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May 10, 1983

Docket Nos. 50-348
50-364

Director, Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. S. A. Varga

Joseph M. Farley Nuclear Plant - Units 1 and 2
Reactor Trip Breakers, DS-416

Gentlemen:

In letters dated March 4, 1983 and March 25, 1983, Alabama Power Company described the actions taken in response to I.E. Bulletins 83-01 and 83-04 related to the reactor trip breakers (Model DS-416) at the Farley Nuclear Plant. Since the initial discovery of potential DS-416 breaker problems, Alabama Power Company and Westinghouse have worked in concert to identify and resolve problems associated with the undervoltage (UV) devices. Actions taken by Alabama Power Company have included:

1. Replacement of UV devices with modified devices that have all identified manufacturing problems corrected and with modified grooves to accomodate improved retaining rings.
2. Installation checks on the installed modified UV devices to verify proper alignment and interface with the breaker trip shaft.
3. Testing and maintenance of the DS-416 breakers in accordance with Westinghouse recommendations. The documentation of actual testing and maintenance, plus procedures by which these activities were conducted, was sent to the NRC Staff on May 2, 1983.

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4. Licensed operators at Farley Nuclear Plant were notified of the Salem and San Onofre events and were provided a description of the Farley trip breaker operation. In addition, licensed operators received a refresher review of Emergency Operating Procedures (EOP) related to Anticipated Transients Without Trip (ATWT).

Alabama Power Company has completed all recommended corrective actions described in Westinghouse letter dated April 21, 1983 and NRC required actions described in I.E. Bulletins 83-01 and 83-04. Alabama Power Company believes that, by completing the recommended corrective actions provided by Westinghouse and NRC, the concerns of potential for misoperation associated with the subject breakers have been adequately addressed. Alabama Power Company currently provides explicit guidance for manual reactor trip in the EOPs to the licensed operators.

In addition to the actions described above, during telecons on May 3, 1983 and May 5, 1983, NRC staff personnel identified additional actions that should be performed in order to further assure the reliability of the subject breakers. These actions, which were evaluated by Alabama Power Company and Westinghouse, were discussed with the NRC staff via telecon on May 6, 1983. As a result, Alabama Power Company hereby commits to the following additional actions during a six month period commencing May 6, 1983:

1. Six Month Interval Bench Test and Maintenance
(Main and bypass breakers)

- a. Obtain the following "as found" data:

- i) Breaker response time measured during 3 consecutive tests of tripping each by UV and by shunt coils.
- ii) Measurement of force required to actuate trip bar.
- iii) Measurement of force exerted by UV device output.

Note: The performance of item ii) and iii) is predicated on the ability of Alabama Power Company and Westinghouse to develop "in-the-field" test techniques with appropriate acceptance criteria, which will provide baseline data to be considered in future breaker maintenance activities. Development of procedural guidance is scheduled for August 1983.

- b. Perform breaker preventive maintenance:

Alabama Power Company will perform preventive maintenance including lubrication, cleaning, etc.

2. Monthly testing (main breakers in-place)

- a. Functional test of UV devices by Reactor Protection System (RPS) actuation including response time testing of the breaker.

Note: Presently the capability to measure the response time of breaker actuation is not possible using installed equipment. A design to allow such response time testing is expected to be completed in June 1983. Installation of this change, which is expected to require a plant outage, will be completed during the first outage of sufficient duration after completion of design and receipt of material. Confidence in the response capability of the UV devices is currently provided by the following:

- i) Monthly RPS test of the UV device will be conducted for each train which includes verification that the breaker opens promptly. Monthly testing of both trains will next be performed by June 6, 1983. Currently, the UV device testing is done on a monthly basis.
- ii) Response time testing of the subject breakers was successfully performed during bench testing in April 1983.

- b. Functional manual test of shunt device.

Note: The present Farley Nuclear Plant design does not allow the performance of this functional test from the breaker cabinet using installed equipment. A design to allow this testing is expected to be complete during June 1983. Upon finalization, the design will be provided to NRC for approval. Installation of this change, which is expected to require a plant outage, will be completed during the first outage of sufficient duration after completion of design and receipt of material.

3. Pre-startup testing (main breakers)

These pre-startup tests will be conducted on both train breakers prior to each criticality unless such testing has been completed within the past seven days.

- a. Functional test of the reactor trip breakers via the main control board trip switches.

- b. Functional independent test of shunt devices from the breaker cabinet.

Note: As presently designed, independent testing cannot be performed with installed equipment. In conjunction with the design change described in Item 2.b above, the capability to independently test these devices will be added.

4. Provide RPS Actuation of the Shunt Trip

In conjunction with the design change described in Items 2.b and 3.b, this capability will be added. This design is expected to be consistent with that of the Westinghouse Owners Group. Upon finalization, the design will be provided to NRC for approval.

5. UV Device Confirmatory Life Testing

Alabama Power Company and Westinghouse are developing a program for confirming, via test and/or calculation, the expected life of the UV devices. The scope and objectives of this program are expected to be completed during June 1983. Upon finalization, the program will be provided to NRC for approval.

6. Procedural Modification and Operator Training

a. Procedural Modifications

After discussions held with the NRC staff on May 6 and May 9, 1983 concerning operator actions during an ATWT condition, Alabama Power Company has modified the EOPs related to ATWT and Reactor Trip. These modifications more clearly delineate operator response in order to preclude potential operator inaction as a result of surveying various plant instrumentation unnecessarily (i.e., failure to manually trip reactor in a timely manner). Attached are copies of the revised EOPs (EOP-5 and EOP-15).

During these discussions, considerable interest was expressed concerning the rationale for the steps appearing in the procedures for observing "all full length rods fully inserted and nuclear power decreasing" as confirmation of a reactor trip. The following discussion is provided as basis for retaining this procedural provision.

Farley Nuclear Plant has two licensed operators per unit called the Operator at-the-Controls (OATC) and Unit Operator (UO). The OATC is stationed in the At-the-Controls area of the control

room at all times; his work station (i.e., desk and chair) is located directly in front of the reactor control panel. This panel is where the key instrumentation and controls equipment discussed below are located. If a reactor trip has occurred, the OATC need only glance at the Digital Rod Position Indication (Figure 1) which displays in prominent fashion with bright red lights each rod's actual rod position. On this same panel in the same area, indicators and recorders prominently display Reactor Power for the OATC (Figure 1). This verification process would be completed almost instantaneously by the OATC.

If the reactor is not tripped as evidenced by all control rods not fully inserted and nuclear power not decreasing, the OATC is immediately alerted that an Anticipated Transient Without Trip (ATWT) is potentially occurring. The OATC now proceeds to determine if a condition requiring a reactor trip exists. If the condition does exist, the OATC immediately trips the reactor. This decision process of verifying the state of the reactor is engrained in licensed operators by repeated classroom training, walk-throughs and simulator training. It has become an almost automatic response for these personnel.

If the verification of determining that "all full length rods fully inserted and nuclear power decreasing" is not allowed, reactor plant safety could be decreased by the following detrimental effects:

- 1) Requiring that an operator take action prior to verification that an off-normal event has occurred may result in an operator taking action counter to safe operating practice. Such a requirement is counter to the basic instincts that are taught and necessary for safety throughout operations. To require operator performance otherwise might result in an unpredictable operator response.
- 2) Challenges to reactor safety systems could be increased by tripping the reactor on invalid indications.

Therefore, Alabama Power Company strongly feels that the verification of "all rods fully inserted and nuclear power decreasing" is essential for taking safe action during a reactor trip or ATWT.

b. Operator Training

Based on I.E. Bulletin 83-01 dated February 25, 1983, Farley Nuclear Plant licensed operators were notified of the failure-to-trip incident at Salem and were required to perform a

refresher review of the Farley Emergency Operating Procedure related to Anticipated Transients Without Trip prior to relieving the first shift after mid-day on February 26, 1983. Based on I.E. Bulletin 83-04, Farley Nuclear Plant licensed operators were notified upon their arrival on-shift of the testing failures at San Onofre Units 2 and 3, were reminded of the Salem incident, and were required to perform an additional refresher review of the Farley Emergency Operating Procedures related to Anticipated Transients Without Trip prior to relieving their first shift commencing with the evening shift on March 15, 1983.

On April 15, 1983, as a result of a possible problem with FNP reactor trip breakers discovered during preventive maintenance change out of each undervoltage coil (subsequently determined to be non-generic), the Farley Nuclear Plant operators were informed that their Reactor Trip Breakers may not function and symptoms and actions required of EOP-5 and EOP-15 were discussed.

Recently, changes have been made to EOP-5 and EOP-15, as described above, to clarify the symptoms of ATWT. All on-shift licensed personnel and Shift Technical Advisors (STA's) were required to be briefed on this change by the Shift Supervisor prior to relieving their next shift.

As a result of discussions held with the NRC on May 6 and May 9, 1983 procedure changes have been made to EOP-15 to further clarify the symptoms of ATWT. All on-shift licensed personnel and STA's will be required to be briefed on this change by the shift supervisor prior to relieving their next shift.

In response to the reactor trip breaker opening failures at the Salem Nuclear Generating Plant, Farley Nuclear Plant license requalification training has addressed the reactor trip breaker event at Salem. Included in this discussion has been the sequence of events on the two addressed occurrences, the physical operation of Salem's and Farley Nuclear Plant's reactor trip breakers, NRC's concerns and responses, and the operator's response if such an event occurred at Farley Nuclear Plant. EOP-5.0, "Reactor Trip" and EOP-15.0 "Anticipated Transient Without a Trip" were specifically emphasized. The philosophy of performing a manual reactor trip anytime the ATWT symptoms were observed was specifically stressed.

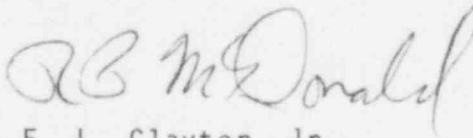
Since it has been impossible to finalize the details of the committed design changes, test procedures and confirmatory life program by May 10, 1983, a follow-up status letter will be submitted by May 31, 1983, to provide a more complete schedule with finalized implementation

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dates. Upon completion of the six month test program described above, Alabama Power Company will submit a summary report concerning this testing and will address continued testing.

Please advise if there are any questions regarding these committed activities.

Yours very truly,


for F. L. Clayton, Jr.

FLCJr/RLG:ddr-D22

Attachments

cc: Mr. R. A. Thomas
Mr. G. F. Trowbridge
Mr. J. P. O'Reilly
Mr. E. A. Reeves
Mr. W. H. Bradford