



Australian Government

Department of Education, Employment and Workplace Relations

UEGNSG505B Use control centre systems to monitor and control gas infrastructure

Release: 1

UEGNSG505B Use control centre systems to monitor and control gas infrastructure

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This competency standard covers the use and operation of SCADA and other control centre information systems including outage management systems, alarm management systems, site security systems, communications systems, telemetry to effectively manage Gas Industry infrastructure.

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 New Apprenticeships and the like.

Pre-Requisites

Prerequisite Unit(s) 4)

Competencies 4.1)

UEGNSG203B Commission and decommission gas distribution pipelines

Or

UEGNSG304B Commission/decommission gas transmission pipelines

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 scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 4 Writing 4 Numeracy 4

Employability Skills Information

Employability Skills 5)

This unit contains Employability Skills

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 for the use of control centre systems to monitor and control pipelines	1.1 Work schedules, plans, requirements and established procedures are detailed and, if necessary, analysed and the extent of the preparation of the work determined for planning and coordination
	1.2 Shift handover detail is received and understood and confirmed according to established procedures
	1.3 Work is analysed, prioritised and sequenced for the most efficient and effective outcome following consultation with others for completion within acceptable timeframes to a quality standard and in accordance with established procedures
	1.4 Risk control measures for identified hazards are prioritised, implemented and evaluated against the work schedule
	1.5 Relevant system constraints are communicated to relevant persons and identified for work sites as per established procedures
	1.6 Operational and commercial requirements are communicated to stakeholders as per established procedures
	1.7 OHS, environmental and sustainable energy policies and procedures related to the work are identified to ensure safe systems of work are followed
	1.8 Liaison and communication with authorised persons, authorities, clients and land-owners is completed and activities coordinated to carry out work
2 Undertake monitoring and controlling of gas infrastructure	2.1 OHS policies and procedures and safe work practices are followed to eliminate or minimise incidents and hazards
	2.2 Work is performed and coordinated in accordance with a work schedule, established

ELEMENT	PERFORMANCE CRITERIA
	procedures, operating conditions and nominations
2.3	Respond to alarms and out of specification conditions in accordance with established procedures
2.4	OHS risks and incidents are identified and action taken according to established procedures
2.5	Actions are taken to overcome any shortfalls or abnormal events encountered in the operating conditions according to requirements and established procedures
2.6	Essential Knowledge and Associated Skills are applied in an agreed timeframe and to quality standards efficiently according to requirements and established procedures
2.7	Solutions to non-routine problems are identified and actioned using Essential Knowledge and Associated Skills according to requirements
2.8	Ongoing checks of quality of the work are undertaken in accordance with requirements and established procedures to ensure a quality outcome is achieved for the client/customer to community and industry standards
3 Complete procedures for monitoring and controlling gas infrastructure	<p>3.1 Work undertaken is checked against works schedule for conformance with requirements and anomalies are reported and solutions identified in accordance with established procedures</p> <p>3.2 Shift handover detail is relayed and confirmed according to established procedures</p> <p>3.3 Works completion records, reports, documentation and information is confirmed, processed and the appropriate persons notified</p>

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 of using control centre systems to monitor and control gas infrastructure.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01- G505B **Control gas infrastructure using control centre systems**

- G 2.1.1 Work in the gas sector
Evidence shall show an understanding of how work is conducted in the Gas Industry, specifically:
- The Gas Industry in Australia
 - Australian gas resources
 - Types of gas and uses
 - Combustion.
- G 2.1.4 Apply relevant OHS regulations, policies and procedures
Evidence shall show an understanding of the basic workplace health and safety legislation and how this applies to individuals in a Gas Industry workplace, indicated by the following:
- Employer's responsibilities to relevant OHS legislation
 - Employee's responsibilities to OHS legislation and organisation's policies and procedures
 - OHS policies and procedures at the worksite.
 - Australian Standards, guidelines and codes of practice
- G 2.1.5 Work safely in the gas industry by reducing risk and using correct PPE
Evidence shall show an understanding of how to work safely in the gas industry indicated by the ability to:
- Correctly interpret and comply with Safety Signs including workplace Hazards, Warnings and PPE requirements
 - Correctly interpret gas markers
 - Identify the correct PPE required for work in the Gas Industry
 - Locate and comply with procedures for correctly

- checking, maintaining and storing PPE
- Apply the process of Hazard identification, Risk assessment and Control
- Complete Risk Assessment forms such as Work Permits and JHA's, JSA's, JSEA's, SWM's etc
- Report workplace hazards

G 2.1.9 Respond to emergency and accident situations
Evidence shall show knowledge and skills in dealing with emergency or accident situations at a Gas Industry workplace, indicated by the following:

- Situations of accidents and emergency
- Comply with procedures for accidents and incidents
- Correct use of emergency equipment and procedures for a fire
- Correct use of breathing apparatus
- Correct use of gas detectors/oxygen monitoring devices
- Correct use of emergency equipment and procedures for a gas leak or vapour emission
- Report emergencies and accidents

G 2.1.14 Read and interpret workplace documents
Evidence shall show an ability to read and interpret Gas Industry documents indicated by the following:

- Understand and use signs, symbols terminology and legends as used in gas industry procedures and documents
- Identify, locate and implement gas industry standards, policies and procedures
- Interpret and read basic drawings and diagrams

G 2.1.26 Communicate in the workplace
Evidence shall show an understanding and ability to communicate effectively in a Gas Industry work team indicated by the following:

- Effective use oral and written communications methods to achieve work related outcomes and solutions.
- Effectively receive, interpret and respond to workplace information and instructions
- Effectively convey and report work related information to fellow workers and customers
- Interact with fellow workers in a socially and culturally appropriate manner

G 4.1.1 Operate and supervise in the Gas Industry
Evidence shall show an understanding of supervising and operating in a Gas Industry environment, indicated by the

following:

- understanding and application of enterprise applicable standard operating procedures
- understanding and application of relevant enterprise permit to work systems
- understanding and application of alarm and communication systems
- understanding and application of relevant OHS and environmental legislative requirements including applicable emergency procedures
- demonstrate an understanding and application of planning, prioritisation and working autonomously in the Gas Industry.

G 4.1.2 Understand the effective operation of Gas Industry plant, equipment and materials

Evidence shall show an understanding of the effective operation of Gas Industry plant, equipment and materials, indicated by the following:

- understand and apply of relevant industry engineering terminology and units
- understanding of pipeline system operating parameters
- demonstrate operational knowledge of systems such as pumps, compressors, regulation, shutdown equipment, measurement systems by on-site or remote operation as applicable.
- understanding of relevant inspection and testing procedures for applicable plant and equipment
- understanding the process of commissioning and decommissioning of relevant equipment such as pipework, vessels and compressors, including on-site and remote operation as applicable.
- Understanding the characteristics of gas flows including compressed and non-compressed operations
- Understanding the characteristics, operation, capabilities and limitations of applicable tools and equipment including prime movers, compression and control systems, pipeline facilities and associated equipment
- understanding the operation of gas analysis and measuring equipment

G 4.1.3 Communicate effectively in the Gas Industry at a supervisory level

Evidence shall show an understanding of communication techniques required in supervisory roles in the Gas Industry, indicated by the following:

- communicate effectively with a variety of Gas Industry stakeholders, using strategies for dealing with difficult situations. The communication includes oral, written or electronic communications, : with various stakeholders including:
 - workplace colleagues
 - workplace managers
 - relevant customers and suppliers
 - regulatory bodies
 - property/land owners (including traditional land owners) and tenants
 - emergency response organisations

G 4.1.4 Understand Gas Industry products, processes and characteristics

Evidence shall show a comprehensive understanding of Gas Industry products and characteristics, indicated by the following:

- understand the Gas Industry products and the characteristics and tolerances of the product including:
 - principles of applicable gas laws
 - gas pressure
 - gas temperature
 - compressibility
 - relative density – specific gravity
 - hydrocarbon and water dew points
 - components of applicable natural gases including LPG
 - standard gas conditions
 - combustion
 - venting and purging principles
 - Effects of temperature and pressure on infrastructure

G 4.1.5 Interpret Gas Industry drawings

Evidence shall show an ability to interpret and understand Gas Industry technical drawings, indicated by the following:

- understanding and interpreting relevant technical drawings including, but not limited to:
 - Process and Instrumentation Diagrams (PID)
 - Facility and pipeline construction and as-built drawings
 - Geographical Information System (GIS) drawings and data

- Electrical drawings
- Survey maps
- Pipeline route maps and alignment sheets

G 4.1.7 Create Gas Industry reports and documentation

Evidence shall show an understanding and application of completing and interpreting enterprise-specific supervisory level Gas Industry reports including ,but not limited to:

- periodic operational reports
- budget reports and summaries
- regulatory reporting requirements

G 4.1.8 Use a personal computer

Evidence shall demonstrate requirements to use personal computer and undertake fundamental tasks, indicated by the following:

- send, answer and manage emails
- access the Internet for research purposes
- write documents using a word processing program
- develop a basic spreadsheet using a spreadsheet program
- apply formatting including cutting and pasting across a variety of computer applications (eg from excel to word)

G 4.1.10 Understand security breach procedures

Evidence shall show an understanding required to identify security breaches and the required action in dealing with such breaches, indicated by the following as applicable:

- identification of different types of security incidents including but not limited to:
 - physical security breaches at gas infrastructure
 - threat assessment and management
 - confidential information security
- communication with applicable emergency service and regulatory organisations
- compliance with applicable enterprise security policies and procedures

G 4.1.11 Follow emergency/incident control procedures

Evidence shall show an application of emergency/incident control procedures used for applicable gas infrastructure, indicated by the following:

- compliance with applicable enterprise emergency/incident control policies and procedures
- communication with relevant stakeholders
- application of relevant procedures

G 4.1.14 Understand and comply with environmental and cultural issues requirements

Evidence shall show an understanding of environmental and cultural issues required of Gas Industry supervisors and autonomous workers, indicated by the following:

- understanding relevant environmental legislation, regulations, advisory standards, codes of practice and their impact on gas industry pipelines and facilities
- demonstrate appropriate actions and behaviours when dealing with environmental and cultural issues
- understanding of the significance of cultural awareness and native title legislation, regulations, advisory standards, codes of practice and cultural customs and practices and their impact on Gas Industry pipelines and facilities.

G 4.1.17 Demonstrate knowledge of pipeline systems

Evidence shall show an understanding required at a Gas Industry supervisory level of general principles associated with pipelines and other gas infrastructure, indicated by the following:

- identification, control and management of relevant threats against pipeline infrastructure and facilities
- identification of pipeline locations
- application of guidelines for the use of excavation machinery near pipelines and infrastructure and damage
- operational specifications and safe working limitations of pipelines and infrastructure
- principles of cathodic protection and corrosion mitigation
- HB105 Guide to pipeline risk assessment in accordance with AS2885.1, AS2885 Part 3
- applicable pipeline legislation, regulations, advisory standards and codes of practice.

G 4.1.18 Apply problem solving techniques

Evidence shall show an understanding and application of problem solving techniques in a Gas Industry environment, indicated by the following:

- understanding and application of formal problem solving techniques
- understanding the nature of problems
- identifying, evaluating and selecting solutions
- evaluating the effectiveness of problem solving processes.

Evidence Guide

EVIDENCE GUIDE

9) 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)

Longitudinal 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 prerequisites 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 — UEG11'. 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
 - Apply sustainable energy principles and practices as specified in the performance criteria and range
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment
 - Demonstrate an appropriate level of employability skills
 - Conduct work observing the relevant anti discrimination legislation, regulations, policies and workplace procedures
- Demonstrate performance across a representative range of contexts from the prescribed items below.

Range of tools/equipment/procedures/workplace		
Group No	The minimum number of items on which skill	Item List

	is to be demonstrated	
A	All	<p>Evaluate, respond and report threats to pipeline systems operation</p> <p>Working knowledge of sections of the relevant Australian pipeline and associated standards</p> <p>Working knowledge of the station function including identification of abnormal conditions of stations and reporting</p> <p>Working knowledge of pipeline operational parameters</p> <p>Respond correctly to alarms</p> <p>Operation of SCADA and other associated information systems</p> <p>Communicate effectively in the workplace</p> <p>Operating communications equipment</p> <p>Interpret technical drawings and symbols</p> <p>Emergency Response procedures</p> <p>Work utilising relevant OHS legislation, regulations, codes of practice, policies and procedures</p> <p>Maintain a safe and clean workplace</p> <p>Apply planning skills</p> <p>Fault and incident reporting and follow up process</p>
B	At least 3	<p>Operation and or monitoring of:</p> <ul style="list-style-type: none"> • compressor stations • regulator stations • power generation

		stations <ul style="list-style-type: none"> • custody transfer stations • odourant stations • valves and actuators • heaters • meter stations • gas quality equipment • system fringe location • complex analysis modelling systems • corrosion protection systems • filtration systems • PIGs Telemetry and data communications systems
C	At least one occasion	Deal with an unplanned event by drawing on essential knowledge and associated 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.
- Appropriate environmental regulation and work practices.
- Appropriate organisational requirements.
- Appropriate work environment, equipment and tools.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency in using control centre systems to monitor and control gas infrastructure.

Assessment of this competency must also be undertaken in either an actual workplace or under a simulated work environment. Assessment must also integrate the employability skills.

Method of assessment

9.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 '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 associated skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no recommended concurrent assessments with this unit.

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.

This Competency Standard Unit shall be demonstrated in relation to compliance with the following constants and variables included in the element/performance criteria in this unit are fully described in the Definitions Section of this volume and form an integral part of the Range Statement of this unit:

Areas to be monitored:

Areas to control:

Gas infrastructure:

Organisational requirements (4)

Records/reports (5)

Information systems

Maps and drawings

Established procedures

Established procedures

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Control centre.