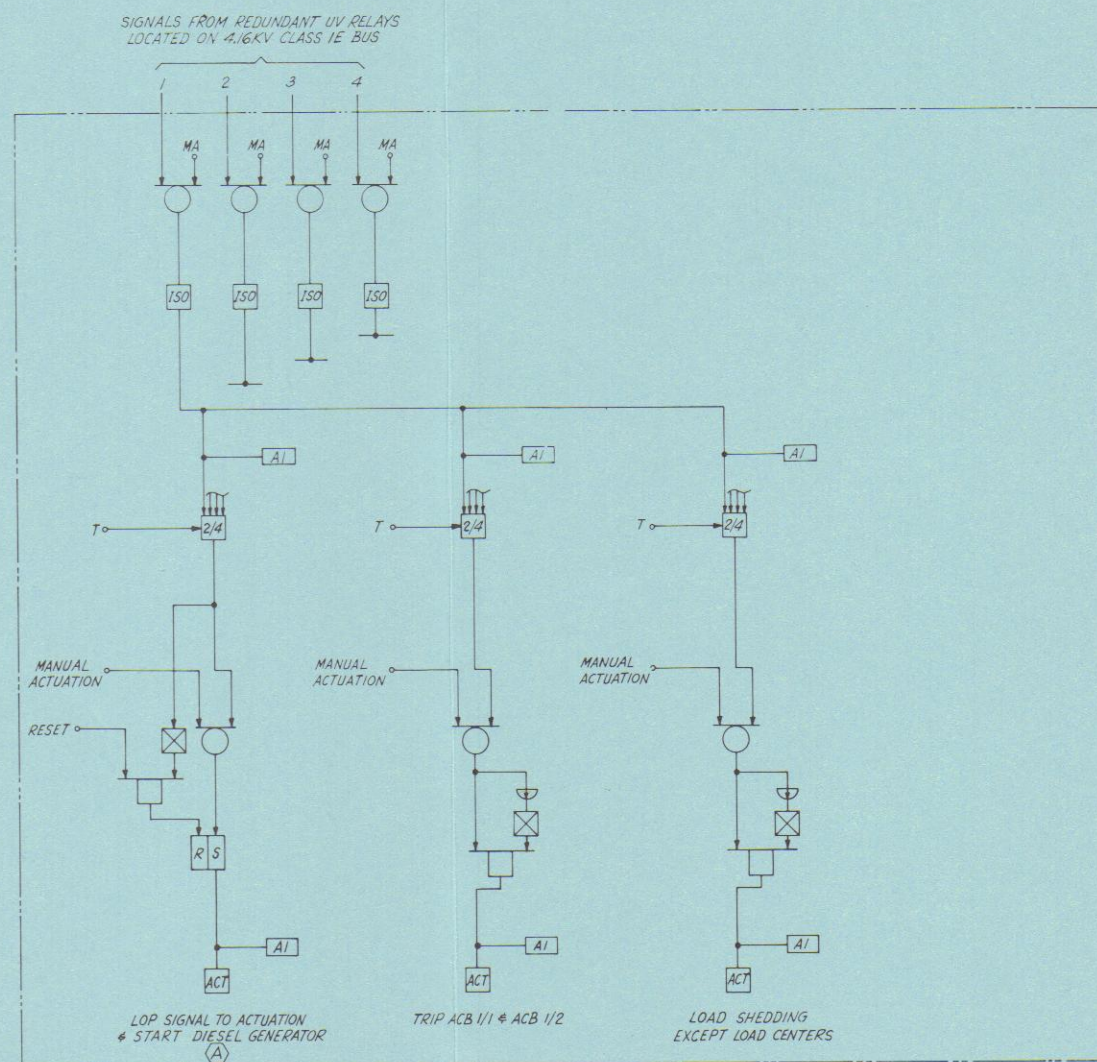
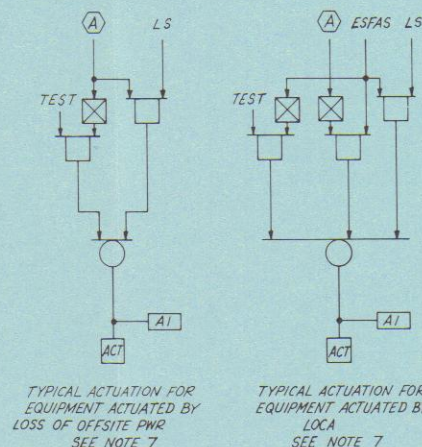
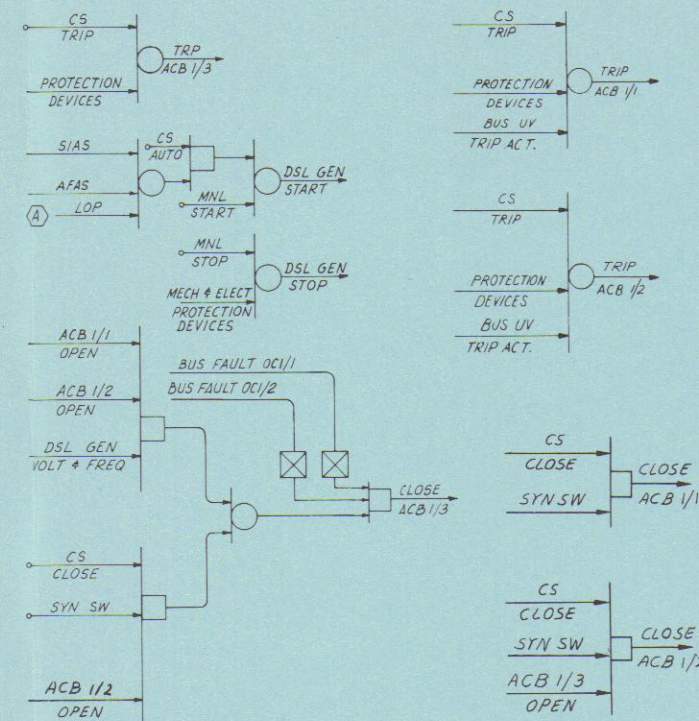


SIMPLIFIED SINGLE LINE DIAGRAM



LOSS OF OFFSITE POWER SENSING LOGIC



- NOTES**
- VOLTAGE SENSED BY UNDERVOLTAGE RELAYS. ESF BUS INCOMING ACB'S OPEN AFTER SHORT TIME DELAY ON LOSS OF VOLTAGE.
  - LOGIC DIAGRAM COVERS ESF LOAD GROUP 1. LOAD GROUP 2 IS SIMILAR. EXCEPT THAT AFAS DOES NOT INITIATE LOAD GROUP 2.
  - START AND STOP SIGNALS WILL BE TRANSMITTED TO INDIVIDUAL ACTUATORS BY THE SEQUENCERS.
  - NON-SEQUENCED LOADS CONNECTED TO 4.16KV & 480V ESF BUSES MAY BE RESTARTED MANUALLY ANY TIME AFTER VOLTAGE RESTORATION.
  - SIMPLIFIED ONE LINE DIAGRAM SHOWS ARRANGEMENT FOR EACH UNIT.
  - THE SEQUENCERS ARE PERMISSIVE AND MAY OR MAY NOT START EQUIPMENT DIRECTLY.
  - THESE ARE TYPICAL LOGIC ACTUATORS. OTHERS WILL BE USED AS REQUIRED.
  - ABBREVIATIONS:  
ACB-AIR CIRCUIT BREAKER  
ACT-ACTUATOR  
AI-ALARM & INDICATING  
CS-CONTROL SWITCH  
DSL GEN-DIESEL GENERATOR  
ESF-ENGINEERED SAFETY FEATURES  
ESFAS-ENGINEERED SAFETY FEATURES ACTUATION SIGNAL  
ISO-ISOLATION DEVICE  
LOP-LOSS OF OFF-SITE POWER  
LS-LOGIC SEQUENCER  
MA-MANUAL ACTUATION  
MNL-MANUAL  
R-RESET  
RC-REACTOR COOLANT  
S-SET  
SIAS- SAFETY INJECTION ACTUATION SIGNAL  
SS-SHUTDOWN SEQUENCER  
SYN SW-SYNCHRONIZING SWITCH  
T-TEST SIGNAL  
UV-UNDER VOLTAGE  
OC-OVERCURRENT  
AFAS-AUX FEEDWATER ACTUATION SIGNAL

**LOGIC SYMBOLS**

| FUNCTION           | SYMBOL | DEFINITION   |
|--------------------|--------|--|
| AND                |        | OUTPUT EXISTS WHEN ALL INPUTS ARE PRESENT.   |
| OR                 |        | OUTPUT EXISTS WHEN ANY INPUT IS PRESENT.   |
| NOT                |        | OUTPUT EXISTS WHEN THE INPUT IS NOT PRESENT.   |
| ON TIME DELAY      |        | OUTPUT EXISTS FOLLOWING A TIME DELAY AFTER THE INPUT IS CONTINUOUSLY APPLIED. OUTPUT CEASES WHEN THE INPUT IS NOT PRESENT. |
| OFF TIME DELAY     |        | OUTPUT EXISTS WHEN THE INPUT IS PRESENT AND CONTINUES TO EXIST FOR A TIME AFTER THE INPUT CEASES.                          |
| MEMORY             |        | OUTPUT EXISTS WHEN THE SET INPUT IS PRESENT AND CONTINUES TO EXIST UNTIL THE RESET INPUT IS PRESENT.                       |
| COINCIDENCE MATRIX |        | OUTPUT EXISTS WHEN AT LEAST A OUT OF B INPUTS ARE PRESENT.   |

**Arizona Nuclear Power Project**  
**Palo Verde Nuclear Generating Station**  
**Units 1, 2 & 3**

**LOGIC DIAGRAM DIESEL GENERATOR STARTING & ESF BUS LOADING SEQUENCE**

Figure 8.3-3