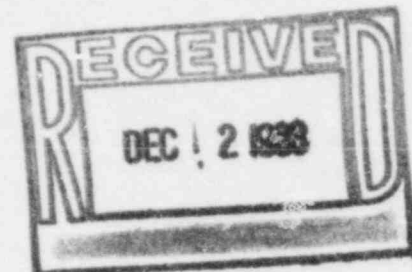


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POWER & LIGHT /Waterford 3 SES/P. O. Box B/Killona, LA 70066

December 6, 1983

W3K83-1895
Q-3-A35.07.85



Mr. John T. Collins
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012

REFERENCE: LP&L letter W3K83-1663 dated October 28, 1983

Dear Mr. Collins:

SUBJECT: Waterford SES Unit No. 3
Docket No. 50-382
Significant Construction Deficiency No. 85
"Damage To Incore Instrumentation Guide Tubes"
Final Report

In accordance with the requirements of 10 CFR 50.55(e), we are hereby providing two copies of the Final Report of Significant Construction Deficiency No. 85, "Damage To Incore Instrumentation Guide Tubes."

Very truly yours,

T. F. Gerrets
T. F. Gerrets
Quality Assurance Manager

TFG:CNH:SSTG

Attachment

cc: Director
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555
(15 copies)

Director
Office of Management
Information and Program Control
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

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Mr. John T. Collins
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cc: Mr. E. L. Blake
Shaw, Pittman, Potts, & Trowbridge
1800 M Street, N.W.
Washington, D.C. 20036

Mr. W. M. Stevenson
Monroe & Lemann
1424 Whitney Building
New Orleans, Louisiana 70130

FINAL REPORT OF
SIGNIFICANT CONSTRUCTION DEFICIENCY NO. 85
"DAMAGE TO INCORE INSTRUMENTATION GUIDE TUBES"

INTRODUCTION

This report is submitted pursuant to 10 CFR 50.55(e). It describes damage to the incore instrumentation guide tubes discovered upon disassembly after Hot Functional Testing.

To the best of our knowledge, this deficiency has not been reported to the USNRC pursuant to 10 CFR 21.

DESCRIPTION

Upon disassembly of the Reactor Vessel (RV) internals after hot functional testing, four Incore Instrumentation (ICI) guide tubes on one guide tube cluster were found to be broken at the point where they enter the lower flange of the cluster. Additionally, wear at points of contact between the upper flange of the cluster assembly and the nozzle in the RV head were noted on this cluster and two others. The ICI consists of a string of five vertically stacked Rhodium neutron detectors and a core exit thermocouple. There are 56 such assemblies located throughout the core. The neutron detectors are used as an input to the Core Operating Limit Supervisory System (COLSS) for determination of azimuthal flux tilt magnitude and normal axial power distribution. They also provide, through COLSS, indication of approach to core power limits based on DNBR and local power density. The Core Exit Thermocouples (CETs) are used as an input to the Inadequate Core Cooling Instrumentation (ICCI) system as described in FSAR Section 1.9.

SAFETY IMPLICATIONS

The COLSS and ICCI Systems are not safety related but do provide information to the operator which is important in assessing the plant status. Failure of the guide tube at the cluster would permit primary coolant to enter the ICI tubing system. This system is protected against such an occurrence by a leak detector, which prevents unmonitored releases to the containment atmosphere.

CORRECTIVE ACTION TAKEN

The NSSS vendor and Architect Engineer have evaluated this condition. The analysis confirmed that the damage was the result of resonant vibration. The natural frequency of the cluster and tubes was very close to the frequency and harmonics of the reactor coolant pumps. This, coupled with the use of tack welds to hold the individual tubes, led to a failure. All ten clusters were either modified or refabricated to avoid the critical frequency, and tack welds are no longer used on the tubes in the clusters.