UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-416/84-54

Licensee: Mississippi Power and Light Company
Jackson, MS 39205

Docket No.: 50-416 License No.: NPF-29

Facility Name: Grand Gulf 1

Inspection Conducted: December 6 - 17, 1984

Inspector: R. E. Carroll for 1/29/85
R. V. Crlenjak Date Signed

Approved by: Vincent W. Panciera 1/29/85
Vincent W. Panciera, Chief Date Signed
Reactor Projects Section 2C
Division of Reactor Projects

SUMMARY

Scope: This special inspection was conducted to evaluate the circumstances which resulted in the licensee not meeting certain Unit 1 FSAR commitments to Regulatory Guide 1.63.

Results: Of the areas inspected and the review of the licensee's documentation addressing these commitments, one apparent violation was identified; (Failure to meet applicable regulatory requirements as specified in the license application).

REPORT DETAILS

1. Licensee Employees Contacted

J. E. Cross, General Manager
C. R. Hutchinson, Manager Plant Maintenance
M. J. Wright, Acting Manager Plant Operations
R. F. Rogers, General Manager Technical Assistant
L. F. Daughtery, Compliance Superintendent
J. L. Robertson, Operations Superintendent
W. A. Russel, Operations Assistant
J. D. Bailey, Compliance
V. Holmbert, Fire Project Coordinator

2. Exit Interview/Management Meeting

On December 17, 1984, representatives of MP&L met with the NRC, at MP&L's request, in the NRC Regional Office in Atlanta, Georgia. The topic of discussion was the scope of and resulting corrective actions from a recent MP&L review that revealed a number of circuits penetrating containment that did not meet the redundant over-current protection requirements of RG 1.63 and/or did not include circuit breakers being used for this purpose, in Technical Specifications.

3. Inspection Activities

This special report has been issued to address those circumstances that resulted in a number of containment penetrating circuits of Unit 1 not meeting the licensee's FSAR commitments to Regulatory Guide (RG) 1.63. The NRC site and regional staff reviewed and evaluated the technical aspects and circumstances surrounding this licensee identified noncompliance and considers the corrective actions taken by MP&L to be acceptable.

a. Description

During July/August 1984, in the course of the licensee's updating of Unit 2 motor control center drawings to conform to Unit 1 changes made since suspension of engineering work on Unit 2, a discrepancy in the design was identified. The licensee found that motor operated valve (MOV) space heater circuits penetrating containment did not have backup over-current protection as did the other 120 volt power panel feeds. This condition was brought to the attention of the Bechtel Unit 1 engineers. After a review, it was determined that the commitments in the FSAR Q&R 040.5 were not met. MOV space heaters were not afforded the protection of its associated FSAR Q&R category. A check was made of 120V power feeds to containment, and it was discovered that Standby Liquid Control System (SLCS) heat tracing also was not provided with backup over-current protection.

Because of these deficiencies, a review of power and control circuits was conducted. This review consisted of qualitative examination of all

power and control circuits (per the circuit and raceway schedule) penetrating the containment to determine into which category they fell, and if there were any other circuits that did not fall into one of the five categories. The results of that review uncovered no other deficiencies.

Due to the Unit 1 deficiencies identified, on August 14, 1984, MP&L requested an addition of 10 circuit breakers to the Unit 1 Technical Specifications (TSs). This request prompted NRR to question the licensee's Unit 1 TS review program. NRR requested by letter (August 18, 1984) that MP&L address the issue. In response to the NRC request, MP&L submitted a letter (AECM-84/0433, September 10, 1984) discussing the identification of the FSAR commitment deficiencies associated with the MOV space heater circuits and with the SLCS heat tracing circuits. The letter stated that "... MP&L conducted a complete review of all circuits penetrating the primary containment to ensure compliance with RG 1.63 and FSAR...." This submittal also reported the licensee's corrective actions.

In late November 1984, Bechtel Unit 2 engineering personnel identified another deficiency with regard to SLCS pump control circuits. Further evaluation by Unit 1 personnel identified similar deficiencies with the SLCS pump control circuit containment penetrations. Additionally, deficiencies were found with the containment penetrations of the reactor protection system (RPS) scram solenoid circuits. Specifically, the SLCS pumps had 500 VA control power transformers (CPT) which did not conform to Category b.(5) circuits described in FSAR Q&R 040.5 and adequate backup protection was not provided for the scram solenoid fuses, in that the distribution breaker was underrated at 50A.

The items were not discovered during the August review since that review only consisted of a qualitative evaluation of the circuits to place them into one of the five FSAR Q&R categories and not a review of the protection coordination. (For the SLCS pumps, the CPT size is not shown on the drawing with the containment penetration and the SLCS pump circuits were incorrectly identified as Category b.(5)).

Based on these discoveries, MP&L decided that a detailed review would be necessary to uncover any similar situations. Therefore, Bechtel was directed to conduct a an indepth review of the circuit protection for each scheduled circuit penetrating the containment; ensuring that each circuit was properly categorized and that proper breaker/fuse coordination existed. That review was conducted from December 7-15, 1984. The NRC was informed of these discoveries and the ongoing review on December 7, 1984.

In addition to the findings associated with RG 1.63 commitments, the licensee also identified 52 low voltage control circuit breakers, for which credit was taken for penetration protection, which were not included in Unit 1 TS.

The results of the MP&L review were discussed with NRC Region II staff in a meeting held on December 17, 1984 and were documented in MP&L's December 18, 1984 submittal. The following is a listing of deficiencies identified in the subject review:

| | | |
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| (1) | SRM/IRM Drive Units | Backup protection is marginal and is not enveloped by curves included in FSAR |
| (2) | DC Power Supply Feed Isolators | Optical Isolator circuits contain only to a single level of penetration protection. |
| (3) | Horizontal Fuel Transfer Control Circuit | Only a single level of penetration System protection has been provided (CPT rated higher than 150VA) |
| (4) | Refueling Platform Interlock Circuit | Only single level of penetration protection has been provided. |
| (5) | Tip Drive Control | Only a single level of penetration protection has been provided. |
| (6) | Plant Communication P. A. System | Only a single level of penetration has been provided |
| (7) | Various | 52 breakers not listed in Plant TSs |

b. Safety Significance

No deficiencies of commitments to the over-current protection provisions of RG 1.63 were identified in the licensee's review of higher power conductor containment penetrations. Circuits in the category have the greatest potential for penetration damage given an uninterrupted over-current condition. For instrumentation and control circuits, however, adequate backup over-current protection was lacking in some instances. Such instances were confined to circuits with relatively small diameter conductors (maximum of #12 AWG wire) and inherently low energy levels (low voltage controls and instrumentation systems). To assess the safety significance represented by these noncompliances, an analysis was performed by the licensee to determine the impact of a proposed penetration failure on containment leakage under postulated loss of coolant accident (LOCA) conditions. The analysis concluded that the effective failed penetration leakage rate based on FSAR post - LOCA pressure profiles, when combined with containment corrected Type A testing results, is less than the TS allowable leakage rate limits of 0.75 La over any 24-hour period. This analysis assumed the presence of a short circuit condition, and a random single failure disabling the primary over-current protection device, coincident with a design basis LOCA.

On the basis of this conservative treatment of a postulated penetration failure, coincident with other design basis conditions, the licensee concluded that the deficiencies did not represent a substantial safety hazard.

This conclusion applies as well to those circuits whose associated circuit breakers were not in Technical Specifications. They were all low voltage control circuits with small diameter conductors (#12 AWG or less). It should be noted that while the subject breakers were not specifically listed in TSs most of these breakers are similar in type to those found in circuits that are currently included in the TSs. Of course, those breakers included in the TSs were periodically tested in accordance with the associated surveillance procedures. The TSs prescribe testing of representative samples for low voltage breakers to demonstrate that breakers of a given type are operable and capable of performing their intended function. In addition, approximately one-third of such circuit breakers were selected for testing, and all tested satisfactorily. Thus, there is confidence that the subject penetrations were adequately protected.

c. Summary

Due to an independent, ongoing engineering design review effort on GGNS Unit 2, discrepancies were identified by Bechtel Power Corporation in the Unit 1 provisions for over-current protection of containment penetrations. MP&L, upon assessing the initial findings, took immediate actions and elected to conduct an intensive review effort to confirm that the plant's design in this area was proper and that safe operations were not adversely impacted. The review did identify certain instances where the plant design did not comply with commitments to Regulatory Guide 1.63 and circuit breakers providing over-current protective functions were not included in the plant's TSs. Accordingly, the statement made in the MP&L letter of September 10, 1984, that a complete review of all circuits penetrating primary containment had been conducted is considered both false and material, and is therefore a violation (416/84-54-01).

Plant modifications were implemented and completed prior to the Unit 1 restart on December 19, 1984.