



Australian Government

UEPMNT427 Diagnose and repair faults in complex instrumentation equipment

Release: 2

UEPMNT427 Diagnose and repair faults in complex 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 Minor release to update superseded pre-requisite units.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 undertake the diagnosis and repair of complex instrumentation configuration including, but is not limited to signal characterising equipment, totaliser units, microprocessor control and interface equipment, laboratory and field analysers, ultrasonic and nucleonic equipment.

Diagnosing and repairing complex electronic instrumentation equipment that is used to measure, monitor, automate and control processes and equipment in a power generation facility includes the inspection, testing and verification of operational efficiency to identify possible repairs.

Competency in this unit requires the ability to plan work, verify complex electronic instrumentation equipment faults, find complex electronic instrumentation equipment faults, diagnose complex electronic instrumentation equipment faults, repair complex electronic instrumentation equipment faults and to report on all completed 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

UEPMNT356 Maintain instrumentation equipment

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare work

2 Diagnosing complex instrumentation

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 used, in accordance with workplace procedures |
| 1.5 | Correct materials and components 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 procedures |
| 2.1 | Normal performance and function of complex instrumentation equipment is ascertained, in accordance |

equipment fault	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 complex instrumentation equipment fault	3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	3.2 Complex instrumentation equipment components, wires, cables, terminations and support fixings are inspected, in accordance with workplace procedures, for faults
	3.3 Fault finding or diagnostic techniques are selected and used, in accordance with workplace procedures
	3.4 Components are disconnected to enable accurate test measurements of suspected faulty components, in accordance with workplace procedures, without back feed readings occurring
	3.5 Test and measurement instruments are used, in accordance with workplace procedures and manufacturers' specifications
4 Determine cause of complex instrumentation equipment fault	4.1 Appropriate personnel are consulted, if required, 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 complex instrumentation equipment fault are based on an analysis of available evidence, in accordance with workplace procedures
5 Repair complex instrumentation equipment fault	5.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures and site requirements
	5.2 Faulty, worn or damaged components are repaired, in accordance with workplace procedures

- 5.3 Parts and components are selected and replaced, as required, in accordance with workplace procedures and manufactures' specifications
 - 5.4 Components disconnected for testing are reconnected, in accordance with workplace procedures and all terminations are checked to ensure they are electrically and mechanically sound
 - 5.5 All faults are repaired, in accordance with workplace procedures
 - 5.6 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 UEPMNT427B Diagnose and repair faults in complex 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 UEPMNT427 Diagnose and repair faults in complex instrumentation equipment

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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 and finalising completion details
- determining cause of faults using fault finding and diagnostic techniques
- determining permit to work requirements
- finding faults
- identifying and selecting materials
- implementing regulations, industry standards, codes of practice and legislation
- interpreting manufacturers' specifications and manuals
- performing instrument calibration techniques
- planning diagnosing and repairing of faults in complex instrumentation equipment work
- repairing faults
- using tools and equipment
- utilising data analysis techniques and tools
- verifying faults
- 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:

- complex instrumentation equipment
- diagnosis and repair of electronic instrumentation equipment plant and equipment, its location and operation
- equipment and material
- fault finding and diagnostic techniques
- instrument calibration techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- repair techniques
- technical drawings and manufacturers' manuals
- 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.

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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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