

## Appendix 8B. Figures

**Figure 8-1. Site Plan of Transmission Lines**

**Figure 8-2. Bulk Power Transmission Network**

The VACAR Transmission Map is treated as Critical Energy Infrastructure Information and has been removed. Duke Energy Carolinas, LLC authorizes SERC to release copies of the current VACAR Transmission Map in accordance with procedures established for such release. Such requests may be made to:

Southeastern Electric Reliability Council  
2815 Coliseum Centre Drive  
Suite 500  
Charlotte, NC 28217

Telephone No. 727-946-0635

Figure 8-3. Single Line Diagram Typical Auxiliary Distribution System

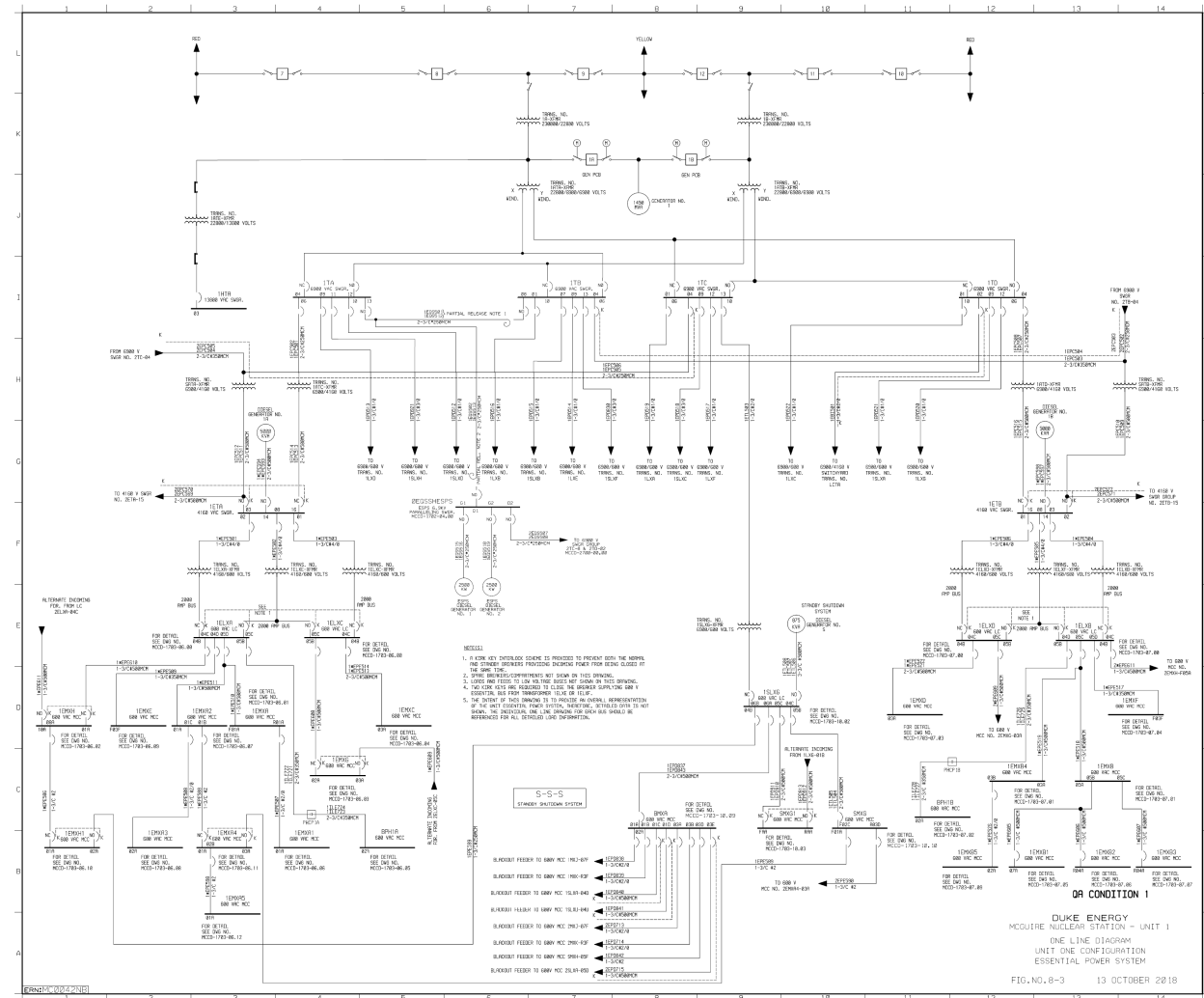


Figure 8-4. Electrical Power System Symbol Legend





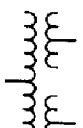



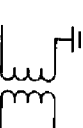







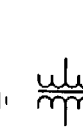



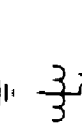



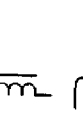







Symbol	Symbol	Symbol	Symbol
			
Two-winding Transformer	Diesel Generator	Surge Arrester	Silicon Controlled Rectifier
			
Three-winding Transformer (Two Low-tension Windings)	Turbine Generator	Electrical Device (Identified in or near function block on drawings; may or may not include internal schematic)	Electrical Device (Identified in or near function block on drawings; may or may not include internal schematic)
			
Grounding Transformer with Resistor	Under-Voltage Relay	Contacts, Normally open	Contacts, Normally Closed
			
Autotransformer	Voltmeter	Switch: Single Pole, Double Throw	Device Function Letters NC Closed during normal operation NO Open during normal operation KI Key Interlock MI Mechanical Interlock
			
Grounded Isolation Transformer	Ammeter with Shunt	Fuse	Voltage Regulator
			
Ferro-Resonant Transformer	Power Circuit Breaker (*XY* indicates breaker number)	Disconnect	Battery
			
Shunt Reactor	Disconnect Link	Switchgear Drawout Circuit Breaker	Diode
			
Generator	Held Case Circuit Breaker	Held Case Circuit Breaker	
			
	Circuit Breaker Compartment with Breaker Not Furnished		

Figure 8-5 is a diagram showing the layout of the McGuire Nuclear Station, including the reactor building, containment dome, and auxiliary buildings. The diagram is oriented horizontally and shows the relative positions of these structures. The reactor building is the largest structure on the left, followed by the containment dome. To the right of the containment dome are several smaller auxiliary buildings. The diagram is a top-down view of the station's layout.

**Figure 8-6. Plan and Profile of McGuire-Harrisburg 230 kV Transmission Lines**

**Figure 8-7. Deleted Per 2006 Update**



**Figure 8-8. Plan and Profile of McGuire-Plant Marshall 230 kV Transmission Line**



**Figure 8-9. Deleted Per 2006 Update**





**Figure 8-12. Plan and Profile of McGuire-Pleasant Garden 525 kV Transmission Line**

Figure 8-12 consists of two parts: a plan view and a profile view of the McGuire-Pleasant Garden 525 kV Transmission Line. The plan view shows the route of the transmission line from McGuire Nuclear Station to Pleasant Garden. The profile view shows the elevation of the transmission line along its route. The plan view includes a north arrow and a scale bar. The profile view includes a vertical axis representing elevation and a horizontal axis representing distance along the transmission line. The plan view shows the transmission line route starting from McGuire Nuclear Station and extending eastward to Pleasant Garden. The profile view shows the transmission line route starting from McGuire Nuclear Station and extending eastward to Pleasant Garden. The plan view includes a north arrow and a scale bar. The profile view includes a vertical axis representing elevation and a horizontal axis representing distance along the transmission line.

**Figure 8-13. Plan and Profile of Oconee-McGuire 525 kV Transmission Line**

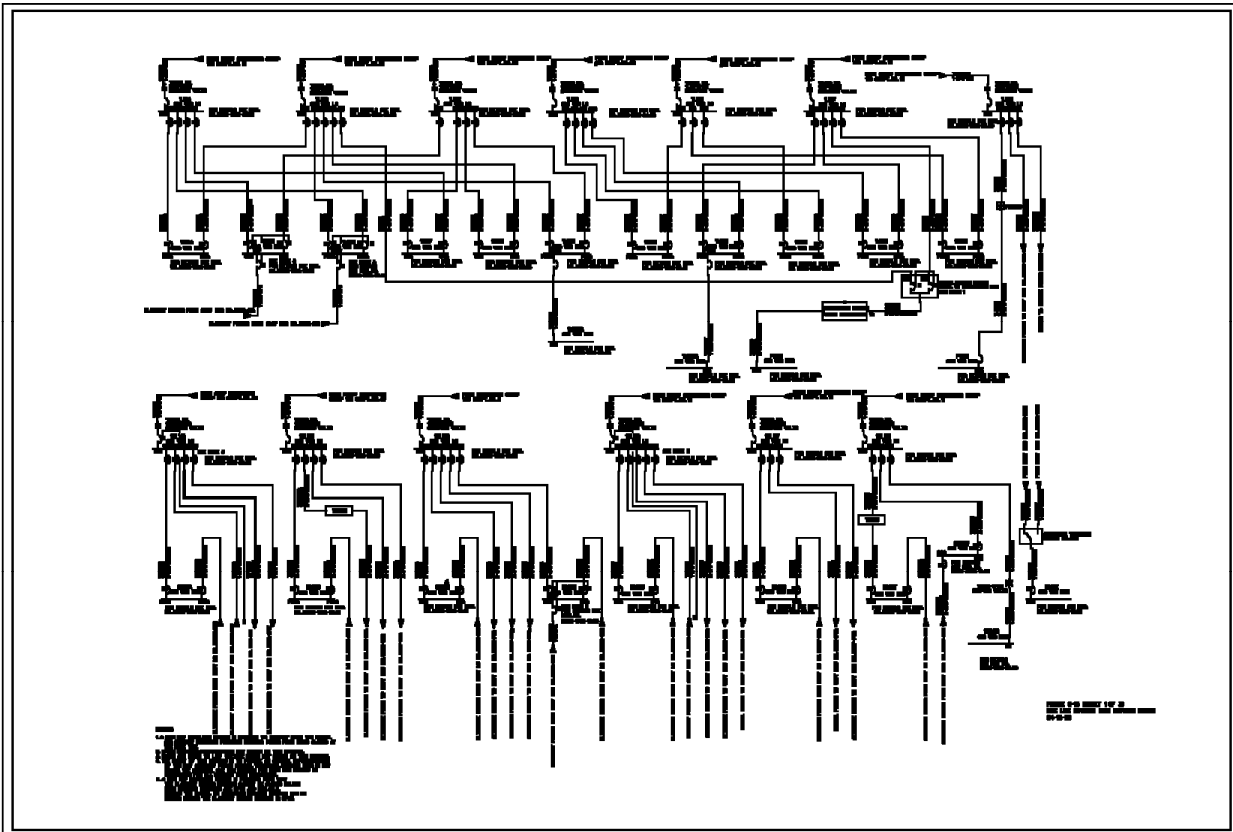
**Figure 8-14. Plan and Profile of Newport-McGuire 525 kV Transmission Line**

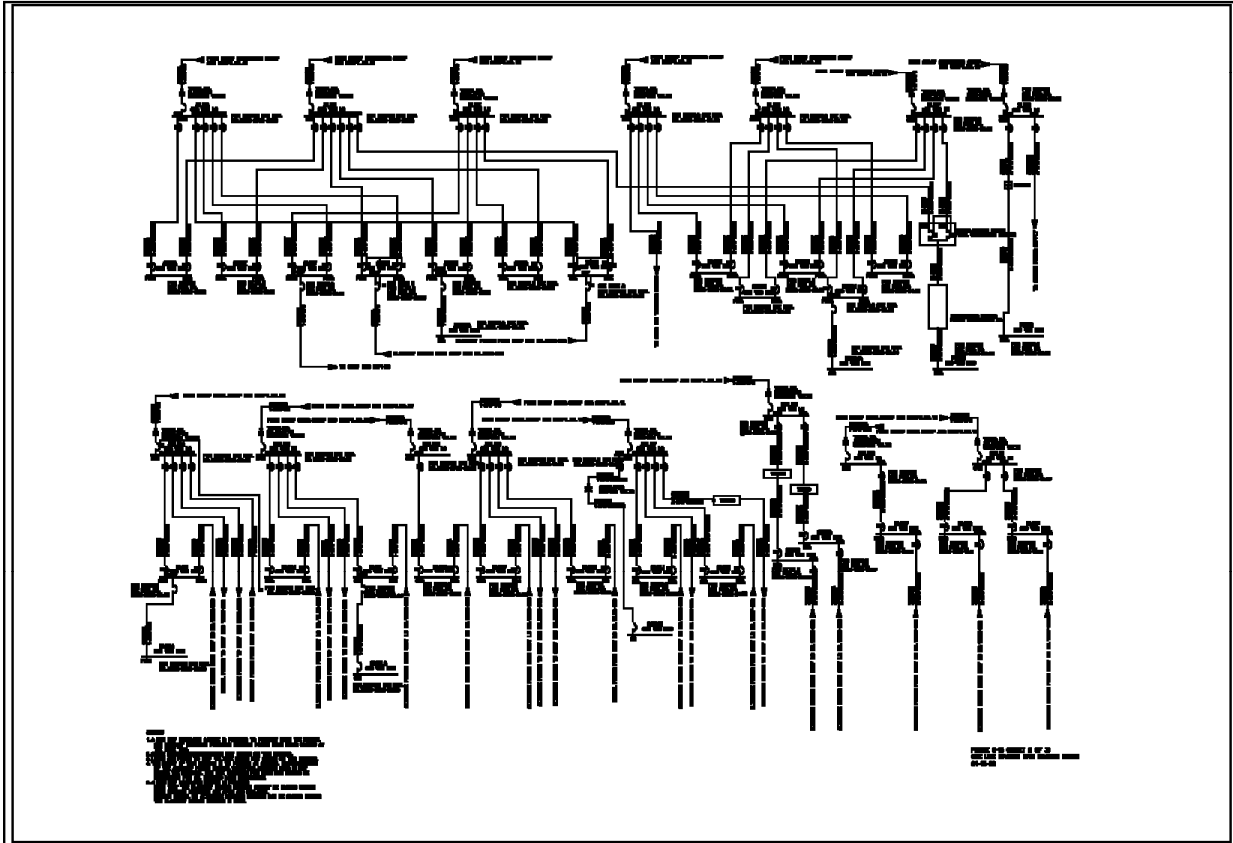
**Figure 8-15. Plan and Profile of McGuire-Appalachian 525 kV Transmission Line**





Figure 8-16. One Line Diagram Main Station Buses





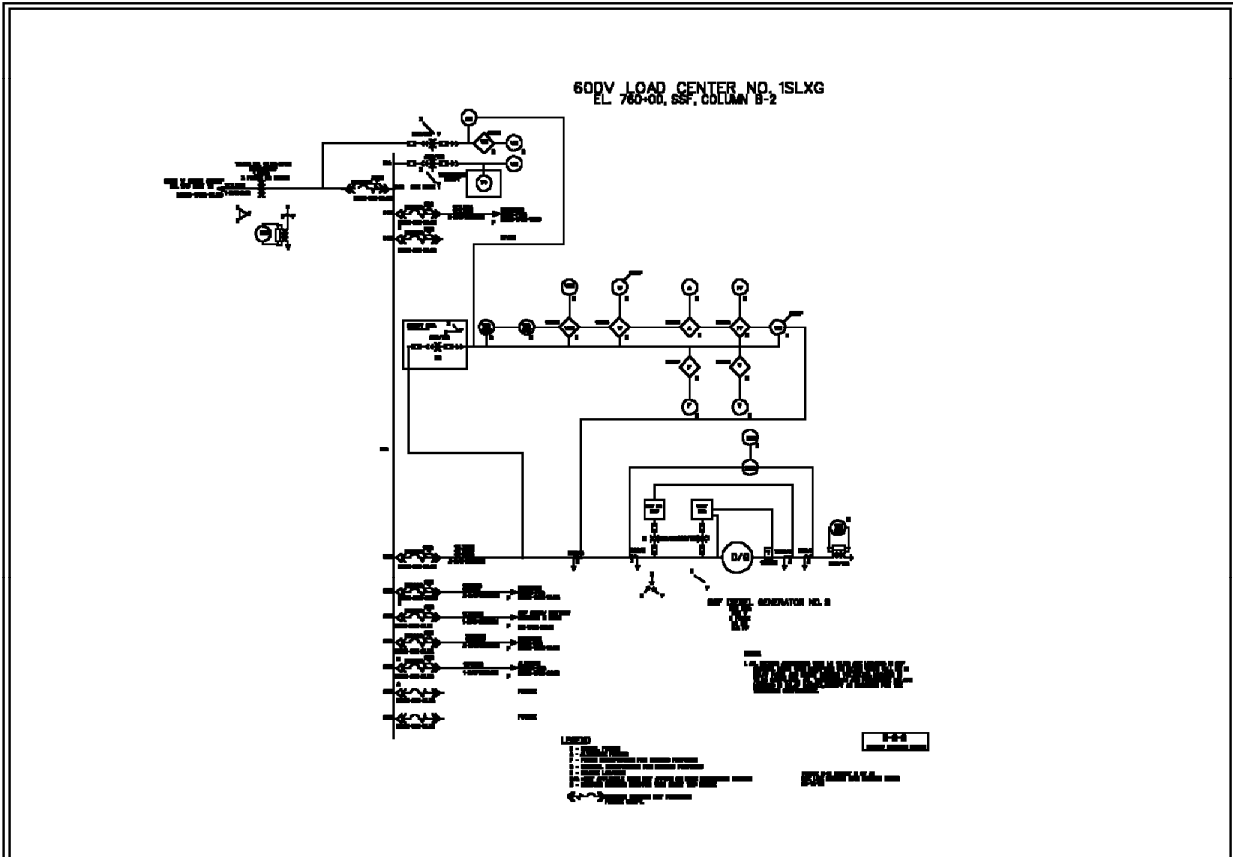
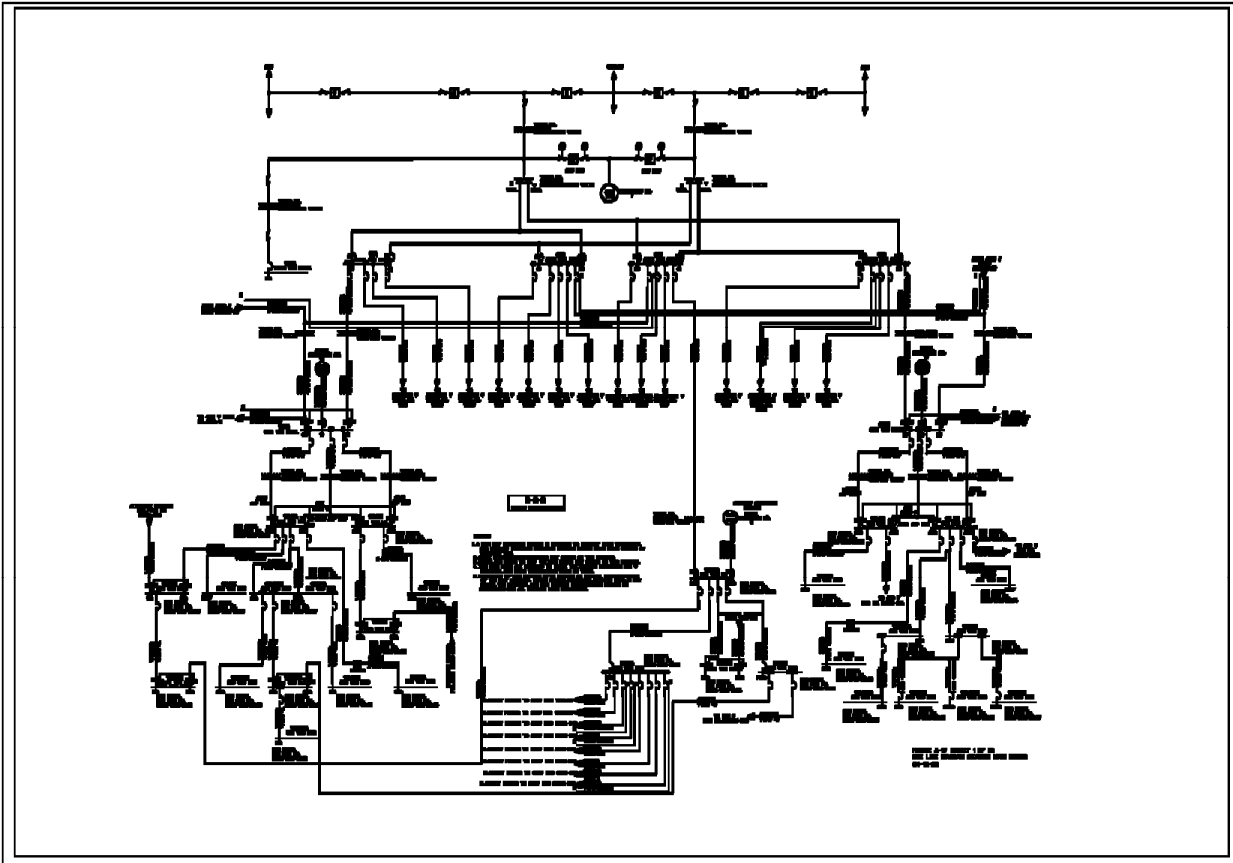
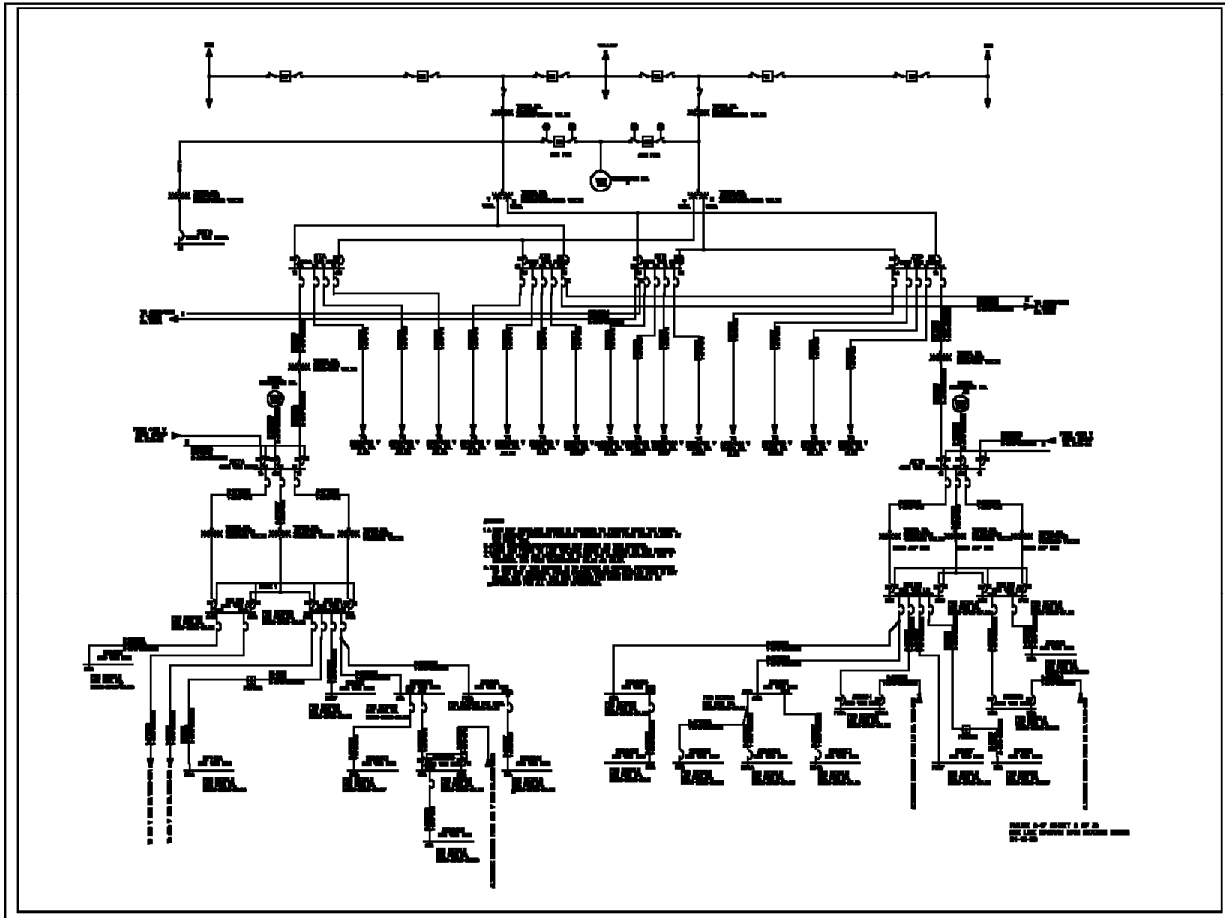


Figure 8-17. One Line Diagram Station Main Buses







**Figure 8-18. Plan View of Transmission Lines Between Plant and Switching Station**

Figure 8-19. Primary Relaying Tripping Zones and Protective Relay Zones

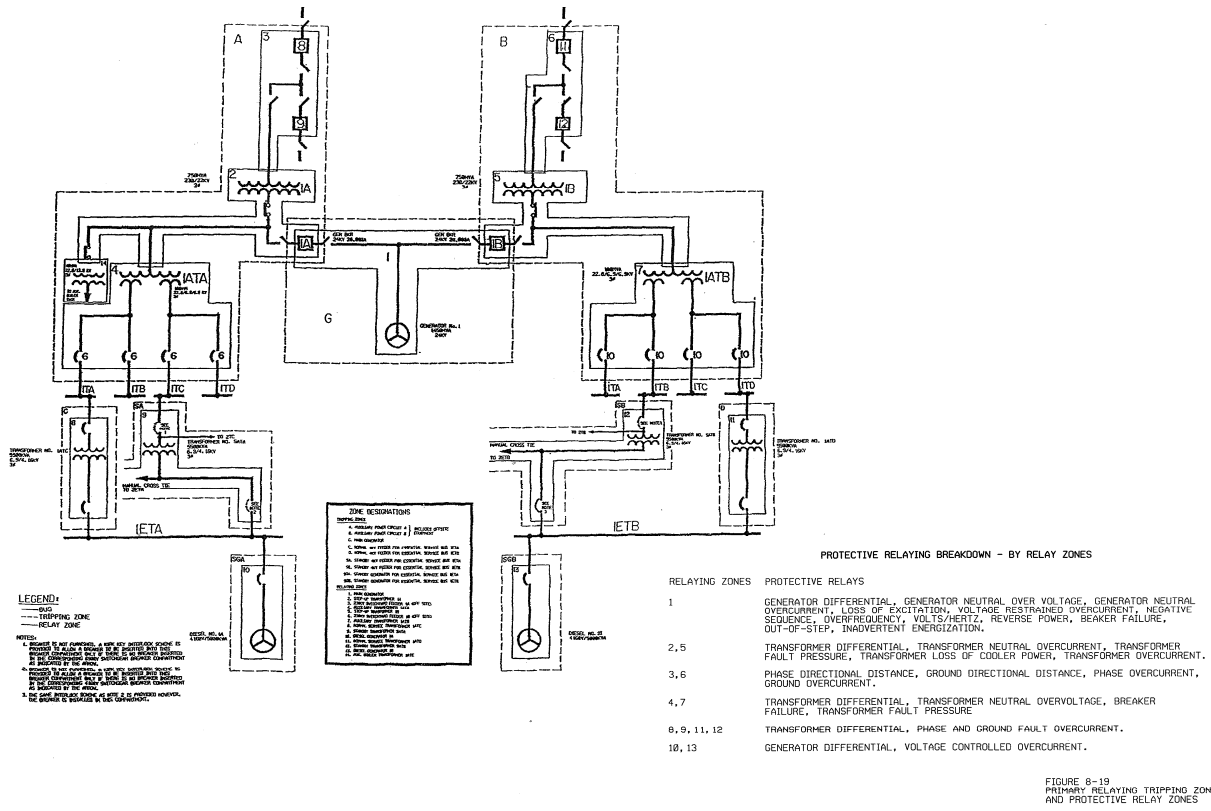


FIGURE 8-19  
PRIMARY RELAYING TRIPPING ZONES  
AND PROTECTIVE RELAY ZONES



**Figure 8-20. Deleted Per 2014 Update**

**Figure 8-21. Deleted Per 1999 Update**

**Figure 8-22. Deleted Per 1999 Update**

**Figure 8-23. Deleted Per 1999 Update**

**Figure 8-24. Deleted Per 1999 Update**

**Figure 8-25. Deleted Per 1999 Update**

**Figure 8-26. Deleted Per 1999 Update**

**Figure 8-27. Deleted Per 1999 Update**

**Figure 8-28. Deleted Per 2014 Update**

**Figure 8-29. Deleted Per 2014 Update**

Figure 8-30. Computer Simulation of Sequential Loading of Emergency Diesel Generator Under LOCA with Blackout Conditions

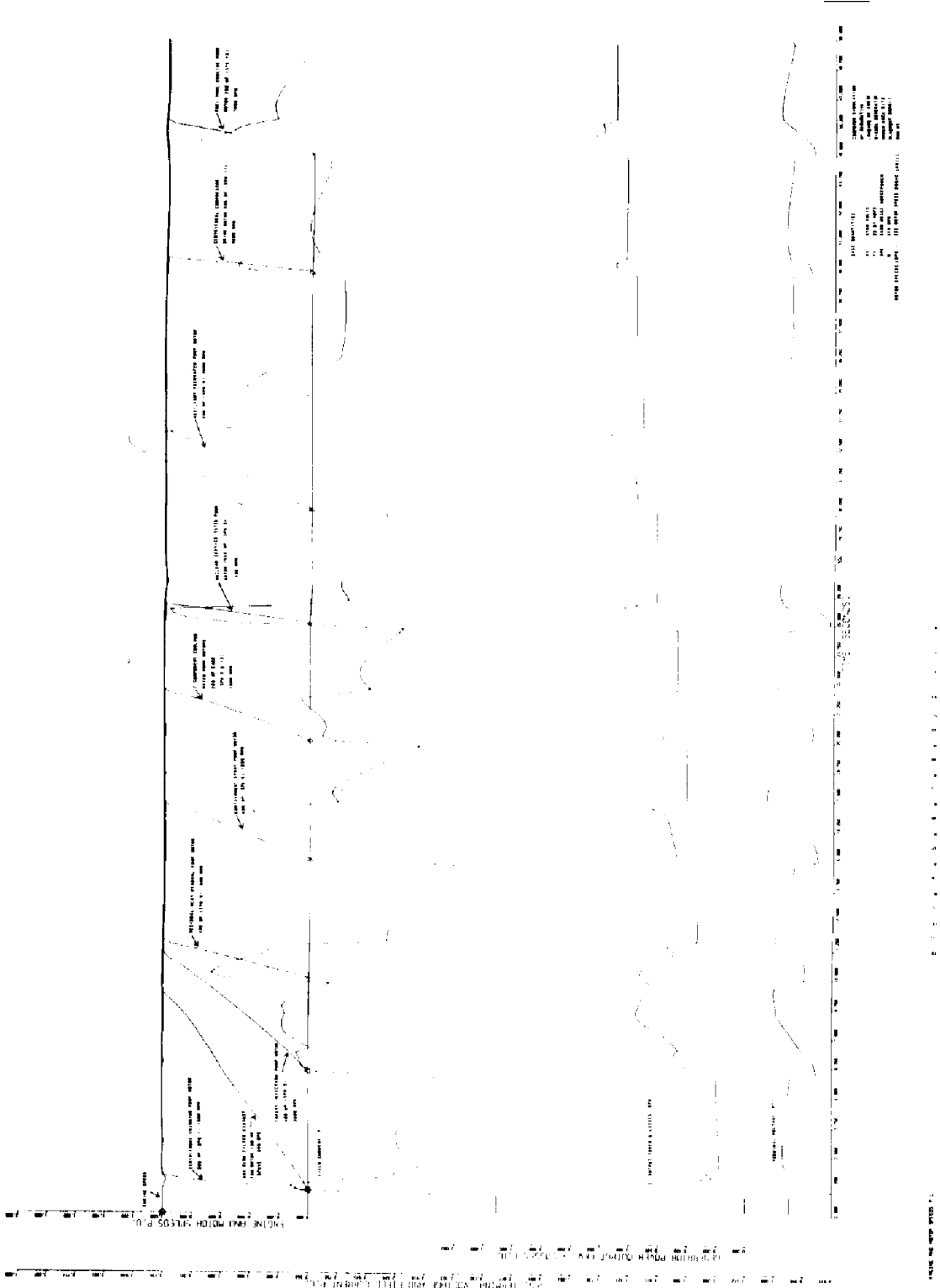
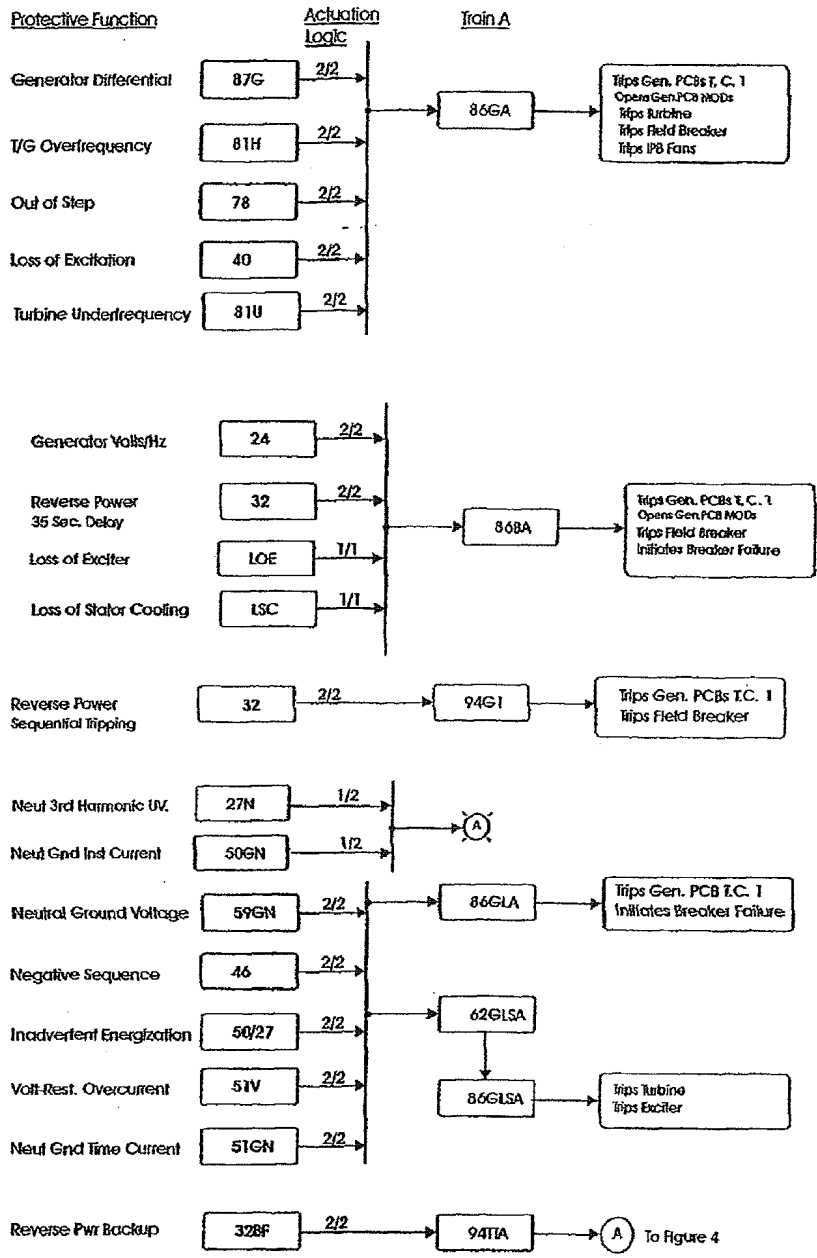


Figure 8-31. Zone G Electrical Protective Relaying



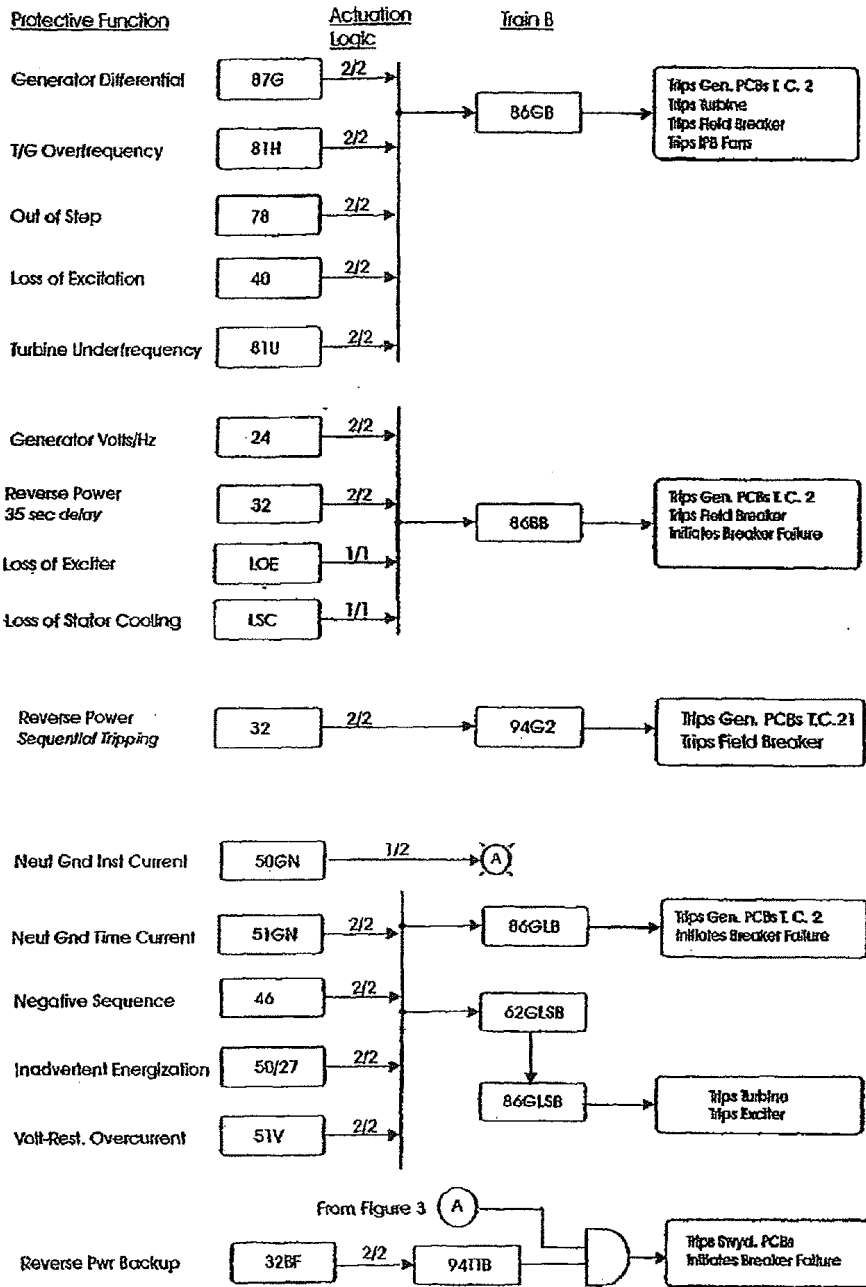


Figure 8-32. Diesel Generator Modeling Program Verification Curves

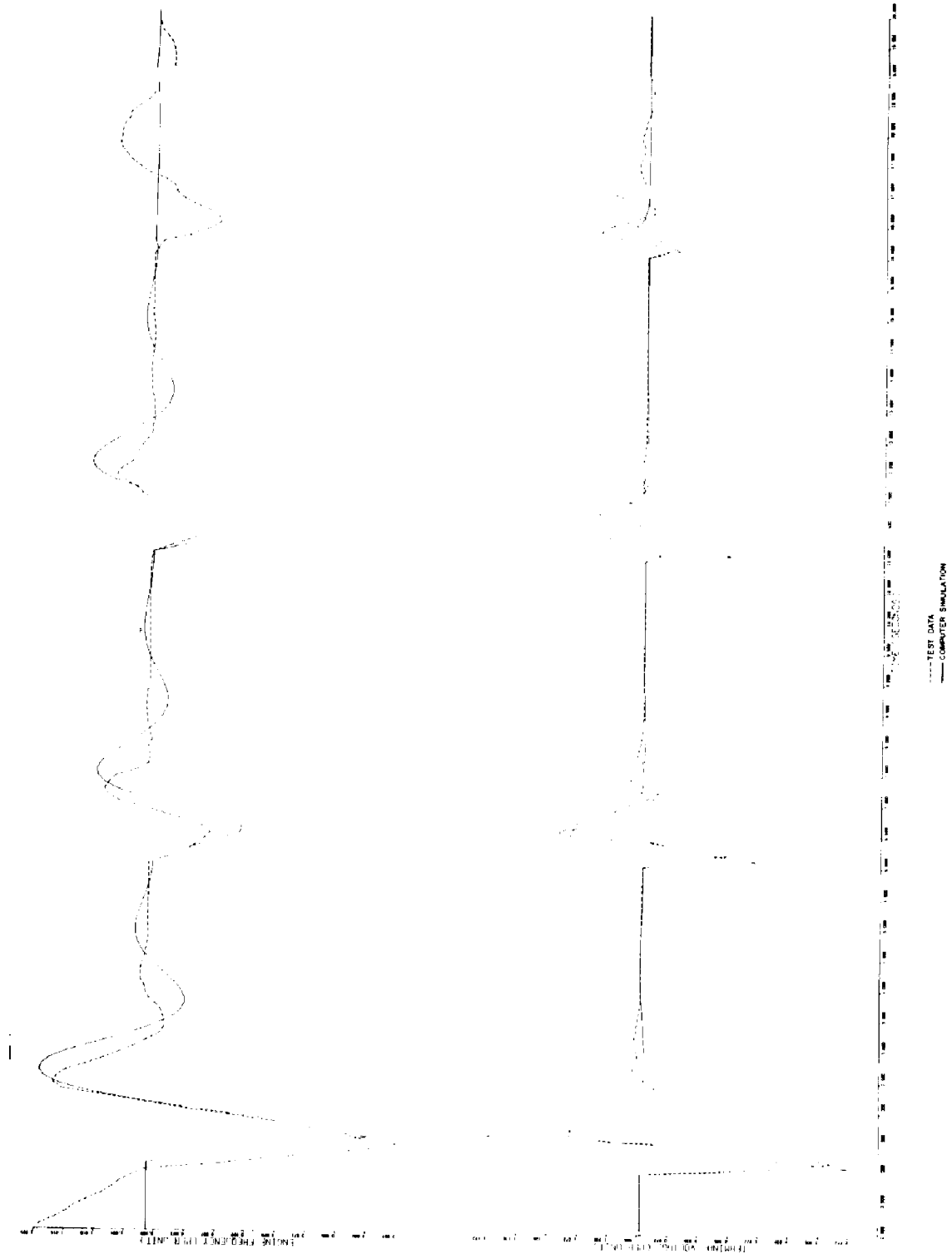




Figure 8-33. Single Line Diagram - 250 VDC Auxiliary Power System and Switchyard 125 VDC System

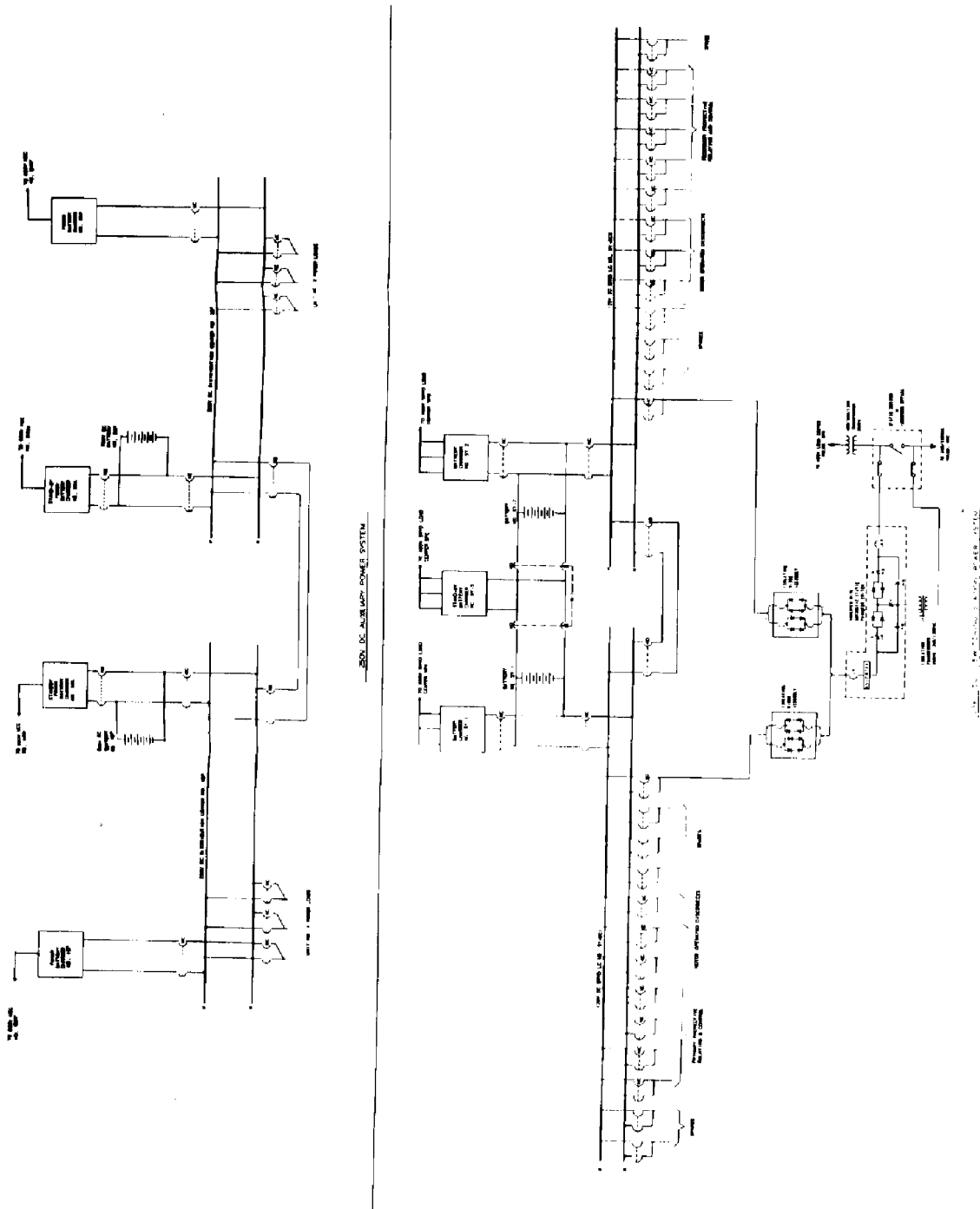




Figure 8-35. Vital Instrument and Control Power System (EPG)

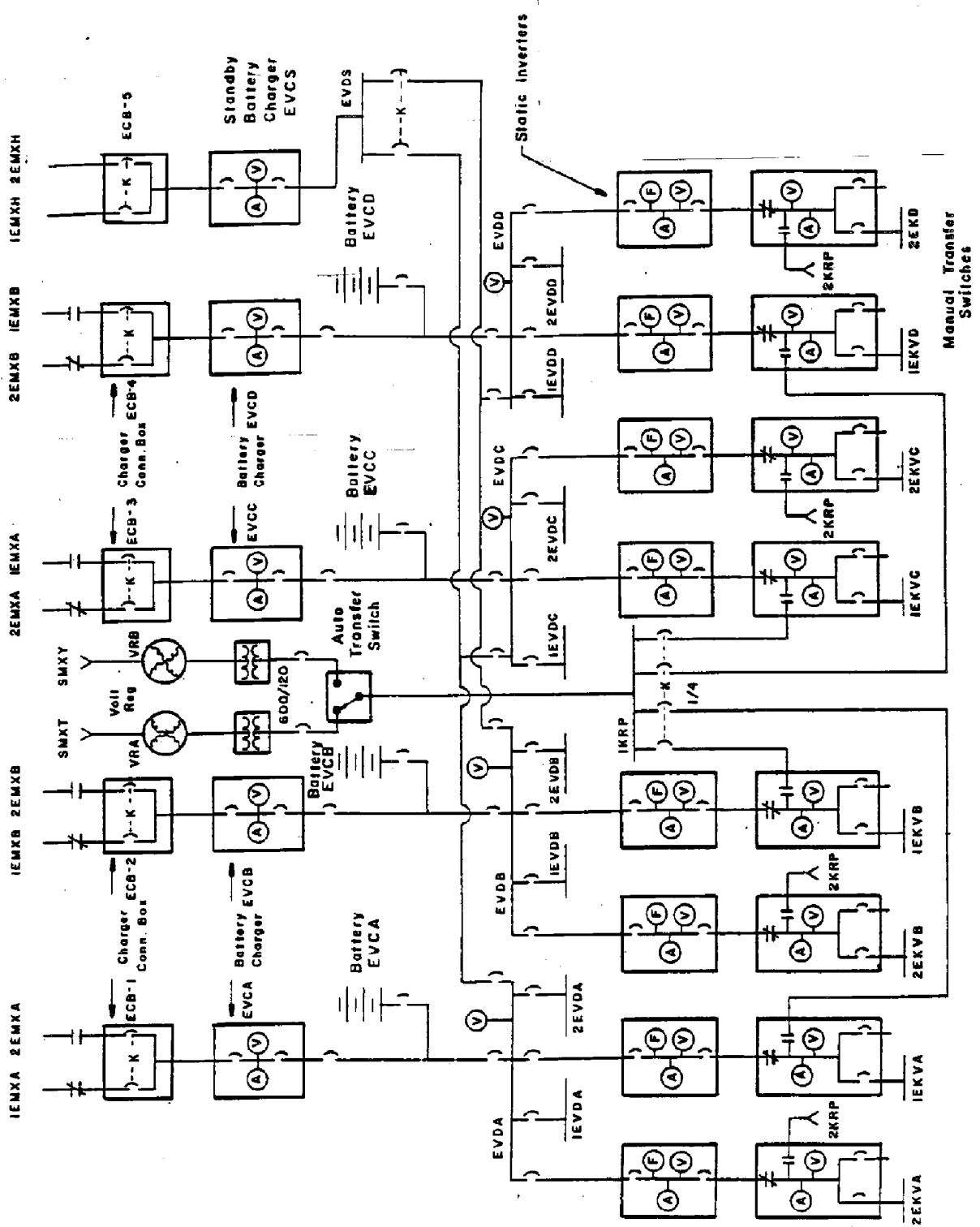
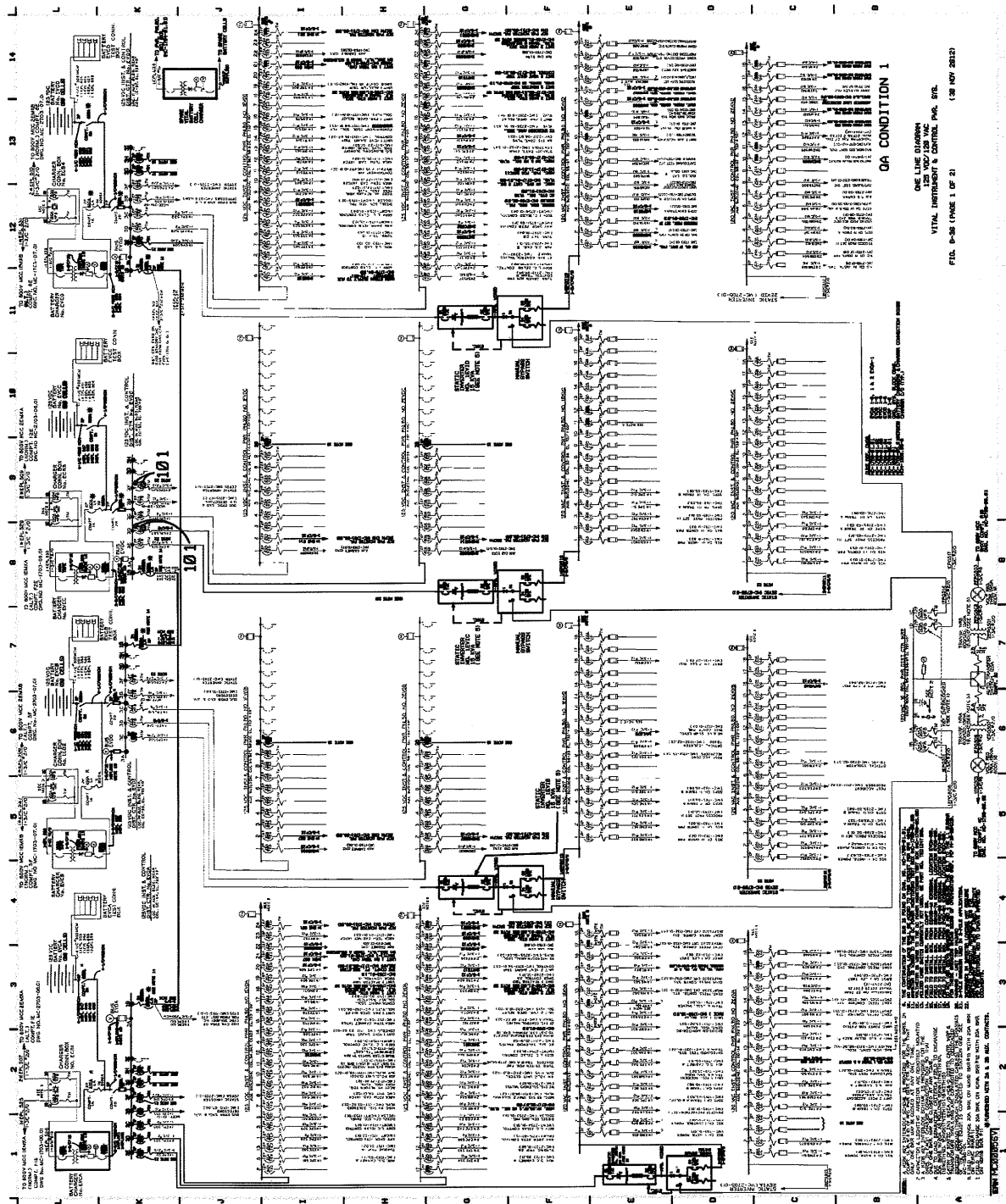
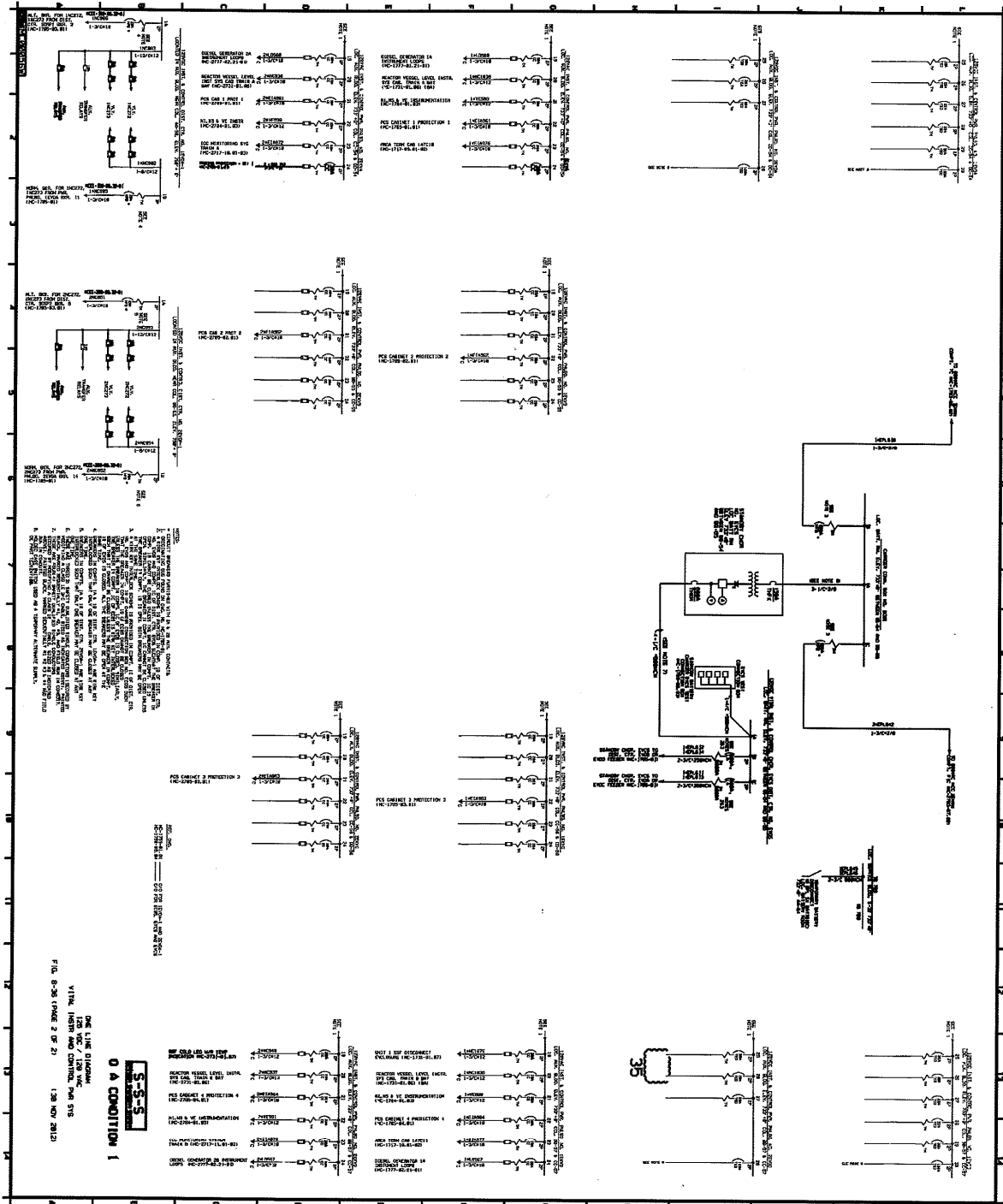
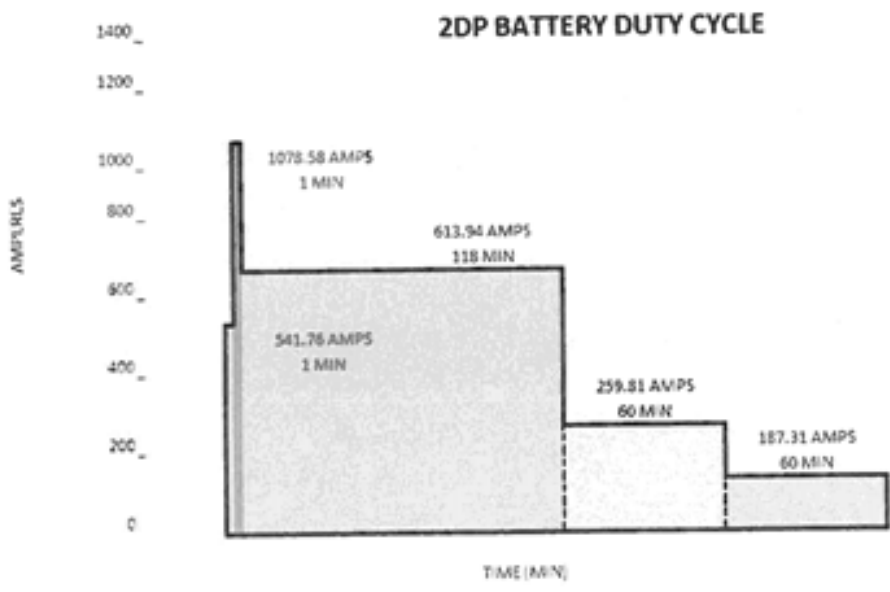
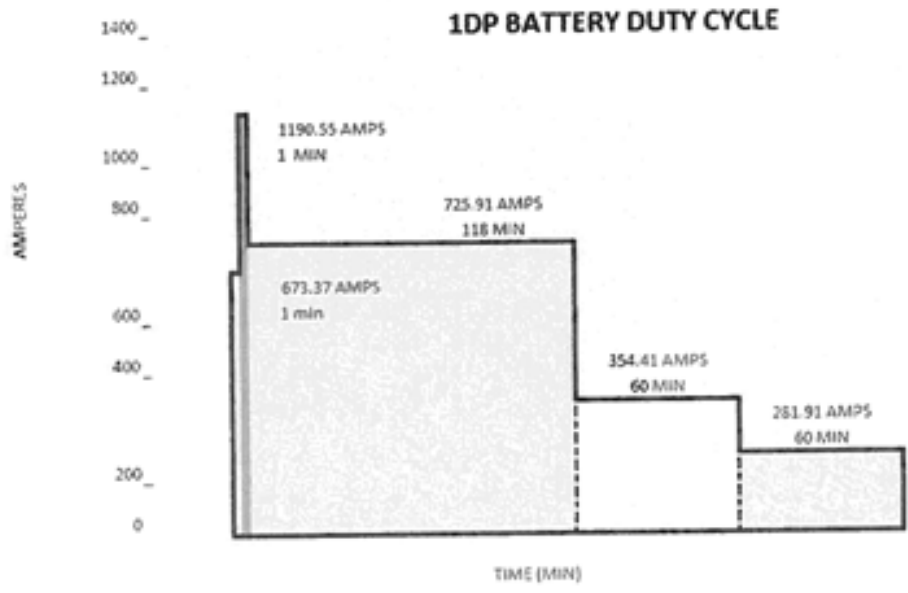


Figure 8-36. Single Line Diagram 125 VDC/120 VAC Vital Instrument and Control Power System





**Figure 8-37. 250 VDC Auxiliary Power System Battery Duty Cycle.** This battery duty cycle is based on loads listed in Table 8-11.



**Figure 8-38. 125 VDC Auxiliary Control Power System Battery Duty Cycle.** This battery duty cycle is based on loads listed in Table 8-12.

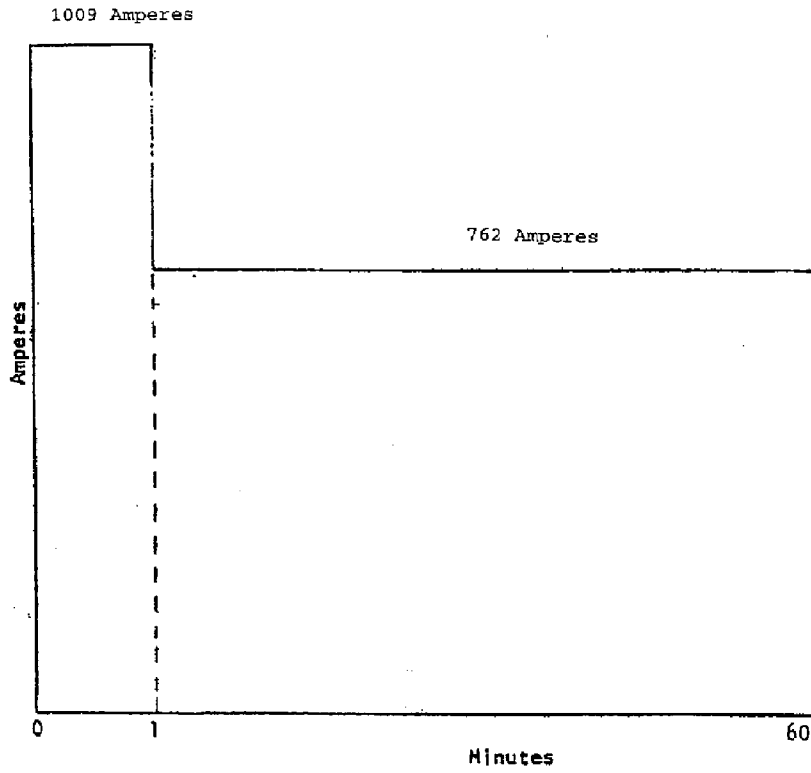


Figure 8-39. 125 VDC Vital Instrumentation and Control System Battery Duty Cycle

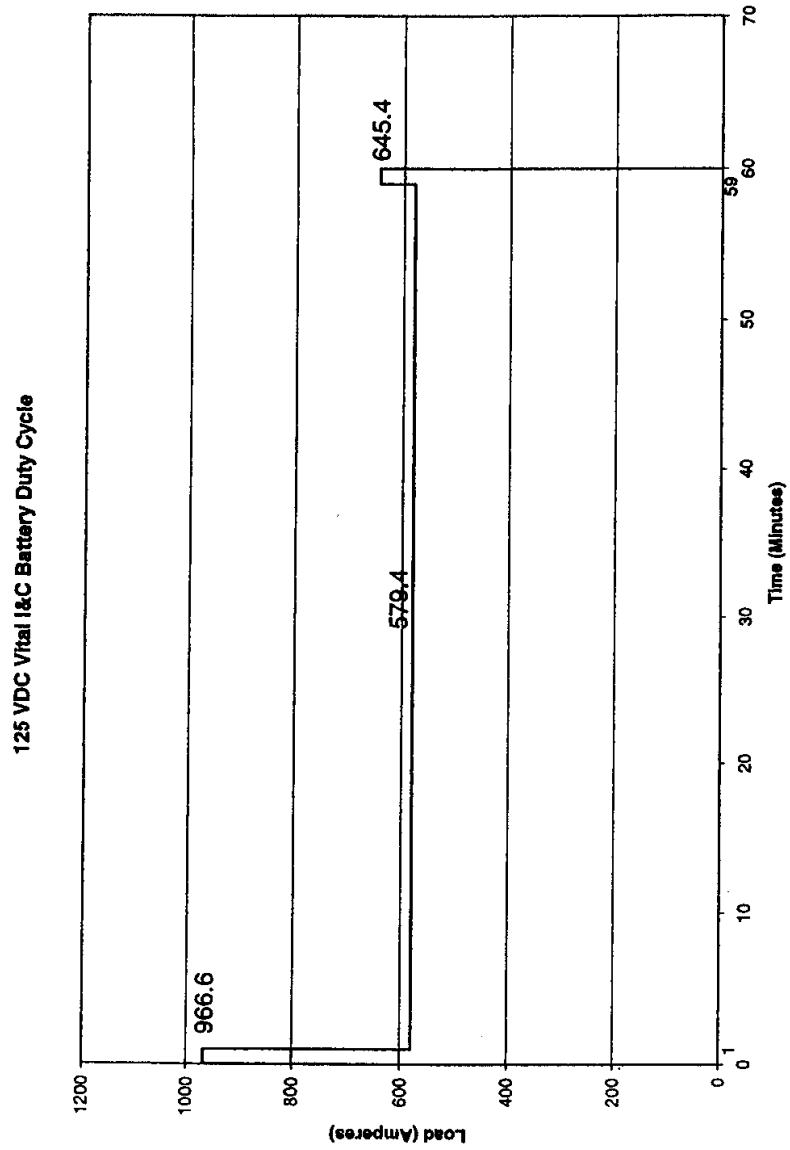
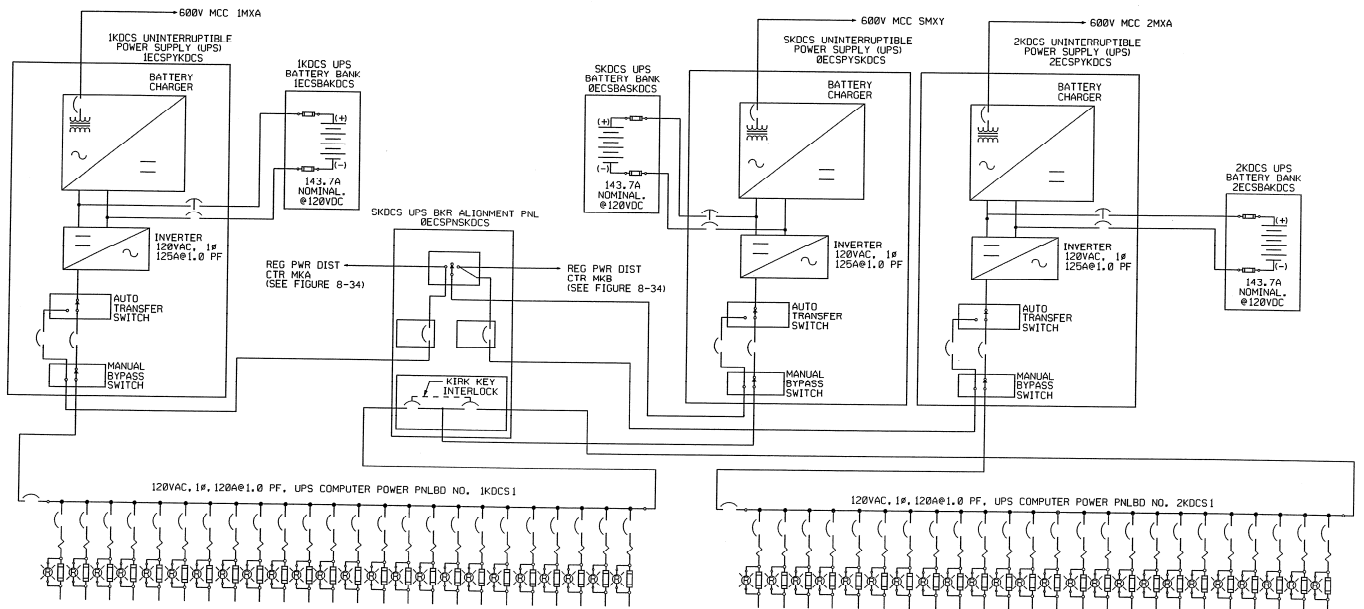




Figure 8-40. 120VAC Electrical Computer Support System



Single Line Diagram  
120VAC Electrical Computer Support System

Figure 8-40