HELPING BUILD ARKANSAS

ARKANSAS POWER & LIGHT COMPANY

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March 21, 1983

DONALD A. RUETER
DIRECTOR
TECHNICAL AND
ENVIRONMENTAL SERVICES

ØCANØ38323

Mr. John T. Collins
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

SUBJECT: Arkansas Nuclear One - Units 1 and 2
Docket Numbers 50-313 and 50-368
License Numbers DPR-51 and NPF-6
IE Bulletin Number 83-04, "Failure of the Undervoltage Trip Function of Reactor Trip Breakers"

Gentlemen:

This letter provides the results of actions taken at Arkansas Nuclear One as required by item 4 of IE Bulletin 83-04, "Failure of the Undervoltage Trip Function of Reactor Trip Breakers." The required actions are reiterated herein for clarity.

Required Actions for Holders of Operating Licenses for Pressurized Water Reactors:

PWR licensees with other than W DB type breakers in reactor protective system applications are requested to:

1. Perform surveillance tests of undervoltage trip function independent of the shunt trip function within five days of receipt of this bulletin unless equivalent testing has been performed within ten days. Those plants currently shut down should complete this item before resuming operation or within ten days, whichever is sooner. Those plants for which on-line testability is not provided should complete this item at the next plant shutdown if currently operating.

IE11

2. Review the maintenance program for conformance to the latest manufacturer's recommendation, including frequency and lubrication. Verify actual implementation of the program.* If maintenance does not conform, initiate such maintenance within five days of receipt of this bulletin or provide an alternate maintenance program. Repeat the testing required in item 1 prior to declaring the breaker OPERABLE.

   *IE Bulletin 79-09 dated April 17, 1979 had as an attachment an extract of General Electric (GE) Service Advice Letter No. 175 (CPPD) 9.3 which is applicable to GE type AK-2 breakers.

3. Notify all licensed operators of the failure-to-trip event which occurred at Salem (see IE Bulletin 83-01) and the testing failures at San Onofre Units 2 and 3 described above. Review the appropriate emergency operating procedures for the event of failure-to-trip with each operator upon his arrival on shift.

4. Provide a written reply within 10 days of receipt of this bulletin:

   a. Identify results of testing performed in response to item 1. Plants without on-line testability should report the date and results of the most recent test.

      Response to 4.a.

      ANO-1

      The ANO-1 RPS design and manual trip design use a safety related under voltage (UV) trip mechanism only to trip (open) the Reactor Trip Breakers (RTBs). These GE AK-2A breakers also have a shunt trip mechanism which is non-safety related and activated only at the breaker location. As such, the ANO-1 UV trip mechanisms and RTBs are tested and verified monthly as a part of the monthly Technical Specification Surveillance Test.

      As a result of the subject IE Bulletin, we conducted another test of the ANO-1 UV trip mechanisms and RTBs on March 14, 1983. All of these components functioned properly. Although not required by the Bulletin, we tested the shunt trip mechanisms on the AC RTBs and verified their operability as well. These devices also functioned properly.

      ANO-2

      The ANO-2 RPS design and manual trip design use a safety related UV and shunt trip mechanism to trip (open) the RTBs. As such, the ANO-2 UV and shunt trip mechanisms are tested monthly as a result of the Technical Specification Surveillance Test requirements. This monthly test verifies that the RTBs trip but does not descriminate between the possible trip mechanisms (i.e., shunt trip vs. UV trip). Once each refueling outageand/or prior to returning a breaker to service following maintenance, the shunt and UV trips are tested independently and verified operable.

As a result of the subject Bulletin, the ANO-2 UV trip mechanisms were tested on March 13, 1983, independent of the shunt trip. This was accomplished by removing the fuse in the power supply to the UV coil (resulting in loss of voltage to the UV trip mechanism). All UV trip mechanisms functioned properly and resulted in trip of the breaker. Although not required by the Bulletin, we tested the shunt trip mechanisms and verified their operability as well. These devices also functioned properly.

b. Identify conformance of the maintenance program to manufacturer's recommendation and describe results of maintenance performed directly as a result of this bulletin in response to item 2.

Response to 4.b.

The ANO-1 and 2 maintenance programs for the GE AK-2 breakers and trip mechanisms were reviewed for conformance to the latest manufacturer's recommendations. The procedures contain steps to address the material condition of the breaker, proper cleanliness and lubrication. They also require verification of proper torque on the trip shaft (less than 1.5 inch-pounds), proper pickup (up to 85% of nominal) and dropout (between 30% and 60%) voltages of the UV mechanism and proper response time of the breaker. It is our opinion that these procedures comply with GE's recommendations for maintenance of these devices. As a result, no specific maintenance was performed on these devices as a result of the subject Bulletin.

In addition to the above, the ANO-1 maintenance procedure was verified to comply with IE Bulletin 79-09, GE Service Advice Letter No. 175 (CPPD) 9.3 and B&W recommendations. As noted in our response to IE Bulletin 79-09, this procedure once differed in the frequency of maintenance (i.e., refueling outage basis vice once per six months in the Bulletin). The procedure was modified in 1982, however, to incorporate the six month maintenance interval.

The GE recommendations provided for ANO-1 were also incorporated in the ANO-2 maintenance procedure during its inception. Combustion Engineering has previously provided recommendations (CE Letter No. 81-002) which recommended maintenance on a refueling outage interval. This interval was used at ANO-2 until September 1982 at which time the procedure was modified to require a six month maintenance interval.

c. Provide a statement that provisions are in place to notify licensed operators of the Salem and San Onofre events and bring to their attention appropriate failure-to-trip emergency procedures upon their arrival on shift.

Response to 4.c.

As stated in our response to IE Bulletin 83-01 (0CAN038308), the ANO operators were made aware of the Salem failure to scram event

and the role of the UV trip mechanism. Following receipt of the subject Bulletin, a required reading package was issued on March 12, 1983, to both Control Rooms for all operators to review and sign, thereby documenting their review as they came on shift.

This review package included IE Bulletins 83-01 and 83-04, the reactor trip breaker failure report to NRC for the Salem Generating Station (Docket Number 50-272) and applicable sections of procedures which deal with the failure of CEAs or control rods to trip.

d. Provide a description of all RPS breaker malfunctions not previously reported to the NRC.

Response to 4.d

The ANO-1 and 2 Technical Specifications require reporting of a RTB failing to trip on demand during modes of plant operation when the RPS is required to be Operable. Six such reports have been previously made on ANO-1 and none for ANO-2.

In addition to the above reported events, the following possible malfunctions of UV or shunt trip mechanisms have occurred.

ANO-1

(1) On August 23, 1982, the "B" RTB failed to trip (open) on demand from the UV trip device. The breaker was subsequently retested 10 times successfully. As a result, surveillance testing on the breaker was conducted daily until the breaker was ultimately replaced. This event was not reported as all control rods were inserted in the core with the reactor subcritical at the time of the occurrence.

(2) On October 6, 1982, the "B" RTB failed to trip on demand from the non-safety related shunt coil. This event occurred during a daily surveillance test and following a successful breaker trip on demand from the UV trip mechanism. The shunt trip failure was due to incorrect restoration of relay in the breaker control scheme removed temporarily to allow breaker reclosure. This event was not reported as the safety related portion required to be Operable had functioned properly.

It should be noted that these two events occurred on the same RTB as the events reported in LER 82-016 and LER-024. During the approximately four month period when we were experiencing problems with the "B" RTB, surveillance frequency was periodically increased ultimately to a daily test frequency. The "B" RTB was replaced in November 1982.

ANO-2

(1) Documentation indicates that a new UV trip coil was installed in a RTB on December 14, 1979. The reason for the replacement is not known. This event was not reported as it occurred on a spare breaker (not in service) during refurbishment.

(2) On September 11, 1981, reactor trip breaker TCB-5 would not stay closed. During subsequent inspection, it was found that the undervoltage coil was defective. The coil was replaced. This occurrence was not reported because the breaker tripped, thus performing its designed safety function and meeting Technical Specification Operability requirements.

(3) On November 12, 1982, documentation indicates that a new UV trip mechanism was installed on a RTB during replacement of a blown control power fuse. The reason for the replacemnt is not known. This event was not reported as the control rods were all inserted in the core and the reactor was subcritical. In addition, the RTB tripped properly on demand thus meeting the Technical Specification Operability requirements.

e. Verify that procurement, testing and maintenance activities treat the RPS breaker and UV devices as safety related. Report the results of this verification to the NRC.

Response to 4.e

Plant procurement records have been reviewed to ensure that all orders for spare or replacement parts for the safety-related portions of the RTBs for Unit 1 and Unit 2 have been ordered as "Q" safety-related. Materials Management maintains a file by vendor of all AP&L purchase orders. For Unit 1 reactor trip breakers, B&W, Diamond Power, General Electric and Westinghouse files were reviewed to ensure that all vendors that could have supplied breakers or replacement parts were covered. Files on Combustion Engineering and General Electric were likewise reviewed for Unit 2. Procurement records were reviewed to ensure that baseline technical/quality requirements for reactor trip switchgear and associated equipment specified safety-related function.

According to all available procurement records, RTBs and associated devices have been ordered safety-related. Procedures 1000.11 and 1032.06 require baseline technical/quality requirements be established for all "Q" parts. Conformance to these procedures provide assurance that the RTBs and associated equipment are procured safety-related according to applicable specifications.

Each channel of the RPS is periodically tested in accordance with safety-related test procedures that functionally test the safety

channels in accordance with Technical Specifications. These tests provide trip signals to the reactor trip breakers and include verification that the reactor trip breakers operate.

RTBs are maintained and inspected in accordance with safety-related maintenance procedures. These procedures provide for checking the proper operation of the latch mechanisms, tripping devices and remote control functions. In addition, the procedures provide for inspection of breaker contacts, primary and secondary disconnects and arc quencher.

Throughout this response we have used the term "Reactor Trip Breakers" to generically encompass the correct terminology of "Control Rod Drive Trip Breakers" for ANO-1 and "Control Element Drive Mechanism Trip Breakers" for ANO-2. As well, we have generically used "Reactor Protection System" to encompass the correct terminology of "Reactor Protection System" for ANO-1 and "Plant Protection System" for ANO-2.

Very truly yours,

Donald A. Rueter

Donald A. Rueter

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Attachment

STATE OF ARKANSAS)
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COUNTY OF PULASKI) SS

I, Donald A. Rueter, being duly sworn, subscribe to and say that I am Director, Technical and Environmental Services, for Arkansas Power & Light Company; that I have full authority to execute this oath; that I have read the document numbered ØCANØ38323 and know the contents thereof; and that to the best of my knowledge, information and belief the statements in it are true.

Donald A. Rueter

Donald A. Rueter

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for the County and State above named, this 22nd day of March, 1983.

Notary Public

My Commission Expires:

4-1-85