

RIVER BEND STATION POST DEFICE BOX 220 ST FRANCIEVALE, LOUISIANA 70775 AREA CODE 504 635-6084 346-8651

> May 1, 1990 RBG- 32765 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. 90-004, Revision 1 for River Bend Station - Unit 1. This supplemental report is being submitted pursuant to 10CFR50.73.

Sincerely,

Ingland W. H. Odell

Manager-Oversight River Bend Nuclear Group

TFP/PDG/RGW/DCH/KLB/pg

cc: U.S. Nuclear Regulatory Commission 611 Ryan Plaza Drive, Suite 1000 Arlington, TX 76011

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

INPO Records Center 1100 Circle 75 Parkway Atlanta, GA 30339-3064

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At 1009 o Condition voltage s resulting room pane with a sch battery c charger wa Upon rest safety fea reportable Corrective frequencie checking battery ch restart ev	n 02/11/90, 1), the Div pike which in a loss of 1 H13-P618 eduled prev harger (EN s moved fro oration of ture (ESF) pursuant t actions s, developi of the in arger, eval ents, and d personnel	with t ision I caused of power (Divi entive IB*CHGRI of the actuation include ng new iverter uation levelopm proper	the plan I emerg a Topaz to spe sion I mainte box occ box occ 50.73(a prevent trip of mo nent of	t at ency invecific I). nance n th sitio rs, m urred )(2)( ing t setpo dific load onded	100 p 125 rters This e flo ultip iv). he pre- ints, ation to p to p	vercent VDC b unit (1 strument event o sk (PM) oat/equa the e ole Divi nerefore reventiv enance troub s to s for th this eve	power (O us expe El2A-PS1 ation o ccurred on Di lize swi qualize sion II , this e mainte tasks t leshooti address e Topaz nt by li	peratio rienced ) to tr n cont coincid vision tch on positi enginee event nance tl ng of automa inverte miting	nal ip, rol ent II the on. red is ask ude the tic rs. the

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

US NUCLEAR REQULATORY COMMISSIO

APPROVED OM8 NO 3150-0104 EXPIRES 8/31/00

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)	PAGE (3)		
		VEAR SEQUENTIAL AEVISION			
RIVER BEND STATION	0 18 10 10 10 14 15	18 910 - 01014 - 0120	12 05 0 15		

#### REPORTED CONDITION

At 1009 on 02/11/90, with the plant at 100 percent power (Operational Condition 1), the Division II emergency 125 VDC bus (\*BU\*) experienced a voltage spike which caused a Topaz inverter (\*INVT\*) unit (1E12A-PS1) to trip, resulting in a loss of power to specific instrumentation on control room panel (\*PL\*) H13-P618 (Division II). This event occurred coincident with a scheduled preventive maintenance task (PM, on Division II battery charger (\*BYC\*) (1ENB\*CHGR1B) when the float/equalize switch on the charger was moved from the float position to the equalize position.

Upon loss of power to control room panel H13-P618, the appropriate Technical Specification action statements were implemented. At 1111 on 02/11/90, the inverter was reset and power was restored to the control room panel. Upon restoration, multiple Division II Engineered Safety Feature (ESF) actuations occurred. Therefore, this event is reportable pursuant to 10CFR50.73(a)(2)(iv).

### INVESTIGATION

At 1009 on 02/11/90, with the plant at 100 percent power (Operational Condition 1), the Division II emergency 125 VDC bus experienced a voltage spike which caused a Topaz inverter unit (1E12A-PS1) to trip, resulting in a loss of power to specific instrumentation on control room panel H13-P618 (Division II). This event occurred coincident with a scheduled preventive maintenance task (PM) on a Division II battery charger (1ENB\*CHGR1B) when the float/equalize switch on the charger was moved from the float position to the equalize position.

Upon loss of power to control room panel H13-P618, the Division II reactor core isolation cooling (RCIC) containment isolation valves (E51\*MOVF076, F063, F064, and F031) (\*ISV\*) were verified to be closed per Technical Specification 3.3.2. Prior to resetting the Topaz inverter unit, Operations personnel took the following actions:

- . The Division II residual heat removal (RHR) pump breakers were racked out.
- . The Division II automatic depressurization system (ADS) was placed in inhibit.
- . The reactor core isolation cooling (RCIC) system trip and throttle valve were closed.
- The "B" safety relief valve (SRV) solenoids were placed in the "off" position.

NAC Ferm 3864 -	LICENSEE EVENT REPO	RT (LER) TEXT CONTINU	ATION	APPROVED DME ND 3150-0104 EXPIRES 6/31/0
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These acti components	ons were taken to p upon resetting of	revent actuation the Topaz inverte	of the abov r unit.	e systems and
Upon rest Engineered	oration of the Top: Safety Feature (E	z inverter unit ( F) actuations aut	E12A-PS1), omatically	the following initiated:
. T	he Division II emer	gency diesel gene	rator (*EK*	) started.
• [	he control building HVC*FLT1B) started	ventilation (*VI	*) filter	(*FLT*) unit
. T t s	he containment but ripped, while con- tarted and the ase SWP*502B and 503B)	lding unit cooler ainment building ociated service w opened.	(*VA*) (*C unit coo ater (*BI*)	LR*) HVR-UCIC ler HVR-UCIB valves (*V*)
. R 1	eactor core isola nitiation signal s	tion cooling aled in.	(RCIC) sy	stem (*BN*)
• {	he Division II rest *BO*) sealed in and solation valves (*1	dual heat removal residual heat re SV*) (1E12*MOVF04	(RHR) init moval (RHR) 2B and 42C)	iation signal containment opened.
An extens Engineerin operated occurred.	ive evaluation of g personnel. This per their design	these ESF act evaluation determ and no other	uations was ined that actuations	performed by all systems should have
The resul presented investigat instrument float/equa from the voltage sp sufficient in a maste from the maximum v IENB*BATD1 for the To inverter later reve	ts of the invest to an NRC a ion revealed that t ation on control lize switch on the float position t ike was induced in magnitude to cau r-slave arrangement emergency respons oltage of 146.3 B. This was about paz inverter. This unit had operated aled that the high	igation that fo ugmented inspect he loss of 125 room panel P- battery charger o the equalize po o the 125 VDC bat se the Topaz inve ) to trip off lin e information sys volts was recei e the 140 volt sp gave the impr per design. H voltage trip set	llowed the ion team VDC power 618 occurr 1ENB*CHGR1 sition. At tery bus rter unit ( e. The d tem (ERIS) ved from ecification ession tha owever, GSU point of	event were (AIT). This to specific ed when the B was moved that time, a that was of two inverters ata obtained showed that a battery bus trip setting t the Topaz 's evaluation the inverter

An investigation and analysis of previous corrective and preventive maintenance tasks (PM) revealed that no similar problems have occurred during maintenance activities or in the performance of this quarterly PM task. Additionally, a search of previous condition reports was LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REQULATORY COMMIRSIO

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PACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)	PAGE (3)
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conducted to identify related deficiencies or events but none were found.

GSU's investigation included an analysis of the opening of the RHR injection valves. This analysis identified three conditions that must be satisfied for these valves to stroke open. First, power must be available to the RHR pump bus. Second, an RHR initiation signal must be provided either on reactor low water level, drywell high pressure or manual initiation. Third, the low reactor pressure vessel (RPV) pressure interlock permissive signal must be provided to the trip units. The first condition was satisfied throughout the event as power was always available to the pump bus. The second and third conditions were satisfied upon re-energization of the the Topaz inverter unit. At this time, the reactor low water level and RPV pressure interlock permissive trip signals were received momentarily which resulted in the valves opening.

Previous LERs have been reviewed to identify similar events. This review identified no other cases in which Topaz inverters have tripped resulting in ESF actuations. LER 89-038 reported the loss of the 125 VDC bus during maintenance on a battery charger, resulting in numerous ESFs. The ESF actuations were due to momentary signals being provided to trip units. However, this event bears only superficial similarity to the Topaz inverter event since the root causes are different.

## CORRECTIVE ACTION

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GSU has evaluated the root cause of the Topaz inverter unit trip, and determined that the high voltage trip set point on the inverter had drifted below the equalize voltage of the charger. Based on the investigation and engineering analysis to date, the following corrective actions are being implemented as a result of this event:

- Battery charger PMs, Division I and Division II, were performed during the mid-cycle outage in March, 1990 and henceforth will be scheduled during refueling outages. The PM frequencies have been revised in order to minimize the number of transients when switching from float to equalize.
  - Troubleshooting of the battery charger was performed during the mid-cycle outage in March, 1990. Following the Topaz inverter unit trip and prior to the mid-cycle outage, the charger was checked weekly for proper outputs. No abnormalities were identified.
    - All Topaz Category I inverters were calibrated to ensure proper high voltage trip point values. PMs have been developed to check calibration in each refueling outage beginning with refueling outage 4 (RF-4).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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- changing to a different type of inverter
- addition of time delays

In addition to the above actions, GSU has developed load lists for the two Division I Topaz inverters, the Division II Topaz inverter and the Division III Topaz inverter. These have been incorporated into the applicable procedures with outlines for specific actions for loss and restoration. The remaining Category I inverters will be evaluated and procedure adequacy will be assessed. Applicable personnel will be trained on these procedures and hardware. These actions will be completed prior to start-up from the third refueling outage. The status on remaining corrective actions scheduled for RF-3 will be reported in a supplemental report by January 30, 1991.

# SAFETY ASSESSMENT

Operations personnel properly responded to this event by limiting the number of ESF system actuations. Those ESF systems which did actuate responded per design. Therefore, this event did not adversely affect the health and safety of the public.

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