Australian Government

Department of Education, Employment and Workplace Relations

UEPMNT421B Conduct technical inspection of process plant and equipment

Release: 1

UEPMNT421B Conduct technical inspection of process plant and equipment

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit deals with the skills and knowledge required to conduct the technical inspection of a generation plant, equipment, processes and associated infrastructure.

Application of the Unit

Application of the Unit **2)**

This unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to Occupational Health and Safety and where applicable contracts of training such as apprenticeships and the like.

Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.
Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed.
Common Unit Group

Unit Code	Unit Title
UEPMNT351B	Test and commission electrical equipment
UEENEEG108A	Trouble-shoot and repair faults in low voltage electrical apparatus and circuits
UEENEEE101A	Apply Occupational Health Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, dismantle, assemble of utilities industry components
UEENEEE104A	Solve problems in d.c. circuits
UEENEEE105A	Fix and secure electrotechnology equipment
UEENEEE107A	Use drawings, diagrams, schedules, standards, cords 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

Prerequisite Unit(s) **4)**

	devices and related circuits
UEENEEG102A	Solve problems in low voltage a.c. circuits
UEENEEG106A	Terminate cables, cords and accessories for low voltage circuits

Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following levels. A description of what each level entails is provided in Section 2.3.1 Language, Literacy and Numeracy.

Reading 4 Writing 4 Numeracy 4

Employability Skills Information

Employability Skills **5)**

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit	Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT		PERFORMANCE CRITERIA	
1	Prepare for inspection process plant	1.1	Short term maintenance and operating history is obtained
		1.2	Occupational Health and Safety standards, statutory requirements, relevant Australian standards, codes of practice, manufacturers' specifications and enterprise procedures are identified, applied and monitored throughout the inspection procedure
		1.3	Deviations from normal operational parameters are identified
		1.4	Potential options for cause of deviations are established
		1.5	Needs and outcomes for plant inspections and/or test are defined, in accordance with potential options
		1.6	Appropriate method sheets, check sheets and isolation instructions are obtained
		1.7	Relevant technical and engineering procedures are considered and adapted where required
		1.8	Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
2	Inspection process plant	2.1	Plant is correctly identified
		2.2	Plant operational status is identified
		2.3	Work is carried out in accordance statutory, enterprise/site requirements
		2.4	Appropriate methods are followed
		2.5	Relevant documentation is completed
		2.6	The needs and outcomes for the inspection are achieved
		2.7	Any needs for additional tests/inspections

ELEMENT		PERFORMANCE CRITERIA	
			required are defined
		2.8	Plant/equipment is left in a safe condition
		2.9	Plant/equipment availability is declared
		2.10	Specialist assistance is sought when required
3	Evaluate/analyse inspection results	3.1	Test/inspection results and data are analysed
		3.2	Conclusions drawn with reference to potential options
		3.3	Causes for deviations from normal operation are identified
4	Prepare remedial action plan	4.1	Action plan is prepared for any required remedial action
		4.2	Remedial action is followed up and checked for effectiveness
5	Update documentation	5.1	All relevant records and documentation are updated in accordance with statutory, industry and enterprise requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the Essential Skills and Knowledge and their level, required for this unit.
Evidence shall show that knowledge has been acquired conducting technical inspections of process plants and equipment.
All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.
The extent of the Essential Knowledge and Associated Skills required follows:
KS01-PM421B Technical inspection of process plant and equipment
T1 Evidence shall show that knowledge has been acquired for safe working practices of:

- Relevant Environmental, Occupational Health and Safety legislation and regulations
- Relevant plant and equipment, its location and operation
- Technical drawings and manufacturers manuals
- Introduction to and typical arrangements of power production plant
- Relevant statutory legislation
- Relevant enterprise/site safety procedures
- Enterprise/site emergency procedures and techniques
- Plant status
- Plant operating parameters
- Environmental awareness
- Inspection and test procedures
- Relevant test equipment
- Diagnostic techniques;
- Sampling techniques
- Quality assurance and quality control
- Data logging systems
- Engineering assembly, design and operating principles

T2 Specific skills needed to achieve the Performance Criteria:

- Apply Relevant Environmental, Occupational Health and Safety legislation and regulations
- Interpret Technical drawings and manufacturers manuals
- Apply enterprise recording procedures
- Locate relevant plant and equipment
- Identify plant status
- Recognise abnormal plant operating conditions
- Communicate effectively
- Apply documentation recording procedures
- Recognise worn, damaged or seized components

REQUIRED SKILLS AND KNOWLEDGE

- Identify components against drawings, manuals and modules
- Select and use engineering procedures and instructions
- Apply sampling techniques
- Apply diagnostic techniques
- Apply data analysis techniques and tools
- Apply testing and inspection techniques
- Use material safety data sheets.

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the Range Statement of unit and the Training Package Assessment Guidelines.
The Evidence Guide forms an integral part of this competency standard unit and shall be used in conjunction with all components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment **9.1)**

Longitude competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and regulatory policy. Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.
The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence

need to be 'rich' in nature so as to minimise error in judgment. Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all pre-requisites shall be met.
Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines – UEP12". Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement
  - Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement
  - Demonstrate an understanding of the essential knowledge and associated skills as described in 6) of this unit
  - Demonstrate an appropriate level of employability skills
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
  - The knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory legislation; Enterprise/site safety procedures;

Enterprise/site emergency procedures

- The process plant and its operating parameters
- Inspection and test procedures
- Identifying worn, damaged or faulty plant and equipment
- Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

Context of and specific resources for assessment **9.3)**

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace conditions.
Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application of work.
In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and methods and in a variety of environments.

Method of assessment **9.4)**

This unit shall be assessed by methods given in 1.3.00 Assessment Guidelines.
Note:
Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential

knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.
Nil

Range Statement

RANGE STATEMENT

10) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.
Generation plant and/or equipment may include fired and unfired pressure vessels, pipe work valves and fittings, turbines, generators, chemical and water treatment plant, ashing plant, gas turbine plant, hydro plant, wind farm plant, fuel firing plant, draught plant and pumping equipment.
Safety standards may include relevant sections of Occupational Health and Safety legislation, enterprise safety rules and procedures, relevant state and federal legislation, national standards or codes of practises for plant.
Information and documentation sources may include verbal or written communications; enterprise safety rules documentation/form(s); equipment and alarm manuals; dedicated computer equipment; drawings, logic diagrams; testing procedures; plant records; plant failure reports; enterprise/site standing and operating instructions; enterprise/site log books; manufacturer's operation and maintenance manuals; and specialist's reports.
Technical and operational indicators may include stimuli (audio, smell, touch, visual), remote or local indicators and recorders, alarms (visible and or audible) and basic fault finding equipment.
Tests may include stand-by plant tests, pre-commissioning operating tests, functional testing and sampling.
Appropriate personnel for consultation may include supervisor/team leader or equivalent, technical and engineering officers or equivalent, power system control personnel or equivalent, maintenance staff, power plant operations personnel, contractor and external specialist personnel.
Operating environment may be, remote from plant, aided by indicators and monitors, during inclement or otherwise harsh weather conditions, in wet/noisy/dusty/hot areas, during night periods, dependant on duty cycle and working in confined spaces.
Faults and abnormal operating conditions may include, pressure, level, flow, temperature, speed, vibration and mix.
Generic terms are used throughout this Training Package for vocational standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Section 2.1 Preliminary Information and Glossaries.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Maintenance.