

SAFETY EVALUATION REPORT  
SOUTH TEXAS PROJECT, UNITS 1 & 2  
REACTOR TRIP SYSTEM RELIABILITY  
ITEMS 4.1, 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 4.1 of the letter required licensees and applicants to verify that all vendor-recommended reactor trip breaker modifications have been implemented. Item 4.2 required them 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 4.1      All vendor-recommended reactor trip breaker modifications shall be reviewed to verify that either: each modification has, in fact, been implemented; or a written evaluation of the technical reasons for not implementing a modification exists.
- 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.

Houston Lighting & Power, the applicant for the South Texas Project, Units 1 & 2 submitted responses to the Generic Letter on November 3, 1983 and July 17, 1985. This report presents an evaluation of the adequacy of the applicant's responses and of his 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 Manual for DS-416 Reactor Trip Circuit Breakers, Rev. 0. This document was prepared for the Westinghouse Owners Group and is the breaker manufacturer's recommended maintenance program for the DS-416 breaker. It provides specific direction with regard to schedule, inspection and testing, cleaning, lubrication, corrective maintenance and recordkeeping. 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 (or when 500 breaker operations have been counted, whichever comes first) that should be included in the licensee's RTB maintenance program are:

1. - General inspection to include checking of breaker's cleanliness, all bolts and nuts, pole bases, arc chutes, insulating link, wiring and auxiliary switches
2. Retaining rings inspection, including those on the undervoltage trip attachment (UVTA)
3. Arcing and main contacts inspection as specified by the Westinghouse Maintenance Manual
4. UVTA check as specified by the Westinghouse Maintenance Manual, including replacement of UVTA if dropout voltage is greater than 60% or less than 30% of rated UVTA coil voltage

5. Shunt Trip Attachment (STA) check as specified by the Westinghouse Maintenance Manual
6. Lubrication as specified by the Westinghouse Maintenance Manual
7. Functional check of the breaker's operation prior to returning it to service.

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

1. Pre-cleaning insulation resistance measurement and recording
2. RTB dusting and cleaning
3. Post-cleaning insulation resistance measurement and recording, as specified by the Westinghouse Maintenance Manual
4. Inspection of main and secondary disconnecting contacts, bolt tightness, secondary wiring, mechanical parts, cell switches, instruments, relays and other panel mounted devices
5. UVTA trip force and breaker load check as specified by the Westinghouse Maintenance Manual
6. Measurement and recording of RTB response time for the undervoltage trip
7. Functional test of the breaker prior to returning to service as specified by the Westinghouse Maintenance Manual.

## 2.2 Trending of Parameters

Generic Letter Item 4.2.2 specifies that the applicant'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, response time for undervoltage trip and breaker insulation resistance. The staff position is that the above parameters 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 Applicant's Position on Item 4.1

The applicant states in his July 17th response that Westinghouse will replace the undervoltage attachment on the DS-416 reactor trip breakers in the South Texas Project, Units 1 & 2. Work for each of the two units will be completed before their prospective fuel loading.

The staff finds that the applicant has committed to implement all vendor-related modifications before the fuel loading. Therefore, the applicant position on Item 4.1 is acceptable.

#### 3.2 Evaluation of the Applicant's Position on Item 4.2.1

The applicant has confirmed that his periodic maintenance program includes all of the seven items identified for maintenance at six month intervals and the other seven identified at the refueling intervals. The fourteen items are mentioned under Section 2.1 of this report. Therefore, the staff finds the applicant position on Item 4.2.1 acceptable.

#### 3.3 Evaluation of the Applicant's Position on Item 4.2.2

The applicant is committed to develop trending procedures to include the undervoltage device drop-out voltage, trip lever force, breaker

response time for undervoltage trip and the breaker insulation resistance. The applicant states that Nuclear Plant Operations Department (NPOD) will collect and trend the data. NPOD will specify changes to the periodic maintenance program based upon trend analysis results.

The staff finds the applicant's commitment adequate. The applicant position on Item 4.2.2 is acceptable.

#### 4. CONCLUSIONS

Based on a review of the applicant's responses the staff finds the applicant position on Items 4.1, 4.2.1 and 4.2.2 of GL 83-28 acceptable.