



Australian Government

UEPMNT357 Diagnose and repair faults in instrumentation equipment

Release: 2

UEPMNT357 Diagnose and repair faults in instrumentation equipment

Modification History

Release 2. Minor release to update superseded pre-requisite units.

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 instrumentation equipment, including, but not limited to, sensor elements, signal characterising equipment, input and output blocks, controllers, transducers and final elements.

A fault is defined as an abnormal condition or defect at the component, equipment or system level which may lead to a failure. Diagnosing and repairing faults ensures the smooth and efficient operation of all instrumentation equipment in a power generation facility.

Competency in this unit requires the ability to plan work, find and verify instrumentation equipment faults, determine cause and then repair faults in instrumentation equipment 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

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

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, in accordance with workplace procedures and job specification
- 1.4** Relevant plans, drawings and manuals are selected and used, 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
- 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 and site procedures

2 Diagnose and verify faults

- 2.1** Normal performance and function of instrumentation equipment is ascertained using manufacturers' manuals and industry standards, 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, in accordance with workplace procedures
- 3 Find faults**
 - 3.1 Isolations for work are confirmed, where appropriate, in accordance with workplace procedures and site requirements
 - 3.2 Instrumentation equipment components, wires, cables, terminations and support fixings are inspected for faults, in accordance with workplace procedures
 - 3.3 Diagnostic techniques are selected and used to determine faults, in accordance with workplace procedures
 - 3.4 Components are disconnected, to enable accurate test measurements of suspected faulty components without the concern of back feed readings, in accordance with workplace procedures
 - 3.5 Test and measurement instruments are used, in accordance with workplace procedures, manufacturers' specifications and job requirements
- 4 Determine cause of faults**
 - 4.1 Appropriate personnel are consulted on faulty equipment, in accordance with workplace procedures
 - 4.2 Information from fault indicators and maintenance records are used, in accordance with workplace procedures
 - 4.3 Conclusions about the nature and cause of the fault are determined from an analysis of the evidence, in accordance with workplace procedures
- 5 Repair faults**
 - 5.1 Isolations for work are confirmed, in accordance with workplace procedures and site requirements
 - 5.2 Faulty components are replaced or repaired, in accordance with manufacturers' specifications and workplace procedures
 - 5.3 Components disconnected for testing are reconnected, and all terminations are checked to ensure they are electrically and mechanically sound, in accordance with

- workplace procedures
- 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 and appropriate personnel are notified, in accordance with workplace procedures
 - 6.2 Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
 - 6.3 Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures
 - 6.4 Work completion details are finalised, 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 UEPMNT357B Diagnose and repair faults in instrumentation equipment.

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 UEPMNT357 Diagnose and repair faults in instrumentation equipment

Modification History

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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:

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

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 faults in instrumentation equipment

- diagnostic and fault finding techniques and procedures
- equipment and materials
- instrument calibration techniques
- instrumentation equipment
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plant and equipment and its location
- repair and verification 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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