

OPERATIONS DOCUMENT 413

STANDARD OPERATING PROCEDURES FOR AUTONOMOUS MOBILE ROBOT DEPLOYMENT AND MAINTENANCE

Effective Date: January 1, 2024

Document Version: 2.4

Last Updated: December 15, 2023

1. PURPOSE AND SCOPE

1. This Operations Document 413 ("Document") establishes the mandatory procedures and protocols for the deployment, operation, and maintenance of Polar Dynamics Robotics, Inc. ("Company") autonomous mobile robots ("AMRs") in temperature-controlled environments ranging from -40 C to +25 C.

2. This Document applies to all Company personnel involved in AMR operations, including but not limited to field technicians, deployment specialists, maintenance engineers, and operational supervisors.

2. DEFINITIONS

1. "IceNav System" means the Company's proprietary cold-environment navigation and operation platform.

2. "Critical Operating Parameters" means the set of environmental and performance metrics that must be maintained for safe AMR operation.

3. "Deployment Zone" means any customer facility or operational area where Company AMRs are installed and operated.

4. "Thermal Management Protocol" means the Company's standardized procedures for maintaining optimal AMR operating temperature in extreme environments.

3. PRE-DEPLOYMENT PROCEDURES

1. Site Assessment Requirements

1.1. A comprehensive environmental assessment must be conducted and documented using Form

OPS-101.

1.2. Thermal mapping of the deployment zone must be completed and validated by a certified Company engineer.

1.3. Network infrastructure compatibility must be verified according to Technical Specification TS-2023-14.

2. Equipment Preparation

2.1. All AMR units must undergo pre-deployment testing according to Protocol PDT-413.

2.2. IceNav System calibration must be performed and documented using the Company's proprietary calibration tools.

4. OPERATIONAL PROTOCOLS

1. Temperature Monitoring and Management

1.1. Continuous monitoring of AMR internal temperature using approved sensors.

1.2. Implementation of automatic thermal protection protocols when temperature thresholds are exceeded.

2. Navigation and Safety Systems

2.1. IceNav System must maintain minimum accuracy parameters as specified in Technical Document TD-209.

2.2. Safety override systems must be tested every 48 hours of operation.

5. MAINTENANCE REQUIREMENTS

1. Scheduled Maintenance

1.1. Level 1 maintenance must be performed every 500 operating hours.

1.2. Comprehensive system diagnostics must be conducted monthly.

1.3. Thermal management system inspection required every 14 days.

2. Emergency Maintenance

2.1. Response protocols for critical system failures must follow Emergency Response Plan ERP-2023.

2.2. All emergency maintenance must be documented using Form EM-413.

6. COMPLIANCE AND REPORTING

1. All maintenance activities must be logged in the Company's central maintenance management system.

2. Monthly performance reports must be generated and reviewed by operational supervisors.

3. Compliance with this Document must be audited quarterly by the Quality Assurance Department.

7. SAFETY PROTOCOLS

1. All personnel must complete Company Safety Training Program CST-413 before accessing deployment zones.

2. Personal protective equipment requirements must comply with Safety Standard SS-2023-01.

8. PROPRIETARY INFORMATION

1. This Document contains confidential and proprietary information of Polar Dynamics Robotics, Inc.

2. Unauthorized disclosure or distribution is strictly prohibited and may result in legal action.

9. AMENDMENTS AND UPDATES

1. This Document may be amended only by written authorization from the Chief Operations Officer.

2. All amendments must be documented in the Document Control Register.

10. EXECUTION AND APPROVAL

This Document is hereby approved and executed by the undersigned authorized representatives of Polar Dynamics Robotics, Inc.

APPROVED BY:

Sarah Nordstrom

Chief Operations Officer

Date: January 1, 2024

Dr. James Barrett

Chief Robotics Officer

Date: January 1, 2024

Katherine Wells

Chief Financial Officer

Date: January 1, 2024

11. DOCUMENT CONTROL

Document Number: OPS-413-2024-V2.4

Classification: Confidential

Review Cycle: Annual

Next Review Date: January 1, 2025

Document Owner: Operations Department