



LOUISIANA
POWER & LIGHT

142 DELARONDE STREET • P.O. BOX 8008
NEW ORLEANS, LOUISIANA 70174-8008 • (504) 388-2345

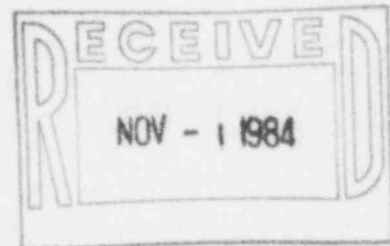
October 31, 1984

W3P84-2957
Q-3-A35.07.37
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. 37
"Temperature Detectors (RDTs) Failure"
Interim Report



Reference: LP&L letter W3K84-2105 dated September 5, 1984

The referenced letter indicated that closure of the subject deficiency was contingent on completion of Post Core Hot Functional Testing. In accordance with the requirements of 10CFR50.55(e)(3), enclosed is an interim report on SCD-37 with the Justification for Interim Operation. A final report will be submitted upon the completion of response time testing during Post Core Hot Functionals which is currently planned for early December and prior to initial criticality.

Very truly yours,

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PDR ADCK 05000382
S PDR

K.W. Cook
Nuclear Support & Licensing Manager

KWC:GEW:sms

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

IF-27

INTERIM REPORT OF
SIGNIFICANT CONSTRUCTION DEFICIENCY NO. 37
TEMPERATURE DETECTORS (RTD'S) FAILURE

INTRODUCTION

This report is submitted pursuant to 10CFR50.55(e). It describes a deficiency regarding unreliable temperature signals from Rosemount, Inc., resistance temperature detectors (RTD's). The RTD's supply reactor coolant system (RCS) cold leg temperature signals to the reactor protection system. This problem is considered reportable under the requirements of 10CFR50.55(e). This problem was identified to the Nuclear Regulatory Commission on July 10, 1981, by a utility owner of a C-E NSSS.

DESCRIPTION OF PROBLEM

On July 27, 1981, C-E Power Systems notified Ebasco Services, Incorporated, that errors in the RCS T-cold signal could result in a non-conservative thermal margin/low pressure (TM/LP) trip setpoint and could permit possible operation in excess of departure from nucleate boiling (DNB) limits. C-E does not believe that such operation is likely to occur because the RTD drift is easily detectable by cross channel comparison and simultaneous multiple failures are not deemed credible. The utility has determined that the cause of the erroneous RTD signals was due to resistance changes in the RTD circuitry as a result of corrosion degradation of the RTD leads at the terminal block connection in the head of the RTD assembly. The corrosion was believed to be caused by a galvanic reaction between the dissimilar metals in the RTD leads and the terminal blocks.

CE stated that the affected utility placed the plant in hot standby for approximately twenty-four hours while all accessible safety and nonsafety related Rosemount RTD's were refurbished. This refurbishment consisted of replacing all components in the head of the RTD assemblies including the crimp type terminals on the RTD field leads and the terminal block. A gasket was also added to each of the RTD assembly heads to limit ingress of water vapor into the RTD head assembly, and surveillance of the inaccessible safety related RTD's was increased. The utility is planning to replace all Rosemount RTD's with comparable equipment from an alternate vendor during the next unit refueling outage.

SAFETY IMPLICATIONS

The galvanic corrosion in RTD's head introduces parasitic resistance into the instrumentation loop. This results in unreliable signals which would essentially indicate lower than actual temperature and adversely affect protective system response. Thus the safety of the plant could be compromised, if left uncorrected.

CORRECTIVE ACTION

Design Change Notice (DCN-NYC-IC-654 R2) has been issued to implement the corrective action, and LP&L Condition Identification and Work Authorization 008032 will perform this DCN instruction.

The corrective action will consist of applying two coats of Carboline 1340 clear to all exposed metal surfaces connected or forming part of the terminal strip, top and bottom after connections are made.

Carboline 1340 is preferred over silver soldering since it provides a moisture resistant seal over all exposed metal parts, as well as reducing chances of galvanic corrosion.

JUSTIFICATION FOR INTERIM OPERATION

Twenty-two (22) subject dual-element RTD's were identified. Of these twenty-two RTD's, six (6) are considered to be nonsafety-related, leaving sixteen (16) safety related RTD's installed in steam generator's hot and cold legs which provide input to the Plant Protection System. Eight (8) of these sixteen (16) RTD's were changed from Rosemount RTD's to Weed RTD's which leaves eight (8) dual-element Rosemount RTD's which have to be environmentally sealed. The Weed RTD's do not have to be sealed because they have a better internal environmental seal than the Rosemount.

Although the eight (8) Rosemount RTD's will not be sealed prior to fuel load, they will be operable. This environmental sealing is being delayed until after initial RTD response time testing is completed which will be after post core hot functional testing. If the sealant was put in place now, and the response times do not meet the Technical Specification requirements, then the seal would have to be broken to calibrate the RTD's. LCIWA-008032 was written to incorporate DCN-IC-654R2 which describes the environmental seal to be performed.