

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) RIVER BEND STATION	DOCKET NUMBER (2) 0 5 0 0 0 4 5 8 1	PAGE (3) 1 OF 0 6
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TITLE (4) Concrete Roof Plugs Forming Part Of Secondary Containment Boundary Missing Retention Hardware - Operation Prohibited By Technical Specifications

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	TH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
0 5	1 7	8 8	8 8	0 1 2	0 0	0 6		1 8			0 5 0 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)											

OPERATING MODE (9) 1	POWER LEVEL (10) 1 0 1 0	20 402(b)	20 405(e)	60 73(a)(2)(iv)	73 71(b)
		20 406(a)(1)(i)	60 36(c)(1)	60 73(a)(2)(v)	73 71(e)
		20 406(a)(1)(ii)	60 36(c)(2)	60 73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 368A)
		20 406(a)(1)(iii)	<input checked="" type="checkbox"/> 60 73(a)(2)(i)	60 73(a)(2)(vii)(A)	
		20 406(a)(1)(iv)	60 73(a)(2)(ii)	60 73(a)(2)(vii)(B)	
		20 406(a)(1)(v)	60 73(a)(2)(iii)	60 73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER
NAME L. A. England - Director-Nuclear Licensing		AREA CODE 5 0 4 3 8 1 - 4 1 4 5

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NRPDS	

SUPPLEMENTAL REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO			

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

At approximately 1610 on 5/17/88 with the unit at approximately 100 percent power, a maintenance work order request (MWOR) was identified (originally initiated on 1/13/88) that identified the condition of inadequate installation of concrete roof plugs on the roof of the auxiliary building due to missing retention hardware. The retention hardware is required by design against uplifting of the plugs during tornadic loadings. These plugs form part of the secondary containment boundary and are required to be operable during operational conditions 1, 2, and 3 by River Bend Station Technical Specification 3.6.5.1. This condition is being reported pursuant to 10CFR50.73(a)(2)(i) as a condition of operation prohibited by Technical Specifications.

The immediate condition was corrected by installing adequate retention hardware. Other corrective action includes a review of a sample of other roof plugs on the auxiliary building for similar conditions and instruction on the occurrence via memorandum for all personnel in the maintenance and operations departments.

Secondary containment was not functionally compromised by this condition during normal operation during this period. With a low probability of a tornadic event occurring and no such event occurring during operations, the safe operation and health and safety of the public was not significantly jeopardized.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) RIVER BEND STATION	DOCKET NUMBER (2) 0 5 0 0 0 4 5 8	LER NUMBER (6)			PAGE (3)	
		YEAR 8 8	SEQUENTIAL NUMBER - 0 1 2	REVISION NUMBER - 0 1 0	2	OF 6

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Reported Condition

At approximately 1610 on 5/17/88, with the unit in operational condition 1 (approximately 100 percent power) a maintenance work order request (MWOR), being reviewed by plant personnel, was discovered identifying a condition where auxiliary building (*NF*) roof plugs were missing hold down nuts and one retention bolt and thought to be a condition prohibited by Technical Specifications. The MWOR, originally initiated on 1/13/88 by maintenance personnel, identified all 12 hold down nuts and one retention bolt missing from three concrete roof plugs over the hoist area on the auxiliary building roof (elevation 171 feet). These nuts are required to ensure the roof plugs remain in place during the tornadic loads described in the River Bend Station (RBS) Updated Safety Analysis Report (USAR), Section 3.3.2.2.2.

A limiting condition of operations (LCO) was initiated at 1610 on 5/17/88 pursuant to Technical Specification Section 3.6.5.1 which requires that SECONDARY CONTAINMENT INTEGRITY-OPERATING be maintained during operational conditions 1, 2 and 3 or be restored within 4 hours or be in at least hot shutdown within the next 12 hours. A new maintenance work order (MWO) was immediately initiated to install nuts and washers and a retention bolt on the roof plugs. The LCO was closed at 2010 on 5/17/88.

The identified condition was documented as existing since 1/13/88 and is being reported as a condition of operation prohibited by Technical Specifications pursuant to 10CFR50.73(a)(2)(i).

Investigation

The missing retention bolt and nuts were initially identified by maintenance personnel during investigation of the auxiliary building roof for repair of water leaks. The MWOR, initiated on 1/13/88, which identified this condition, was incorrectly given a lower priority for work release due to the involved personnel's unfamiliarity with the design requirements for the retention hardware on the roof plugs.

The auxiliary building roof plugs (see attached drawing) provide part of the boundary for secondary containment integrity. Though not designed to be airtight, the plugs provide a barrier for large masses of air flow, thereby allowing the building to be placed under a slight negative pressure utilizing the standby gas treatment system (3H*). The plugs with their retention bolts and nuts are required by design to be installed during operational conditions 1, 2, and 3 as specified in Technical Specification Section 3.6.5.1.

Each of the individual subject plugs are restrained from upward movement by 4 retention bolts with nuts, 2 on each end. The primary purpose of this arrangement is to prevent the plugs from being

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) RIVER BEND STATION	DOCKET NUMBER (2) 0 5 0 0 0 4 5 8	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 8	- 0 1 2	- 0 0	0 3	OF 0 6

TEXT (if more space is required, use additional NRC Form 366A s) (17)

dislodged if subjected to tornadic loadings. The tornadic loads are described in the RBS USAR Seciton 3.3.2.2.2 and have been postulated to create a differential pressure of 3 pounds per square inch (psi) between the outside and the inside of the building. This differential pressure would be sufficient to overcome the gravitational loading (2 psi) of the concrete plugs and potentially dislodge them from the roof. In the unlikely event of a tornado passing over the subject plugs, the capability of the building to maintain SECONDARY CONTAINMENT INTEGRITY-OPERATING under tornadic loading might not have been maintained.

The initial design of the retaining bolts and nuts was performed as a generic design detail. The worst case loadings and the largest concrete plugs in the auxiliary building roof were utilized in the initial design analysis. Four retaining bolts in each of the roof plugs were conservatively designed to prevent uplift as a result of the tornadic loadings. GSU determined for the identified plugs, that as a minimum, only 2 retention bolts with nuts positioned diagonally were required per plug. Maintenance installed the nuts and washers on the retention bolts that were previously in place. The one exception was the bolt that was originally identified as missing. However, this bolt could not be installed immediately due to interferences in the bolt hole. Since three other bolts and nuts were installed in this plug, the requirements were satisfied.

The missing nuts and washers, along with the missing retention bolt, were determined to be an isolated occurrence. No evidence or documentation exists to indicate that a similar situation had occurred previously. In addition, GSU has not identified any documentation which would provide a reason why the nuts, washers, and retention bolt were not installed as per the design requirements. Therefore, the root cause for the missing hardware is indeterminate.

A review of previously submitted LERs from RBS revealed in LER 88-011 a condition of operation prohibited by Technical Specification 3.6.4. Containment isolation valve 1E51*MOVFO78 was not initially recognized as being in an inoperable condition. It was initially believed that a torque arm key that had fallen out of its keyway was a local position indicator and not important to the operable status of the valve.

Corrective action for this reported event (LER 88-011) included instructing operations personnel via memorandum on the event and emphasizing the importance of consulting with subject matter experts concerning the impact on operability of plant equipment where detailed design information is required. With this corrective action only recently instituted (May 1988), it could not have precluded the subject event of this report as the subject event originated with the initiation of the MWOR in January 1988.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) RIVER BEND STATION	DOCKET NUMBER (2) 0 5 0 0 0 4 5 8	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 8	— 0 1 1 2	— 0 1 0	0 4	OF	0 6

TEXT (If more space is required, use additional NRC Form 365A x) (17)

Corrective Action

At the time that the identified condition was determined to potentially affect SECONDARY CONTAINMENT INTEGRITY-OPERATING, an LCO was initiated while the identified roof plugs were secured via installing 11 nuts on the arrangement of 3 roof plugs on the auxiliary building roof. Two of the three plugs were secured with all four nuts and one plug with only three since a new retention bolt could not be threaded into the existing hole due to interferences in the hole resulting from foreign deposits. Per a review of calculations performed by engineering, the one remaining retention bolt and nut are not required to ensure the plug would withstand tornadic loadings.

After immediate corrective action was taken for the identified roof plugs, a check of one other plug in the area was performed to verify the installation of the retaining bolt and associated hardware. The roof plug that was checked, was sealed and contained the proper bolt and hardware. A 10 percent sample review of access plug hardware on both the auxiliary building and the fuel building (*ND*) roofs will be conducted by 8/31/88 to ensure that no other similar conditions exist.

A sign will be affixed to each roof plug area on the auxiliary and fuel buildings stating the requirements for maintaining plug integrity.

Since February 1988 operations and maintenance supervision has been reviewing all MWORs initiated the day before. It is believed this review will detect problems similar to the one reported here.

Additionally, all maintenance and operations personnel will be instructed via memorandum on this occurrence stressing the importance of consulting with subject matter experts concerning the impact on operability of plant equipment where detailed design information is required. Also, training on this event will be incorporated into a future operator requalification training module.

Safety Assessment

The missing nuts and washers on the retention bolts for the concrete roof plugs permitted the plugs to be susceptible to uplift if subjected to the differential pressure loadings caused by a tornado. The difference between the pressure load and the gravitational load of the plugs, results in an upward force of approximately 1 psi. This force would raise the plugs from their seated position in the penetration opening in the roof slab.

Section 3.3.2.2.2 in the RBS USAR describes the time frame of occurrence of a tornadic event. When a tornado passes over a structure, the pressure builds from 0 to 3 psi at a rate of 2 psi per second. Upon reaching 3 psi, the differential pressure is considered

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) RIVER BEND STATION	DOCKET NUMBER (2) 0 5 0 0 0 4 5 8	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 8	— 0 1 2	— 0 0	0 5	OF 0 6

TEXT (If more space is required, use additional NRC Form 366A's) (17)

to be maintained at 3 psi for a duration of 2 seconds, after which the pressure decreases back to 0 at a rate of 2 psi per second. The dead weight of the roof plugs is approximately equivalent to 2 psi, therefore, any opposing force greater than that would dislodge the plugs from the roof opening. This movement would occur during the final 1/2 second of the pressure build-up phase of the tornadic event. Upon reaching 3 psi, it is postulated that the plugs would be uplifted thus challenging secondary containment integrity.

In reviewing the implications of the condition noted, a tornado did not occur at RBS. In addition, a probability analysis performed for a tornado strike at RBS revealed a low probability of the occurrence of a tornado event. For this analysis, it was determined that the probability of a tornado impacting a 120 foot diameter area of the plant is 1.77 E-4 per year. This extremely low probability of occurrence indicates that it was highly unlikely that a tornado would have occurred during the period of time RBS was not in compliance with the Technical Specification, and thus the health and safety of the public was not significantly jeopardized.

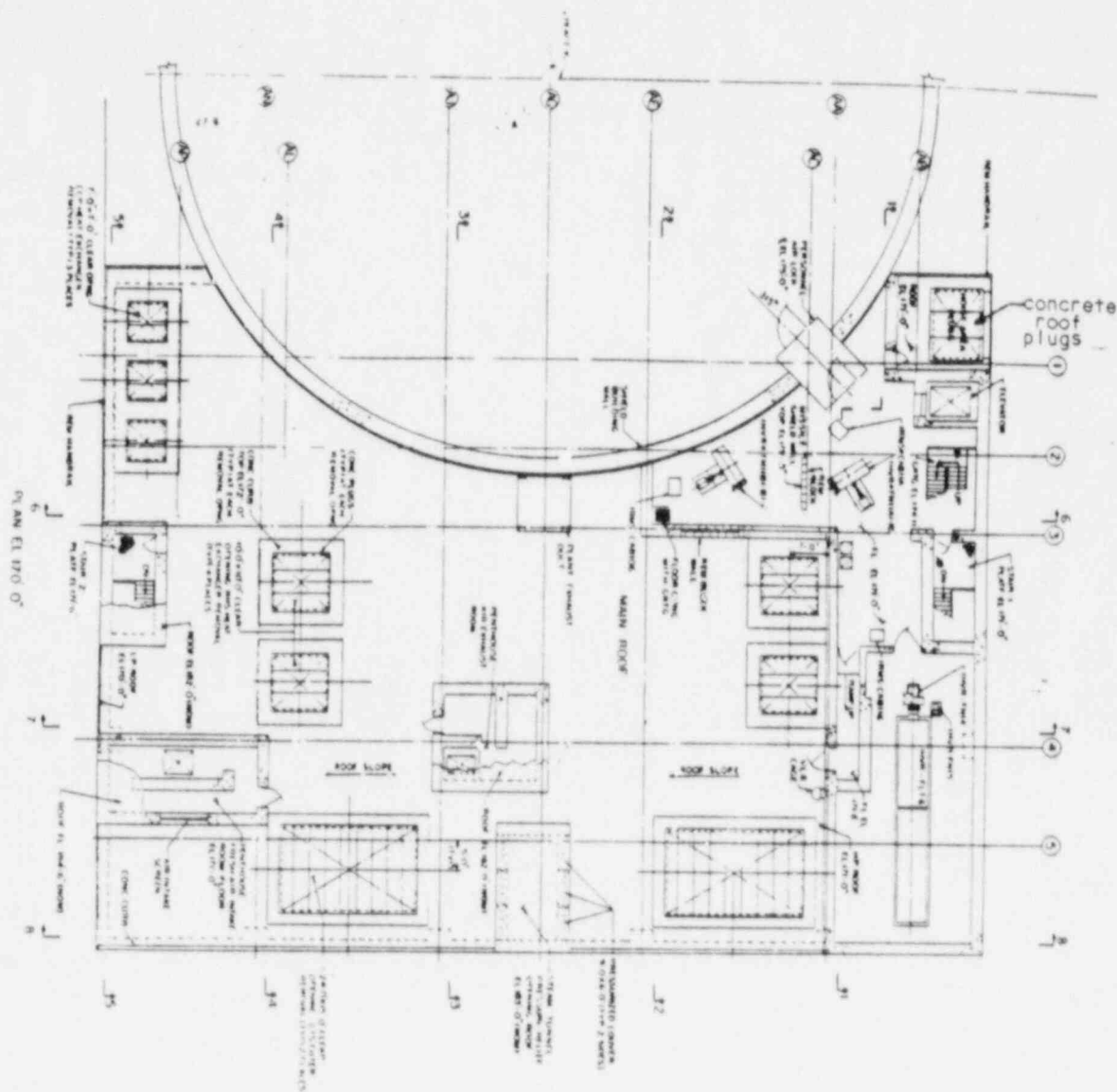
Note: Energy Industry Identification System Codes are identified in the text as (*XX*).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) RIVER BEND STATION	DOCKET NUMBER (2) 05000458	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		88	012	010	06	OF 06

TEXT (If more space is required, use additional NRC Form 366A's) (17)

ATTACHMENT





GULF STATES UTILITIES COMPANY

RIVER BEND STATION POST OFFICE BOX 220 ST. FRANCISVILLE, LOUISIANA 70775
AREA CODE 504 835-8084 346-8651

June 16 , 1988
RBG- 28103
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. 88-012 for River Bend Station - Unit 1. This report is being submitted pursuant to 10CFR50.73.

Sincerely,

J. E. Booker
by HE

J. E. Booker
Manager-River Bend Oversight
River Bend Nuclear Group

TFP PDG RRS
JEB/TFP/PDG/RRS/ch

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