

The size of each of the diesel generators serving Divisions 1 and 2 satisfies the requirements of NRC Regulatory Guide 1.9, Revision 0, and conforms to the following criteria:

- a. The continuous (8000 hr) nameplate rating of each set exceeds the maximum required load indicated in Tables 8.3-1 and 8.3-2.
- b. Each diesel generator is capable of starting, accelerating, and supplying its loads in the sequence shown on Tables 8.3-1 and 8.3-2 without exceeding 5 percent frequency drop (maximum). The units are capable of recovery to 98 percent of normal frequency in less than 2 seconds.
- c. Each diesel generator is capable of starting, accelerating, and supplying its load in their proper sequence without exceeding 20 percent voltage drop at its terminals (maximum). The units are capable of recovery to 90 percent of normal voltage in less than 2 seconds.
- d. Each diesel generator is capable of starting, accelerating, and running its largest motor at any time after the automatic loading sequence is completed, assuming that the motor had failed to start immediately.
- e. Each diesel generator is capable of reaching full speed and voltage within 10 seconds after receiving a signal to start, and can be fully loaded within 30 seconds following the start signal.
- f. The speed of each diesel generator does not exceed 75 percent of the difference between nominal speed and the overspeed trip setpoint, or 115 percent of nominal speed, whichever is lower, during recovery from transients caused by disconnection of the largest single load.

Each governor control system includes manual engine idle capability. Manually operating engines at a reduced speed for "warm up" or a "cool down" run prior to shutdown is recommended by manufacturer to minimize mechanical stress and wear. If a 4.16KV class 1E bus (SM-7,8) primary undervoltage relay signal is received when operating engines at reduced RPM (idle speed), manual control is automatically bypassed. The engines are accelerated to rated speed and generator excitation (field flash) is initiated. The diesel generator is automatically brought to rated frequency and voltage attaining a ready-to-load condition within 10 seconds.

- a. Voltmeter
- b. Ammeter
- c. Wattmeter
- d. Varmeter
- e. Field ammeter
- f. Annunciator panel
- g. Synchroscope, synchronizing switches and lights
- h. Frequency meter
- i. Elapsed time meter
- j. Generator breaker status lights
- k. Bus-tie breaker status lights

The diesel generator sets are capable of being started or stopped manually from the main control room or from local control panels, and all Class 1E instrumentation is capable of being monitored both in the main control room and locally.

8.3.1.1.8.1.11 Light or No Load Operation

Light loading of the diesel generators for extended periods may lead to accumulation of oil in the exhaust system and create a potential for fire which could damage the turbo-charger and exhaust system. The HPCS or diesel generator (1C) when started will be loaded, but the diesel generators (units 1A and 1B) start when offsite power is not available to the Class 1E 4.16 kV switchgear buses or when LOCA signal is received. Partial loss of offsite power does not cause connection of a diesel generator onto its 4.16 kV switchgear bus. Once offsite power to the bus is reestablished via transfer to a remaining offsite source, closure of the diesel generator breaker is blocked. In such a case, the units run unloaded. Also, during testing and maintenance/repairs, periods of unloaded operation are also expected to occur.

at rated speed The Division 1 and 2 diesel generating units are capable of running for four (4) hours in the unloaded or lightly loaded condition. Operating restrictions are employed to avoid the potential for fire if the diesels are run for more than 4 hours at less than 50% loading. *at rated speed* After 4 hours of loading at less than 50% the engines are run for a minimum of 30 minutes at greater than 50% loading before being shutdown. *The engines may be run unloaded at idle speed for extended periods.*

