



Australian Government

UEPMNT501 Diagnose and repair faults in electrical and electronic systems

Release: 1

UEPMNT501 Diagnose and repair faults in electrical and electronic systems

Modification History

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

Application

This unit involves the skills and knowledge required to diagnose and repair faults in electrical and electronic systems.

Diagnosing and repairing faults is the process of optimising electrical and electronic systems through regular inspections and verification to meet efficiency and operational requirements.

Competency in this unit requires the ability to plan work, verify faults, find faults, determine cause of fault, repair and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEPMNT410 Diagnose and repair faults in electronic equipment

UEPMNT411 Diagnose and repair faults in complex electrical equipment

UEENEEG108A Troubleshoot and repair faults in low voltage electrical apparatus and circuits

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in D.C. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEG006A Solve problems in single and three phase low voltage machines

UEENEEG033A Solve problems in single and three phase low voltage electrical apparatus and

circuits

UEENEEG063A Arrange circuits, control and protection for general electrical installations

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage A.C. circuits

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

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

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specification
- 1.4** Relevant plans, drawings and manuals are selected and interpreted, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures and system

	requirements
	1.7 Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
	1.8 Work area is prepared, in accordance with workplace procedures
2 Verify electrical or electronic fault	2.1 Normal performance and function of electrical and electronic systems is ascertained, in accordance with workplace procedures
	2.2 Fault indicators, technical information and diagnostic techniques are used to verify reported faults, in accordance with workplace procedures
	2.3 Faults are reproduced and monitored, if possible, in accordance with workplace procedures
3 Find electrical or electronic fault	3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	3.2 Electrical and electronic equipment, components, wires, cables, terminations and support fixings are inspected, in accordance with workplace procedures, for faults
	3.3 Diagnostic techniques are selected and used to determine faults, in accordance with workplace procedures
	3.4 Electrical and electronic equipment and components are disconnected, in accordance with workplace procedures, to enable accurate test measurements without back feed readings
	3.5 Test and measurement instruments are used, in accordance with workplace procedures and manufactures' specifications
4 Determine cause of electrical or electronic fault	4.1 Details relating to fault is collected from personnel, in accordance with workplace procedures
	4.2 Information from indicators and maintenance records are used to determine faults, in accordance with workplace procedures

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| | 4.3 | Conclusions about the nature and cause of the fault based on analysis of evidence are used, in accordance with the workplace procedures |
| 5 Repair electrical or electronic fault | 5.1 | Isolations are confirmed, where appropriate, in accordance with workplace procedures |
| | 5.2 | Faulty, worn or damaged equipment and components are replaced or repaired, in accordance with workplace procedures |
| | 5.3 | Equipment and components disconnected for testing are reconnected, in accordance with workplace procedures, and all terminations are checked to ensure they are electrically and mechanically sound |
| | 5.4 | All faults are repaired, in accordance with workplace procedures |
| | 5.5 | Final inspection is performed, in accordance with workplace procedures |
| 6 Complete work | 6.1 | Work is completed, in accordance with workplace procedures |
| | 6.2 | Appropriate personnel are notified, in accordance with workplace 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 Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT501B Diagnose and repair faults in electrical and electronic systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT501 Diagnose and repair faults in electrical and electronic systems

Modification History

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

Performance Evidence

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

- communicating with personnel
- completing work applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- data analysis techniques and tools
- determining cause of electrical and electronic systems fault
- determining permit to work requirements
- fault finding and diagnostic techniques
- finding electrical and electronic systems fault
- implementing regulations, industry standards, codes of practice and legislation
- interpreting manufacturers' specifications and manuals
- planning for diagnosis and repair of faults in electrical and electronic systems work
- repairing electrical and electronic systems fault using repair techniques and procedures
- selecting materials
- test and measurement instruments
- using tools and equipment
- verifying electrical and electronic systems fault using verification techniques

Knowledge Evidence

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

- diagnosing and repairing electrical and electronic systems
- electronic and electrical systems

- equipment and materials
- fault finding and diagnostic techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment, its location and operation
- repair techniques
- test and measurement instruments
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

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.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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