

TABLE 3.3-4 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
7. Loss of Power (4.16 kV Emergency Bus Undervoltage)		
a. First Level		
1) Diesel Start	≥ 0 volts with a ≤ 0.8 second time delay and ≥ 2583 volts with a ≤ 10 second time delay	≥ 0 volts with a ≤ 0.8 second time delay and ≥ 2583 volts with a ≤ 10 second time delay
2) Initiation of Load Shed	One relay ≥ 0 volts with a ≤ 4 second time delay and ≥ 2583 volts with a ≤ 25 second time delay with one relay ≥ 2870 volts, instantaneous	One relay ≥ 0 volts with a ≤ 4 second time delay and ≥ 2583 volts with a ≤ 25 second time delay with one relay ≥ 2870 volts, instantaneous
b. Second Level		
1) Diesel Start	≥ 3785 volts with a ≤ 10 second time delay	≥ 3785 volts with a ≤ 10 second time delay
2) Initiation of Load Shed	≥ 3785 volts with a ≤ 20 second time delay	≥ 3785 volts with a ≤ 20 second time delay
8. Engineered Safety Features Actuation System Interlocks		
a. Pressurizer Pressure, P-11	≤ 1915 psig	≤ 1920.6 psig
b. DELETED		
c. Reactor Trip, P-4	N.A.	N.A.

NOTE 1: Time constants utilized in the lead-lag controller for Steam Pressure - Low are $\tau_1 = 50$ seconds and $\tau_2 = 5$ seconds.

NOTE 2: Steam Generator Water Level Low-Low Trip Time Delay

$$TD = [B1(P)^3 + B2(P)^2 + B3(P) + B4][0.99]$$

Where: P = RCS loop ΔT Equivalent to Power (%RTP), $P \leq 50\%$ RTP

TD = Time Delay for Steam Generator Water Level Low-Low Reactor Trip (in seconds)

Generators affected

$$B1 = -0.0072$$

$$B2 = +0.8181$$

$$B3 = -31.72$$

$$B4 = +468.8$$

DIABLO CANYON - UNITS 1 & 2

3/4 3-27

Amendment Nos.

37 & 36, 72 & 71,
84 & 83, 86 & 85

9402150090 940204
PDR ADOCK 05000275
PDR

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the Onsite Class 1E Distribution System shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by:
 - 1) Transferring 4 kV vital bus power supply from the normal circuit to the alternate circuit (manually and automatically) and to the delayed access circuit (manually), and
 - 2) Verifying that on a Safety Injection test signal, without loss of offsite power, the preferred, immediate access offsite power source energizes the emergency busses with permanently connected loads and energizes the auto-connected emergency (accident) loads through sequencing timers.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED BASIS by:**
 - 1) Verifying the fuel level in the engine-mounted fuel tank,
 - 2) Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be $4160 \pm 240/-375$ volts and 60 ± 1.2 Hz within 13 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
 - a) Manual, or
 - b) Simulated loss of offsite power by itself (Startup bus undervoltage), or
 - c) A Safety Injection actuation test signal by itself.

*For a five diesel generator configuration, tests of Diesel Generator 3 to satisfy the frequency specified in Table 4.8-1 and in Surveillance Requirement 4.8.1.1.2b for one unit may be counted in determining whether the frequency specified in Table 4.8-1 and in Surveillance Requirement 4.8.1.1.2b for the other unit is satisfied. Unit-specific portions of this Surveillance Requirement for Diesel Generator 3 shall be performed on an alternating schedule with signals from Units 1 and 2.

**All diesel generator starts for the purpose of this surveillance test may be preceded by an engine prelube period. Further, all surveillance tests, with the exception of once per 184 days, may also be preceded by warmup procedures (e.g., gradual acceleration and/or gradual loading > 150 sec) as recommended by the manufacturer so that the mechanical stress and wear on the diesel engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

- 3) Verifying the generator is synchronized, loaded to greater than or equal to 2484 kW in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes,
 - 4) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses,* and
 - 5) Verifying the diesel engine protective relay trip cutout switch is returned to the cutout position following each diesel generator test.
- b. At least once per 18 months during shutdown**, by:
- 1) Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service;
 - 2) Verifying that the load sequence timers are OPERABLE with each load sequence timer within the limits specified in Table 4.8-2;
 - 3) Verifying the generator capability to reject a load of greater than or equal to 508 kW while maintaining voltage at $4160 + 240/-375$ volts and frequency at 60 ± 3 Hz;
 - 4) Verifying the generator capability to reject a load of greater than or equal to 2484 kW without tripping. The generator voltage shall not exceed 4580 volts during and following the load rejection;
 - 5) Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses, and
 - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the required auto-connected loads through sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the permanent and auto-connected loads. After energization of these loads, the steady state voltage and frequency of the emergency busses shall be maintained at $4160 + 240/-375$ volts and 60 ± 1.2 Hz during this test.

*For a five diesel generator configuration, this may be the associated bus in the other unit if that unit is in MODE 1, 2, 3 or 4.

**For a five diesel generator configuration, these surveillance requirements can be performed on the third (common) diesel generator with only one unit shutdown.

SURVEILLANCE REQUIREMENTS (Continued)

- 6) Verifying that on a Safety Injection test signal without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be $4160 + 240/-375$ volts and 60 ± 1.2 Hz within 13 seconds after the auto-start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test;
- 7) Simulating a loss of offsite power in conjunction with a Safety Injection test signal, and:
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses;
 - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization of these loads, the steady state voltage and frequency of the emergency busses shall be maintained at $4160 + 240/-375$ volts and 60 ± 1.2 Hz during this test; and
 - c) Verifying that all automatic diesel generator trips, except engine overspeed, low lube oil pressure and generator differential, are bypassed when the diesel engine trip cutout switch is in the cutout position and the diesel is aligned for automatic operation.
- 8) Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to greater than or equal to 2750 kW and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 2484 kW. The generator voltage and frequency shall be $4160 + 240/-375$ volts and 60 ± 1.2 Hz within 13 seconds after the start signal. Within 5 minutes after completing this 24 hour test, perform Specification 4.8.1.1.2b.5)b);*
- 9) Verifying that the auto-connected loads to each diesel generator do not exceed the maximum rating of 2750 kW;
- 10) Verifying the diesel generator's capability to:

*If Specification 4.8.1.1.2b.5)b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead the diesel generator may be operated at 2484 kW for 1 hour or until operating temperature has stabilized.