



GULF STATES UTILITIES COMPANY

RIVER BEND STATION POST OFFICE BOX 220 ST FRANCISVILLE, LOUISIANA 70375
AREA CODE 504 678-8094 346-8681

December 15, 1993
RBG-39666
File Nos. G9.5, G9.33.1

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

River Bend Station - Unit 1
Docket No. 50-438

Gentlemen:

This letter provides information resulting from an evaluation conducted by Gulf States Utilities (GSU) of fixed and transient materials in the containment and drywell having a potential for being transported to the suppression pool during a Design Basis Accident (DBA). This issue developed from an investigation of degraded coatings in the drywell, and was identified as a concern during the latter portion (November 8 - 12, 1993) of the Operational Safety Team Inspection (OSTI) conducted at the River Bend Station (RBS). At the OSTI exit meeting, GSU committed to provide additional information related to plugging of emergency core cooling suction strainers as discussed in NRC Bulletin 93-02.

While performing an evaluation related to degraded coatings in the drywell, GSU identified additional materials in the drywell and containment which could have become debris and potentially blocked the Emergency Core Cooling System (ECCS) suction strainers in the event of a DBA Loss of Coolant Accident. These materials were categorized and evaluated through the use of detailed statistical and hydrodynamic analyses. The final disposition of this evaluation determined that the materials would not have produced an impairment to the operation of the ECCS.

Attachment 1 provides the characterization of identified material for primary containment and the drywell (drywell material is estimated based on previous inspections or extrapolated from containment inspection results) which could have become dislodged and migrated to the suppression pool. Attachment 2 provides the results of the strainer blockage evaluation for the "as-found" primary containment conditions based on the material inventory found in primary containment. Attachment 3 provides the results of the strainer blockage evaluation for the "as-left" primary containment conditions after loose material was removed from primary containment. The evaluations assumed that 100% of

9312230091 931215
PDR ADOCK 05000458
PDR

ADD 1

Page 2 of 3
Letter to U.S. Nuclear Regulatory Commission
Document Control Desk
December 15, 1993
RBG-39666

the materials dislodged in containment migrated to the pool, while only a fraction of the drywell materials reached the pool. The transport mechanism analysis of the materials in the pool concluded that the ECCS suction strainers would have performed their design function and protected their respective safety-related pumps while allowing adequate flow to ensure minimum net positive suction head (NPSH) and system flow requirements.

GSU has developed and implemented a program to provide direction for control and use of temporary materials inside containment during power operations. This program was developed to address the concern identified above and to ensure that safety-related equipment in containment remains capable of performing its intended function.

These evaluations and conclusions are being provided for NRC information. If you have any questions or require further information concerning this matter, please contact David N. Lorring at (504) 381-4157.

Very truly yours,



James J. Fisicaro
Manager - Safety Assessment and
Quality Verification
River Bend Nuclear Group

Attachments

Page 3 of 3
Letter to U.S. Nuclear Regulatory Commission
Document Control Desk
December 15, 1993
RBG-39666

cc: U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

NRC Resident Inspector
P.O. Box 1051
St. Francisville, LA 70775

Mr. Edward T. Baker
U.S. Nuclear Regulatory Commission
M/S OWFN 13-H-15
Washington, D.C. 20555

ATTACHMENT 1
MATERIAL CHARACTERIZATION

DRYWELL		RISK		RISK		TRANSPORT		TRANSPORT		COMMENTS	
TARGET	RISK	EVENT	METHOD	EVENT	METHOD	EVENT	METHOD	EVENT	METHOD	EVENT	COMMENTS
PAINT	JET IMPINGEMENT	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	ANALYZED IN CR 93-0754 / ESTIMATED PER RG1.82 METHOD
HOUSEKEEPING	JET IMPINGEMENT	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	LESS TRAFFIC, MORE CONTROLS THAN CNTMT, FORMAL CLOSE-OUT
SILTEMP	JET IMPINGEMENT	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	ESTIMATED PER RG1.82 METHOD
UAP FLEX CONDUIT	THERMAL	SB-LOCA	VENT CLEARING	SB-LOCA	VENT CLEARING	SB-LOCA	VENT CLEARING	SB-LOCA	VENT CLEARING	SB-LOCA	LOW THERMAL DEGRADATION FOR DBA LOCA
THERMA CEL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	STEEL JACKETED, LOW ENERGY LBE
THERMA CEL TAPE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	STEEL JACKETED, LOW ENERGY LBE
RP MATERIALS	JET/THERMAL	ANY	VENT CLEARING	ANY	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	LESS TRAFFIC, MORE CONTROLS THAN CNTMT, FORMAL CLOSE-OUT
CABLE JACKET	THERMAL	SB-LOCA	VENT CLEARING	SB-LOCA	VENT CLEARING	SB-LOCA	VENT CLEARING	SB-LOCA	VENT CLEARING	SB-LOCA	LOW THERMAL DEGRADATION FOR DBA LOCA
PAPER TAGS	JET/THERMAL	ANY	VENT CLEARING	ANY	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	DISINTEGRATION IN DBA LOCA IS NOT CREDITED
BLACK TIE WRAPS	JET IMPINGEMENT	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	ESTIMATED PER RG1.82
INSULATION	JET IMPINGEMENT	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	VENT CLEARING	MSLB	ESTIMATED PER RG1.82
THERMO LAG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NOT USED IN DRYWELL
GYPSUM CEMENT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NOT USED IN DRYWELL
UC FILTERS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TRANSIENT, REMOVED AFTER OUTAGES
CONTAINMENT		RISK		RISK		TRANSPORT		TRANSPORT		COMMENTS	
TARGET	RISK	EVENT	METHOD	EVENT	METHOD	EVENT	METHOD	EVENT	METHOD	EVENT	COMMENTS
PAINT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NO JET IMPINGEMENT IN CONTACT/AGENT
HOUSEKEEPING	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	REMOVED < - 114' EL.
SILTEMP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ENVIRONMENTALLY QUALIFIED FOR ALL EVENTS
UAP FLEX CONDUIT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ENVIRONMENTALLY QUALIFIED FOR ALL EVENTS
THERMA CEL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ENVIRONMENTALLY QUALIFIED FOR ALL EVENTS
THERMA CEL TAPE	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	REMOVED < - 114' EL., REMOVE > 114' EL., ANALYZED SAMPLES
RP MATERIALS	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	MINIMIZE < - 114' EL., ANALYZED FOR POOL SWELL
CABLE JACKET	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ENVIRONMENTALLY QUALIFIED FOR ALL EVENTS
PAPER TAGS	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	DISINTEGRATION IN DBA LOCA IS NOT CREDITED
BLACK TIE WRAPS	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	ANALYZED TO SURVIVE FOR CONTAINMENT DURING DBA LOCA
INSULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ENVIRONMENTALLY QUALIFIED FOR ALL EVENTS, NO TRANSPORT
THERMO LAG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SEISMICALLY MOUNTED, ABOVE POOL SWELL
GYPSUM CEMENT	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	SEISMICALLY MOUNTED, ABOVE POOL SWELL
UC FILTERS	BACK DRAFT	N/A	GRAVITY	N/A	GRAVITY	N/A	GRAVITY	N/A	GRAVITY	N/A	NO BACKDRAFT RISK PER G13.1B.2.1-45-0
POOL BOTTOM	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	POOL SWELL	DBA LOCA	ESTIMATED BASED ON DIVER INSPECTIONS

ATTACHMENT 2
"AS-FOUND" STRAINER BLOCKAGE EVALUATION RESULTS

DRYWEEL TARGET	MATERIAL DAMAGE (SQ FT)	EXIT VENTS	TRANSPORT FRACTION	BLOCKAGE (SQ FT)	COMMENTS
PART	815.75	104.88	0.0312	3.27	
HOUSEKEEPING	8.02	1.02	0.1963	0.20	EST. D/W MATL AT MSLB LOCATION - CNTMT MATL ON 95' EL.
SH TEMP	87.00	11.39	0.0151	0.17	
UAP FLEX CONDUIT	45.00	0.00	0.1823	0.00	NO DAMAGE FOR MSLB/D8A LOCA
THERMA CEL	0.00	0.00	0.1823	0.00	
THERMA CEL TAPE	0.00	0.00	0.1823	0.00	
RP MATERIALS	17.30	2.94	0.2487	0.73	EST. D/W RP MATERIAL - CNTMT RP MATL ON 95' EL.
CABLE JACKET	581.80	0.00	0.2055	0.00	NO DAMAGE FOR MSLB/D8A LOCA
PAPER TAGS	4.70	0.80	0.1139	0.09	EST. D/W PAPER TAGS - CNTMT PAPER ON 95' EL.
BLACK TIE WRAPS	0.10	0.02	0.0205	0.00	EST. D/W TIE WRAPS AT MSLB LOCATION - CNTMT TIE WRAPS IN POOL SWELL
INSULATION	37.70	8.41	0.3000	1.92	DAMAGE - 3 PIPE DIAM / 30% SUSPENDED (MUREG/CR 2791)
THERMO LAG	0.00	0.00	0.0000	0.00	
GYPSUM CEMENT	0.00	0.00	0.0000	0.00	
UC FILTERS	0.00	0.00	0.0000	0.00	
SUBTOTAL	1355.37	127.26		8.38	
<hr/>					
CONTAINMENT TARGET	MATERIAL DAMAGE (SQ FT)	POOL SWELL	TRANSPORT FRACTION	BLOCKAGE (SQ FT)	
PART	0.00	0.00	0.0000	0.00	
HOUSEKEEPING	59.80	59.80	0.1963	11.74	NO CREDIT FOR GRATING
SH TEMP	15.50	15.50	0.0312	0.48	
UAP FLEX CONDUIT	0.00	0.00	0.0000	0.00	
THERMA CEL	0.00	0.00	0.0000	0.00	
THERMA CEL TAPE	10.00	10.00	0.1825	1.63	12" PIPE STARTS ON 116' & RUNS VERTICALLY UP
RP MATERIALS	129.10	0.00	0.2208	0.00	CREDIT FASTENERS ON RP MATERIALS
CABLE JACKET	0.00	0.00	0.0000	0.00	
PAPER TAGS	29.90	29.90	0.1151	3.44	
BLACK TIE WRAPS	0.00	0.00	0.0151	0.00	
INSULATION	0.00	0.00	0.0000	0.00	
THERMO LAG	0.00	0.00	0.0000	0.00	
GYPSUM CEMENT	0.00	0.00	0.0000	0.00	
UC FILTERS	0.00	0.00	0.0000	0.00	
POOL BOTTOM	20.00	20.00	0.1963	3.93	
SUBTOTAL	264.30	135.70		21.21	PREVIOUS - 28% BLOCKAGE
TOTAL	1619.67			27.60	

ATTACHMENT 3
"AS-LEFT" STRAINER BLOCKAGE EVALUATION RESULTS

SWYMWELL TARGET	MATERIAL DAMAGE (SQ FT)	EXIT VENTS	TRANSPORT FRACTION	BLOCKAGE (SQ FT)	COMMENTS
PAINT	615.75	104.88	0.0312	3.27	
HOUSEKEEPING	8.02	1.02	0.1963	0.20	EST. D/W MAT'L AT MSLSB LOCATION - CMTMT RP MAT'L ON 95' EL.
SILT/TEMP	87.00	11.38	0.0151	0.17	
UAP FLEX CONDUIT	45.00	0.00	0.1823	0.00	NO DAMAGE FOR MSLSB/DDBA LOCA
THERMA CEL	0.00	0.00	0.1823	0.00	
THERMA CEL TAPE	0.00	0.00	0.1823	0.00	
RP MATERIALS	17.30	2.94	0.2487	0.73	EST. D/W RP MATERIAL - CMTMT RP MAT'L ON 95' EL.
CABLE JACKET	561.80	0.00	0.2055	0.00	NO DAMAGE FOR MSLSB/DDBA LOCA
PAPER TAGS	4.70	0.80	0.1139	0.08	EST. D/W PAPER TAGS - CMTMT PAPER ON 95' EL.
BLACK TIE WRAPS	0.10	0.02	0.0205	0.00	EST. D/W TIE WRAPS AT MSLSB LOCATION - CMTMT TIE WRAPS IN POOL SWELL
INSULATION	37.70	8.41	0.3000	1.92	DAMAGE - 3 PIPE DIAM / 30% SUSPENDED (MUREGICR 2791)
THERMO LAG	0.00	0.00	0.0000	0.00	
GYPSUM CEMENT	0.00	0.00	0.0000	0.00	
UC FILTERS	0.00	0.00	0.0000	0.00	
SUBTOTAL	1355.37	127.26		5.38	
COMPARISONS					
TARGET	MATERIAL DAMAGE (SQ FT)	POOL SWELL	TRANSPORT FRACTION	BLOCKAGE (SQ FT)	
PAINT	0.00	0.00	0.0000	0.00	
HOUSEKEEPING	0.00	0.00	0.1955	0.00	NO CREDIT FOR GRATING
SILT/TEMP	0.00	0.00	0.0133	0.00	
UAP FLEX CONDUIT	0.00	0.00	0.0000	0.00	
THERMA CEL	0.00	0.00	0.0000	0.00	
THERMA CEL TAPE	0.00	0.00	0.1805	0.00	12" PIPE STARTS ON 116' & RUNS VERTICALLY UP
RP MATERIALS	129.10	0.00	0.2207	0.00	CREDIT FASTENERS ON RP MATERIALS
CABLE JACKET	0.00	0.00	0.0000	0.00	
PAPER TAGS	15.00	15.00	0.1120	1.68	
BLACK TIE WRAPS	0.00	0.00	0.0204	0.00	
INSULATION	0.00	0.00	0.0000	0.00	
THERMO LAG	0.00	0.00	0.0000	0.00	
GYPSUM CEMENT	0.00	0.00	0.0000	0.00	
UC FILTERS	0.00	0.00	0.0000	0.00	
POOL BOTTOM	20.00	20.00	0.1955	3.91	
SUBTOTAL	164.10	35.00		5.59	
TOTAL	1519.47			11.97	CURRENT - 11% BLOCKAGE