



**GULF STATES UTILITIES COMPANY**

RIVER BEND STATION POST OFFICE BOX 220 ST. FRANCISVILLE, LOUISIANA 70775  
AREA CODE 504 875-8994 466-8851

April 18, 1990  
RBG-32735  
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 Licensee Event Report No. 90-009 for River Bend Station - Unit 1. This report is being submitted pursuant to 10CFR50.73.

Sincerely,

*J. H. Odell*  
J. H. Odell

Manager-River Bend Oversight  
River Bend Nuclear Group

*TFP/PDG/RGW/GWS/JHM/pg*  
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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) RIVER BEND STATION										DOCKET NUMBER (2) 0 5 0 0 0 4 5 1 8										PAGE (3) 1 OF 0 4																																			
TITLE (4) Excessive Leakage Rate Test Results for Both Inboard and Outboard Containment Isolation Valves in a Single Penetration due to Silt and Corrosion																																																							
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 NAMES													DOCKET NUMBER(S)															
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OPERATING MODE (9) 4										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																																													
POWER LEVEL (10) 0										20.402(b)										20.406(c)										50.73(a)(2)(iv)										73.71(b)															
										20.406(a)(1)(ii)										50.36(c)(1)										X 50.73(a)(2)(v)										73.71(c)															
										20.406(a)(1)(iii)										50.36(c)(2)										50.73(a)(2)(vi)										OTHER (Specify in Abstract below and in Text, NRC Form 366A)															
										20.406(a)(1)(iv)										50.73(a)(2)(i)										50.73(a)(2)(vii)(A)																									
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LICENSEE CONTACT FOR THIS LER (12)																																																							
NAME L. A. England, Director - Nuclear Licensing																				TELEPHONE NUMBER 5 0 4 3 8 1 1 - 4 1 4 5																																			
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																																			
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SUPPLEMENTAL REPORT EXPECTED (14)																				EXPECTED SUBMISSION DATE (15)										MONTH DAY YEAR																									
YES (If yes, complete EXPECTED SUBMISSION DATE)																				X NO																																			

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

At approximately 1945 on 03/19/90 with the unit in Mode 4 (Cold Shutdown) for a mid-cycle outage, the Division I service water inlet containment isolation penetration was subjected to a local leak rate test (LLRT), STP-256-3820. Both inboard and outboard isolation valves failed the LLRT. The minimum pathway leakage rate was estimated to be in excess of 0.6 La (leakage allowable). The valves were subsequently reworked and passed the LLRT retests. The valves are to be retested at the next refueling outage scheduled for September 1990.

The service water system is designed to be operable and to supply the containment during normal and accident conditions. Additionally the design of the service water system provides for a water seal in the service water piping when the system is shutdown, thus limiting any possible leakage from this penetration. At no time was there any adverse impact on the safe operation of the plant or to the health and safety of the public as a result of this event.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT (if more space is required, use additional NRC Form 255A's) (17)

REPORTED CONDITION

At approximately 1945 on 03/19/90, with the unit in Mode 4 (Cold Shutdown) for a mid-cycle outage, the Division I service water (\*KG\*) containment penetration 1KJB\*252A (\*PEN\*) failed the local leak rate test (LLRT) STP-256-3820. This penetration is a 12 inch nominal diameter containment isolation penetration. The outboard valve (1SWP\*MOV507A) (\*ISV\*) is a 12 inch nominal diameter Velan gate valve with a body drain. The inboard valve (1SWP\*V174) (\*ISV\*) is a 12 inch nominal diameter Velan swing check valve. Both inboard and outboard isolation valves failed the LLRT. The minimum pathway leakage rate was estimated to be in excess of 0.6 La (leakage allowable).

During the LLRT of the penetration, it was estimated that the leak rate for each valve was in excess of 0.6 La. The word "estimated" is used because the equipment used to measure the leak rate was a standard Volumetrics Corp. Model #14342 capable of measuring up to 20 standard liters per minute (SLM). Allowable leak rate limits for these individual valves is 3600 standard cubic centimeters per minute (SCCM) for the gate valve and 7200 SCCM for the swing check valve. The allowable limit for River Bend Station (RBS) is 0.6 La, or approximately 67 SLM. Neither test volume could be pressurized utilizing the Volumetrics leak rate monitor nor could either volume be pressurized with a three-eighths inch pressurization by-pass. The three-eighths inch lines have been utilized with a 400 SLM Volumetrics leak rate monitor and shown capable of the required volume. The 400 SLM Volumetrics was not available for this test but would not have provided any additional useful information. Both valves were verified to be leaking past the seating surfaces by checking flow at the test boundary vent. The failure mechanism was determined to be silt and corrosion product buildup that prevented full valve closure. This Licensee Event Report (LER) is submitted pursuant to 10CFR50.73a(2)(v) and to document a failure to meet the containment leak rate acceptance criteria as addressed by 10CFR50 Appendix J III.C.3. Maintenance work orders were issued to investigate and rework as necessary.

INVESTIGATION

The root cause of the LLRT failures was determined to be silt and corrosion products present in both valves. Silt and corrosion products deposited in the valve body cavities and on the valve internals prevented the full closure of both valves. These corrosion products have been previously diagnosed as a product of general service water corrosion. The root cause for the service water corrosion was addressed in an earlier Licensee Event Report (LER 89-011) submitted in May 1989 and in a supplement submitted June 1989.

Prior to LER 89-011, LER 87-023 identified the root cause of the service water corrosion to be caused by early system operation problems. Corrective actions included a program to improve service



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TEXT (if more space is required, use additional NRC Form 386A's) (17)

water system chemistry. This program, along with corrective actions identified by LER 89-011 and its supplement, continues to improve overall system chemistry and performance monitoring.

**CORRECTIVE ACTION**

Both service water containment isolation valves (1SWP\*MOV507A and 1SWP\*V174) were disassembled for inspection and rework. Inboard isolation valve 1SWP\*V174 was found to be not fully closed as the lower third of the valve disk was not seating on the valve body seating surface. Inspection of the disk hinge pin area showed a build up of corrosion products that prevented full disk to hinge action, thus not allowing the valve disk to meet flush with the valve body seating area. This condition was noted when utilizing only gravity to close the valve. The hinge pin area was cleaned, the valve seats were inspected and found to be clear of debris, the valve reassembled and retested. Retest of valve 1SWP\*V174 was acceptable.

The outboard isolation motor operated gate valve (1SWP\*MOV507A) was found to have corrosion nodules and debris as well as some scale and silt preventing the valve from fully closing. This silt and loose corrosion was removed from the valve body and seating area. After reassembly, an LLRT was performed and it again indicated an unacceptable leak rate. The valve was disassembled a second time and the disk machined to provide true flat seating surfaces. Reassembly was completed and an LLRT performed with satisfactory results.

The primary corrective action for the service water corrosion concerns was addressed by LER 89-011 and the supplement submitted in May and June 1989, respectively. Specific actions concerning the service water containment isolation valves for both divisions are being established. Valves 1SWP\*MOV507A and 1SWP\*MOV507B will be subject to a periodic flushing of the valve body cavities (note that valve 1SWP\*MOV507B successfully passed the mid-cycle LLRT). Each valve will be flushed on a different frequency in order to evaluate the proper time interval required. The inboard containment isolation valves, 1SWP\*V174 and 1SWP\*V175 will be exercised during flushing of the corresponding outboard motor operated valves. No further corrective action is planned for the inboard valves since the valve design prevents the type of flushing that is performed on the outboard valves.

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TEXT (If more space is required, use additional NRC Form 386A s/ (17))

SAFETY ASSESSMENT

Containment isolation penetration 1KJB\*Z52A (valves 1SWP\*MOV507A and 1SWP\*V174) is one of two service water supply penetrations supplying cooling water to the containment and drywell. As described in Updated Safety Analysis Report (USAR) Section 9.2.1, during normal operations the service water system is supplied by pumps taking water from the circulating water flume (non-safety related). During emergency operation, the standby service water system as described in USAR Section 9.2.7 isolates unnecessary functions and supplies essential loads outside containment and safety related unit coolers (inside containment) utilizing a safety related water supply. Neither service water containment isolation valve receives an automatic signal from the containment isolation systems as the service water system is required to provide service water to the containment on a post accident basis.

Both normal and standby service water systems supply pressure to the containment penetrations in excess of 75 psig, which exceeds the containment design pressure of 15 psig and the analyzed accident pressure of 7.6 psig. Additionally, elevation differences designed into the system provide a static water column that forms a water seal. The pressure due to the water column exceeds the analyzed accident pressure. Therefore, this pathway was not considered credible in the offsite dose calculations. Therefore, the failure of the service water containment isolation valves 1SWP\*MOV507A and 1SWP\*V174 to adequately maintain the isolation function did not adversely affect the health and safety of the public.

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