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| FROM: Arkansas Power & Light Little Rock, Ark. 72203 | | DATE OF DOC 1-6-75 | DATE REC'D 1-9-75 | LTR X | TWX | RPT | OTHER |
| TO: J.D. Phillips | | ORIG 1 signed | CC | OTHER | SENT AEC PDR <u>XXX</u> SENT LOCAL PDR <u>XXX</u> | | |
| CLASS | UNCLASS XXX | PROP INFO | INPUT XXX | NO CYS REC'D 40 | DOCKET NO: 50-313 | | |

DESCRIPTION:
Ltr re Power Escalation Tests at the Arkansas Nuclear One Unit #1..... adv that they feel that their is no need for further testing to verify turbine overspeed...and requesting a change to the test program..... trans the following....notarized 1-6-75..

ENCLOSURES:
"Deletion of the Generator Separation Test"

(40 cys encl rec'd)

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

PLANT NAME: Arkansas Nuclear One Unit #1

FOR ACTION/INFORMATION 1-9-75 JB

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- 1 - AGMED (RUTH CLAYMAN Rm B-107 GT)
- 1 - B. D. MUELLER Rm E-201

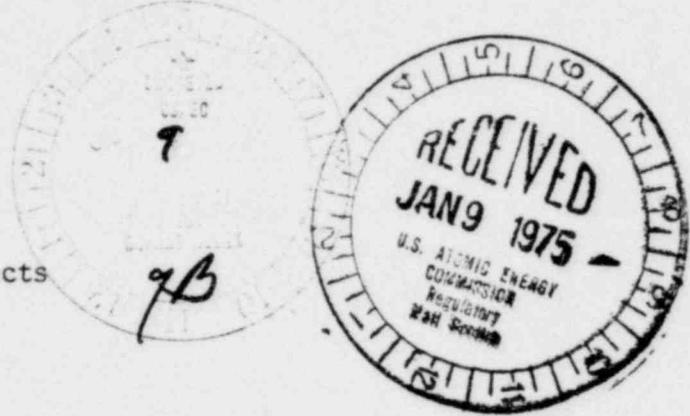


HELPING BUILD ARKANSAS

ARKANSAS POWER & LIGHT COMPANY

9TH & LOUISIANA STREETS • LITTLE ROCK, ARKANSAS 72203 • (501) 372-4311

January 6, 1975



Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
Office of Regulation
U. S. Atomic Energy Commission
Washington D. C. 20545

Subject: Arkansas Power & Light Company
Arkansas Nuclear One-Unit 1
Docket No. 50-313
License No. DPR-51
Power Escalation Tests

Dear Mr. Giambusso:

The power escalation test program as originally written for Arkansas Nuclear One - Unit 1 (ANO-1) contained procedures for a turbine trip and a generator separation test from 100% Full Power (FP). The acceptance criteria for these tests included a provision that the reactor would not trip as a result of these transients but would run back to 15% FP as indicated in FSAR Sections 4.1.1.2, 7.2.3.1, 7.2.3.3.4, and 14.1.2.8.3. Test results from the Oconee Nuclear Station and Three Mile Island-Unit 1 indicated that the reactor would trip as a result of these transients. Thus, the acceptance criteria for these tests at ANO-1 were changed to allow a reactor trip. The reactor trip was verified following the turbine trip from 100% FP at ANO-1.

With the change in acceptance criteria it became evident that, if the reactor trips following the turbine trip or generator separation test, the transient on the unit would be very similar for both tests. Thus, we propose to eliminate the generator separation test since no new data would be obtained by running this test and a plant transient during testing would be used for no apparent reason. This course of action has been reviewed by the Plant Safety Committee, Safety Review Committee, AP&L Management and Babcock & Wilcox and it has been determined that the changes involved do not constitute unreviewed safety questions as defined by 10CFR50.59(a).

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January 6, 1975

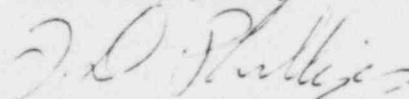
Subsequent discussions with personnel from AEC Regulatory Operations, Region II, indicate that, in their opinion, the generator separation test is necessary to verify that turbine overspeed will not occur during the transient. We disagree with that opinion and consider that the generator separation test can be deleted for the following reasons:

1. A turbine overspeed test was conducted at a lower power level which verified that the turbine trip mechanisms described in the FSAR protected the turbine from overspeed conditions.
2. Continued surveillance of the turbine overspeed trip mechanisms is conducted during the life of the unit as required by Technical Specification Table 4.1-1, Item 31, to verify the operability of these mechanisms.
3. It is not a documented objective of the generator separation test to determine the operability of the turbine overspeed trip mechanisms.
4. The turbine trip test was successfully completed at 100% FP and is the most severe transient on the main steam lines which was necessary for running the concurrent Pipe Shock and Vibration test.

Attached is a detailed safety evaluation of this proposed change to the test program.

In conclusion, we do not consider it necessary to conduct a generator separation test from 100% FP at ANO-1 in addition to the turbine trip already conducted. Your comments and/or concurrence in this matter is requested.

Very truly yours,



J. D. Phillips
Senior Vice President

JDP:tw

Attachment

cc: Mr. Norman C. Moseley, Director
Directorate of Regulatory Operations
United States Atomic Energy Commission
Region II
230 Peachtree Street, N.W., Suite 818
Atlanta, Georgia 30303

STATE OF ARKANSAS)
)
COUNTY OF PULASKI) SS

J. D. Phillips, being duly sworn, states that he is a Senior Vice President of Arkansas Power & Light Company; that he is authorized on the part of said Company to sign and file with the Atomic Energy Commission this Supplementary Information; that he has read all of the statements contained in such Information, and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.

J. D. Phillips
J. D. Phillips

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for the County and State above named this 6th day of January, 1975.

Linda B. Thomas
Notary Public

My Commission Expires:
March 1, 1978

SAFETY EVALUATION

DELETION OF GENERATOR SEPARATION TEST

ARKANSAS NUCLEAR ONE-UNIT 1

Section 13 of the Arkansas Nuclear One-Unit 1 (ANO-1) FSAR commits us to comply with the "Guide for the Planning of Initial Startup Programs" with certain exceptions as noted in FSAR Table 13-4. Sections J.1.i and J.1.j of that guide state that a turbine trip and a generator trip are to be performed at 50% Full Power (FP) and 100% FP. A reactor/turbine trip test was successfully conducted at 40% FP to satisfy the turbine trip requirement at 50% FP, while Table 13-4 took exception to the generator trip at 50% FP.

At 100% FP, we are committed to perform a turbine trip and a generator trip and thus have planned in the test program a turbine trip and a generator separation at 100% FP. The generator separation test was planned rather than a generator trip because Regulatory Guide 1.68, which superceded the "Guide for the Planning of Initial Startup Programs", defines the generator trip to be a trip of the generator main breaker.

The acceptance criteria for the generator separation and turbine trip both stated that the load drop would be permitted without a reactor trip. These criteria were based on FSAR Sections 4.1.1.2, 7.2.3.1, 7.2.3.3.4 and 14.1.2.8.3 which stated that the reactor would not trip following a generator separation or a 100 percent load drop.

In view of the fact that the results of these tests at the Oconee Nuclear Station and Three Mile Island-Unit 1 have proven that the reactor would trip following these transients, we changed our acceptance criteria to allow the reactor to trip. The reactor trip following a turbine trip was then confirmed during the turbine trip test at 100% FP at ANO-1. With this change in acceptance criteria it was felt that the two tests, turbine trip and generator separation, would produce the same results. Thus, we propose to eliminate the generator separation test to avoid this added plant transient which appears to serve no obvious purpose. The turbine trip test was chosen to be conducted as it represented the most severe transient on the main steam system which was necessary for running the concurrent Pipe Shock and Vibration Test.

The change in the acceptance criteria for the two tests was reviewed by the Plant Safety Committee, the Safety Review Committee, and AP&L management all of whom concluded that the fact that the reactor trips following both transients did not involve an unreviewed safety question as defined by 10CFR 50.59(a). This conclusion was based on concurrence from Babcock & Wilcox (B&W) that, although a transient involving a reactor trip following a turbine trip or generator separation is more severe than the transient without a reactor trip as analyzed in FSAR Section 14.1.2.8.3, it is less severe than the transient following

a complete loss of a-c power as analyzed in FSAR Section 14.1.2.8.4. The final plant conditions are also considered to be safer if the reactor is tripped. Further, consideration was given to the fact that a generator separation test was successfully completed at ~15% FP.

It should be pointed out that no specific acceptance criteria is presented for either transient in either the "Guide for the Planning of Initial Startup Programs" or Regulatory Guide 1.68. Therefore, our acceptance criteria were based on FSAR statements that the reactor would not trip following these transients which have since been proven to be incorrect. Although it was intended to perform both a turbine trip and a generator separation from 100% FP using the original acceptance criteria, we now find that, with the revised acceptance criteria, there will be no difference in the results of the transients.

Subsequent discussions with personnel from AEC Regulatory Operations, Region II indicated that the generator separation test from 100% FP was designed to show that the turbine could not reach dangerous overspeed levels. However, neither our procedure, which was reviewed by Regulatory Operations personnel, nor either of the guides mention turbine overspeed in the monitoring requirements or the acceptance criteria. Also the safety analysis presented in the FSAR does not mention turbine overspeed in the discussion of these transients. It should also be pointed out that a turbine overspeed test was successfully conducted at ANO-1 at a lower power level and that continued testing of the turbine overspeed trip mechanism is required throughout the life of the plant per Technical Specification Table 4.1-1, Item 31. These tests are considered valid at all power levels as turbine speed is constant at 1800 rpm for all power levels.

Section 14.1.2.9 of the FSAR analyzes the possibility and consequences of significant turbine overspeed. This analysis, which has been reviewed by the Commission, concluded that, "it takes the simultaneous failure of two independent steam admission control systems plus a failure of the backup systems before the turbine-generator can exceed 120 percent of rated speed. Therefore, overspeed beyond 120 percent of rated speed is not considered credible. Because of the redundancy and reliability of the plant turbine control and protection system, the close control of oil purity, the periodic check of steam admission valve freedom, and the high value of the bursting overspeed, any missile resulting from a turbine-generator overspeed incident is hypothetical only and not considered credible."

At ANO-1, Oconee, and Three Mile Island-1 (TMI-1) the Integrated Control System (ICS) and turbine control system are designed to cause the turbine to reduce load without significant overspeed following a generator separation. Our information indicates that these systems worked properly at both Oconee and TMI-1 to limit turbine speed following a generator separation. Although General Electric turbines are used at Oconee and TMI-1, while a Westinghouse Turbine is used at ANO-1, these control systems function similarly for both brands.

The control system on the ANO-1 turbine is designed to take action beginning at 101% of rated speed. At this point the speed governor valves start to close and are fully closed at 103% speed. This will limit speed to less than 110% of rated speed. If these fail, the emergency governor, at approximately 111% speed, will trip closed all control, stop intercept and reheat stop valves. If these fail, the backup overspeed trip device will trip all valves shut at 111.5% of rated speed. In addition, the reactor will trip in approximately 4 seconds due to high RCS pressure, thus further limiting turbine speed.

In conclusion, the deletion of the generator separation test from 100% FP does not involve an unreviewed safety question as defined by 10CFR50.59(a) and should not be tied with the determination of the adequacy of the turbine overspeed protection mechanisms.