

EMERGENCY SHUTDOWN PROCEDURE FOR ROBOTIC SYSTEMS

EMERGENCY SHUTDOWN PROCEDURE FOR

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1. PURPOSE AND SCOPE

1. This Emergency Shutdown Procedure ("Procedure") establishes m

2. This Procedure applies to all Company AMR models operating in te

2. DEFINITIONS

1. "Emergency Condition" means any situation that poses an immedia

a) Human safety incidents

b) Fire or smoke detection

c) Unauthorized facility access

d) Critical system failures

e) Environmental control malfunctions

f) Cyber security breaches

2. "Emergency Shutdown System" or "ESS" means the Company's pr

3. EMERGENCY SHUTDOWN ACTIVATION

1. Manual Activation

1.1. Physical Emergency Stop (E-Stop) buttons located on:

- a) Each AMR unit
- b) Facility walls at 50-foot intervals
- c) Control room master panel
- d) Mobile operator terminals

2. Automated Activation

2.1. The ESS shall automatically initiate shutdown upon detection of:

- a) Temperature excursions beyond 2 C of specified operating range
- b) Unauthorized entry into restricted zones
- c) Loss of primary power systems

d) Navigation system failures

e) Communication system failures

4. SHUTDOWN SEQUENCE

1. Upon activation, the ESS shall execute the following sequence:

1.1. Immediate Actions (0-5 seconds):

a) Cease all motion

b) Engage mechanical brakes

c) Disable power to motion systems

d) Activate emergency beacons

1.2. Secondary Actions (5-15 seconds):

a) Return BlueCore(TM) systems to safe state

- b) Secure payload
- c) Enable backup power systems
- d) Transmit status to control center

5. COMMUNICATION PROTOCOLS

1. The ESS shall immediately notify:

- a) On-site safety personnel
- b) Facility management
- c) Company technical support
- d) Emergency services (if required)

2. Notification Methods:

- a) Audible alarms

- b) Visual indicators
- c) Mobile device alerts
- d) Control room displays
- e) Automated phone calls

6. RESTART PROCEDURES

1. AMR units shall not resume operation until:
 - a) Emergency Condition has been cleared
 - b) Physical inspection completed
 - c) System diagnostics performed
 - d) Authorization received from designated safety officer
 - e) Documentation of incident completed

2. Required Documentation:

- a) Incident report
- b) System diagnostic results
- c) Corrective actions taken
- d) Authorization signatures

7. TRAINING AND COMPLIANCE

1. All personnel operating or supervising AMR systems must:

- a) Complete annual emergency response training
- b) Demonstrate proficiency in shutdown procedures
- c) Pass written examination
- d) Maintain current certification

8. MAINTENANCE AND TESTING

1. The ESS shall be tested:

- a) Monthly: Basic functionality
- b) Quarterly: Full system test
- c) Annually: Third-party certification

2. Documentation of all tests shall be maintained for five (5) years.

9. LEGAL COMPLIANCE

1. This Procedure complies with:

- a) OSHA 29 CFR 1910.147
- b) ANSI/RIA R15.06-2012

c) ISO 10218-2:2011

d) State and local regulations

10. DISCLAIMER AND LIMITATION OF LIABILITY

1. This Procedure is proprietary to Polar Dynamics Robotics, Inc. and

2. The Company reserves the right to modify this Procedure without n

APPROVAL AND EXECUTION

APPROVED AND ADOPTED by Polar Dynamics Robotics, Inc.

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Chief Robotics Officer

Date: January 15, 2024

By:

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Chief Operating Officer

Date: January 15, 2024

