

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/90-02

Operating License: NPF-47

Docket: 50-458

Licensee: Gulf States Utilities (GSU)
P.O. Box 220
St. Francisville, Louisiana 70775

Facility Name: River Bend Station (RBS)

Inspection At: St. Francisville, Louisiana

Inspection Conducted: January 22-26, 1990

Inspectors:

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C. E. Johnson, Reactor Inspector, Plant
Systems Section, Division of Reactor Safety
(Team Leader)

2/21/90
Date

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Section, Division of Reactor Safety

2/21/90
Date

M. E. Murphy
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Section, Division of Reactor Safety

2/21/90
Date

Accompanying Personnel: Mr. D. P. Notley, Fire Protection Engineer
Office of Nuclear Reactor Regulation (NRR)

Approved:

T. F. Stetka
T. F. Stetka, Chief, Plant Systems Section
Division of Reactor Safety

2/21/90
Date

Inspection Summary

Inspection Conducted January 22-26, 1990 (Report 50-458/90-02)

Areas Inspected: Special, announced postfire safe shutdown capability reverification and assessment of the fire protection program's compliance with the requirements of Appendix R to 10 CFR Part 50.

Results: The inspection verified that the licensee has properly maintained the postfire safe shutdown capability that was confirmed in the initial validation inspection conducted during April 1-4, 1985. Items requiring licensee action as a result of the initial inspection were found to be completed and the initial concerns resolved. The inspection also reverified that the licensee has continued to carry out an overall effective fire protection program. There appears to be a weakness in the area of implementation of the procedures and administrative controls that are required by the Fire Hazards Analysis. This resulted in two potential violations, both of which were licensee identified. One of the violations falls under the noncited violation (NCV) category and one does not. The licensee's configuration management involvement as it relates to maintaining Appendix R compliance, represents one of the strengths of the licensee's overall fire protection efforts.

DETAILS

1. Persons Contacted

GSU

- *R. Backen, Quality Systems Supervisor
- *K. Bullen, Senior Engineer
- *B. Chustz, Maintenance Supervisor
- *J. Cook, Technical Assistant
- *C. Coones, Lead Fire Protection Engineer
- *T. Crouse, Quality Assurance (QA) Manager
- *W. Curran, Site Representative
- *B. Ellis, Fire Protection Coordinator
- *L. England, Director, Nuclear Licensing
- *M. Feltner, Licensing Engineer
- *W. Fountain, Senior QA Engineer
- *A. Fredier, Operations Supervisor
- *K. Giadrosich, QA Supervisor
- *E. Gould, QA Engineer
- *J. Hamilton, Director, Design Engineering
- *P. Holt, Senior Mechanical Engineer
- *R. Kerar, Civil Engineer
- *G. Kimmell, Director, Quality Services
- *D. Lorfing, Supervisor, Nuclear Licensing
- *I. Malik, Operations, QA Supervisor
- *D. McCarter, Director, Loss Prevention
- *W. O'Dell, Manager, Administration
- *R. Roberts, Supervisor, Electrical Maintenance
- *J. Spivey, Jr., Senior QA Engineer/Audit Coordinator
- *M. Stein, Supervisor, Civil/Structural Design
- *K. Suhrke, Manager, Project Management
- *W. Trudell, Shift Supervisor
- *R. West, Assistant Plant Manager, Technical Services

NRC

*T. Stetka, Chief, Plant Systems Section

*Denotes those attending the exit interview conducted on January 26, 1990.
The inspectors also interviewed other personnel during the inspection.

2. POSTFIRE SAFE SHUTDOWN CAPABILITY REVERIFICATION (64150)

The purpose of this inspection was to determine whether the licensee had developed and implemented a configuration management program with respect to postfire safe shutdown capability. This inspection was also to determine whether the licensee has maintained the postfire safe shutdown capability that was verified during the initial validation inspection conducted during the period of April 1-4, 1985.

2.1 Configuration Management Program

The inspectors conducted a detailed review of design change packages (DCPs) in order to verify that the configuration management program related to Appendix R compliance and postfire safe shutdown capability was adequate. Procedures were reviewed to determine if provisions were included to ensure that all DCP documents are reviewed for Appendix R compliance and safe shutdown concerns; that adequate guidance is provided for reviewers so that the impact on Appendix R compliance and the postfire safe shutdown capability is considered; and that provisions to ensure that all DCPs, which do not impact Appendix R compliance and postfire safe shutdown capability, are incorporated into the analysis, procedures, and programs which support and implement this capability.

In addition, to verify the implementation of these procedures, the inspection team selectively reviewed the DCPs to those plant systems required for postfire safe shutdown. Review and verification of the DCPs selected indicated that procedures for configuration control were adequately implemented.

2.2 Configuration Control Procedures and Implementation

The licensee has established Procedure ENG-3-006, "River Bend Station Design and Modification Request Control Plan," Revision 6, dated December 20, 1989. This procedure establishes the instructions for initiating, controlling, and documenting actions pertaining to design and modifications of permanent station equipment and facilities at the River Bend Station (RBS). This procedure contains 36 attachments for different areas of the plant.

Design changes or modification requests (MRs) are initiated by a design engineer to satisfy the requirements of Procedure ENG-3-006. This procedure contains checklists for the evaluation of Appendix R and fire protection concerns. These checklists are Attachment 12, "Fire Protection Review Checklist" and Attachment 27, "Design Configuration Guidelines." The first page of Attachment 12 requires that the design engineer conduct a preliminary fire protection evaluation and indicate by a "yes/no" answer if a proposed modification request may impact certain fire protection features. A "yes" answer requires that the Appendix R coordinator or a designated fire protection engineer (FPE) perform a review of the modification request.

The inspectors reviewed 10 modification request packages, which are listed in the enclosed Attachment, to verify that the procedures for configuration control were implemented. The modification request packages had been reviewed in accordance with the applicable RBS engineering procedure. The licensee had procedures in place to ensure that the training department incorporated any MR resultant changes into the applicable training courses. The packages reviewed by the inspectors were found to be complete and acceptable.

2.3 Postfire Safe Shutdown Procedures

2.3.1 Procedure Review

The inspectors reviewed the RBS procedure, AOP-31, "Shutdown From Outside Main Control Room," Revision 6, dated May 8, 1989. This is the procedure that is applicable in case of a fire that requires evacuation of the control room and which necessitates the use of the Division 1 remote shutdown panel. The scope of the review was to ascertain that shutdown can be attained in a safe and orderly manner, to determine the level of difficulty involved in operating equipment, and to verify that there is no dependence on equipment repairs to achieve hot shutdown.

No significant problems were identified by the review. Some editorial comments were discussed with the licensee and a Temporary Change Notice (TCN) was issued before the end of the inspection to incorporate these comments. The review determined that the actions required could be performed in a reasonable amount of time and in a safe and orderly manner with a minimum of difficulty. No dependence on equipment repairs to achieve hot shutdown was identified.

2.3.2 Licensed Operator Regualification Program for Abnormal Operating Procedures (Fire Protection Related)

The inspectors reviewed the documentation for reactor operator regualification training for 1989 on emergency and abnormal operating procedures. This training requires that each reactor operator (RO) and senior reactor operator (SRO) review contents of all abnormal operating procedures (AOPs) on an annual basis and maintain current training on the remote shutdown panel. The lesson plans were reviewed and found to be adequate. All SROs have had regualification training for 1989 in the performance of AOP-31 for control room evacuation. On the basis of this review, the inspectors found the licensed operator regualification program to be adequate for the AOP-31 procedure.

2.3.3 Damage Control Measures

Appendix R, Section III.L.5 requires fire protection features be incorporated in the design of structures, systems, and components important for safe shutdown. The design must also be capable of limiting fire damage so that systems necessary to achieve and maintain cold shutdown are free of fire damage or can be repaired such that equipment can be made operable so that cold shutdown can be achieved within 72 hours. Materials are required to be readily available onsite and procedures are to be in effect to implement such repairs.

Procedure AOP-31, "Shutdown From Outside Main Control Room," was reviewed to assess these damage control measures. For a fire in the main control room, there are two components that could require repairs. The first repair is air compressor 1LSVC3A. It may have to be powered by use of electrical jumpers at standby motor control center 1EHSMCC2L if additional air is required for cycling the automatic depressurization system (ADS) safety relief

valves (SRVs). The second repair entails either manually opening valve 1E12F009 or electrically jumpering the valve at motor control center 1EHSMCC26, in order to permit the operation of the residual heat removal (RHR) system in the shutdown cooling mode. As stated above, Appendix R, Section III.L.5, requires that the materials for repairs be readily available and procedures be in effect to implement such repairs. Contrary to this Appendix R requirement, the licensee had neither the materials available nor the procedures in effect to implement these repairs. Failure to meet this Appendix R requirement is considered to be an apparent violation. The licensee had previously identified this violation and had documented the finding in CR-90-26. The licensee had also taken corrective actions to implement the procedures and store the materials at the necessary locations. Based upon these activities, and in accordance with the enforcement policy, 10 CFR Part 2, Appendix C, paragraph V.A., this violation will not be cited.

2.4 Associated Circuits Review

The associated circuits analysis dated June 14, 1985, provided the basis of the modifications which were made to comply with 10 CFR Part 50, Appendix R. This analysis was developed by Stone and Webster Engineering. The licensee stated that there had been no change in the associated circuit analysis since initial validation, which was documented in NRC Inspection Report 50-458/85-27 and Supplement 3 to the Safety Evaluation Report (SER). The inspectors concluded that the licensee's analysis of associated circuit concerns is satisfactory and meets the requirements of Appendix R, Section III.L.

2.5 Fire Hazards Analysis (FHA)

A review of the FHA was conducted as a part of this fire protection inspection. The FHA at RBS had been previously approved by the NRC.

The inspectors initially reviewed report CR-89-1117 which stated that a number of motor operated valves (MOV) in safety-related systems were not in a condition assumed by the RBS FHA.

A detailed study of the FHA was initiated by the licensee following the discovery of improperly installed fire walls at the Division I remote shutdown panel in March of 1988. This study compared FHA requirements to the valve lineups and station operating procedures (SOPs) and identified that 19 MOVs in safety-related systems were to be administratively controlled and deenergized during reactor operation. The licensee discovered that none of these 19 MOVs had been tracked by the administrative controls and that none of them had been deenergized. This condition was documented in CR-89-1117 and had existed since the operating license was issued on November 20, 1985.

The licensee immediately took appropriate protective measures to deenergize two of the valves, which are located in high radiation areas, and initiated a roving fire watch for the other 17 valves. During subsequent technical evaluations, the licensee determined that these latter 17 valves were not

required to be deenergized during plant operations. The other two valves (Valves 1E12*MOVFO09 and 1B21*MOVFO19) were determined to be a potential Intersystem LOCA (ISLOCA) pathway as the result of a fire in the main control room or in the remote shutdown panel.

In the case of Valve 1E12*MOVFO09, the concern is to prevent a fire-induced opening of the low pressure shutdown cooling residual heat removal (RHR) system to the reactor vessel at operating pressure. This high/low pressure interface valve is identified in Section 9.5 of the Updated Safety Analysis Report (USAR). Valve 1B21*MOVFO19 is the outboard isolation valve for the main steam isolation valve (MSIV) drains. A postulated control room fire could cause this valve to open spuriously, dumping steam to the main condenser. When this scenario is considered with a loss of offsite power, as required by the FHA, this steam may be vented to the atmosphere as main condenser vacuum is lost. These valves have been added to the administrative controls and remain deenergized, in accordance with the original FHA commitments.

The inspectors were informed by the licensee that during the final days of construction and initial operation license (OL) review, the licensee's Architect/Engineer (AE), Stone and Webster, made a number of commitments in the FHA that may have been unnecessarily conservative, but that were deemed reasonable and timely in lieu of more extensive engineering evaluation and analysis. The FHA was never incorporated into operations procedures. The reason for this lack of incorporation into procedures could not be explained by the licensee. This is an apparent violation of Gulf States Utilities (GSU) facility operating licensee No. NPF-47, Attachment 4, which states that GSU shall comply with the requirements of the fire protection program.

The licensee's review to determine compliance with its FHA commitments was in progress but not yet complete at the end of this inspection. Because the licensee has not completed its final reevaluation of the FHA, the inspectors could not determine if the review of the RBS FHA was adequate. This issue will be considered as an unresolved item until the licensee has completed its final review.

Unresolved Item (458/9002-01): Reevaluation of River Bend Station Fire Hazards Analysis has not been completed by the licensee.

3. FIRE PROTECTION/PREVENTION PROGRAM (64704)

3.1 Program Review and Implementation

The inspectors reviewed the licensee's procedures, which constitute the approved fire protection program. These procedures are listed in the enclosed Attachment. This review verified that the licensee had technically acceptable procedures to implement the fire protection program. Procedural guidance was provided to control combustible material and reduce fire hazards. Administrative procedures also provided for maintenance and surveillances on fire suppression, detection, and support equipment. Personnel training, qualifications, and responsibilities were satisfactorily provided. Maintenance evolutions that significantly increase fire risk were properly controlled.

The inspectors toured accessible areas of the plant site to observe general area conditions, work activities in progress, and visual condition of fire protection systems and equipment. Combustible materials and flammable and combustible liquid and gas usage were restricted or properly controlled in areas containing safety-related equipment and components. Items checked included positions of selected valves, fire barrier condition, hose stations, hose houses, fire lockers, and fire extinguishers for type, location, and condition.

There was no welding, cutting, or use of open flame ignition sources found in the areas toured. General housekeeping conditions were found to be very good. Fire brigade equipment, including emergency breathing apparatus, was found to be properly stored and maintained. Fire protection systems and equipment installed for protection of safety-related areas were found to be functional and tested in accordance with the requirements specified in the Technical Specifications.

The inspectors also reviewed fire brigade training and drill records. The records were in order and confirmed that training and drills were being conducted at the specified intervals.

The last two QA audits in the area of fire protection were reviewed by the inspectors. Audit 88-03-I-PFPP, dated April 21, 1988, was an annual audit. Audit 89-03-I-PFPP, dated May 17, 1989 was the triennial audit and included an outside independent fire protection consultant. The audits were comprehensive and in-depth. System/equipment alterations, tests, surveillances, maintenance, records, and overall program procedures were addressed. Discrepancies identified were formally presented to the affected organization. Responses were tracked to closeout and actions taken were reviewed for adequacy.

3.2 Fire Barrier Penetration

The licensee's tracking system for fire barrier penetration seals were reviewed to ensure that the seals have been maintained to provide separation between redundant trains of safe shutdown equipment as required by Section III.G. of Appendix R. A number of penetrations were selected for field verification to verify that the penetrations were sealed as specified on plant drawings and that adequate documentation was available to confirm the fire rating of the seals. The inspectors found that the licensee has developed a fire barrier tracking system which ensures that required fire barrier penetration seals are adequately maintained. Additionally, for all penetration seals reviewed during the field walkdown, sufficient documentation was available to confirm the required fire rating.

3.3 Emergency Lighting

The inspectors reviewed the adequacy of the installed emergency lighting that is required by Section III.J of Appendix R. The emergency lighting was reviewed to ensure that it was adequate to provide the necessary illumination

of ingress and egress paths for shutdown personnel and that there would be adequate light to perform any manual actions necessary to achieve safe shutdown. In addition, lights were inspected in the field to ensure that they have been adequately surveilled and maintained. The inspector also reviewed several completed procedures to confirm that the procedures were being implemented as required.

There were no violations or deviations identified in this area of the inspection.

4. EXIT MEETING

An exit meeting was held January 26, 1990, with the personnel indicated in paragraph 1 of this report. At this meeting, the scope of the inspection and the findings were summarized. The licensee did not identify as proprietary any of the information provided to or reviewed by the inspectors.

ATTACHMENT

Administrative Procedures

<u>Procedure No.</u>	<u>Title</u>	<u>Date</u>
STP-000-2001, Revision 5	Daily Fire Door Position Check	10/05/89
STP-000-3602, Revision 7A	Fire Barrier Visual Inspection	01/15/90
STP-000-3200, Revision 5	Fire Door Operability Functional Test	02/17/89
STP-000-3401, Revision 3	Semiannual Fire Door Operability Check and Mechanism Inspection	01/17/89
STP-250-3202, Revision 4	Inaccessible Fire Detector Instrumentation Test	03/07/89
STP-000-3604, Revision 5	Fire Barrier 18 Month Visual Inspection Sealed Penetrations	06/02/89
STP-000-3605, Revision 5	Fire Door Release Mechanism Functional Test	02/03/89
STP-000-3603, Revision 5	Fire Damper 18 Month Visual Inspection	02/03/89
STP-250-3501, Revision 8	Six Month Fire Detector Instrumentation Functional Test	03/07/89
ENG-3-006, Revision 6	River Bend Station Design and Modification Request	12/20/89
ADM-0003, Revision 17A	Development, Control and Use of Procedures	11/03/89
ADM-0028, Revision 10	Maintenance Work Order	12/13/88
AB-070-500, Revision 1	Pre-Fire Strategy ECCS Piping Penetration Room	06/24/85
AB-070-502, Revision 1	Pre-Fire Strategy RHR Pump 2A Room	06/24/85
AB-095-517, Revision 1	Pre-Fire Strategy HPCS Piping Area	06/24/85
AB-095-516, Revision 1	Pre-Fire Strategy Shield Building Access Area	06/17/85

AB-015-510, Revision 1	Pre-Fire Strategy CCP Heat Exchanger Room	06/24/85
FPP-0010, Revision 5	Fire Fighting Procedures	08/21/89
FPP-0020, Revision 7	Guidelines for Preparation of Pre-Fire Strategies and Pre-Fire Plans	11/15/89
FPP-0030, Revision 5	Storage of Combustibles	01/06/89
FPP-0040, Revision 6	Control of Transient Combustibles	12/05/89
FPP-0050, Revision 2	Handling of Flammable Liquids and Gases	04/07/86
FPP-0060, Revision 6	Hot Work Permit	11/06/89
FPP-0070, Revision 6	Duties of Fire Watch	08/21/89
FPP-0090, Revision 6	Fire Fighting Equipment, Inventory, Inspection, and Maintenance	12/05/89
FPP-0095, Revision 3	Fire Extinguisher Inspection and Maintenance	12/05/89
FPP-0100, Revision 5	Fire Protection System Impairment	05/19/88

Modification Requests

<u>Number</u>	<u>Title</u>	<u>Date</u>
MR 85-0433	Fire Detection Panel Wiring Change	08/31/85
MR 86-1584	Change Open Head Water Deluge Fire Protection System to Closed Head Preaction System	10/08/86
MR 85-0525	Document Change to Correct Error of Multiple Valves with Same ID Number	09/26/85
MR 86-0313	Correct Editorial Errors	02/19/86
MR 85-0306	Drawing Change to Correct Fire Detection System	03/08/86

MR 86-0239	Document Change to Delete Automatic Sprinkler Corrections to Fire Protection Water Supply Due to Removal of Temporary Buildings	02/14/86
MR 86-1162	Document Change to Remove Tamper Switch Shown on Fire Alarm Cabinet but Not On Automatic Sprinkler System Design	04/15/88
MR 86-0472	Document Change to Correct Error in Original Wiring Design for Fire Detection System Cabinet	03/17/86
MR 88-0209	Document Change to Reflect "As Built" Changes to Various Fire Suppression Systems	08/03/88
MR 86-1511	Change Pre-Alarm and Alarm Set Points for Line Type Thermal Fire Detector System	09/17/86