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James J. Fisicaro  
Director  
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February 12, 1996

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Mail Stop P1-37  
Washington, D.C. 20555

Subject: River Bend Station - Unit 1  
Docket No. 50-458  
License No. NPF-47  
Licensee Event Report 50-458/96-003-00  
File Nos. G9.5, G9.25.1.3

RBG-42378  
RBF1-96-0025

Gentlemen:

In accordance with 10CFR50.73, enclosed is the subject report.

Sincerely,

JJF/RMM/kvm  
enclosure

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PDR ADOCK 05000458  
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Licensee Event Report 50-458/96-003-00  
February 12, 1996  
RBG-42378  
RBF1-96-0025  
Page 2 of 2

cc: U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

NRC Sr. Resident Inspector  
P. O. Box 1051  
St. Francisville, LA 70775

INPO Records Center  
700 Galleria Parkway  
Atlanta, GA 30339-3064

Mr. C. R. Oberg  
Public Utility Commission of Texas  
7800 Shoal Creek Blvd., Suite 400 North  
Austin, TX 78757

Louisiana Department of Environmental Quality  
Radiation Protection Division  
P.O. Box 82135  
Baton Rouge, LA 70884-2135  
ATTN: Administrator

### LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

|  |                                       |                           |
|--|---------------------------------------|---------------------------|
| FACILITY NAME (1)<br><b>River Bend Station</b> | DOCKET NUMBER (2)<br><b>05000-458</b> | PAGE (3)<br><b>1 of 4</b> |
|--|---------------------------------------|---------------------------|

TITLE (4)  
**ESF Actuations Due to Electrical Protection Assembly Breaker Trip**

| EVENT DATE (5) |     |      | LER NUMBER (6) |                   |                 | REPORT DATE (7) |     |      | OTHER FACILITIES INVOLVED (8) |               |
|----------------|-----|------|----------------|-------------------|-----------------|-----------------|-----|------|-------------------------------|---------------|
| MONTH          | DAY | YEAR | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH           | DAY | YEAR | FACILITY NAME                 | DOCKET NUMBER |
| 01             | 13  | 96   | 96             | -- 003            | -- 00           | 02              | 12  | 96   | N/A                           | 05000         |
|                |     |      |                |                   |                 |                 |     |      | N/A                           | 05000         |

  

|                         |   |                    |                   |   |   |
|-------------------------|---|--------------------|-------------------|---|---|
| OPERATING MODE (9)<br>5 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | 20.2201(b)         | 20.2203(a)(2)(v)  | 50.73(a)(2)(i)                                      | 50.73(a)(2)(viii)                             |
| POWER LEVEL (10)<br>0.0 |   | 20.2203(a)(1)      | 20.2203(a)(3)(i)  | 50.73(a)(2)(ii)                                     | 50.73(a)(2)(x)                                |
|                         |   | 20.2203(a)(2)(i)   | 20.2203(a)(3)(ii) | 50.73(a)(2)(iii)                                    | 73.71   |
|                         |   | 20.2203(a)(2)(ii)  | 20.2203(a)(4)     | <input checked="" type="checkbox"/> 50.73(a)(2)(iv) | OTHER   |
|                         |   | 20.2203(a)(2)(iii) | 50.36(c)(1)       | 50.73(a)(2)(v)                                      | Specify in Abstract below or in NRC Form 366A |
|                         |   | 20.2203(a)(2)(iv)  | 50.36(c)(2)       | 50.73(a)(2)(vii)                                    |   |

LICENSEE CONTACT FOR THIS LER (12)

|  |   |
|--|---|
| NAME<br><b>D. N. Lorfing, Supervisor - Licensing</b> | TELEPHONE NUMBER (Include Area Code)<br><b>504-381-4157</b> |
|--|---|

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| B     | ED     | BKR       | G080         | Y                   |       |        |           |              |                     |
| B     | JC     | RG        | G080         | Y                   |       |        |           |              |                     |

SUPPLEMENTAL REPORT EXPECTED (14)

|  |  |                               |       |     |      |
|--|--|-------------------------------|-------|-----|------|
| YES<br>(If yes, complete EXPECTED SUBMISSION DATE) | <input checked="" type="checkbox"/> NO | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|--|--|-------------------------------|-------|-----|------|

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 13, 1996, with the plant shutdown (Mode 5) for Refueling Outage 6 (RF-6), a loss of the Division II Reactor Protection System (RPS) bus occurred resulting in a half scram and associated Engineered Safety Features (ESF) actuations. A similar condition occurred on February 6, 1996, while in Mode 4. This event is reportable pursuant 10CFR50.73(a)(2)(iv).

The root cause of the January 13, 1996, event was indeterminate. The most likely cause of the January 13, 1996, event was a spurious Electrical Protection Assembly (EPA) breaker trip. Due to historical problems with spurious tripping of the EPA, a new EPA design was scheduled to be installed in RF-6. The new design EPA was installed prior to the February 6, 1996, event. The root cause of the February 6, 1996, event was RPS motor generator voltage regulator stability adjustment drift. The voltage regulator circuit card was replaced and the motor generator set was restored to service.

For both events, RPS bus power was subsequently transferred to the alternate power supply and the applicable Residual Heat Removal pump returned to service. These events were determined to be of little safety significance.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

| FACILITY NAME (1)  | DOCKET    | LER NUMBER (6) |                   |                 | PAGE (3) |
|--------------------|-----------|----------------|-------------------|-----------------|----------|
|                    |           | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |
| River Bend Station | 05000-458 | 96             | -- 003            | -- 00           | 2 of 4   |

## REPORTED CONDITION

On January 13, 1996, with the plant shutdown (Mode 5) for Refueling Outage 6, a loss of the Division II Reactor Protection System (RPS) (\*JC\*) bus occurred resulting in a half scram and associated Engineered Safety Features (ESF) actuations. A similar condition occurred on February 6, 1996, while in Mode 4.

The following Division II ESF actuations occurred subsequent to the loss of the RPS bus.

- Nuclear Steam Supply Shutoff System (NSSSS) (\*JM\*) Isolated
- Standby Gas Treatment (\*BH\*) Started
- Annulus Mixing (\*BH\*) Started
- Fuel Building Charcoal Ventilation Treatment (\*VG\*) Started
- Control Building Charcoal Ventilation Treatment (\*VI\*) Started
- Control Building HVAC (\*VI\*) Re-Aligned to Charcoal Ventilation Treatment System
- Hydrogen Analyzer Auto Started

This plant condition is reportable pursuant 10CFR50.73(a)(2)(iv).

## INVESTIGATION

The RPS bus is supplied from a normal power source, the RPS motor generator, and an alternate source, the RPS power line conditioner. At the time of both events, the Division II RPS bus was being supplied from the normal power source. The Electrical Protection Assembly (EPA) breakers (\*BKR\*) provides protection for the RPS bus loads and essential circuitry against overvoltage, under voltage, or underfrequency. By design, the EPA breaker trips to de-energize the RPS bus when the overvoltage, under voltage, or underfrequency trip setpoints are exceeded, after a nominal time delay of 3.1 seconds.

A review of plant data from January 13, 1996, indicates minor voltage fluctuations prior to the first event; however, the values were within the breaker trip setpoint limits. There has been a history of spurious trips of the EPA breakers and, as a result, corrective actions were being implemented during the current Refueling Outage to replace the EPA with a new design. The corrective action to replace these EPA breakers was completed prior to the February 6, 1996, event.

On February 6, 1996, following maintenance on the Division II RPS motor generator set which included replacement of a printed circuit card in the voltage regulator (\*RG\*), the Division II EPA breakers tripped on an overvoltage condition. The new EPA is comprised of discrete overvoltage, undervoltage, and underfrequency relays in a single panel. The overvoltage condition was indicated by the plant computer data

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

| FACILITY NAME (1)  | DOCKET    | LER NUMBER (6) |                   |                 | PAGE (3) |      |
|--------------------|-----------|----------------|-------------------|-----------------|----------|------|
| River Bend Station | 05000-458 | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |      |
|                    |           | 96             | -- 003            | -- 00           | 3        | of 4 |

and confirmed by the EPA overvoltage relay flag indication. An investigation indicated that the motor generator set voltage regulator had failed resulting in the overvoltage condition. This condition was sensed by the EPA breakers and after the time delay was met, the EPA breakers opened to de-energize the Division II RPS bus, as designed.

A review of recent Licensee Event Reports (LER) identified one event related to an ESF actuation due to the loss of an RPS bus. This event was reported in LER 94-007-01 and occurred during Refueling Outage 5. The root cause of that event was an EPA breaker logic card failure. The corrective action, in part, included the replacement of the EPA logic card with a new card which was completed during Refueling Outage 5. The new EPA breakers were installed prior to the February 6, 1996; however, plant data indicates that the January 13, 1996, event was similar to the event reported in LER 94-007-01.

**ROOT CAUSE**

The root cause of the January 13, 1996, event was indeterminate. The most likely cause of the January 13, 1996, event was a spurious EPA breaker trip. The root cause of the February 6, 1996, event was the RPS motor generator voltage regulator stability adjustment drift. This drift resulted in a bus overvoltage condition which caused the EPA breakers to trip as designed.

**CORRECTIVE ACTIONS**

Corrective action for the January 13, 1996, event and the event reported by LER 94-007-01 was to replace the EPA with a new design. This replacement was completed prior to the February 6, 1996, event.

Corrective actions for the February 6, 1996, event included replacement of the failed circuit card in the motor generator set voltage regulator. This card had failed subsequent to the January 13, 1996, event. The stability was adjusted and tested at various loads. Subsequent to these repairs, the motor generator was returned to service. The motor generator set output voltage and current will be monitored during startup for any abnormal fluctuations.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

|                    |           |                |                   |                 |          |  |
|--------------------|-----------|----------------|-------------------|-----------------|----------|--|
| FACILITY NAME (1)  | DOCKET    | LER NUMBER (6) |                   |                 | PAGE (3) |  |
| River Bend Station | 05000-458 | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |  |
|                    |           | 96             | -- 003            | -- 00           | 4 of 4   |  |

**SAFETY ASSESSMENT**

Plant systems functioned as designed for both events except for the January 13, 1996, event when a recirculation pump cooling water valve showed dual indication upon receipt of the isolation signal. This valve was repaired and returned to service.

On January 13, 1996, the Division II RHR system was operating in fuel pool cooling assist mode. In this mode upon loss of the Division II RPS bus, the RHR pump was not protected by loss of suction path control logic and was manually tripped resulting in a loss of shutdown cooling. Shutdown cooling was lost for about 20 minutes prior to being returned to service. On February 6, 1996, the RHR pump was aligned to Division I which automatically tripped due to a loss of the RHR suction path. Shutdown cooling was lost for about 7 minutes prior to being returned to service. For both events, reactor coolant temperature increased less than 1 degree Fahrenheit.

For both events, RPS bus power was subsequently transferred to the alternate power supply and the RPS bus returned to service. Plant response was verified and documented pursuant Abnormal Operating Procedure, AOP-0010, "Loss of One RPS Bus." These events were determined to be of little safety significance.