OPERATIONS DOCUMENT 412

STANDARD OPERATING PROCEDURES FOR AUTONOMOUS MOBILE ROBOT DEPLOYMENT AND MAINTENANCE

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1. PURPOSE AND SCOPE

1. This Operations Document 412 ("Document") establishes the binding operational procedures and protocols for the deployment, maintenance, and decommissioning of Polar Dynamics Robotics, Inc. ("Company") autonomous mobile robots ("AMRs") in temperature-controlled environments.

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 Temperature" means any ambient temperature below -30 C (-22 F).

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

4. "Maintenance Protocol" means the prescribed series of inspection, service, and repair procedures detailed in Section 4.

3. DEPLOYMENT PROCEDURES

1. Pre-Deployment Assessment

a) Conduct comprehensive site survey of Deployment Zone

b) Document temperature mapping of operational areas

c) Verify IceNav System compatibility with facility layout

d) Assess RF interference patterns and signal strength

e) Validate emergency stop system placement

2. Installation Requirements

a) AMR units must undergo 24-hour cold-soak testing

b) Calibrate thermal management systems to facility specifications

c) Install and test redundant navigation beacons

d) Configure facility-specific operational parameters

e) Verify fail-safe protocols

4. MAINTENANCE PROTOCOLS

1. Scheduled Maintenance

a) Weekly inspection of thermal management systems

b) Bi-weekly actuator performance validation

c) Monthly calibration of IceNav sensors

d) Quarterly full-system diagnostic review

e) Semi-annual firmware updates

2. Emergency Maintenance

a) 24-hour response time requirement

b) Remote diagnostic capabilities must be maintained

c) Replacement parts must be pre-qualified for cold environment

d) Documentation of all emergency interventions

5. SAFETY AND COMPLIANCE

1. Safety Requirements

a) All personnel must complete Cold Environment Safety Training

b) Protective equipment requirements per OSHA standards

c) Emergency shutdown procedures must be posted

d) Monthly safety drills required

2. Regulatory Compliance

a) Maintain documentation of all required certifications

b) Annual compliance audit requirement

c) Update procedures based on regulatory changes

d) Record retention requirements

6. QUALITY CONTROL

1. Performance Metrics

a) Monthly uptime requirements (minimum 98%)

b) Navigation accuracy standards

c) Temperature deviation tolerances

d) Response time requirements

2. Quality Assurance

a) Weekly performance data review

b) Monthly quality control inspections

c) Quarterly performance optimization

d) Annual system audit

7. PROPRIETARY INFORMATION

1. All technical specifications, operational procedures, and maintenance protocols contained within this Document are confidential and proprietary to Polar Dynamics Robotics, Inc.

2. Disclosure of any information contained herein to third parties is strictly prohibited without prior written authorization from the Company's Chief Technology Officer.

8. AMENDMENTS AND UPDATES

1. This Document may be amended or updated by the Company at any time, with notice to relevant personnel.

2. Version control and change documentation must be maintained by the Operations Department.

9. EXECUTION AND APPROVAL

IN WITNESS WHEREOF, this Operations Document 412 has been reviewed and approved by the

undersigned authorized representatives of Polar Dynamics Robotics, Inc.

APPROVED BY:

Sarah Nordstrom

Chief Operating Officer

Date: January 1, 2024

Dr. James Barrett

Chief Robotics Officer

Date: January 1, 2024

Katherine Wells

Chief Financial Officer

Date: January 1, 2024