



GULF STATES UTILITIES COMPANY

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November 21, 1984

RBG-19,490

File Nos. G9.5, G9.8.6.2

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

River Bend Station - Unit 1
Docket No. 50-458

Provided below for your review is Gulf States Utilities Company (GSU) response to Request for Additional Information identified by the Nuclear Regulatory Commission's Instrumentation and Control Systems Branch (ICSB). This letter will provide final close out to Confirmatory Item (35) of Table 1.3 of the Safety Evaluation Report.

In a letter from J.E. Booker to H.R. Denton dated December 9, 1983 (RBG-16535), GSU provided to the Staff information that:

"River Bend Station procedures shall delineate for operator information the maximum expected errors for water level measurements given the unlikely event of drywell heatup beyond normal ambient conditions."

For the condition of high drywell temperature, a difference in vertical length within the drywell between the reference and variable legs will result in a measurement error which is called calibration error.

The calibration errors resulting from high drywell temperatures can be directly quantified from the difference in vertical drop data presented in Table 1. The error in the measurement is dependent on the maximum drywell temperature and the calibration temperature for the reactor. According to GE document NEDE-24801, "Review of BWR Reactor Vessel Level Measurement", dated April 1980, the maximum temperature in the drywell is 340 F and the reference calibration temperature is 135 F. The fuel zone transmitters are to be calibrated for 0 psig (yielding a 9.5% error) and the remaining transmitters are to be calibrated for 1000 psig (yielding a 12.3 percent error).

If drywell temperature increases, the water density in the drywell instrument lines is reduced. If the change in head for the reference leg due to density change is not fully balanced by a change in head for the variable leg, a measurement error is introduced. The maximum error is proportional to the differences in the vertical length within the

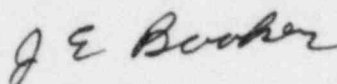
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drywell between the reference and variable legs. Table 2 presents the maximum calibration errors associated with high drywell temperatures. With the exception of the fuel zone instrument, the errors are conservative, i.e. actual water level is higher than the indicated water level. Therefore, the normal and wide range level measurements can be utilized to detect inadequate core cooling. Note that the fuel zone level instrument does not initiate any automatic control or protective functions.

As indicated in the December 9, 1983 letter, the River Bend Station emergency operating procedures will reflect summary results of this analysis.

Sincerely,

A handwritten signature in dark ink, appearing to read "J E Booker". The signature is written in a cursive, slightly slanted style.

J. E. Booker
Manager-Engineering
Nuclear Fuels & Licensing
River Bend Nuclear Group

JEB/WJR/JEP/je

Attachment

Table 1

As Built Elevations of Reference and Variable Legs

Range	Angle	Type	Desired Nozzle El.	Drywell Cond.Ch El.	Penetration Penetration El.	Vert. Drop	Diff.*** Vert. Drop
Narrow,	A, 15 -20	Ref.	150'-9 31/32"	157'-5 3/4"	156'-3 3/16"	1'-2 9/16"	
Wide, and	C, 160 -165	Ref.	150'-10 3/32"	157'-8 1/8"	156'-2 1/4"	1'-5 3/4"	
Fuel Zone	B, 195 -200	Ref.	150'-10 3/32"	157'-7 5/8"	156'-2 1/2"	1'-5 1/8"	
	D, 340 -345	Ref.	150'-10 3/32"	157'-3 15/16"	156'-2 15/16"	1'-1"	
Narrow	A, 15 -20	Var.	144'-4 25/32"	-	137'-5 3/8"	6'-11 13/32"	5'-8 27/32"
	C, 160 -165	Var.	144'-4 23/32"	-	136'-5 1/2"	7'-11 7/32"	6'-5 15/32"
	B, 195 -200	Var.	144'-4 25/32"	-	137'-5 3/8"	6'-11 13/32"	5'-6 9/32"
	D, 340 -345	Var.	144'-4 27/32"	-	137'-5 1/2"	6'-11 11/32"	5'-10 11/32"
Wide	A, 15 -20	Var.	131'-9 29/32"	-	125'-5 1/8"	6'-5 25/32"	5'-2 7/32"
	C, 160 -165	Var.	131'-9 29/32"	-	124'-5 5/8"	7'-4 9/32"	5'-10 17/32"
	B, 195 -200	Var.	131'-10 1/32"	-	124'-5 1/4"	7'-4 25/32"	5'-11 17/32"
	D, 340 -345	Var.	131'-9 7/8"	-	125'-5 3/8"	6'-4 1/2"	5'-3 1/2"
Fuel Zone	C, 160 -165	Var.	114'-5 1/8"	-	120'-5"(123'-7 3/4")**	-5'-11 7/8"(-8'-2 5/8")	-7'-5 5/8"(-10'-8 3/8")**
	D, 340 -345	Var.	114'-5 1/8"	-	120'-5"(137'-3 1/8")**	-5'-11 7/8"(-22'-10")	-7'-0 7/8"(-23'-11")**
High Level Upset	B, 195 -200	Ref.		173'-14 1/4"*	143'-2 1/8"	16'-9 5/8"	9'-10 7/32"

*Penetrates drywell roof at 159'-11 3/4"

**Elevation at high point in Containment

***Diff. = variable leg vertical drop - reference leg vertical drop.

Table 2

Maximum Calibration Errors

<u>Range</u>	<u>Angle</u>	<u>Max. Cal. Error*</u>
Narrow	A, 15 -20	+8.47"
	C, 160 -165	+9.53"
	B, 195 -200	+8.15"
	D, 340 -345	+8.65"
Wide	A, 15 -20	+7.65"
	C, 160 -165	+8.68"
	B, 195 -200	+8.80"
	D, 340 -345	+7.81"
Fuel Zone	C, 160 -165	-11.02"
	D, 340 -345	-10.44"
High Level Upset	B, 195 -200	+14.54"

*Positive error: actual water level higher than indicated water level.

Negative error: actual water level lower than indicated water level.