

ENCLOSURE
TVA BFNP TS 156
SUPPLEMENTAL INFORMATION
BROWNS FERRY NUCLEAR PLANT
(DOCKET NOS. 50-259, -260)

8108200235 810817
PDR ADOCK 05000259
PDR

Table 4.9.A.4.c

VOLTAGE RELAY SETPOINTS/DIESEL GENERATOR START

Relay Location	Trip Level Setting			Remarks
1. 4-kV Shutdown Boards	Trip Setpoint: 0 volts with a 1.5-second time delay Allowable Values: $\pm .1$ second Trip Range: 1.4 to 1.6 seconds Reset Setpoint: 2870-V Allowable Values: $\pm 2\%$ of 2870-V Reset Range: 2813-V to 2927-V			Start diesel generators on loss of off-site power.
2. 4-kV Shutdown Boards	<u>Undervoltage</u> Trip Setpoint: 3920 Allowable Values: 3900-3940 Reset Setpoint: Reset at $\leq 1.5\%$ above trip value			Second level undervoltage sensing relays - start diesel generator on degraded voltage.
3. 4-kV Shutdown Boards (Timers shown for 4-kV shutdown board A 4-kV shutdown boards B, C, and D, similar, except for change of suffix)	<u>Timer</u>	<u>Setpoint (seconds)</u>	<u>Critical Time (seconds)</u>	Auxiliary timers for second level undervoltage sensing relays. The setpoint ranges specified assure that the operating times will be below the critical times specified. These ranges are based on timer repeatability of $\pm 5\%$ as specified by the manufacturer.
	2-211-1A	$0.27 \pm 5\%$	0.3	
	2-211-2A	$4.00 \pm 5\%$	N/A	
	2-211-3A	$7.43 \pm 5\%$	8.2	
	2-211-4A	$1.36 \pm 5\%$	1.5	

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1. 4-kV Shutdown Boards	Trip Setpoint: 0 volts with a 1.5-second time delay Allowable Values: $\pm .1$ second Trip Range: 1.4 to 1.6 seconds Reset Setpoint: 2870-V Allowable Values: $\pm 2\%$ of 2870-V Reset Range: 2813-V to 2927-V			Start diesel generators on loss of off-site power.
2. 4-kV Shutdown Boards	<u>Undervoltage</u> Trip Setpoint: 3920 Allowable Values: 3900-3940 Reset Setpoint: Reset at $\leq 1.5\%$ above trip value			Second level under-voltage sensing relays - start diesel generator on degraded voltage.
3. 4-kV Shutdown Boards (Timers shown for 4-kV shutdown board A. 4-kV shutdown boards B, C, and D, similar, except for change of suffix)	<u>Timer</u> 2-211-1A 2-211-2A 2-211-3A 2-211-4A	<u>Setpoint (seconds)</u> $0.27 \pm 5\%$ $4.00 \pm 5\%$ $7.43 \pm 5\%$ $1.36 \pm 5\%$	<u>Critical Time (seconds)</u> 0.3 N/A 8.2 1.5	Auxiliary timers for second level under-voltage sensing relays. The setpoint ranges specified assure that the operating times will be below the critical times specified. These ranges are based on timer repeatability of $\pm 5\%$ as specified by the manufacturer.