



Australian Government

Department of Education, Employment and Workplace Relations

UEGNSG317B Monitor and report on cathodic protection systems

Release: 1

UEGNSG317B Monitor and report on cathodic protection systems

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This competency standard does not include specialist cathodic protection activities, but includes the performance of testing, basic fault recognition, and is limited to minor maintenance, reporting of findings including faults on cathodic protection systems. The work may be performed autonomously in remote locations for long periods of time. The competency standard is applied against the requirements found under the latest version of AS 2885 and AS2832 Australian and New Zealand Standard. Includes Tools and equipment, Maps and Drawings, Established Procedures, PPE and First Aid Equipment, Traffic Control.

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.

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 Industry safety and compliance, industrial relations, environmental protection, telecommunications, anti discrimination and

License to practice**3)**

training. Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of persons who 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 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 to monitor and report on the cathodic protection system	<p>1.1 Work schedules, specific requirements, drawings, plans, requirements, established procedures and material and equipment are examined. The extent of preparation for the work is assessed</p> <p>1.2 Work is 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</p> <p>1.3 Risk control measures are identified, prioritised and evaluated against the work schedule</p> <p>1.4 Relevant requirements and established procedures for the work are communicated to all persons and identified for all work sites</p> <p>1.5 OHS, environmental and sustainable energy policies and procedures related to the work are identified to ensure safe systems of work are followed</p> <p>1.6 Relevant work permits are secured to coordinate the performance of work according to requirements and established procedures</p> <p>1.7 Resources including persons, equipment, tools and personal protective equipment required for the job are identified, scheduled, coordinated and confirmed in a safe and technical working order</p> <p>1.8 Liaison and communication issues with authorised persons, authorities, clients and land owners are resolved and activities coordinated to</p>

ELEMENT	PERFORMANCE CRITERIA
	carry out work
	1.9 Persons participating in the work are fully briefed and respective responsibilities coordinated and authorised where applicable in accordance with establish procedures
2 Monitor and report on the cathodic protection system	2.1 OHS and Environmental policies and procedures and safe work practices are followed to eliminate or minimise incidents and hazards
	2.2 First Aid and other related work procedures are performed according to requirements and established procedures
	2.3 Lifting, climbing, working in confined spaces and aloft, use of power tools, techniques and practices are safely exercised according to requirements
	2.4 Equipment faults are identified through inspection and testing of operational equipment in accordance with a work schedule and to requirements
	2.5 Hazard warnings and safety signs are recognised and hazards are assessed and OHS risks are reported to the immediate authorised persons for directions according to established procedures
	2.6 Fault finding and troubleshooting techniques are applied to identify any repairs or maintenance that are required according to requirements and established procedures
	2.7 Essential Knowledge and Associated Skills are applied to ensure completion in an agreed timeframe and to quality standards with a minimum of waste according to requirements
	2.8 Solutions to non-routine problems are identified and actioned using Essential Knowledge and Associated Skills according to requirements
	2.9 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 to a

ELEMENT	PERFORMANCE CRITERIA
	community and industry standard
3 Review, record and report on monitoring and reporting on the cathodic protection system	<p>3.1 Work undertaken is checked against works schedule for conformance with requirements, anomalies are reported and solutions identified in accordance with established procedures</p> <p>3.2 Accidents and injuries are reported and followed up in accordance with requirements and established procedures</p> <p>3.3 Work site is rehabilitated/cleaned up and confirmed safe and in accordance with established procedures</p> <p>3.4 Tools, equipment and any surplus resources and materials are where appropriate, cleaned, checked and returned to storage in accordance with established procedures</p> <p>3.5 Relevant work permit(s) are signed off accordance with requirements</p> <p>3.6 Work completion records, reports as installed/modified drawing(s) and 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 safe working practices for monitoring and reporting on cathodic protection systems.

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

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G 2.1.8 Control traffic at the work site

Evidence shall show knowledge and skills in coordinating traffic flow at a workplace where traffic control is required, that is, where work is conducted on or near a road, indicated by the following:

- Read and interpret relevant traffic authority regulations for traffic control at a worksite
- Identify signs and devices required to control pedestrians and traffic at a worksite depending on traffic flow volumes
- Apply techniques for controlling pedestrians and traffic at various worksites
- Use procedures for monitoring traffic controls
- Set up and monitor pedestrian and traffic controls

G 3.1.2 Work independently in a Gas Industry environment

Evidence shall show an understanding of working independently in a Gas Industry environment, indicated by the following:

- understanding of how to work autonomously or under limited/remote supervision.

G 3.4.1 Understanding corrosion processes

Evidence shall show an understanding of corrosion as it applies to cathodic protection on a Gas Industry pipeline, indicated by the following:

- understanding corrosion processes.

G 3.4.5 Interpreting topographical maps and information

Evidence shall show an understanding of the requirements to interpret topographical and geographical information and maps for cathodic protection, indicated by the following:

- interpreting topographical and geographical maps and information.

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 4.1.6 Understand OHS and First Aid requirements for Gas Industry supervisors

Evidence shall show an understanding of OHS and First Aid

requirements for gas industry supervisors and autonomous working staff, indicated by the following:

- understanding of applicable enterprise Occupational Health and Safety systems and procedures
- understanding of requirements and reasons for providing First Aid equipment and training for employees in the gas industry

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 4.1.9 Supervise transmission pipeline operations

Evidence shall show an understanding, applicable at a supervisory level, of gas transmission pipelines, indicated by the following:

- pipeline threats, identification and control
- pinpointing pipeline locations
- excavation machinery and their effects used near pipelines
- pipeline specifications
- coatings for corrosion protection
- HB105 Guide to Pipeline Risk Assessment in accordance with AS2885 Part 1 and Part 3
- applicable pipeline legislation, regulatory and advisory standards and codes of practice.

G 4.1.13 Understand electrical fundamentals for the Gas Industry

Evidence shall show an understanding of electrical

fundamentals required for Gas Industry workers and supervisors, indicated by the following:

- fundamentals of extra low voltage operation
- use of electrical test equipment for cathodic protection on gas pipelines and facilities
- Electrical risks associated activities within the Gas Industry
- safe use of meters and other relevant electrical equipment.

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 4.1.15 Driving Gas Industry vehicles

Evidence shall show an understanding of requirements and capability of driving applicable Gas Industry vehicles including but not limited to:

- Driving vehicles appropriate to the organisation. Vehicles may include any of the following (dependent on the needs of the organisation):
 - sedan
 - four wheel drive vehicles
 - trucks
 - buses
 - excavation and construction equipment such as backhoes and excavators.
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Note: All vehicles included in this clause have licence or ticket requirements. The licence or ticket will need to be issued to the learner for completion of relevant sections of the EKAS Clause.

G 5.1.2 Apply problem solving, decision making and conflict resolution techniques

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

- problem solving and decision making techniques
 - the decision making environment
 - group decision making
 - guidelines for making decisions
 - decision making aids and support systems
 - negotiation with internal and external stakeholders
 - the nature of negotiation
 - strategy and tactics of bargaining
 - pre-negotiation essentials
 - communication in negotiation
- resolve conflict with internal or external stakeholders
 - dealing with negotiation breakdowns
 - social context of negotiation
 - power in negotiation
 - ethics in negotiation.

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 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 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 is to be demonstrated	Item List
A	All	Working knowledge of relevant sections AS2885 and AS2832 Demonstrate the practical use of communications equipment Demonstrate use and maintenance of CP equipment Demonstrate use and maintenance of measuring equipment Complete written and verbal reports

		<p>Demonstrated knowledge of cathodic protection principles and equipment</p> <p>Identify and recognise cathodic protection faults</p> <p>Diagnose and perform minor maintenance of faults on cathodic protection equipment</p>
B	All	<p>Interpret technical drawings and symbols</p> <p>Operate gas detector</p> <p>Operate pipe locator</p> <p>Work using relevant OHS and environmental, cultural and heritage regulations, codes of practice, policies and procedures</p> <p>Practical knowledge of the properties of product being transported</p> <p>Work safely with hazardous materials and equipment</p> <p>Apply safe manual handling techniques</p> <p>Communicate effectively in the workplace</p> <p>Negotiation skills</p> <p>Apply basic planning skills</p> <p>First Aid certificate level 1</p>
C	At least one occasion	<p>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</p>

Context of and specific resources for assessment 9.3)

This unit contains Employability Skills

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 monitoring and reporting on cathodic protection systems.

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, 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.

UEGNSG302B Maintain pipeline easements

UEGNSG329 Gas transmission pipeline surveillance
A

UEGNSG308B Identify, evaluate and control threats to
transmission pipelines

UEGNSG309B First on-site emergency response on a
transmission pipeline

UEGNSG310B Supervise and monitor contract work

UEGNSG311B Site control of third party works in the vicinity of
a transmission pipeline

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 monitoring and reporting on cathodic protection systems.

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:

Tools and equipment (4)

Maps and drawings

Established procedures and requirements

PPE and First Aid equipment

Traffic control

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**
Transmission.