



Australian Government

Department of Education, Employment and Workplace Relations

UEGNSG117B Plan and implement the data acquisition and metering requirements of a gas system

Release: 1

UEGNSG117B Plan and implement the data acquisition and metering requirements of a gas system

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This Unit covers the planning and commissioning of the data acquisition and metering requirements of a natural or liquefied petroleum gas system. This competency standard refers to Gas Systems; Data acquisition; Resources; Legislative requirements; Relevant authorities and other stakeholders; Relevant documentation.

Application of the Unit

Application of the Unit 2)

This competency standard shall apply to any basic and safe work site where Gas Industry operations occur. It could also apply, where applicable to other workplaces in the electricity supply industry (transmission and distribution and generation), the electrotechnology industry and the water industry, subject to all Occupational Health and Safety and duty of care requirements being met for the workplace.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit are not subject to licence regulation other than those directly related to Occupational Health and Safety, gas/electricity/water industry safety and compliance, industrial relations, environmental protection,

License to practice

3)

telecommunications, anti discrimination and training. Commonwealth, State/Territory or Local Government legislation and regulations may exist that limit the age at which a person can operate certain equipment.

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:

Nil

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 5 Writing 5 Numeracy 5

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 data acquisition and metering requirements of a gas system	1.1 OHS principles and practices and environmental and sustainable energy procedures which may influence the systems are reviewed and determined
	1.2 Purpose of the data acquisition and metering requirements of a gas system are established after data is analysed and expected outcomes of the work are confirmed with the appropriate persons
	1.3 Properties and characteristics of the gas to be measured are identified as per established procedures on the development of a data acquisition and metering requirements system
	1.4 Design capacity of gas system is identified
	1.5 Back up systems are specified
	1.6 Legislative requirements are identified
	1.7 Data storage and communication systems are specified
	1.8 Work is prioritised and sequenced for the most efficient outcome, completed within an acceptable timeframe to a quality standard and in accordance with established procedures
	1.9 Liaison and communication issues with authorised persons, authorities, clients and land owners are resolved and activities coordinated to carry out work
	1.10 Risk control measures are identified, prioritised

ELEMENT	PERFORMANCE CRITERIA
2 Determine specific equipment and maintenance requirements	and evaluated against the work schedule
	2.1 Systems modelling is used to evaluate alternative proposals as per established procedures
	2.2 Maintenance activities are designed and scheduled according to requirements and established procedures
	2.3 OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimise waste are incorporated into the project in accordance with requirements and established procedures
	2.4 Technical advice is given to hazards, assessed risks and control measures so that monitoring can be undertaken and appropriate authorities consulted, where necessary, in accordance with requirements and established procedures
	2.5 Essential Knowledge and Associated Skills are applied to analyse specific data and compared with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements
	2.6 Maintenance recording system is developed incorporating organisation initiatives as per established procedures
	2.7 Metering equipment is selected to meet performance specifications and is optimally located in the system
	2.8 Solutions to non-routine problems are identified and actioned, according to requirements, using acquired Essential Knowledge and Associated Skills
	2.9 Quality of work is monitored against personal performance agreement and established organisational and professional standards

ELEMENT	PERFORMANCE CRITERIA
3 Commission data collection and metering system	3.1 Final inspections of the metering and data acquisition plan is undertaken to ensure they comply with all requirements and include all specifications and documentations needed to complete the project
	3.2 Appropriate resources are obtained and scheduled according to the plan
	3.3 Company OHS policies and procedures are followed and the metering and data acquisition system is commissioned in accordance with the plan
	3.4 Appropriate persons are notified of completion and reports
	3.5 Reports are submitted to relevant persons for approval
	3.6 Approved copies of metering and data acquisition plan is issued and records are updated in accordance with established procedures

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 safe working practices for planning and implement the data acquisition and metering requirements of a gas system.

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

**KS01-
G117B** **Data acquisition and metering requirements**

G 4.1.5 3SCADA system operation

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 5.1.6 Technical knowledge for Gas Industry managers
Evidence shall show an understanding and application of the technical knowledge required of Gas Industry managers, indicated by the following:

- development of organisational operational strategies as required
- understanding maintenance philosophies
- engineering principles
- risk management in a Gas Industry environment
- principles of planning including project management planning.

G 6.1.1 Understand and utilise concepts and skills for Gas Industry supervisors
Evidence shall show an understanding and interpretation of the concepts and skills required of Gas Industry supervisors to undertake activities, indicated by the following:

- applicable mathematical techniques and principles to enable production of relevant supervisory level calculations, data processing requirements and reports
- engineering principles and operating principles of pipeline systems
- understanding of safe design principles
- appropriate environmental requirements
- correctly read, analyse, interpret and record data
- third-party service location methods
- construction principles and safety
- applicable gas chemistry, properties and characteristics.

G 6.1.2 Understand and utilise information for Gas Industry supervisors
Evidence shall show an understanding of the requirements to

undertake supervision/management in a Gas Industry environment, indicated by the following:

- principles of gas flow and gas metering
- organisational standard operating procedures
- site specific safety legislation and safety requirements
 - overview of Occupational Health and Safety including systematic approaches to OHS
 - health and safety stakeholders (union, employers, workers, contractors and managers) hazards
 - risk assessment and control relating to areas such as:
 - electrical safety
 - vibration
 - outdoor work
 - stress
 - equipment, tools and plant
 - noise
 - chemicals and substances
 - manual handling
 - confined spaces
- Stakeholder Relations
 - managing contractors, industry awards, and employee entitlements
 - understanding government and business relations
 - employee associations
 - industry associations
 - awards and agreements
 - collective bargaining and individual agreements
 - conciliation, arbitration, mediation and negotiation
 - coordinate the work of others
- adhere to OHS legislation and regulations
 - understanding government and the development of statute and common law
 - principles of Occupational Health and Safety and risk management
 - Occupational Health and Safety legislation and regulations
- observe environmental and legislative requirements
 - understanding government and the development of statute and common law
 - principles of Occupational Health and Safety

- environmental and other legislative requirements
- apply applicable permit to work system including types of permit limitations
 - understanding the permit to work system
 - identifying the limitations in a permit to work system
- develop and review standard operating procedures
- review and report on completed work
- employ correct waste management procedures
 - appropriate waste management procedures
 - organisational requirements for waste management
 - consequences of not managing waste effectively
- knowledge of native title issues and legislation
- analyse relevant workplace data eg incident and environmental monitoring to evaluate the effectiveness of the OHS management system.

G 6.1.3 Commission/decommission pipelines and cathodic protection principles for Gas Industry supervisors

Evidence shall show an understanding of commission/decommissioning and cathodic protection principles required of Gas Industry supervisors, indicated by the following:

- commissioning and decommissioning procedures for pipeline and gas industry facilities and infrastructure
- cathodic protection systems
- plan and design commissioning procedures
- plan and design cathodic protection commissioning procedures

G 6.1.4 Communicate effectively

Evidence shall show an understanding and utilisation of technology for communication in a Gas Industry environment, indicated by the following:

- effective communication for Gas Industry managers and supervisors
 - motives for communication
 - communication networks: who communicates with whom
 - verbal and non-verbal communication
 - choosing the medium and the flow of a message
 - blocks to effective communication
- analyse and interpret recorded data, review and report
- use information technology for communication
 - understanding how to use information technology

- effective use of email, internet and other communication mediums.

G 6.1.7 Understand chemical and physical behaviours of gas
Evidence shall show an understanding of the chemical and physical behaviour of gases, and their effects in a gas system indicated by the following:

- chemical and physical behaviours of natural and liquefied petroleum gas
 - understanding of basic chemistry and physics of gases
 - the chemical makeup and properties of natural gas and LPG
 - dangers of working with natural gas and LPG and how to manage natural gas and LPG
- transportation of LPG and natural gas
 - understanding of issues associated with transporting of natural gas and LPG
- LPG supply logistics
 - correct filling procedures for LPG
 - identifying abnormal cylinder conditions
 - correct storage of LPG.

Evidence Guide

EVIDENCE GUIDE

9) The Evidence Guide forms an integral part of this 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 practised. 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 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 Performance Criteria 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 is to be demonstrated	Item List
A	At least 5	Gas systems: Custody Transfer Stations Tanker transfer Decantation Tempered Liquid Petroleum systems Field or District Regulators LPG systems Meters and regulators Transmission and distribution systems

B	At least 4	Data acquisition: Temperature Pressure and flow rates from regulator or custody transfer stations Water bath heater operation (water temperature, pilot light and main burner operation) Faulty equipment (over pressure and under pressure, slam shut operation and filter problems) Pipeline ruptures Security system monitoring and pressure and volume data for 'balancing the system'
C	At least 4	Resources: Relevant persons Relevant authorities Company standard operating procedures Materials Equipment manuals/specifications Personal protective equipment Fire safety systems and training resources
D	All	Legislative requirements: Occupational Health and Safety legislation Relevant Government Acts, regulations and codes of practice Australian standards and codes of practice Environmental legislative requirements
E	At least 3	Relevant authorities: Government authorities Landowners

		Stakeholders Local councils Fire authorities Other utilities
F	At least 8	Relevant documentation: Specifications, drawings and plans Manufacturer's specifications Company standard operational and safety procedures Company management plans and policies Work permits Hot work permits Company forms and files Acts and regulations Contracts Recording/reporting Maintenance activities Inspection and incident reports
G	All	Commission/decommission pipelines and cathodic protection principles for Gas Industry supervisors Communication for Gas Industry supervisors Chemical and physical behaviours of gas
H	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 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 planning and implementing the data acquisition and metering requirements of a gas system.

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 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 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, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied Units where listed.

UEGNSG118B Select and commission equipment to meet pressure and temperature control specifications

UEGNSG119B Manage workplace risk

UEGNSG120B Manage gas system environmental compliance

UEGNSG121B Prepare and design specifications for a gas system

UEGNSG115B Manage gas systems projects

UEGNSG122B Manage a customer service gas business unit

UEGNSG123B Manage financial resources

UEGNSG116B Manage physical resources

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 Unit shall be demonstrated in relation to planning and implementing the data acquisition and metering requirements of a gas system.

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:

Gas Systems

Data acquisition

Resources

Legislative requirements

Relevant authorities and other stakeholders

Relevant documentation (6)

Unit Sector(s)

Not applicable.

Competency Field

Competency Field	11)
	Cross discipline.