APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-458/89-40 Operating License: NPF-47

Docket: 50-458

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

Facility Name: River Bend Station (RBS)

Inspection At: RBS, St. Francisville, Louisiana

Inspection Conducted: November 1-30, 1989.

Inspectors: E. J. Ford, Senior Resident Inspector
W. B. Jones, Resident Inspector

Approved: _____ 1/10/90
G. L. Constable, Chief, Project Section C Date
Division of Reactor Projects

Inspection Summary

Inspection Conducted November 1-30, 1989 (Report 50-458/89-40)

Areas Inspected: Routine, unannounced inspection of operational safety, followup of events, maintenance, surveillance, service water system, and followup of Information Notice 89-51.

Results: Within the areas inspected, one violation was identified (failure to provide adequate control of material taken into the containment, paragraph 3).

The reactor operators, on two specific occasions during this inspection period, demonstrated an excellent knowledge of plant systems and RBS Technical Specifications (paragraph 3). In another instance an operator failed to independently verify a clearance request that resulted in the temporary loss of the Division I 120 Vdc power supply. This instance was not deemed indicative of the individuals' usual performance.

DETAILS

1. Persons Contacted

*D. Barnett, Foreman, Chemistry
*General R. H. Barrow (Ret.), GSU Board of Directors
*J. E. Booker, Manager, Oversight
*E. M. Cargill, Director, Radiation Programs
*J. W. Cook, Lead Environmental Analyst, Nuclear Licensing
*C. Coones, Design Engineer
T. C. Crouse, Manager, Quality Assurance (QA)
*J. C. Deddens, Senior Vice President, River Bend Nuclear Group
*L. A. England, Director, Nuclear Licensing
*A. O. Fredieu, Supervisor, Operations
*P. D. Graham, Executive Assistant
J. R. Hamilton, Director, Design Engineering
*M. Harrington, Senior Environmental Analyst
G. K. Henry, Director, Quality Assurance Operations
*K. C. Hodges, Supervisor, Chemistry
L. G. Johnson, Site Representative, Cajun
G. R. Kimmell, Director, Quality Services
*E. N. Lambremont, Ph.D., Nuclear Advisory Committee
I. M. Malik, Supervisor, Quality Systems
*W. H. Odell, Manager, Administration
*T. H. Pigford, Ph.D., Safety Advisory Committee
*T. F. Plunkett, Plant Manager
*J. J. Pruitt, Director, Management Systems
M. F. Sankovich, Manager, Engineering
*J. P. Schippert, Assistant Plant Manager, Operations and Radwaste
*J. E. Smith, Consultant
*K. E. Suhrke, Manager, Project Management
*R. G. West, Assistant Plant Manager, Technical Services
*H. H. Woodson, Ph.D., Nuclear Safety Advisory Committee

The NRC also interviewed additional licensee personnel during the inspection period.

*Denotes those persons that attended the exit interview conducted on December 8, 1989.

2. Plant Status

The licensee operated at essentially 97 percent thermal power throughout the inspection period. Reactor thermal power had been reduced by approximately 3 percent because the main turbine moisture separator reheaters had been removed from service on October 25, 1989, to isolate a steam leak. The licensee plans to repair the leak during a maintenance outage in early December 1989.

On November 14, 1989, the Division I emergency diesel generator failed to run during a scheduled surveillance test. The licensee identified an open main bearing temperature switch and a degraded support air system as a result of the corrective maintenance activity (paragraph 5). These conditions would not have prevented the Division I emergency diesel generator from operating during an emergency. The Division I emergency diesel generator was returned to service on November 17, 1989.

3. Operational Safety Verification (71707)

The inspectors conducted several tours of accessible areas of the facility during this inspection period. During a tour of the reactor building on November 30, 1989, the inspector observed that visqueen (plastic sheeting), tables, and computer terminals had been set up in front of the drywell equipment hatch. The area consisted of a standing area and walkway directly over the suppression pool. The reactor was operating at 97 percent thermal power at the time of discovery. The licensee had placed the materials in front of the drywell equipment hatch earlier that day in preparation for a planned maintenance outage which was scheduled to begin December 2, 1989. The inspector found that sufficient material was present to potentially degrade the performance of the emergency core cooling system (ECCS) following a loss of coolant accident (LOCA). In particular, the visqueen could block an ECCS suction line and cause damage to the ECCS pump or degrade flow following a LOCA.

The inspector identified this condition to the licensee and the materials were immediately removed. This event was discussed with licensee management personnel. The inspector identified the lack of controls for material taken into the containment as an apparent violation of 10 CFR 50.59 (458/8940-01).

Walkdowns of the A and B residual heat removal and low pressure core spray systems were conducted. Major flow path valves were verified to be in the required standby position. The associated power supply for each major flow path valve and pump was observed to be available. No conditions were noted which would indicate that the associated system would not perform its intended safety function.

The inspectors verified that selected activities of the licensee's radiological program were implemented in conformance with facility policies, procedures, and regulatory requirements. Radiation and/or contaminated areas were properly posted and controlled. Radiation work permits contained appropriate information to ensure that work could be performed in a safe and controlled manner. Radiation monitors were properly utilized to check for contamination. During plant tours, the inspectors frequently checked calibration stickers on various radiological monitoring equipment and physically verified that selected very high radiation area access control doors were locked and closed.

On November 8, 1989, an onsite, nonvital 230KV power line was lost when a nearby substation transformer experienced a phase-to-phase fault. Various

nonessential buildings lost normal power until it was restored approximately 2 hours later. The control room experienced a momentary normal lighting loss. The backup lighting system remained operable. The only other effects on the plant were heating, ventilation, and air conditioning (HVAC) actuations and the loss of the reactor water cleanup (RWCU) pumps which resulted in an expected isolation of the RWCU system. Operations personnel realigned the system in a timely manner after determining that the pump trips were spurious.

The resident inspectors observed the operator recovery actions. Operator actions were systematic and demonstrated an excellent knowledge of plant systems. Operations management personnel responded to the control room and assisted in assuring that the status of all systems was normal.

The HVAC actuations involved the control room filter system which was later evaluated to be 10 CFR 50.72 reportable. Also, fans for both trains of annulus mixing and standby gas treatment systems auto started.

The licensees' investigation into the initiation signals for the auto starts determined that no additional corrective action was warranted.

Following an activation of the standby gas treatment system, a senior reactor operator identified the need to sample the charcoal filter medium. The sample was required because paint fumes had entered the charcoal bed. The licensee subsequently identified that the charcoal filter medium required replacement. The charcoal was replaced within the timespan allowed by the RBS Technical Specifications.

On November 9, 1989, the inspector discussed the status of a condition report pertaining to thermolag fire barrier material with site engineering and licensing personnel. This thermolagging is utilized extensively throughout the plant. The report was initiated when a licensee-initiated test of the 3-hour, fire-rated material apparently failed after 47 minutes. The need for additional testing is being evaluated by the licensee's engineering department.

The licensee considers the fire barriers in all Category 1 buildings to be inadequate pending further evaluation and has implemented a "hazard reduction" program in the interim. The program requires (1) positive control by each individual bringing any quantity (as opposed to the 5-gallon criteria) of combustibles into a Category 1 building and (2) the posting of a dedicated fire watch in the event of a fire suppression or detection system being out of service.

The inspector noted that the licensee is presently utilizing roving fire watches on an hourly basis in these areas. The inspector is monitoring the licensee's evaluation and will review this issue in subsequent inspections.

The resident inspectors have observed on a frequent, random basis, deliveries made by soft drink and food vendors. Delivery was made using a

hand truck to transport the items into the protected area. The items must pass through the security detection devices. As a result, they are either x-rayed or hand searched, as appropriate. The vendor's vehicle remains outside the protected area.

The inspector interviewed several reactor operators during the inspection period. The interviews were conduced to ascertain the basis for generalized concerns expressed to the inspector. The inspector found that work schedules which were often published late and frequently revised, were a cause of frustration and aggravation to operations personnel. It was also found that chronic nonvoluntary overtime for operators, while within the requirements of Technical Specification paragraph 6.2.2.f, was an additional source of discontent.

The inspector expressed these concerns to licensee management personnel. The licensee explained that there were plans in progress to create a sixth operating crew. This would alleviate excessive work scheduling for those individuals who did not want the extra work. The licensee also felt that late schedule publication and revisions could readily be remedied.

In general, the inspectors observed operational activities throughout the inspection period and closely monitored operational events. Control room conduct and activities were generally observed to be well controlled. Proper control room staffing was maintained and access to the control room was well controlled. Selected shift turnover meetings were observed, and it was found that detailed information concerning plant status was being covered. Several control board walkdowns were conducted by the inspectors. In all cases, the responsible operators were cognizant as to why an alarm was lit and the reason for each plant configuration. Operational conditions and events identified through discussions with the reactor operators and review of the shift turnover logs were identified in the main control room log. Inoperable equipment, identified during the main control board walkdowns, were identified by the applicable limiting condition for operation (LCO). One violation of NRC requirements was noted above.

4. Followup of Events (93702)

During this inspection period, the inspectors reviewed licensee condition reports (CRs) and 10 CFR 50.72 reports and held discussions with various plant personnel to ascertain the sequence, cause, and corrective actions taken for plant events. Discussion of a selected event is given below:

Loss of 125 VDC Bus

On November 13, 1989, at 10:36 p.m., all power to the Division I 125 Vdc bus was lost. This occurred when a reactor operator incorrectly opened the breaker for the battery supply to the bus. The bus is supplied by a Class 1E 480 Vac source through a battery charger/inverter and also by the Class 1E batteries. The battery charger is fed from the Class 1E 480 Vac supply and, in turn, it

feeds the Division 1 125 Vdc bus. The DC bus is also fed from the Division I Class 1E batteries.

The licensee intended to isolate the Division 1 battery charger (1ENB*CHGR 1A) to perform scheduled preventative maintenance in accordance with Preventative Maintenance Procedure PMP-1045, "Quarterly Battery Charger Maintenance." This activity was authorized by Preventive Maintenance Work Order (MWO) P535214. An electrical foreman evaluated which breakers were required to be opened to isolate the charger without deenergizing the 125 Vdc bus. The correct breakers should have been ACB-010 and ACB-560, which would have isolated the 480 Vac feed to the charger and the charger feed to the 125 Vdc bus. Instead, Breakers ACB-010 and ACB-561 (ACB-561 is the battery fed to the 125 vdc bus) were designated to be opened. This breaker lineup would isolate power to both sides of the charger but would also isolate all power to the 125 Vdc bus. The consequences of the requested breaker lineup was not recognized by the operator who was responsible for establishing clearance boundaries.

When ACB-561 was opened, the bus deenergized and the plant experienced a Division I isolation and the automatic start of the Division II standby gas treatment and the annulus mixing systems (because of the Division I isolation). The reactor water cleanup (RWCU) pumps received a spurious trip and automatically isolated. The isolation of various balance-of-plant systems did not cause any adverse temperature effects on the various loads.

The battery breaker was closed in approximately 3 minutes, restoring the Division I 125 Vdc electrical power. It was noted by the inspector that the control room had relatively little loss of indications because of the design of the electrical system. The 120 Vac vital instrument power comes off the 125 Vdc bus but will automatically switch over to an alternate 480 Vac source which is reduced to 120 Vac through a transformer. Thus, the reliability of the 120 Vac loads is enhanced. The licensees' administrative procedure, ADM-0027, "Protective Tagging," states that the requestor of a clearance is responsible to fully understand the purpose of the clearance and the conditions that will be established within the clearance boundary. It also requires that the tagging official ensure that the tagging order is adequate and that the designated operator (who may also be the tagging official) review the tagging order to ensure there are no questions as to the positioning of each control device. The licensee determined that these requirements were not adequately satisfied in that an incorrect breaker (ACB-561) was designated to be repositioned.

This incident resulted from an inadequate review of the clearance request by an electrical maintenance foreman and an experienced reactor operator. However, this incident is not representative of the attention to detail which these individuals normally exhibit, nor

is it representative of the operations department's conduct of the clearance program.

The licensee promptly reported this event to the NRC and subsequently issued Licensee Event Report 89-38. The NRC staff has reviewed the licensees' actions involving this event. Corrective actions to prevent recurrence are appropriate. Review of previous corrective actions, in particular those to NRC Violation 458/8911-01, could not have reasonably been expected to prevent this clearance problem. Because of the above findings, this event will be tracked by the NRC staff as a noncited violation (458/8940-02). This action is being taken in accordance with Appendix C, paragraph V.G.1 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations.

5. Maintenance Observation (62703)

On November 14, 1989, the licensee started the Division I diesel generator in accordance with Surveillance Test STP-309-0201, "Diesel Generator Division I Operability Test." Approximately 10 seconds after the initial start, the diesel tripped for no readily apparent cause. The licensee initiated Maintenance Work Order (MWO) R132854 to troubleshoot the Division I diesel generator. Condition Report (CR) 89-1197 was also initiated to ensure that an evaluation would be conducted to determine if a special report on the diesel generator failure was needed.

During the troubleshooting activities, the licensee identified that the No. 6 main bearing temperature switch had failed in the open position. This resulted in low control air pressure at the outlet port of the shutdown logic board. The low air pressure caused the diesel generator to trip as expected. The licensee subsequently replaced the temperature switch and pneumatic logic board. Temporary Procedure TP 89-34, "Div 1 Diesel Logic Board Replacement Special Test Procedure," was then performed to demonstrate that normal and emergency functions attended to by the pneumatic logic board were functional. The diesel generator was subsequently declared operable on November 17, 1989, following the successful completion of STP-309-0201.

Prior to the replacement of the pneumatic control logic card, the licensee identified that the dew point of the control air exceeded 75°F. Preventive MWOs P3809 and P53810 were subsequently initiated before their scheduled date to replace the desiccant in Air Dryers 1EGA-DRY1A and 1EGA-DRY2A, respectively. When each of the desiccant towers was opened, the licensee found rust and corrosion products inside the chamber. The desiccant, rust, and corrosion products were removed and the towers replaced with new desiccant. The licensee also identified that the forward air start towers were not switching from one to another. MWO R132926 was initiated to correct this condition.

The inspector reviewed the licensee's preventive maintenance program for the diesel generator air system. The licensee has been performing inspections of the desiccant on a semiannual basis as recommended by Vendor Manual No. 3233 700 041 007, "Air Dryer, Starting Air Model

MPS-50S, Desiccant Type," since 1987. However, the inspector noted that neither Preventive Maintenance Task ME 03129.02 or Corrective Maintenance Procedure CMP-9108, "Emergency Diesel Starting Air Dryers," provided acceptance criteria on the desiccant or on the proper operation of the dryer skid. The inspector also noted that the training given on air systems does not specifically address the diesel generator air system. The conditions for desiccant replacement are also not addressed in the training class.

The licensee had performed a QA surveillance (QS-88-03-42) of instrument air system problems in April 1988. The one recommendation that resulted from this surveillance was that air quality testing should be expanded to include all compressed air systems at RBS. On November 16, 1989, the engineering department established a minimum dew point acceptance limit of less than or equal to 30°F for the diesel generator air system. The licensee is also developing a preventive maintenance task to require regular testing of the diesel generator air system dew points.

The inspector is continuing to evaluate the adequacy of the corrective and preventive maintenance tasks performed on the diesel generator air systems. The results of this review will be documented in NRC Inspection Report 50-458/89-47.

6. Surveillance Test Observation (51726)

The inspector observed the performance of Surveillance Test STP-403-3301, "Containment Purge System Isolation Valve Leakage Test," on November 30, 1989. This surveillance test verifies that the containment purge supply and exhaust isolation valves are within the leak rates established in RBS Technical Specification 4.6.1.3.d for valves with resilient material seats. The STP was performed with the reactor in Operational Condition 1 and within the specified 92-day testing frequency.

Prior to beginning the test, the system engineer notified the control operating foremen of the scope of the procedure and received authorization to perform the test. The inspector observed that the procedure was being complied with and that the measured leakage rates were within the limits specified in the surveillance procedure. The results of this surveillance test where then utilized in STP-057-3800, "Local Leak Rate Test," to ensure the annulus bypass leak rate for Type B & C combined leak rate was within the RBS Technical Specification allowable values. In each case, the as-found leak rates where less than 50 percent of the RBS Technical Specification allowable values.

No violations or deviations were identified.

7. Service Water System (92701)

The inspector discussed the licensee's proposed program for service water cleaning with licensee management personnel. The licensee indicated that two drywell unit coolers will be replaced during the midcycle outage

scheduled to begin around March 1990. Modifications to the standby service water system will be performed during the third refueling outage to begin in September 1990. These modifications will allow for chemical cleaning of one division of standby service water while maintaining the second division operable. The normal service water system will be cleaned along with one of the standby service water divisions. The actual cleaning process is presently scheduled to begin during the fourth refueling outage. The licensee will continue to monitor the performance of safety-related heat exchangers to ensure that they are capable of meeting their intended safety function. The NRC Staff will continue to review the licensee's heat exchanger operability monitoring program. The adequacy of the proposed service water system chemical cleaning program and the timeliness of the proposed schedule will be reviewed by the staff during a subsequent inspection.

8. Followup of Information Notice 89-51 (92701)

The licensee has evaluated Information Notice 89-51, "Potential Loss of Required Shutdown Margin During Refueling Operations," in Condition Report 89-0823. Reactor Engineering Procedure REP-0010, "Special Nuclear Material (SNM) Movement Control and Accountability," establishes the controls to ensure preplanned, step-by-step fuel movement. The licensee prohibits the interim storage of fuel assemblies in areas other than that specified for the final core configuration. Prior to fuel movement, the licensee receives refueling configuration analysis from the vendor to support the core licensee's core analysis group.

At the onset of refueling movements, the licensee offloads the specified fuel assemblies into the upper fuel pool as determined by the refueling configuration analysis. The upper storage pool is not equipped with high density storage racks. The in-core fuel assemblies are then shuffled to their target locations. Discharged spent fuel is subsequently placed into the high-density racks in the lower storage pool. Interim core configuration verifications are performed to ensure that the actual configuration is in accordance with the refueling analysis.

No violations or deviation were identified.

9. Exit Interview

An exit interview was conducted with licensee representatives identified in paragraph 1 on December 8, 1989. During this interview, the inspector reviewed the scope and findings of the report. The licensee identified as proprietary certain information concerning the proposed service water system cleaning program. The inspector did not include this information in this report.