



Australian Government

UEPMNT504 Test and commission instrumentation systems

Release: 1

UEPMNT504 Test and commission instrumentation 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 conduct testing and commissioning of instrumentation systems and all ancillary equipment including, but not limited to, PC operating systems, distributive control systems, programmable logic control systems, process control systems.

Testing and commissioning includes the assessment and verification that the instrumentation system and ancillary equipment in a power generation facility is meeting operational requirements.

Competency in this unit requires the ability to plan work, testing wiring systems, testing piping and tubing systems, testing instrumentation equipment, commissioning instrumental equipment and 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

UEPMNT430 Test and commission complex instrumentation equipment

UEPMNT359 Test and commission instrumentation systems

UEENEEI001B Install and set up transducers and sensing devices

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A 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

2 Test wiring systems

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 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 procedures
- 2.1** Isolations are confirmed, where appropriate, in

- accordance with workplace procedures
- 2.2** Wiring systems are tested, in accordance with workplace procedures, plans, drawings and manuals
- 2.3** Wiring systems, including enclosures and supports, are inspected prior to testing, in accordance with workplace procedures, to ensure absence of damage, defects or deterioration
- 2.4** Fixed wiring is tested, in accordance with workplace procedures, and results are documented to confirm compliance with job specification
- 3 Test piping and tubing systems**
- 3.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 3.2** Piping and tubing systems are tested, in accordance with workplace procedures, plans, drawings and manuals
- 3.3** Piping and tubing systems, including enclosures and supports, are inspected prior to testing, in accordance with workplace procedures, to ensure absence of damage, defects or deterioration
- 3.4** Fixed piping and tubing is tested, in accordance with workplace procedures, and results are documented to confirm compliance with job specification
- 4 Test instrumentation system**
- 4.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 4.2** Instrumentation system is tested, in accordance with workplace procedures, plans, drawings and manuals
- 4.3** Test conditions are confirmed and instrumentation system is inspected, in accordance with workplace procedures, to ensure absence of damage, defects or deterioration
- 4.4** Instrumentation system test results are documented to confirm compliance with job specification
- 5 Commission instrumentation equipment**
- 5.1** Required isolations are confirmed, where appropriate, in accordance with workplace procedures site requirements
- 5.2** Instrumentation system is commissioned, in accordance with workplace procedures, plans, drawings and

manuals

- 5.3 Instrumentation system is set up, in accordance with workplace procedures and manufacturers' specifications
- 5.4 Testing and monitoring results are reviewed and documented, in accordance with workplace procedures, to ensure equipment operates within manufacturers' specifications

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 UEPMNT504B Test and commission instrumentation 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 UEPMNT504 Test and commission instrumentation systems

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
- commissioning equipment using commissioning techniques and procedures
- communicating with personnel
- determining permit to work requirements
- finalising completion details
- inspecting, monitoring and testing wiring systems, piping and tubing systems and equipment
- interpreting manufacturers' specifications, manuals, plans and drawings
- performing with instrument calibration techniques
- planning for testing and commissioning of instrumentation systems work
- safe working practices implementing regulations, industry standards, codes of practice and legislation
- selecting and using materials
- testing piping and tubing systems
- testing system
- testing wiring systems using testing techniques
- using tools and equipment
- utilising 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:

- characteristics and operating principles of equipment and plant instrumentation systems
- equipment and materials
- generation plant and equipment, its location and operation
- instrument calibration techniques
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- plans and drawings
- test and commission of instrumentation systems
- test and commission 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

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.
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