



MISSISSIPPI POWER & LIGHT COMPANY

*Helping Build Mississippi*

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

JAMES P. McGAUGHY, JR.  
ASSISTANT VICE PRESIDENT

June 4, 1982

Office of Inspection & Enforcement  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 3100  
Atlanta, Georgia 30303

Attention: Mr. J. P. O'Reilly, Regional Administrator

Dear Mr. O'Reilly:

SUBJECT: Grand Gulf Nuclear Station  
Units 1 and 2  
Docket Nos. 50-416/417  
File 0260/15525/15526  
PRD-81/42, Final Report,  
NUREG-0588  
AECM-82/246

Reference: AECM-81/473, 12/1/81  
AECM-82/77, 3/1/82

On October 15, 1981, Mississippi Power & Light Company notified Mr. P. A. Taylor, of your office, of a Potentially Reportable Deficiency (PRD) at the Grand Gulf Nuclear Station (GGNS) construction site. The deficiency concerns equipment determined to be unqualified during the investigation of the NUREG-0588 Requirements.

In a previous telephone conversation with your Mr. F. S. Cantrell on August 3, 1981, MP&L agreed to the following:

1. Reporting, under 10CFR50.55(e), the first piece of equipment reviewed under the qualification plan which were it "to have remained uncorrected could have adversely affected the safety of operations of the nuclear power plant".
2. Submitting interim reports approximately every three months after the first report, adding additional equipment found not to be qualified and which also "could adversely affect safety".
3. Submitting a final report on completion of the qualification work, referencing previous interim reports.

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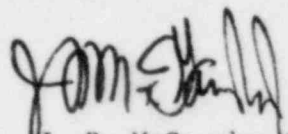
Mr. J. P. O'Reilly  
NRC

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This report was originally due your office on June 1, 1982, but a three day extension was requested and granted by Mr. F. S. Cantrell on June 1, 1982. Per conversation with Mr. F. S. Cantrell it was determined that MP&L could submit a Final Report at this time even though all qualification work has not been completed. This determination was based on the fact that MP&L has committed, under NUREG-0588, to identify and correct all equipment unqualified under the requirements of the NUREG and that MP&L submittals to the NRC under the NUREG would be on a continuing basis until NRC approval was obtained for the qualification of equipment.

Attached is our Final Report identifying that equipment previously reported and since determined to be reportable within the meaning of 10CFR50.55(e) and that equipment previously reported and since determined not to be reportable within the meaning of 10CFR50.55(e).

Yours truly,



J. P. McGaughy, Jr.

ATR:dr

Attachment

cc: Mr. N. L. Stampley  
Mr. R. B. McGehee  
Mr. T. B. Conner

Mr. Richard C. DeYoung, Director  
Office of Inspection & Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. C. B. Taylor  
South Miss. Electric Power Association  
P. O. Box 1589  
Hattiesburg, MS 39401

FINAL REPORT TO PRD-81/42

I. Description of Deficiency

A. As a result of NUREG-0588, "Environmental Qualification Requirements", MP&L initiated a review to determine the acceptability of the specified equipment. The review has revealed that certain equipment is not qualified for its intended safety-related use. The equipment identified, to date, is as follows:

1. NSSS Scope of Supply

- a. MSIV Limit Switches, NAMCO Model EA740
- b. HPCS Motor Operated Valve, Limitorque, Model SB-3-100
- c. Schutte & Koerting (S&K) Flow Meter
- d. Rosemount Transmitter, 4 Model 1151s (B21-N078) and 2 1152s (B21-N095)
- e. Electrical Terminal Blocks

2. BOP Scope of Supply

- a. Butterfly Valve Position Switches, NAMCO Model EA170
- b. Gould Handswitch, Q1P41-M009B
- c. Electrical Terminal Blocks
- d. SGTs Heater Controls
- e. Micro Limit Switches (LSQ-101)
- f. Rosemount Transmitter Model 1151 (1E38-PT-N002A)

B. This deficiency is applicable to Unit 1 and Unit 2

C. Safety Implications and corrective actions for each item will be discussed in the enclosures to this attachment.

II. Analysis of Safety Implications

See I.C above.

III. Corrective Actions Taken

See I.C above.

Enclosures:

- 1. NAMCO EA740
- 2. HPCS Motor Operated Valve
- 3. S&K Flow Meter
- 4. NAMCO EA170 Position Switches
- 5. Gould Handswitch M-009B

Component: MSIV Limit Switches  
Manufacturer: NAMCO - Model EA 740

1. Description

The limit switches for the MSIV's were manufactured in 1975. They were NAMCO Model EA-740 Limit Switches. These were never environmentally qualified (no test report) for their intended application.

2. Analysis of Safety Implications

The MSIV Limit Switches are used in the MSIV-Leakage Control System (MSIV-LCS) to isolate or interlock the LCS depending on the in-board MSIV position indication. The LCS is used following a Design Basis Accident (DBA) recirculation line break to collect MSIV seat leakage and direct it to the Standby Gas Treatment System in Auxiliary Building for processing.

Since the limit switches had not been environmentally qualified for their intended use, their failure could adversely affect the safety of operations of the plant and is, therefore, reportable within the meaning of 10CFR50.55(e).

3. Corrective Actions Taken

NAMCO has, since 1975, modified and qualified the EA-740 switches to meet IEEE 323-1974. These new switches will be purchased and used to replace the existing switches. Additionally, the new switches will be tested to obtain a five (5) year qualified life.

The new switches are expected to be installed by December 31, 1981, and the additional testing is expected to be completed by June, 1982. Additional information will be submitted under the provisions of NUREG-0588.

Component: HPCS Motor Operated Valve  
Manufacturer: Limitorque Model SB-3-100

1. Description

Adequate test data does not exist to support the qualification of the Limitorque Model SB-3-100 valve actuator used on valve (E22-F004) in the High Pressure Core Spray System (HPCS).

2. Analysis of Safety Implications

This valve is the HPCS injection valve and is required to open during the first minute of an accident to initiate HPCS flow to the core. Subsequently, the valve serves as an isolation valve to terminate HPCS flow on high reactor water level or by operator action.

Failure of the valve to perform its intended safety function could adversely affect the safety of operations of the plant and is, therefore, reportable within the meaning of 10CFR50.55(e).

3. Corrective Actions Taken

The actuator components are to be replaced by components which have been extensively type tested for abnormal environmental conditions. The aging tests, however, are considered inadequate to meet the requirements of NUREG-0588. Therefore, additional testing will be accomplished by June 1982 to obtain a fully qualified actuator.

The unqualified components in the Unit 1 valve actuator will be replaced by December 31, 1981 and additional testing is being undertaken with a projected completion of June 1982. Additional information will be submitted under the provisions of NUREG-0588.

Component: Flow Meter

Manufacturer: Schutte & Koerting (S&K) Model 20-9651-8550

1. Description

The S&K flow meter is subject to only radiation as a harsh environment. Pressure, temperature, and humidity are non-harsh for this device. The radiation environment will affect the function of the Teflon washer located in the flow meter.

The flow meter is used in the MSIV - Leakage Control System (MSIV-LCS). The MSIV-LCS, including instrumentation and circuits necessary for the functioning of the system, are designed in accordance with standards applicable to an engineered safety feature.

2. Analysis of Safety Implications

The flow meter measures leakage flow in a 1" pipeline toward the low pressure manifold. The flow meter can act as a flow rate regulating check valve in both directions. If the Teflon washer is deformed due to radiation, then the alignment of LVRT coil can be affected. However, the flow meter will continue to perform the necessary function of physically limiting the leakage flow to the Low Pressure Manifold. The flow sensor is a fail-safe design and it activates an alarm under high leakage flow conditions. This alarm is used for initiation of isolation of the in-board LCS system. If the failure of the Teflon washer effects a misalignment of the LVRT coil, an erroneous flow signal can be generated.

This failure, however, will not adversely affect the safety of operations of the plant because the flow meter will continue to perform its limiting function and an erroneous high-leakage flow signal will cause the initiation of measures to isolate the in-board LCS system.

This deficiency, therefore, is not reportable within the meaning of 10CFR50.55(e).

3. Corrective Actions Taken

Even though the failure of the flow meter would not adversely affect safety, it does not meet the NUREG-0588, Category II requirements. To meet these requirements, the Teflon washer will be replaced with a brass washer and the flow meter will be recalibrated.

It is expected that the flow meter will be modified by June, 1982. Additional information will be submitted under the provisions of NUREG-0588.



Component: Position Switches EA-170  
Manufacturer: NAMCO Controls

1. Description

The NAMCO Model EA-170 Position Switches are not qualified. There are either no environmental qualification test reports available or the material used in these switches has a maximum service temperature of only 225° F.

2. Analysis of Safety Implications

The NAMCO Model EA-170 Position Switches are installed on 24 valves both inside and outside containment. The affected systems are: Standby Liquid Control, Combustible Gas Control, Fuel Pool Cooling & Cleanup, Containment Cooling, Condensate & Refueling Water Transfer & Storage, Plant Service Water, Auxiliary Building Ventilation, and Fuel Handling Area Ventilation. The switches may not remain functional in the elevated temperatures during a Loss of Coolant Accident (LOCA) or High Energy Line Break (HELB).

This deficiency is, therefore, reportable within the meaning of 10CFR50.55(e).

3. Corrective Actions Taken

The switches will be replaced with qualified NAMCO EA-740 switches prior to fuel load.

Procurement action has been initiated to obtain the NAMCO Model EA-740 switches. It is expected that it will require 10 weeks for delivery and installation of the switches. Additional information will be provided under the provisions of NUREG-0588.

Component: Handswitch  
Manufacturer: Gould, Inc. M009B

1. Description

The handswitch is not qualified to withstand the radiation levels in its present location. The handswitch is used in the Standby Service Water System which removes heat from plant auxiliaries during an emergency shutdown of the plant.

2. Analysis of Safety Implications

The specific application of the handswitch is in relation to the Residual Heat Removal (RHR) Loop B Heat Exchangers. When the RHR Heat Exchangers are not in operation, the tube side piping is flushed with demineralized water supplied by the makeup water system to purge the heat exchanger of impurities and minimize corrosion and fouling. The demineralized water is brought in through a supply valve which is operated with local handswitch HS-M009B.

The failure of the handswitch will not adversely affect the function of the RHR Heat Exchangers to perform their intended safety function. The handswitch only controls water to flush piping when the Heat Exchangers are not in operation.

This deficiency, therefore, is not reportable within the meaning of 10CFR50.55(e).

3. Corrective Actions Taken

Even though the failure of the handswitch would not adversely affect safety, it does not meet the NUREG-0588 requirements. To meet these requirements the handswitch will be relocated to reduce the radiation exposure of the handswitch to acceptable limits.

It is expected the handswitch will be relocated prior to fuel load. Additional information will be provided under the provisions of NUREG-0588.



Component: Transmitters 1151 & 1152  
Manufacturer: Rosemount

1. Description

Six Rosemount Model 1151 and 1152 transmitters identified in the NSSS scope of supply are not qualified for use in a harsh environment in accordance with NUREG 0588.

2. Analysis of Safety Implications

These transmitters, 1B21-PT-N078A,B,C,D and 1B21-LT-N095 are installed in the Nuclear Boiler System and provide signals to the Reactor Protection System and the ADS System. Since the transmitters are not qualified for their intended use, their failure could adversely affect the safety of operation of the plant and is, therefore, reportable under the provisions of 10CFR50.55(e).

3. Corrective Action Taken

The affected transmitters have been replaced with qualified Rosemount Model 1152T0280 transmitters. Additional information will be provided under the provisions of NUREG-0588.

Component: Electrical Terminal Blocks  
Manufacturer: Various

1. Description

Under simulated LOCA conditions certain terminal blocks (example: KULKA 600 series) had a decrease in insulation resistance.

2. Analysis of Safety Implications

The terminal blocks are utilized in the circuits of safety related transmitters and limit switches in the NSSS and BOP scope of supply. It is postulated that the degradation of the terminal blocks could cause erroneous signals to be transmitted and thus could have affected adversely the safety of the operations of the plant during a Loss of Coolant Accident (LOCA). This deficiency is, therefore, reportable under the provisions of 10CFR50.55(e).

3. Corrective Actions Taken

When used in current loop instrumentation circuits or high voltage power circuits (i.e. 480V and above) these terminal blocks will be replaced with in-line splices and sealed using qualified heat shrink materials prior to the beginning of Phase II testing.

Corrective action has been initiated and is continuing on the sealed splices. To date, approximately 50% of the identified circuits have been spliced and sealed. It is expected that the remaining circuits will be spliced and sealed prior to the beginning of Phase II testing. Additional information will be provided under the provisions of NUREG-0588.

Component Transmitter  
Manufacturer Rosemount Model 1151

1. Description

The Rosemount Model 1151 pressure transmitter (1E38-PTN002A) installed in the Feedwater Leakage Control (FWLC) system is not qualified to NUREG-0588 requirements.

2. Analysis of Safety Implications

Pressure transmitter PT-N002A provides a permissive signal to allow the initiation of the FWLC system to prevent the release of radioactivity from the feedwater lines during a Loss Of Coolant Accident (LOCA). During a LOCA the failure of PTN002A could prevent the initiation of the FWLC system and thus could have affected adversely the safety of operations of the plant. This deficiency of 10CFR50.55(e).

3. Corrective Actions Taken

Pressure transmitter 1E38-PTN002A has been replaced with a qualified Rosemount Model 1153 transmitter. Additional information will be provided under the provisions of NUREG-0588.

Component: Limit Switches

Manufacturer: Micro-Switch LSQ-101

1. Description

The Micro-Switch LSQ-101 Limit switch utilized on 35 air operated valves are not qualified to NUREG-0588. The radiation and thermal aging are not known and therefore the qualified life is unknown.

2. Analysis of Safety Implications

Many of the valves utilizing these limit switches are isolation valves for the auxiliary and containment buildings. Failure of these switches during degraded plant conditions could cause erroneous indications of the status of the building isolations. This could further degrade plant conditions if immediate corrective actions are performed utilizing the erroneous indications. This deficiency could affect adversely the safety of operations of the nuclear plant and is, therefore, reportable under the provisions of 10CFR50.55(e).

3. Corrective Actions Taken

The limit switches will be replaced with qualified NAMCO EA-740 switches prior to the beginning of Phase II testing.

Qualified NAMCO EA-740 limit switches have been procured and are on site and work orders are being initiated to perform the replacement. The replacement is expected to be completed prior to the beginning of Phase II testing. Additional information will be provided under the provisions of NUREG-0588.

Component: SGTS Heater Controls  
Manufacturer: CVI

1. Description

The Standby Gas Treatment System (SGTS) was designed and built in accordance with the requirements of Regulatory Guide 1.52 which references ANSI-N509-1976 as the design standard. ANSI-N509-1976 does not require IEEE-323 qualification of the heaters. The heater's humidity control circuit is unqualified (no documentation) for its intended application.

2. Analysis of Safety Implications

The Standby Gas Treatment System limits the release to the environment of radioisotopes which may leak from the containment or the fuel handling area to the boundary area under accident conditions. This limit on the release is such that the dose rate to the thyroid does not exceed the guidelines of 10CFR100.

Failure of the unqualified humidity control circuit to energize the SGTS heaters at 70% humidity could result in the charcoal filters becoming saturated and losing their efficiency in removing radioisotopes during a Loss of Coolant Accident (LOCA). This failure could result in exceeding the guidelines of 10CFR100 and is, therefore, reportable under the provisions of 10CFR50.55(e).

3. Corrective Actions Taken

The humidity control circuit for the heaters in the SGTS has been bypassed as an interim resolution. The heaters now operate whenever the SGTS is operating. The heater controls will be qualified by test or replaced by qualified equipment prior to low power ascension testing. Additional information will be provided under the provisions of NUREG-0588.