

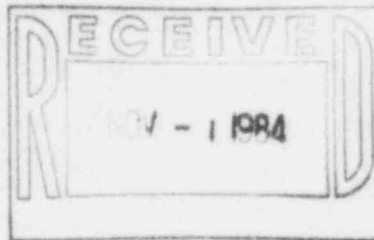
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October 31, 1984

W3P84-2970
Q-3-A35.07.116
3-A1.01.04

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



Dear Mr. Collins:

Subject: Waterford 3 SES
Docket No. 50-382
SIGNIFICANT CONSTRUCTION DEFICIENCY NO. 116
"Failure of Static Uninterruptible Power Supply (SUPS) Inverters"
Final Report

Reference: LP&L letter W3P84-2764 dated October 2, 1984

The referenced letter stated that the final report on SCD-116 was rescheduled for submittal by October 30. In accordance with 10CFR50.55(e)(3), enclosed are two copies of the LP&L final report on SCD-116.

Very truly yours,

K.W. Cook
Nuclear Support & Licensing Manager

KWC:GEW:sms

Enclosure

- cc: NRC, Director, Office of I&E (15 copies)
- NRC, Director, Office of Management
- G.W. Knighton, NRC-NRR
- E.L. Blake
- W.M. Stevenson
- W.A. Cross
- INPO Records Center (D.L. Gillispie)

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FINAL REPORT
SIGNIFICANT CONSTRUCTION DEFICIENCY NO. 116
"FAILURE OF STATIC UNINTERRUPTIBLE POWER SUPPLY (SUPS) INVERTERS"

INTRODUCTION

This report is submitted pursuant to 10CFR50.55(e). It describes deficiencies associated with the safety related SUPS units 3MA, 3MB, 3MC, and 3MD. Also described herein are subsequent corrective actions taken to assure the safe and continued operation of the SUPS units.

This has not been reported to the NRC pursuant to 10CFR21.

DESCRIPTION OF PROBLEM

Waterford 3 had recently experienced numerous inadvertant trips and alarms of the safety related SUPS units which resulted in an investigation to determine the cause of the trips. A total of seven (7) failed capacitors (style 020138) were identified of which six (6) were found in the safety related inverters: SUPS 3MA, 3MB, and 3MD containing one (1), two (2) and three (3) failed capacitors, respectively. Other concerns were identified as a result of extensive troubleshooting and review of available vendor-supplied information. These concerns include 1) Vendor Technical Manual deficiencies and corresponding maintenance procedure deficiencies for setting SUPS setpoints, 2) the existence of frequency trip setpoints which could cause common mode inverter shutdown when the inverter attempts to automatically track and synchronize with the bypass source during frequency transients and 3) time delay circuitry setpoints covered under IE Circular 79-02.

SAFETY IMPLICATIONS

If left uncorrected, a common-mode failure of the safety related SUPS units due to failed CVT capacitors and/or setpoint disparities could complicate the operators ability to monitor the essential variables necessary to assure safe shutdown of the plant.

CORRECTIVE ACTIONS

All capacitors have been replaced with newly qualified capacitors (style 020139). Voltage adjustments were successfully accomplished by SCI (Solid State Controls Incorporated). SCI has indicated that the new replacement CVT capacitors are of improved design and higher rating. An analysis is underway by SCI to determine the cause of the failures of the (style 020138) CVT capacitors.

Maintenance procedures have been revised/approved and AC/DC sense board alignments have been accomplished accordingly. Technical Manual revisions are being tracked via Project Engineering Request (PER) No. 7000.

SUPS frequency trip setpoints have been adjusted to preclude inadvertant trips as a result of synchronizing with the bypass source during normal and accident conditions.

SCD-116 (cont'd)

The time delay setpoints for high rectifier output DC Voltage and high inverter output AC Voltage have been adjusted to preclude the simultaneous shutdown of the rectifier assembly and the inverter unit as a result of an AC input over-voltage condition (IE Circular 79-02).

This report is submitted as the final report for the subject deficiency.