



GULF STATES UTILITIES COMPANY

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U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555

Gentlemen:

River Bend Station - Unit 1
Docket No. 50-458
NRC Bulletin 92-01, Supplement 1

Please find enclosed Gulf States Utilities Company's (GSU) response to NRC Generic Letter 92-08, "Thermo-Lag 330 Fire Barriers."

If you have any questions or require additional information, please contact Mr. L.L. Dietrich of my staff at (504) 381-4866.

Sincerely,

J. E. Booker
Manager - Safety Assessment
and Quality Verification
River Bend Nuclear Group

LAE/LLD/JCM/JRH/MAS/kvm

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

STATE OF LOUISIANA)

PARISH OF WEST FELICIANA)

In the Matter of)

GULF STATES UTILITIES COMPANY)

Docket No. 50-458

(River Bend Station - Unit 1)

AFFIDAVIT

J. E. Booker, being duly sworn, states that he is a Manager-Safety Assessment and Quality Verification for Gulf States Utilities Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

J. E. Booker
J. E. Booker

Subscribed and sworn to before me, a Notary Public in and for the State and Parish above named, this 14th day of April, 1993. My Commission expires with Life.

Claudia F. Hurst
Claudia F. Hurst
Notary Public in and for
West Feliciana Parish, Louisiana

ENCLOSURE

Following is Gulf States Utilities Company's (GSU) response to NRC Generic Letter (GL) 92-08, "Thermo-Lag 330 Fire Barriers." The item numbers correspond directly to the numbers assigned to the reporting requirements described in GL 92-08.

ITEM 1

At GSU's River Bend Station (RBS), Thermo-Lag 330 is used to provide barriers to meet conditions stated in the RBS Updated Safety Analysis Report (USAR). Thermo-Lag 330 applications for protection and separation of safe shutdown capability were provided in GSU's responses to NRC Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free from Fire Damage" and NRC Bulletin 92-01, Supplement 1, "Failure of Thermo-Lag 330 Fire Barrier System to Perform its Specified Fire Endurance Function." Additionally, Thermo-Lag 330 is used to ensure that a single event does not incapacitate more than one fire pump (Ref. RBS USAR 9.5.1.2.2, "Fire Pumps").

Both 1-hour and 3-hour pre-formed Thermo-Lag 330 panels and conduit shapes are used at RBS. Trowel-grade Thermo-Lag 330 compound is used to fill cracks between panels and provide a thin cover layer over assemblies. Attachment 1 identifies the location, size of raceway and required fire rating of all Thermo-Lag 330 applications.

ITEM 2

Part a

Thermal Science Incorporated (TSI) submitted to the architect/engineer for RBS, Stone & Webster Engineering Corporation (SWEC), several fire endurance test reports such as Industrial Test Lab (I.T.L.) Report Numbers 82-11-80 and 82-11-81. Based on the successful results of those and other tests, Thermo-Lag 330 was assessed to meet the requirements of Branch Technical Position (BTP) APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants" and Appendix A to BTP 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976."

All Thermo-Lag 330 fire barriers at RBS were declared inoperable on October 26, 1989, following an unsuccessful fire endurance test performed by GSU at Southwest Research Institute. Hourly firewatch patrols were immediately established in compliance with the compensatory action required by RBS Technical Specification 3/4.7.7, "Fire-Rated Assemblies." These firewatch patrols have been in continuous operation since October, 1989.

Upgrades to the existing Thermo-Lag 330 barriers were planned and tested; however, concerns regarding ampacity derating and qualification of initial fire resistance testing of Thermo-Lag 330 prevented RBS from implementing the upgrades. Currently, GSU is participating in a

NUMARC ad hoc committee on Thermo-Lag 330. NUMARC is coordinating an industry program to develop appropriate actions to restore fire barrier operability. This program will include: establishment of a test database; development of guidance for applicability of tests; development of generic installation guidance; and consideration and coordination of additional testing as appropriate.

Part b

In general, fire endurance tests qualifying Thermo-Lag 330 barriers are representative of the barriers installed at RBS. There are configurations which were installed which do not have a truly representative qualification test; however, they have been evaluated. These configurations, identified as enclosures, were deemed adequate based on the fact that they were analogous to TSI Technical Note 20684, "Thermo-Lag 330 Fire Barrier System, Installation Procedures Manual," Rev. 3, and the similarity of the enclosure designs to gypsum board wall designs and installation practices. The acceptability of these configurations was coupled with utilizing the defense in depth concept. (Ref. response to NRC Inspection Report 92-04 dated May 6, 1992.)

Other configurations have been identified which do not conform to existing requirements; however, these deficiencies were addressed in RBS LER 87-005, dated March 25, 1987. At that time, GSU recognized the need for additional testing, which ultimately resulted in declaring all Thermo-Lag 330 barriers at RBS inoperable.

Part c

The as-built fire barrier configurations at RBS are consistent with fire barrier configurations used in TSI ampacity derating tests. The fire barrier configurations used in the tests were installed in accordance with TSI Technical Note 20684, "Thermo-Lag 330 Fire Barrier System, Installation Procedures Manual." In general, fire barriers at RBS were installed to the same procedure, therefore, for the purposes of ampacity derating, the as-built fire barrier configurations are consistent with those used in the qualifying tests.

The ampacity derating of cables inside Thermo-Lag 330 wrapped raceways is addressed in GSU calculation E-218, "Ampacity Verification of Cables Within Raceways Wrapped with Appendix R Fire Protection Barrier." The basis for the ampacity derating was a letter from TSI to SWEC, dated July 5, 1985. The tests report numbers and ampacity derating values are shown in the table below.

TEST REPORT	DESCRIPTION	TSI DERATING VALUE	UL DERATING VALUE
I.T.L. No. 82-355-F-1	One Hour Cable Tray Test	12.5%	
I.T.L. No. 84-3-275A	Three Hour Cable Tray Test	20.55%	
Technical Note No. 111781	One Hour Conduit Test	7.2%	
I.T.L. No. 84-10-5	Three Hour Conduit Test	9.72%	
UL 86NK23826, File R6802	One Hour Cable Tray Test		28.0%
UL 86NK23826, File R6802	Three Hour Cable Tray Test		31.2%
UL 86NK23826, File R6802	Three Hour Conduit Test		9.4%

A letter from Underwriter's Laboratories (UL) to TSI dated January 21, 1987, provides the results of a test performed by UL to determine the ampacity derating of Thermo-Lag 330 fire wrap enclosures. GSU's review of the UL Report concerning ampacity derating of Thermo-Lag 330 fire wrap enclosures noted that the UL test configurations vary from the TSI report and the RBS installed configurations. Calculation E-218 was reviewed using the more conservative ampacity derating factors from the UL test shown in the table above. The review and resulting modifications confirmed that all wrapped cables are adequately sized.

ITEM 3

It is apparent that further actions are necessary to address fire endurance and ampacity derating concerns related to Thermo-Lag 330 barriers. Resolution of these issues is being coordinated with other utilities through NUMARC. Schedules for this program will be provided to the NRC by NUMARC. GSU intends to review the results of the NUMARC test program for applicability to RBS specific Thermo-Lag 330 installations. GSU anticipates that the NUMARC program will not address all configurations installed at RBS with respect to fire endurance and that further actions will be required. These actions, pending the scope of the NUMARC test plan and the feasibility of implementing NUMARC recommended upgrades, may include: additional fire endurance testing to address RBS specific configurations; analysis to demonstrate that a specific enclosure provides adequate protection for the fire hazards in the area with appropriate NRC approval; or relocating raceway to achieve adequate physical separation between redundant trains of safe shutdown equipment. GSU is utilizing fire PRA methods to determine risk significance of specific Thermo-Lag 330 installations at RBS. Results of this analysis will be used to prioritize corrective actions. In a presentation to the NRC on April 20, 1992, GSU committed to correct all known fire protection deficiencies by January, 1995. GSU intends to meet that commitment to the greatest extent possible.

GSU (RBS) has initiated necessary actions to implement Thermo-Lag 330 modifications during its fifth refueling outage which is scheduled to begin in March, 1994. The information necessary to complete engineering work on this modification is dependant on the test program and is not available at this time. Once the scope of the necessary corrective actions is known, GSU will inform the NRC in writing and provide a schedule for their completion. Also, GSU will confirm in writing the completion of these corrective actions.

As stated previously, all Thermo-Lag 330 fire barriers at RBS were declared inoperable on October 26, 1989, following an unsuccessful fire endurance test performed by GSU at Southwest Research Institute. Hourly firewatch patrols were immediately established in compliance with the compensatory action required by RBS Technical Specification 3/4.7.7, "Fire Rated Assemblies." These firewatch patrols have been in continuous operation since October, 1989.

ITEM 4

All Thermo-Lag 330 barriers used at RBS have been addressed in this letter; no response is necessary for this reporting requirement.

ATTACHMENT 1

BUILDING	ELEVATION	APPLICATION & SIZE	FIRE RATING
AUXILIARY	70'	MOTOR OPERATED VALVE RADIANT ENERGY SHIELD QTY. 1 (APPROX SIZE 2'-10 H X 4'-2" W) Thermo-Lag 330 NORTH SIDE OF STRUCTURAL BEAM W36 X 182, (APPROX. 10' LONG) CONDUIT 1½", 3" & 4" JUNCTION BOXES QTY. 3 CABLE TRAY 18" WIDE	3-HOUR 1-HOUR 1-HOUR 1-HOUR
	95'	CONDUIT 1½"	3-HOUR
REACTOR	141'	CONDUIT 4" CABLE TRAY 18" WIDE	3-HOUR 3-HOUR
CONTROL	70'	CONDUIT 1½", 3" & 4" JUNCTION BOXES QTY. 1 CABLE TRAY 18" WIDE	1-HOUR 1-HOUR 1-HOUR
	98'	CONDUIT 4" CABLE TRAY 18" WIDE CONDUIT 2" & 4" CABLE TRAY 30" WIDE INSTRUMENT RACK ENCLOSURE (APPROX SIZE 6'-0" X 6'-0" X 2'-0")	1-HOUR 1-HOUR 3-HOUR 3-HOUR 3-HOUR
	116'	CONDUIT ¾", 1½", 3", & 4" CONDUIT ¾", 1½", 3", & 4" CABLE TRAY 18" WIDE JUNCTION BOXES QTY. 1	3-HOUR 1-HOUR 1-HOUR 3-HOUR
TUNNELS	70'	CONDUIT ¾", 1½", 2", 3" & 4" JUNCTION BOXES QTY. 9 MULTIPLE CABLE TRAY ENCLOSURE (APPROX. SIZE 8'-0" TO 12'-0" HIGH X 6'-0" WIDE) NOTE: 8'-0" HIGH ENCLOSURE 3-SIDED (BOTTOM, SIDE & TOP) 12'-0" HIGH ENCLOSURE 2-SIDED (BOTTOM & SIDE TO CEILING) MOTOR-OPERATED VALVE ENCLOSURE QTY. 2 (APPROX. SIZE 3'-0" X 3'-0" X 4'-0") CEILING (MULTI-SIDED) (APPROX. SIZE 12'-6" X 12'-0 + 3'-8" X 3'-3")	1-HOUR 1-HOUR 1-HOUR 1-HOUR 1-HOUR
FUEL	70'	CONDUIT 4" CABLE TRAY 18" WIDE	3-HOUR 3-HOUR
	95'	CABLE TRAY 18" WIDE	3-HOUR
	113'	CABLE TRAY 18" WIDE	3-HOUR
	148'	CONDUIT 1" & 1½" CABLE TRAY 18" WIDE INSTRUMENT ENCLOSURES, QTY. 6, (APPROX. SIZE 1'-0 X 1'-0 X 1'-0)	3-HOUR 3-HOUR 3-HOUR
FIRE PROTECTION PUMPHOUSE	95'	CONDUIT 4"	1-HOUR