EQUIPMENT MAINTENANCE PLAN

EQUIPMENT MAINTENANCE PLAN

ARCTIC BAY STORAGE FACILITY

Polar Dynamics Robotics, Inc.

Effective Date: January 15, 2024

Document Reference: EMP-AB-2024-001

1. PURPOSE AND SCOPE

1 This Equipment Maintenance Plan ("Plan") establishes the maintena

2 This Plan covers all BlueCore(TM)-enabled AMRs, charging stations

2. EQUIPMENT INVENTORY

1 Primary Equipment:

- Twenty (20) PDR-350X Cold Storage AMRs
- Four (4) PDR-500X Heavy-Duty Freezer AMRs
- Two (2) PDR-200X Maintenance Support Units

2 Support Infrastructure:

- Eight (8) BlueCore(TM) Rapid Charging Stations

Thirty-two (32) Environmental Navigation Beacons

-

Four (4) Central Control Units

-

One (1) Emergency Backup Power System

3. MAINTENANCE SCHEDULES

1 Daily Inspections:

-

Visual inspection of all operational AMRs

-

Battery performance verification

-

Navigation system calibration check

-

Temperature sensor validation

-

Obstacle detection system testing

2 Weekly Maintenance:

-

Detailed diagnostic scanning of BlueCore(TM) systems

-

Charging station efficiency testing

-

Navigation beacon signal strength verification

-

Wheel assembly and drive train inspection

- Environmental seal integrity check

3 Monthly Service:

- Comprehensive software updates
- Battery pack deep cycle testing
- Motor efficiency analysis
- Chassis structural inspection
- Environmental control system maintenance

4 Quarterly Overhaul:

- Complete system teardown and inspection
- Replacement of wear components
- Full calibration of all sensors
- Stress testing under maximum load conditions
- Safety system certification

4. MAINTENANCE PROCEDURES

1 All maintenance activities shall be performed by certified technicians

2 Maintenance activities shall follow the procedures detailed in the Blu

3 Documentation Requirements:

-

Digital maintenance logs for each unit

-

Photographic evidence of completed work

-

Performance test results

-

Parts replacement records

-

Technician certification verification

5. SAFETY PROTOCOLS

1 Required Safety Equipment:

- Cold environment protective gear
- Electrical safety equipment
- Fall protection systems
- Emergency shutdown devices
- Communication systems

2 Safety Procedures:

- Lock-out/tag-out implementation

Work zone isolation

-

Emergency response protocols

-

Environmental monitoring

-

Personal protective equipment verification

6. SPARE PARTS MANAGEMENT

1 Minimum Stock Requirements:

-

Four (4) replacement battery packs

-

Eight (8) drive motors

-

Sixteen (16) wheel assemblies

-

Two (2) complete navigation systems

-

Standard maintenance consumables

2 Parts shall be stored in the designated maintenance facility under co

7. QUALITY CONTROL

1 Performance Metrics:

-

Equipment uptime target: 98%

- Mean time between failures: >2000 hours
- Charging efficiency: >95%
- Navigation accuracy: 5mm
- Temperature variance tolerance: 0.5 C

2 Monthly audit of maintenance records and performance data

8. EMERGENCY PROCEDURES

1 Emergency Response Protocol:

-

Immediate shutdown procedures

-

Technical support escalation

-

Backup system activation

-

Client notification process

-

Recovery operations

9. COMPLIANCE AND REPORTING

1 Maintenance activities shall comply with:

-

ISO 9001:2015 Quality Management Systems

ANSI/RIA R15.06-2012 Robot Safety Standards

-

Company Standard Operating Procedures

-

Facility Safety Requirements

-

Local regulatory requirements

10. AMENDMENTS AND UPDATES

1 This Plan shall be reviewed quarterly and updated as necessary to r

-

Equipment modifications

-

Operational changes

-

Safety requirement updates

-

Regulatory compliance requirements

-

Performance optimization needs

AUTHORIZATION

APPROVED BY:

Dr. Elena Frost

CEO, Polar Dynamics Robotics, Inc.

Date: January 15, 2024

Sarah Nordstrom

COO, Polar Dynamics Robotics, Inc.

Date: January 15, 2024

Dr. James Barrett

Chief Robotics Officer

Date: January 15, 2024