Australian Government

Department of Education, Employment and Workplace Relations

UEPOPS325B Operate and monitor water quality monitoring systems

Release: 1

UEPOPS325B Operate and monitor water quality monitoring systems

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This competency standard unit deals with the skills and knowledge required to operate and monitor water quality monitoring systems in a power station. These systems include all analytical devices used to monitor process chemical conditions.

Application of the Unit

Application of the Unit **2)**

This competency standard 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 practice 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.
There are no pre-requisite units

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 3 Writing 3 Numeracy 3

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 Plan and prepare work	1.1	Safety issues are identified to comply with enterprise/site requirements
	1.2	Work requirements are identified from relevant personnel and documentation
	1.3	Documentation to determine plant status is assessed and evaluated
	1.4	Localised device inspection is carried out in accordance with manufacturer's and enterprise procedures
	1.5	Device operational pre-requisites are established in accordance with manufacturer's and enterprise procedures
	1.6	Sequence for recommissioning of device is determined to suit existing circumstances in accordance with enterprise/site requirements
	1.7	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 Operate device	2.1	Devices are operated in accordance with enterprise and manufacturer's operating procedures
	2.2	Devices are monitored and observed to detect deviations from normal operating conditions
	2.3	Corrective actions taken to rectify abnormalities in accordance with manufacturer's and enterprise procedures
3 Test device operation	3.1	Tests are performed in accordance with defined procedures applicable to the operational test
	3.2	Devices are observed for correct operational response
	3.3	Devices are returned to required operational status upon completion of test

ELEMENT	PERFORMANCE CRITERIA
4 Analyse plant conditions	4.1 Cause of abnormal plant conditions are identified by analysing the technical and operational information in a logical and sequential manner
	4.2 Corrective action is taken when response is not in accordance with documentation, plant integrity or personnel safety requirements
	4.3 Plant integrity and personnel safety is maintained through consultation with appropriate personnel, and reference to plant, technical and operational documentation
5 Monitor and inspect plant	5.1 Plant to be monitored/inspected is physically identified
	5.2 Plant is monitored/inspected for normal operation or to detect deviations
	5.3 Corrective action taken is in accordance with enterprise/site procedures
	5.4 Appropriate personnel are notified when defects are detected
6 Complete documentation	6.1 Documentation is updated and plant problems, movements, abnormalities and status are reported and logged in accordance with enterprise/site procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) Essential Knowledge and Associated Skills (EKAS): This describes the essential skills and knowledge and their level, required for this unit.
Evidence shall show that knowledge has been acquired of operating and monitoring water quality control systems for a permit to work.
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-PO325B Water quality monitoring systems
Evidence shall show that knowledge has been acquired for safe working practices of:
T1 Relevant Environmental, Occupational Health and Safety legislation and regulations
T2 Enterprise procedures
T3 Plant drawings and manufacturers manuals
T4 Introduction to and typical arrangements of power production plant
T5 Relevant plant and equipment, its location and operating parameters
T6 Plant status
T7 Control and data acquisition systems
T8 Electric motor types and characteristics
T9 Pump and compressor types and characteristics
T10 Valve and actuator types and characteristics
T11 Switchgear types and characteristics
T12 Relevant chemicals, uses and hazards
T13 Fundamentals of water treatment
T14 Water treatment plants, types and characteristics
T15 Water analysing equipment types and characteristics
T16 Water dosing systems
T17 Water chemical additives and effects
T18 Water systems types and characteristics
T19 Relevant water quality standards
T20 Process chemicals and their properties
T21 Material safe handling data sheets
T22 General responsibilities for power production plant operations
T23 Electrical principles
KS02-PO325B Water quality monitoring systems
Specific skills needed to achieve the performance criteria:
T1 Interpret plant drawings and manufacturers manuals
T2 Apply enterprise recording procedures
T3 Identify plant status
T4 Prepare plant/equipment for operation
T5 Organise resources
T6 Operate water quality monitoring systems
T7 Apply diagnostic and testing techniques
T8 Identify and respond to abnormal plant operating conditions
T9 Apply enterprise recording procedures

REQUIRED SKILLS AND KNOWLEDGE

T10 Identify plant status
T11 Prepare plant/equipment for operation
T12 Organise resources
T13 Operate water quality monitoring systems
T14 Apply diagnostic and testing techniques
T15 Identify and respond to abnormal plant operating conditions
T16 Plan and prioritise work
T17 Use relevant hand tools
T18 Communicate effectively
T19 Apply data analysis techniques and tools

Evidence Guide

EVIDENCE GUIDE

9) Evidence Guide: This provides essential advice for assessment of the unit of competency and must be read in conjunction with the performance criteria and the range statement of the unit of competency 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, at a minimum, the application of the competency 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 in this regard. 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 for Assessors 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 – UEP05". 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 and
  - Apply sustainable energy principles and practices as specified in the performance criteria and range and
  - Demonstrate an understanding of the essential knowledge and associated skills as described in Essential Knowledge and Associated Skills of this unit and
  - Demonstrate an appropriate level of employability skills and
  - Conduct work observing the relevant Anti Discrimination

legislation, regulations, polices and workplace procedures and

- Demonstrated performance across a representative range of contexts from the prescribed items below:
  - Knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures
  - Preparation and planning of work
  - Operation of water quality control systems
  - Operationally testing plant
  - Analysing plant faults
  - Monitoring plant operation
  - Knowledge of process chemicals, their use and precautions taken
  - Knowledge of water quality chemistry
  - 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 competency standard 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 method and in a variety of environments.

Method of assessment **9.4)**

This competency standard unit shall be assessed by methods given in Section 1.3.00 Assessment Guidelines.
Note:
Competent performance with inherent safe working practices is expected in the Industry to which this competency standard 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) Range: This relates to the unit of competency 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.
Chemical conditions monitored and operated may include pH, conductivity, acid conductivity, silica, dissolved O2, ammonia, totally dissolved solids, phosphate, oxidisation reduction potential, sodium ion and chlorine residual.
Systems, plant and/or equipment may include raw water, feed water, condenser cooling water, auxiliary cooling water, demineralised water, water treatment plant, water quality room, ammonia and hydrazine systems, hypochlorite plant, effluent disposal system, reverse osmosis plant pumps, high/low pressure, characteristics, operating conditions valves, actuators (electric, pneumatic) electrical supply switchboards electrical motors (high and low voltage) supervisory, alarm and control equipment filters, strainers, dryers, moisture, pressure control devices, safety devices and high and low pressure systems.
Safety standards may include relevant sections of Occupational Health and Safety legislation, enterprise safety rules, relevant state and federal legislation and national standards 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 enterprise/site standing and operating instructions enterprise log books and manufacturer’s operation and maintenance manuals.
Technical and operational indicators may include stimuli (audio, smell, touch, visual), local indicators and recorders and alarms (visible and/or audible).
Communications may be by means of telephone, two way radio, pager, public address system, computer (electronic mail) and operating log (written or verbal).
Tests may include stand-by plant tests and post maintenance operating tests.
Appropriate personnel to consult, give or receive direction may include, supervisor/team leader or equivalent, technical and engineering officers or equivalent, maintenance staff, power plant operations personnel and contractor and specialist staff.
Test, fault finding and operating tools may include chemical analysis equipment, power or hand tools, control system equipment and leak test equipment.
Operating environment may be remote from plant, aided by indicators and monitors, during inclement or otherwise harsh weather conditions, in wet/noisy/dusty areas or during night periods.
Faults and abnormal operating conditions may include motor/pump/ actuator/valve/damper failure/malfunctions, control equipment failure/ malfunctions, loss of electrical supply to plant and equipment, loss supply, low water pressure, burst pipes, plant/equipment, loss of major auxiliary (dosing plant) and loss of station air supply.
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

RANGE STATEMENT

and Glossaries.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Operations.