



Australian Government

UEEHA0036 Test reeling, trailing and flexible cables and their attachments used in coal mining

Release: 1

UEEHA0036 Test reeling, trailing and flexible cables and their attachments used in coal mining

Modification History

Release 1. This is the first release of this unit of competency in the Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to pre and post-repair test reeling, trailing and flexible cables and their attachments, as used in coal mining. It includes: working safely and to standards; evaluating the condition of cables; conducting cable tests; finding faults; writing repair specifications; and documenting test results and cable repair history.

It is adopted from clause 2.18 of AS/NZS 4761.1:2018 Competencies for working with electrical equipment for hazardous areas (EEHA). There may be differences between the content of this unit and AS/NZS 4761.1:2018, so the Standard must be checked to ensure compliance with it.

This unit applies to electrical equipment overhaul and repair job functions.

Site-specific work permits may be required to work in the hazardous environment. In addition, other permits may be required, such as confined space and to operate specific pieces of equipment such as elevated work platforms in various jurisdictions.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEEHA0030 Repair reeling, trailing and flexible cables used in coal mining

Competency Field

Hazards

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to test cables

- 1.1** Safe work methods to test damaged and repaired cables are obtained and understood
- 1.2** Cable to be tested before and after repair is confirmed with supervising personnel
- 1.3** Cable repair history and test records are reviewed to identify potential issues and ascertain the viability of repair
- 1.4** Tools, equipment and testing devices needed to carry out the tests are obtained and checked for correct operation, safety and currency of calibration certification

2 Determine the extent of cable repairs by fault finding, testing and inspection

- 2.1** Safe work methods to carry out cable inspecting and testing are obtained interpreted and applied
- 2.2** Knowledge of basic electrical quantities, circuits and cable design parameters and how they are tested and measured is applied to cable testing
- 2.3** Cable testing devices are handled carefully and set up correctly prior to each test
- 2.4** Cables are inspected and tested to ascertain the viability of repairs or extent of repairs required
- 2.5** Viability and extent of the cable repair is determined from inspection, test results and cable repair history records
- 2.6** Decision on the viability of repair and instructions for the repair of the cable are documented and forwarded to the responsible personnel

3 Test repaired cable

- 3.1** Safe work methods to carry out cable testing are obtained interpreted and applied
- 3.2** Cable testing devices are handled carefully and set up correctly prior to each test
- 3.3** Each test reading is taken accurately, interpreted and recorded

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|--|------------|---|
| | 3.4 | Actions to rectify any non-complying parameters shown by test results are documented and forwarded to the responsible personnel |
| | 3.5 | Safe work methods for the care and storage of test equipment at the completion of testing are followed |
| 4 Document test results, fault finding and cable repair | 4.1 | Cable history test records are updated in accordance with quality assurance procedures |
| | 4.2 | Responsible supervisor is notified of the completion of the work in accordance with quality assurance procedures |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Electrotechnology Training Package Companion Volume Implementation Guide.

This unit must include these conditions in relation to pre and post repair testing of at least four separate cables. Among the cables for which competency is required, all of the following features shall be included:

Cable features	AS/NZS designated cable type
• Standard conductor construction	209; 210; 240; 241; 260; 275; 409; 412.1; 440; 441.1; 441; 450; 455.
• Super flexible	245.
• XR-EP-90 insulated compound	441; 450; 455.
• Semi conductive extruded screens	241; 245; 441.1; 441; 450; 455.
• Metal braided screens	209; 210; 240; 260; 409; 440; 450.
• Interstitial earths	241; 245; 275; 412.1; 441.1; 441; 450; 455.

- Interstitial pilots 240; 260; 440; 450; 455.
- Central pilot 209; 210; 241; 245; 275; 409; 441.1; 441.
- Pliable armour 260; 412.1.
- Sheath reinforcement 241; 245; 274; 441.1; 441; 450; 455.

Unit Mapping Information

This is a new unit.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEHA0036 Test reeling, trailing and flexible cables and their attachments used in coal mining

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- preparing to test damaged cable including:
 - reviewing safe work methods
 - reviewing repair history and test records of cable to be repaired
 - obtaining equipment and testing devices and checking them for safe operation and currency of calibration certification
- determining the extent of cable repairs including:
 - confirming and accepting safe work methods
 - inspecting and testing damaged cables using fault finding procedures
 - using inspection and test results together with cable repair history in determining the viability or extent of repair required
 - documenting the viability of repair and repair instruction from fault finding and forwarding to responsible personnel
- testing repaired cable including:
 - confirming and accepting safe work methods
 - setting up testing devices and taking and recording each test reading accurately
 - documenting actions to be taken to rectify non-complying parameters shown by test results and forwarded to the responsible personnel
 - following safe work methods for the care and storage of test equipment
- updating cable repair history record and notifying the responsible supervisor on the completion of the work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- nature of electricity and electrical circuits including:
 - electrical current and charge

- sources of electricity
- effects of current
- single-source single-load circuits covering:
 - components that make up the circuit
 - the relationship between voltage and current
 - consequences of a short-circuit and an open-circuit
- electrical properties of material including:
 - insulating materials including:
 - insulating properties
 - types and applications of insulation in cable technology
 - conducting materials including:
 - conducting properties
 - factor affecting resistance
 - types and applications of conducting materials in cable technology
 - semiconducting materials including:
 - semiconducting properties
 - types and applications in cable technology
- electrical parameters of cables and electrical measurement including:
 - testing devices including:
 - devices used for testing cables
 - care and handling
 - requirement of measuring instruments to have current calibration certification
 - cable tests including:
 - continuity test
 - phase rotation test
 - insulation resistance test
 - high-voltage proof test
 - partial break test
 - symmetrical load test
 - sheath test
- testing electrical parameters of cables and cable assemblies including:
 - causes of inaccuracies and overcoming them
 - test device set up and safety procedures
 - interpreting test readings
 - test results that show a cable complies with standard requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate tools and testing devices and PPE currently used in industry
- safe work method documentation
- resources relevant to the cable repairs undertaken and required to be a recognised cable repair workshop to the scope of AS/NZS 1747 with ISO 9001 type quality assurance.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>