

PDR-OPS-039 COLD CLIMATE BATTERY CHARGING PROCEDURES

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1. PURPOSE AND SCOPE

1. This document establishes mandatory procedures for charging lithi

2. These procedures apply to all Model BC-2000 through BC-2500 AM

2. DEFINITIONS

1. "BlueCore(TM) Battery System" refers to Company's proprietary co
2. "Charging Station" means Company-approved charging infrastru
3. "Cold Climate Operation" means any deployment environment mai
4. "Thermal Management System" or "TMS" refers to the integrated b

3. SAFETY REQUIREMENTS

1. All charging operations must comply with:
 - a) OSHA Standard 1910.178(g)

- b) NFPA 70E requirements
- c) Company Safety Protocol PDR-SAF-012
- d) Local jurisdictional requirements

2. Personnel Requirements:

- a) Only certified technicians may perform charging operations
- b) Minimum Level 2 BlueCore(TM) certification required
- c) Cold environment safety training completion mandatory

4. PRE-CHARGING PROCEDURES

1. Temperature Verification:

- a) Confirm battery core temperature via BlueCore(TM) diagnostic panel
- b) Record temperature in charging log

- c) Initiate TMS pre-heating if core temperature below -15 C

2. Charging Station Inspection:

- a) Verify charging station operational status
- b) Confirm absence of ice or moisture on contacts
- c) Check thermal monitoring system functionality
- d) Validate power supply parameters

5. CHARGING PROTOCOLS

1. Standard Charging Sequence:

- a) Engage TMS warm-up cycle
- b) Wait for "Ready" indicator on diagnostic panel
- c) Initialize charging sequence via control panel

d) Monitor charging progress through BlueCore(TM) interface

2. Temperature-Specific Requirements:

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Above -10 C: Standard charging protocol

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-10 C to -20 C: Extended warm-up cycle required

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Below -20 C: Enhanced thermal conditioning mandatory

3. Charging Parameters:

a) Maximum charging current: 125A

b) Target cell temperature: 10 C \pm 2 C

c) Maximum charging time: 4 hours

d) Minimum rest period: 30 minutes post-charge

6. MONITORING AND DOCUMENTATION

1. Required Monitoring:

- a) Core temperature every 15 minutes
- b) Charging current and voltage
- c) TMS performance metrics
- d) Ambient temperature

2. Documentation Requirements:

- a) Complete charging log entry
- b) Record any anomalies or deviations
- c) Update maintenance tracking system
- d) File monthly charging reports

7. EMERGENCY PROCEDURES

1. In case of charging anomalies:

- a) Terminate charging sequence
- b) Engage emergency shutdown if necessary
- c) Contact technical support
- d) Document incident

2. Temperature Excursions:

- a) Monitor for thermal runaway indicators
- b) Implement cooling protocols if necessary
- c) Evacuate area if safety thresholds exceeded

8. MAINTENANCE AND CALIBRATION

1. Weekly Requirements:

- a) Inspect charging contacts
- b) Clean thermal sensors
- c) Verify TMS operation
- d) Calibrate temperature monitors

2. Monthly Requirements:

- a) Full system diagnostic
- b) Charging efficiency analysis
- c) Update firmware if required
- d) Validate safety systems

9. COMPLIANCE AND REVIEW

1. This document shall be reviewed annually and updated as required
2. Compliance with these procedures is mandatory for maintaining wa
3. Deviations require written authorization from Company's Chief Tech

10. DOCUMENT CONTROL

Document Owner: Technical Operations Department

Review Cycle: Annual

Next Review Date: January 15, 2025

CONFIDENTIALITY NOTICE: This document contains proprietary

Approved by:

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Chief Technology Officer

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