

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.3 As a minimum the following D.C. electrical sources shall be OPERABLE:

- a. 125-volt D.C. bus No. 1A, 125-volt Battery bank No. 1A and a full capacity charger.
- b. 125-volt D.C. bus No. 1B, 125-volt Battery bank No. 1B and a full capacity charger.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one of the required battery banks or busses inoperable, restore the inoperable battery bank or bus to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one of the required full capacity chargers inoperable, demonstrate the OPERABILITY of its associated battery banks by performing Surveillance Requirement 4.8.2.3.2.a.1. within 1 hour, and at least once per 8 hours thereafter. If any Category A limit in Table 4.8-2 is not met, declare the battery inoperable.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized at least once per 7 days by verifying indicated power availability.

4.8.2.3.2 Each 125-volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 - 1. The parameters in Table 4.8-2 meet the Category A limits, and
 - 2. The total battery terminal voltage is greater than or equal to 129-volts on float charge.

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SUREVILLANCE REQUIREMENTS (Continued)

- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:
 - 1. The parameters in Table 4.8-2 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 150×10^{-6} ohms, and
 - 3. The average electrolyte temperature of 10% (60 cells total) of connected cells is above 50°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, and coated with anti-corrosion material,
 - 3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohms, and
 - 4. The battery charger will supply at least 300 amperes at 140 volts for at least 6 hours.
- d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.
- 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. This performance discharge test may be performed in lieu of the battery service test required by Surveillance Requirement 4.8.2.3.2.d.
- f. Annual 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.

TABLE 4.8-2

BATTERY SURVEILLANCE REQUIREMENT

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 $< \frac{1}{4}$ " above maximum level indication mark	>Minimum level indication mark, and $< \frac{1}{4}$ " 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)	≥ 1.195 ^(b)	≥ 1.190 Average of all connected cells > 1.200	Not more than .020 below the average of all connected cells Average of all connected cells ≥ 1.190 ^(b)

(a) Corrected for electrolyte temperature and level.

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

(c) 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.

Re: St. Lucie Unit
Docket No. 50-335
Proposed License Amendment
D.C. Distribution

SAFETY EVALUATION

The present St. Lucie Unit #1 safety related D.C. System is being modified to be identical to the St. Lucie Unit #2 system.

The Technical Specification Surveillance requirements for demonstrating the Operability of the Station batteries are based on the recommendation of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants", February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

The Surveillance requirements encompass discharge and charge testing and include monitoring electrolyte temperature, cell specific gravity and voltage, total battery terminal voltage, float voltage and connection resistance values. The maintenance procedure and the discharge/charge test ensures the battery system capability to perform its design functions.

Based on this, the proposed Technical Specification change is complete and technically acceptable and does not constitute an unreviewed safety question.