

**GULF STATES UTILITIES COMPANY**



IVER BEND STATION    POST OFFICE BOX 420    ST. FRANCISVILLE, LOUISIANA 70781  
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February 18, 1992  
RBG- 36516  
File Nos. G9.5, G9.25.1.3

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Gentlemen:

River Bend Station - Unit 1  
Docket No. 50-458

Please find enclosed Supplement 1 to Licensee Event Report No. 91-008 for River Bend Station - Unit 1. This report is submitted to document additional reportable conditions identified in GSU's review of the Fire Hazards Analysis and to provide a status of Fire Hazards Analysis issues. This report is submitted pursuant 10CFR50.73.

Sincerely,

W.H. Odell  
Manager - Oversight  
River Bend Nuclear Group

LAE/PDG/GAB/DCH/MRC/kvm

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## LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (R&R) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503

FACILITY NAME (1): RIVER BEND STATION										DOCKET NUMBER (2): 050004581										PAGE 1 OF 06																			
TITLE (4): FIRE HAZARDS ANALYSIS DEFICIENCIES INCLUDING LACK OF FIRE WRAP/INADEQUATE FIRE BARRIER																																							
EVENT DATE (5)				LER NUMBER (6)				REPORT DATE (7)				OTHER FACILITIES INVOLVED (8)																											
11/17/91				008-01021892				04/15/91				FACILITY NAMES: 050000																											
OPERATING MODE (9): 1				THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (13)																																			
POWER LEVEL (10): 1,000				20.402(1)				20.406(1)				50.73(1)(1)(1)				73.71(1)																							
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				20.406(1)(1)(1)				50.36(1)(2)				50.73(1)(1)(1)				OTHER (Specify in Appendix R and in Text NRC Form 308A)																							
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LICENSEE CONTACT FOR THIS LER (12)																TELEPHONE NUMBER																							
NAME: L.A. ENGLAND, DIRECTOR - NUCLEAR LICENSING																AREA CODE: 504 381-4145																							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																							
CAUSE				SYSTEM				COMPONENT				MANUFACTURER				REPORTABLE TO NRC				CAUSE				SYSTEM				COMPONENT				MANUFACTURER				REPORTABLE TO NRC			
SUPPLEMENTAL REPORT EXPECTED (14)																EXPECTED SUBMISSION DATE (15)																							
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)																<input type="checkbox"/> NO																							
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ABSTRACT (Limit to 1,000 words. If approximately fifteen single-space typewritten lines) (16)

At 1345 hours on 4/15/91, with the reactor at full power in Operational Condition 1, it was discovered that electrical cables located in fire area ET-2, which may cause spurious operation of valves 1E51\*MOVFO63 (RCIC inboard steam isolation valve) and 1E51\*MOVFO78 (RCIC vacuum breaker valve), did not have fire wrap contrary to Fire Hazards Analysis (FHA) requirements. At 1300 on 4/23/91, additional cables, which could cause the same problem were found in fire areas AB-2, C-2 and C-6. RCIC is required by the FHA for safe shutdown in these fire areas. Since these valves are required not to change position for operation of RCIC and fire damage to these cables may cause loss of RCIC, the cables would require wrapping in these fire areas.

Upon discovery of this condition, the affected cables were treated as having missing fire barriers and the action statement prescribed in Technical Specification 3/4.7.7, "Fire Rated Assemblies", was implemented for areas containing these cables. Errors made during the original development of the FHA were the cause for the identified cables not being wrapped in the identified fire areas. Additional deficiencies have been discovered during the FHA review. These recently discovered deficiencies concern Appendix R separation and a fire area that was not previously identified. GSU has implemented corrective actions to address each of these conditions. Permanent corrective actions for the Appendix R separation deficiencies will be provided in a supplemental report by May 1, 1992.

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TEXT CONTINUATIONESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS  
INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD  
COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS  
AND REPORTS MANAGEMENT BRANCH (F&SD), U.S. NUCLEAR  
REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO  
THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE  
OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (if more space is required, use additional NRC Form 305A's) (17)

REPORTED CONDITION

At 1345 hours on 4/15/91, with the reactor at full power in Operational Condition 1, it was reported to the shift supervisor that certain electrical cables associated with valves 1E51\*MOVFO63 (\*ISV\*) (RCIC inboard steam isolation valve) and 1E51\*MOVFO78 (\*VTV\*) (RCIC vacuum breaker valve) located in fire area ET-2 (Electrical Tunnel "B" West), did not have fire wrap. This discovered condition is contrary to requirements contained in the FHA. While working on resolution of this issue, additional cables which could cause the same problem were found in fire areas AB-2, C-2 and C-6. At 1300 hours on 4/23/91, these additional areas of concern were reported to the shift supervisor. The FHA lists Method 1 as the analyzed method of shutdown for fire areas AB-2, C-2, C-6 and ET-2. Method 1 shutdown is identified as using 3 safety relief valves (SRVs) (\*RV\*) for reactor pressure vessel (RPV) (\*JE\*) pressure control, RCIC for RPV level control, and RHR-A for suppression pool cooling and shutdown cooling. The FHA lists these valves as "Passive Valves" required for Method 1 shutdown which means the valves must not change position due to fire damage on their cables. The FHA states the identified cables for these valves should be wrapped in these fire areas.

The affected cables did not have the required fire wrap (fire barrier) since plant startup; therefore, the fire barrier is considered inoperable per Technical Specification 3/4.7.7 and this report is submitted pursuant to 10CFR50.73(a)(2)(i)(B) as operation prohibited by the Technical Specification.

Additional reportable conditions have been discovered as a result of the FHA review. These conditions concern Appendix R separation and the discovery of a previously unidentified fire area. These conditions are described in the Investigation section below.

INVESTIGATION

The River Bend Station - Unit 1 Appendix R Data Management System lists equipment, raceways, and cables by fire area. A review of this data base found inconsistencies between the data base and the FHA for the identified cables which may cause spurious operation of valves 1E51\*MOVFO63 and 1E51\*MOVFO78. The FHA indicates the cables should be wrapped in these fire areas but the data base indicates the cables do not require wrap.

FHA Section V "Fire Hazards Evaluation Conclusions" states that for fire areas AB-2, C-2, C-6 and ET-2 shutdown can be achieved by Method 1. FHA Section I and Tables 1, 2 and 6 identify Method 1 shutdown equipment. Reactor core isolation cooling (RCIC) (\*BN\*) is used for

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TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (PB30) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20543 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503.

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reactor pressure vessel (RPV) level control in Method 1 shutdown. The RCIC inboard steam isolation valve 1E51\*MOVFO63 and the RCIC vacuum breaker valve 1E51\*MOVFO78 are passive valves for Method 1 shutdown which means they must not change position due to fire damage. FHA Table 2 states that cables for these two valves, which may result in spurious signals, are wrapped in these fire areas. Circuit analysis on cables 1ICSABC001 and 1ICSABC004 (\*CBL2\*) found that fire damage can cause spurious closure of valve 1E51\*MOVFO63 which would prevent steam from reaching the RCIC turbine (\*T33\*). Circuit analysis on cables 1ICSEBC001 and 1ICSEBC003 found that fire damage can cause spurious opening of valve 1E51\*MOVFO78 which would adversely affect RCIC vacuum breaker capabilities.

Since these valves are required not to change position for operation of RCIC and RCIC is required for safe shutdown in the affected fire areas, the valves are correctly classified in the FHA as "Passive - Method 1 Components". Therefore, to comply with the USAR, FHA, and 10CFR50 Appendix R Section III.G, the cables would require wrapping in fire areas AB-2, C-2, C-6 and ET-2. With the exception of FHA Table 3 with regards to fire area AB-2, the FHA correctly indicates these cables require wrapping in these fire areas. The Appendix R data base is incorrect as it indicates the cables are not required to be wrapped.

Additional reportable conditions have been discovered as a result of the FHA review. These conditions concerned Appendix R separation and the discovery of a previously unidentified fire area.

Three areas were identified where compliance with Appendix R separation criteria, as identified in the FHA and/or USAR, was not provided. Two of the areas, the main control room and a fire area in the fuel building, involved equipment required for spent fuel pool cooling only and not equipment required for safe shutdown of the reactor vessel. In both cases immediate actions were taken and administrative controls implemented to address the concerns with spent fuel pool cooling until permanent corrective actions can be identified and implemented. The third area is in the reactor containment building. Containment cooling could be lost due to potential fire damage in this fire area since separation in accordance with Appendix R, Section G requirements is not provided. The affected raceways were treated as having missing fire barriers and fire watch requirements specified in Technical Specification 3/4.7.7, "Fire Rated Assemblies" were implemented. Permanent corrective action for these three areas will be identified in a supplemental report by May 1, 1992.

During the final FHA review, all fire areas except one were found to have a fire hazards analysis and 58 of 62 fire areas were found to have administrative controls identified in the FHA included in their pre-fire strategies. A preliminary fire hazards analysis for the new



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TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST AND WBS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (FBI) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20545 AND TO THE PAPERWORK REDUCTION PROJECT (3160-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503

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fire area, not previously identified in the FHA, was performed to determine potential impact on safe shutdown capability. The preliminary analysis indicated that safe shutdown for this new fire area is provided utilizing Method 1 shutdown equipment and by initiating high pressure core spray (HPCS) in lieu of reactor core isolation cooling (RCIC) for level control during a fire. Also, administrative controls to align valve 1SFC\*MOV120 to supply cooling to the upper fuel pools were necessary. Modification request (MR) 92-0013 was initiated on January 27, 1992, to make necessary document changes to the FHA and USAR for the new fire area. A new pre-fire strategy was prepared to identify this information to reactor operators and the fire brigade. Pre-fire strategies for the four fire areas were revised to include the omitted administrative controls identified in the FHA.

CORRECTIVE ACTIONS

A detailed review and verification of the FHA by an independent contractor was initiated as a result of NRC Inspection Report No. 50-458/90-02. The conditions as described in this report were identified by the independent contractor during resolution of questions identified in the review and verification process. Evaluations of all questions arising from the final review of the FHA by the independent contractor were completed in January 1992.

Upon discovery of the condition identified on 4/15/91, the affected cables were treated as having missing fire barriers and the action statement prescribed in Technical Specification 3/4.7.7, "Fire Rated Assemblies", was implemented for areas containing these cables. With the exception of the Division II electrical room located in the northeast corner of "D" tunnel on elevation 70', fire watches had been previously in place for the affected areas due to operability questions associated with penetration seals. However, there is no assurance that fire watches had been in place for the entire time period since startup.

For the affected fire areas, an analysis has been performed to determine what alternate system for RCIC is available (free of fire damage). The analysis determined that low pressure core spray (LPCS) (\*BM\*) is free of fire damage in Fire Areas AB-2, C-2, & C-6 and high pressure core spray (HPCS) (\*BJ\*) is free of fire damage in Fire Area ET-2.

Errors made during the original development of the FHA were the cause of inconsistencies found within the FHA and between the FHA and the Appendix R data base. These inconsistencies resulted in the identified circuits not being protected in accordance with 10CFR50, Appendix R, Section III.G. A contributing factor involving these

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-330) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503

PLANT NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)	
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errors appears to be the fact that the affected components are Division II and are required for Method 1 shutdown, which primarily uses Division I and III components. Review of this condition has determined there are also Division I cables/equipment which are required for Method 2 shutdown, which primarily uses Division II components. The cables for this type of equipment are considered "Appendix R Crossover Cables". Analysis has determined that there are approximately 80 of these crossover cables. A review of these crossover cables was performed and with one exception no similar deficiencies exist. The exception is the Division II cable chase area located in the northeast corner of D-Tunnel. In this area, RCIC may be lost due to fire damage on crossover cables. As previously stated in the investigation, it was found that this area had not been previously identified or evaluated in the FHA. Analysis for this new fire area (AB-18) demonstrates safe shutdown capability is provided. Since the area contains only Division II cabling, safe shutdown can be achieved utilizing Method 1 shutdown methodology and substituting HPCS for RCIC for RPV level control.

As previously stated, permanent corrective actions for the Appendix R separation issues identified in the FHA review will be identified in a supplemental report by May 1, 1992. The corrective actions to address the new fire area included the identification of the proper safe shutdown method, implementation of administrative controls to align valve 1SFC\*MOV120 to provide cooling to the upper fuel pools, documentation changes to the FHA and USAR, and the preparation of a pre-fire strategy for this area.

Similar events have been reported in LERs 87-005, 89-009, 89-036, and 90-003. LERs 87-005, 89-009 and 90-003 reported installation-related deficiencies in Thermo-Lag fire barriers. LER 89-036 reported an event in which the fire hazards analysis specified that certain motor-operated valves (MOVs) should be normally de-energized. The actual condition of the valves was that they were energized. New issues identified during the FHA review have revealed FHA deficiencies concerning spent fuel pool cooling and a previously unidentified fire area.

## SAFETY ASSESSMENT

The FHA states safe shutdown can be achieved in fire areas AB-2, C-2, C-6 and ET-2 using Method 1 shutdown. Method 1 is identified as using 3 SRVs for RPV pressure control, RCIC for RPV level control, and RHR-A for suppression pool cooling and shutdown cooling. Since the affected cables were not wrapped in these fire areas, fire damage could cause loss of RCIC. With the loss of RCIC, a review was made to determine what alternate method of RPV level control was available in these fire areas. Analysis has demonstrated that for Fire Areas AB-2, C-2 & C-6, LPCS is free of fire damage and for ET-2 & the new fire area (AB-18),

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TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104) OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, DC 20503

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HPCS is free of fire damage. This demonstrates that with a fire in any of these fire areas, at least one method of safe shutdown is unaffected.

Fire Areas C-25 (main control room) and FB-1 (fuel bldg.) were identified as areas where potential fire damage could cause a loss of spent fuel pool cooling. Calculation No. G13.18.14.0\*46-0 was developed which demonstrates the time required for the spent fuel pool temperature to reach the design limit of 155.6 degrees F with the present fuel load is approximately 5.3 days. Abnormal Operating Procedure (AOP)-0031 "Shutdown From Outside Main Control Room" and pre-fire strategies for fire area FB-1 have been revised to address manual actions which may be required to restore spent fuel pool cooling with a fire in these areas. These corrective actions and administrative controls have been implemented to address these concerns under present fuel pool load conditions until permanent corrective actions are identified and implemented.

The FHA indicates safe shutdown can be achieved in Fire Area RC-5/Z-13 (reactor containment bldg.) using Method 1 or 2 depending on the location of the fire. The FHA states containment unit cooler 1HVR\*UC1B is separated from its alternate counterpart by 24 ft. and a 10 ft. radiant energy shield and is being protected from intervening combustibles by wrapping the intervening combustibles with a 3-hour rated barrier. Since the cables for this unit cooler were not wrapped in accordance with Appendix R, Section III.G requirements, fire damage could cause a loss of containment cooling. The affected cables were treated as having missing fire barriers and fire watch requirements specified in Technical Specification 3/4.7.7, "Fire Rated Assemblies" have been implemented.

NOTE: Energy Industry Identification System Codes are identified in the text as (\*XX\*).