

PDR-OPS-038 THERMAL TESTING CHAMBER OPERATIONS MANUAL

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Polar Dynamics Robotics, Inc.

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1. PURPOSE AND SCOPE

- 1. This Operations Manual ("Manual") establishes mandatory procedu
- 2. This Manual applies to all PDR employees, contractors, and author

2. DEFINITIONS

1. "Authorized Operator" means any PDR employee who has completed
2. "Chamber" means any of PDR's thermal testing environments capable
3. "Test Subject" refers to any PDR robotic system, component, or product

3. SAFETY REQUIREMENTS

1. Personal Protective Equipment (PPE)

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Insulated protective suits rated for -40 C

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Cryogenic gloves meeting ANSI/ISEA 105-2016 standards

- - 2 -

Safety goggles with anti-fog coating

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Emergency breathing apparatus within 10 meters of Chamber entrance

2. Chamber Access Controls

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Biometric authentication required for Chamber access

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Minimum two (2) Authorized Operators present during testing

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Emergency override codes updated monthly

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Maintenance of visitor log with signed liability waivers

4. OPERATING PROCEDURES

1. Pre-Test Protocol

- a) Complete safety checklist (Form PDR-SAF-103)
- b) Verify Chamber environmental controls calibration
- c) Install test monitoring equipment
- d) Document initial Test Subject condition
- e) Activate emergency shutdown systems test

2. Test Execution

- a) Program thermal cycle parameters
- b) Initialize BlueCore(TM) diagnostic systems
- c) Maintain continuous monitoring of:

-

Chamber temperature

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Humidity levels

-

Test Subject performance metrics

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Power consumption data

d) Record deviations per PDR-QA-207 protocol

3. Post-Test Procedures

a) Return Chamber to ambient temperature

b) Complete performance validation checklist

c) Archive test data in secure database

d) Inspect Chamber seals and sensors

e) Submit test report to Quality Assurance

5. EMERGENCY PROCEDURES

1. Emergency Shutdown

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Activate red emergency stop button

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Engage backup power systems

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Evacuate Chamber following posted route

-

Contact Facility Safety Officer

2. System Failures

- - 6 -

Initialize redundant cooling systems

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Engage manual override protocols

-

Document failure mode

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Implement recovery procedures per Section 7.3

6. MAINTENANCE AND CALIBRATION

1. Scheduled Maintenance

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Daily system checks

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Weekly sensor calibration

-

Monthly seal inspection

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Quarterly full system audit

2. Documentation Requirements

-

Maintain maintenance logs

-

Record calibration certificates

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Update Chamber certification

-

Archive inspection reports

7. COMPLIANCE AND TRAINING

1. Required Certifications

-

OSHA Safety Certification

-

PDR Chamber Operation Certificate

-

Cryogenic Safety Training

-

Emergency Response Qualification

2. Documentation

All testing activities must be documented using approved forms and s

PDR's secure document management system for a minimum of seven

8. LIABILITY AND CONFIDENTIALITY

1. This Manual contains confidential and proprietary information of PD.
2. Compliance with this Manual is mandatory. Violation may result in c

9. REVISION HISTORY

Version | Date | Description | Approved By

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- | | | | |
|---|------------|----------------------------|------------|
| 0 | 2024-01-15 | Updated safety protocols | J. Barrett |
| 1 | 2023-06-10 | Added emergency procedures | E. Frost |
| 0 | 2023-01-20 | Initial release | M. Chen |

APPROVAL

Approved by:

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Polar Dynamics Robotics, Inc.

Date: January 15, 2024

