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Docket No. 50-261

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Mr. E. E. Utley, Senior Executive
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Power Supply and Engineering
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Carolina Power and Light Company
Post Office Box 1551
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Dear Mr. Utley:

Subject: Draft SER for H. B. Robinson Steam Electric Plant Unit 2 - Generic Letter 83-28 Items 4.2.1 and 4.2.2 - Preventative Maintenance Program for Reactor Trip Breakers/Maintenance and Trending (MPA B-81) (Tac No. 53145)

We have completed our review of your responses to items 4.2.1 and 4.2.2 of Generic Letter 83-28. As noted in the enclosed draft safety evaluation, additional information or justification is required to close out these items.

Please provide your response to the open items within 45 days.

The reporting and/or recordkeeping requirements of this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L 96-511.

Sincerely,

/S/

Glode Requa, Project Manager
PWR Project Directorate #2
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Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

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DRAFT SAFETY EVALUATION REPORT

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2

REACTOR TRIP SYSTEM RELIABILITY

ITEMS 4.2.1 AND 4.2.2 OF GENERIC LETTER 83-28

1. INTRODUCTION

On July 8, 1983, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 83-28. This letter addressed intermediate-term actions to be taken by licensees and applicants aimed at assuring that a comprehensive program of preventive maintenance and surveillance testing is implemented for the reactor trip breakers (RTBs) in pressurized water reactors. In particular, Item 4.2 of the letter required the licensees and applicants to submit a description of their preventive maintenance and surveillance program to ensure reliable reactor trip breaker operation. The description of the submitted program was to include the following:

GL, Item 4.2.1 — A planned program of periodic maintenance, including lubrication, housekeeping, and other items recommended by the equipment supplier.

GL, Item 4.2.2 — Trending of parameters affecting operation and measured during testing to forecast degradation of operation.

Carolina Power and Light Company, the licensee for H. B. Robinson Unit 2, submitted responses to the Generic Letter on November 4, 1983, and March 7, 1985. This report presents an evaluation of the adequacy of those responses and of the licensee's preventive maintenance and surveillance programs for RTBs.

2. EVALUATION CRITERIA

2.1 Periodic Maintenance Program

The primary source for periodic maintenance program criteria is Westinghouse Maintenance Program for DB-50 Reactor Trip Switchgear, Rev. 0. This document is the breaker manufacturer's recommended maintenance program for the DB-50 breaker and provides specific direction with regard to schedule, inspection and testing, cleaning, lubrication, corrective maintenance and record keeping. The document was reviewed to identify those items that contribute to breaker trip reliability consistent with the generic letter. Those items identified for maintenance at six month intervals that should be included in the licensee's RTB maintenance program are:

1. Verification of trip bar freedom
2. Verification of operating mechanism alignment and freedom
3. Retaining ring verification
4. Verification of nut and bolt tightness
5. Verification of pole bases physical condition
6. Verification of arcing and main contacts physical condition
7. Verification of insulating link's physical condition
8. Verification of wiring insulation and termination physical condition
9. Verification of arc chute physical condition
10. Verification of breaker cleanliness
11. Undervoltage Trip Attachment (UVTA) dropout voltage test and lubrication
12. Shunt Trip Attachment (STA) operation verification
13. Verification of operation of auxiliary switches
14. Inspection of positioning lever condition
15. Functional test of the breaker prior to returning it to service.

The licensee's RTB periodic maintenance should also include, on a refueling interval basis:

16. Verification of cell interlock operation
17. Examination and cleaning of breaker enclosure
18. Measurement of trip force required
19. Functional test of the breaker prior to returning it to service
20. Breaker response time for undervoltage trip.

All of the items listed above are recommended by the manufacturer except Item 20. This item is the breaker trip response time measurement which is implied by the IEEE Standard 279-1971.

2.2 Trending of Parameters

Generic Letter Item 4.2.2 specifies that the licensee's preventative maintenance and surveillance program is to include trending of parameters affecting operation and measured during testing to forecast degradation of operation. The parameters measured during the maintenance program described above which are applicable for trending are undervoltage trip attachment dropout voltage, trip force, and breaker response time for undervoltage trip. The staff position is that the above three parameters in addition to the breaker insulation resistance are acceptable and recommended trending parameters to forecast breaker operation degradation or failure. If subsequent experience indicates that any of these parameters is not useful as a tool to anticipate failures or degradation, the licensee may, with justification and NRC approval, elect to remove that parameter from those to be tracked.

3. EVALUATION

3.1 Evaluation of the Licensee Position on Item 4.2.1

The licensee states that his preventative maintenance program includes each of the items detailed in Section 2.1 of this SER, with the exceptions for the UVTA dropout voltage measurement and the breaker trip force test.

The licensee justifies omission of measurement of the UVTA dropout voltage on the basis that (a) he is performing response time testing, (b) response time testing identifies degradation in the UVTA as well as other components that affect tripping, and (c) low voltage dropout measurements provide redundant information on the UVTA only. The licensee also states that the UVTA is routinely replaced every five years, and that proper operation of the UVTA is verified monthly when the reactor is critical. The staff finds this justification inadequate, as the UVTA dropout voltage test is the only part of the maintenance procedure with a potential for providing degradation information specifically on the UVTA. Because the undervoltage trip is the safety-related function of the RTB, and because the licensee has suggested no acceptable alternate method for detecting UVTA-specific degradation, the licensee's omission of the UVTA dropout voltage measurement is unacceptable.

The licensee justifies omission of the breaker trip force test on the basis that performance of the test is inconclusive and not a meaningful measure of UVTA operability. The staff position is that this test provides an indication of the force margin available to trip the breaker. The licensee has not identified any alternate procedure to verify trip force margin. The staff finds this justification inadequate and the licensee's omission of the breaker trip force measurement unacceptable.

The licensee has also taken exception to the recommended maintenance frequency; Robinson 2 performs those parts of the program recommended for a six month interval on an annual basis. THe licensee justifies extension of the six month interval to 12 months based on operational usage and experience at Robinson. The referenced Westinghouse maintenance program states that the semi-annual activities might be extended to a maximum of 12 months if experience shows this to be sufficient, provided that 200 breaker cycles are not exceeded during this interval. The staff finds the licensee's position on the maintenance frequency acceptable provided the licensee confirms that 200 RTB trips are not exceeded during the interval.

3.2 Evaluation of the Licensee's Position on Item 4.2.2

The only parameter for which the licensee performs trend analysis is breaker opening time due to undervoltage trip. The licensee justification for omission of UVTA dropout voltage and breaker trip force is addressed in section 3.1 of the SER. The licensee justification for omission of breaker insulation resistance is that the measurement is not included as part of Westinghouse Maintenance Program for DB-50 Reactor Trip Switchgear. The staff finds the licensee justification for omission of three parameters from his parametric trending program inadequate, and the licensee's position on Item 4.2.2 unacceptable.

4. CONCLUSIONS

Based on the review of the licensee responses, the staff finds the licensee position on Item 4.2.1 unacceptable. The staff considers items 4.2.1 of the Generic Letter to be open pending incorporation by the licensee of the UVTA dropout voltage test and breaker trip force in his maintenance procedure. In addition the licensee must confirm that 200 RTB trips are not exceeded during the annual interval the licensee has elected for his preventative maintenance.

Staff evaluation of the licensee's position on Item 4.2.2 remains open pending adequate licensee justification for omission of three of the four parameters recommended for trend analysis.