608
Russellville, Arkansas 72801

Mr. Frank Wilson, Director
Division of Environmental Health
Protection
Department of Health
Arkansas Department of Health
4815 West Markham Street
Little Rock, Arkansas 72201

Mr. Nicholas S. Reynolds
Bishop, Cook, Percell & Reynolds
1400 L Street, N.W.
Washington, D.C. 20005-3502

Honorable William Abernathy
County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Office of Executive Director for
Operations
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

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

Ms. Greta Dicus, Director
Division of Environmental Health
Protection
Arkansas Department of Health
4815 West Markham Street
Little Rock, Arkansas 72201

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
1700 Rockville Pike, Suite 525
Rockville, Maryland 20852