PDR-OPS-040 QUALITY INSPECTION FOR ARCTIC-GRADE WIRING

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Next Review Due: December 1, 2024

1. PURPOSE AND SCOPE

1 This Standard Operating Procedure (SOP) establishes the mandato

2 This procedure applies to all electrical wiring, connectors, and assoc

2. DEFINITIONS

1 "Arctic-Grade Wiring" means any electrical conductor, cable assemb

2 "Quality Control Inspector" means a Company employee or authoriz

3 "Critical Failure Point" means any condition that could result in elect

3. INSPECTION REQUIREMENTS

1 Pre-Installation Inspection

a) Visual examination of wire insulation for micro-cracks or surface an

b) Verification of proper gauge and temperature rating markings

c) Confirmation of manufacturer's certification documentation

d) Cold-flex testing at -50 C for minimum 100 cycles

e) Dielectric strength verification at specified operating temperature

2 Installation Quality Verification

a) Proper routing clearance from mechanical stress points

b) Verification of bend radius compliance

c) Secure mounting of strain relief components

d) Thermal expansion compensation allowance

e) Proper torque verification on all electrical connections

3 Post-Installation Testing

a) Continuity testing at room temperature

b) Insulation resistance measurement at -40 C

c) Load testing under maximum rated current

d) Thermal cycling verification (25 C to -50 C)

e) Vibration testing at operating temperature

4. DOCUMENTATION AND REPORTING

1 The Quality Control Inspector shall maintain detailed records of:

a) Batch numbers and manufacturing dates

b) Pre-installation test results

c) Installation verification measurements

d) Post-installation performance data

e) Any deviations or non-conformances identified

2 All inspection records shall be maintained in the Company's Quality

5. NON-CONFORMANCE HANDLING

1 Any wiring components failing to meet the specified requirements sh

a) Immediately tagged and segregated

b) Documented in the non-conformance tracking system

c) Reported to the Quality Manager within 24 hours

d) Subject to formal failure analysis

e) Disposed of according to PDR-QMS-088

6. SAFETY REQUIREMENTS

1 All inspections shall be conducted in accordance with:

a) Company safety protocols

b) Relevant OSHA standards

c) Applicable electrical safety codes

d) Environmental protection requirements

e) Proper PPE usage protocols

7. QUALITY ASSURANCE

1 This procedure shall be reviewed annually by the Quality Manager a

2 Random audits of inspection records shall be conducted quarterly.

3 Any procedural modifications require written approval from the Qual

8. REFERENCE DOCUMENTS

1 PDR-TRN-122 Arctic Components Certification

2 PDR-QMS-088 Non-Conforming Material Handling

3 PDR-ENG-256 BlueCore(TM) Electrical Specifications

4 ISO 9001:2015 Quality Management Systems Requirements

5 IEC 60068-2-1 Environmental Testing - Cold

9. REVISION HISTORY

Version | Date | Description | Approved By

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2 | 2024-01-15 | Updated temperature cycling requirements | J. Barret

1 | 2023-06-10 | Added BlueCore(TM) specific requirements | M. Chen

0 | 2023-01-15 | Major revision - Arctic standards update | E. Frost

10. APPROVAL

APPROVED BY:

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Date: January 15, 2024

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