

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.2.1 Each of the above required 250-volt, 125-volt, and ± 24 -volt batteries and chargers shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 1. The parameters in Table 4.8.2.1-1 meet the Category A limits, and
 2. Total battery terminal voltage on float charge is greater than or equal to 25.8 volts, 129 volts, and 258 volts for the ± 24 -volt, 125-volt, and 250-volt batteries, respectively.
- b. At least once per 92 days ^{or} and within 7 days after a battery discharge with battery terminal voltage below 22 volts, 110 volts, and 220 volts for the ± 24 -volt, 125-volt, and 250-volt batteries, respectively, or battery overcharge with battery terminal voltage above 31 volts, 150 volts, and 300 volts for the ± 24 -volt, 125-volt, and 250-volt batteries, respectively, by verifying that:
 1. The parameters in Table 4.8.2.1-1 meet the Category B limits,
 2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 250×10^{-6} ohm, and
 3. The average electrolyte temperature of 4, 10, or 20, as applicable, of connected cells for the 24-, 125- and 250-volt batteries is above 60°F.
- c. At least once per 18 months by verifying that:
 1. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,
 2. The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material,
 3. The resistance of each cell-to-cell and terminal connection is less than or equal to 250×10^{-6} ohms, and
 4. The battery charger will supply:
 1. For ± 24 -volt batteries at least 25 amperes at a minimum of 25.8 volts for at least 4 hours.
 2. For the 125-volt batteries, at least 200 amperes at a minimum of 129 volts for at least 4 hours for Divisions 1 and 2 and at least 50 amperes at a minimum of 129 volts for at least 4 hours for Division 3.
 3. For the 250-volt battery, at least 400 amperes at a minimum of 258 volts for at least 4 hours.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- d. At least once per 18 months, during shutdown, by verifying that either:
1. The battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for 8 1/2 hours for Divisions 1, and 2 and 4 1/2 hours for Division 3 when the battery is subjected to a battery service test, or
 2. The battery capacity is adequate to supply a dummy load of the following profile while maintaining the battery terminal voltage greater than or equal to 21 volts for the ± 24 -volt battery, 102-100 volts for the 125-volt battery, and 203 volts for the 250-volt battery, and 105 volts for the 125 v. Div 3 battery.
 - a) The ± 24 -volt battery, greater than or equal to 60 amperes; the 125-volt battery, greater than or equal to 222 amperes for Divisions 1 and 2 and 80 amperes for Division 3; and the 250-volt battery, greater than or equal to 612 amperes during the initial 60 seconds of the test.
 - b) The ± 24 -volt battery, greater than or equal to 60 amperes; the 125-volt battery, greater than or equal to 101 amperes for Divisions 1 and 2 and 15 amperes for Division 3; and the 250-volt battery, greater than or equal to 432 amperes during the remainder of the first hour of the test.
 - c) The ± 24 -volt battery, greater than or equal to 60 amperes; the 125-volt battery, greater than or equal to 101 amperes for Divisions 1 and 2 and 15 amperes for Division 3; and the 250-volt battery, greater than or equal to 229 amperes during the remainder of the 8-hour test for Divisions 1 and 2 and 4 hours for Division 3.
- e. At least once per 60 months during shutdown by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. At this once per 60-month interval, this performance discharge test may be performed in lieu of the battery service test.
- f. At least once per 18 months during shutdown performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

BATT SYS Time	0-3sec	3-13sec	13-30sec	30-60sec	1-60min	1-2hr
+ 24V	17	17	17	17	17	17
125V DIV 1	671	252	237	153	86	86
125V DIV 2	426	224	209	125	99	99
125V DIV 3	73.4 66	73.4 66	73.4 66	73.4 66	18.4 11	19.4 12
250V	1462	567	567	567	432	396

TABLE 4.8.2.1-1

BATTERY SURVEILLANCE REQUIREMENTS

Parameter	CATEGORY A(1)	CATEGORY B(2)	
	Limits for each designated pilot cell	Limits for each connected cell	Allowable(3) value for each connected cell
Electrolyte Level	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts(c)	> 2.07 volts
Specific Gravity(a)	≥ 1.200 (b)	≥ 1.195 Average of all connected cells > 1.205	Not more than 0.020 below the average of all connected cells Average of all connected cells ≥ 1.195 (b)

(a)Corrected for electrolyte temperature and level.

(b)Or battery charging current is less than (2) amperes when on float charge.

(c)May be corrected for average electrolyte temperature.

(1)For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.

(2)For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.

(3)With any Category B parameter not within its allowable value declare the battery inoperable.

level correction will be used when electrolyte level is outside the normal range.

