



Australian Government

UEGNSG411 Maintain cathodic protection systems

Release: 1

UEGNSG411 Maintain cathodic protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEG Industry Gas Training Package.

Application

This unit involves the skills and knowledge required to maintain cathodic protection systems to prevent corrosion of steel gas pipelines.

It includes identifying the type and location of the cathodic protection fault, using the correct electrical equipment, maintaining and adjusting cathodic protection system and equipment, re-establishing the system and completing relevant documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Cathodic Protection

Unit Sector

Gas Industry

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare and plan to maintain cathodic protection systems

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work schedule/s, job requirements, drawings, plans and maps are identified and examined to identify the system maintenance work in accordance with workplace procedures
- 1.2** Readings from cathodic protection monitoring equipment and anode beds are taken at regular intervals

and data collected in accordance with workplace procedures and industry standards

- 1.3** Work schedules and job requirements for the maintenance are identified for all work sites and communicated to all relevant person/s in accordance with workplace procedures
- 1.4** Relevant work health and safety (WHS)/occupational health and safety (OHS) workplace procedures, and environmental and sustainable energy policies and procedures are obtained and applied
- 1.5** Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant person/s in accordance with workplace procedures
- 1.6** WHS/OHS risk control measures for identified hazards are prioritised, implemented and monitored against the work schedule in accordance with workplace procedures
- 1.7** Relevant work permits are obtained to access and perform work in accordance with job requirements and workplace procedures
- 1.8** Person/s, equipment, tools and personal protective equipment (PPE) required for the job are identified, scheduled, obtained and checked for correct operation and safety in accordance with workplace procedures
- 1.9** Relevant person/s at work site are suitably trained and qualified for the work to be performed
- 1.10** Communication issues with relevant stakeholders are resolved, as required, and work coordinated in accordance with work schedule and workplace procedures
- 1.11** Site is prepared to minimise risk and damage to property, commerce and individuals in accordance with the work schedule and workplace procedures
- 1.12** Third-party issues are referred to appropriate person/s in accordance with workplace procedures
- 1.13** Person/s participating in the work are briefed and responsibilities coordinated and confirmed in accordance with job requirements and workplace

		procedures
	1.14	Road signs, barriers and warning devices are positioned in accordance with job requirements, workplace procedures and traffic management plans
2 Maintain and adjust cathodic protection system equipment	2.1	WHS/OHS, risk control measures and environmental policies and procedures are followed in accordance with workplace procedures
	2.2	Hazardous activities are conducted safely in accordance with workplace procedures and job requirements
	2.3	Cathodic protection system is inspected, adjusted and maintained correctly and safely in accordance with job requirements, workplace procedures and industry standards
	2.4	Hazard warnings and safety signs are recognised, hazards and WHS/OHS risks assessed and reported to authorised person/s for directions in accordance with workplace procedures
	2.5	Unplanned events and non-routine problems are identified and actioned in accordance with workplace procedures
	2.6	Fault-finding and troubleshooting techniques are applied to identify any repairs or maintenance required in accordance with job requirements and workplace procedures
	2.7	Data is collected and analysed and quality checks of the work undertaken in accordance with workplace procedures and industry standards
3 Re-establish system and complete relevant documentation	3.1	Cathodic protection system is re-established, work undertaken is checked against work schedule for conformance and anomalies, and proposed solutions reported to relevant person/s in accordance with workplace procedures
	3.2	Accidents, injuries and non-conformances are reported, as required, in accordance with workplace procedures
	3.3	Work site is rehabilitated, cleaned up and made safe in accordance with workplace procedures
	3.4	Tools, equipment and any surplus resources and materials are cleaned, checked and returned to storage in

accordance with workplace procedures

- 3.5** Relevant work permit/s are signed off and system is returned to service in accordance with job requirements and workplace procedures
- 3.6** Work completion records, reports, documentation and as installed/modified drawings are completed, processed and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEG Gas Industry Training Package Companion Volume Implementation Guide.

types of faults must include at least eight (8) of the following:

- coating damage/deterioration
- interference from other systems
- anode not working
- equipment fault/failure
- earth faults
- transformer failure
- anode bed deterioration
- anode cable failure
- telluric effects on cathodic protection systems
- isolated/insulation joint (IJ) failure and testing
- flange insulation kit (FIK) failure and testing
- cathodic protection potential surveys
- on/off potential surveys
- coating defect assessment surveys (direct current voltage gradient (DCVG) method, Pearson technique/method, over pipeline potential method)
- loop impedance testing
- anode bed testing

checks and tests on cathodic protection systems must include at least four (4) of the following:

- soil resistivity testing
- interference testing
- trad unit commissioning and testing

Unit Mapping Information

This unit replaces and is equivalent to UEGNSG411A Maintain cathodic protection systems.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6a6c032e-ffcb-4f3d-8063-415efbd261e8>

Assessment Requirements for UEGNSG411 Maintain cathodic protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEG Industry Gas Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - working safely with hazardous materials and equipment
 - hazard identification and reporting
 - implementing risk control measures
 - selecting and using correct personal protective equipment (PPE)
- applying environmental principles and practices
- applying problem-solving techniques
- applying relevant industry standards, guidelines, codes of practice and regulations
- communicating effectively with others
- conducting quality and safety checks
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining types of faults
- following work schedule, safety plan and job requirements
- following workplace procedures
- inspecting, maintaining and adjusting cathodic protection system and equipment
- interpreting readings and collecting data from equipment and anode beds
- interpreting technical drawings, plans and maps
- locating and repairing faults
- obtaining relevant resources, tools, equipment and materials to conduct the work
- positioning road signs, barriers and warning devices
- preparing and planning to maintain cathodic protection systems
- re-establishing cathodic protection system and completing relevant documentation
- rehabilitating and maintaining a clean work site
- reporting anomalies and proposed solutions
- working in accordance with relevant work permit/notifications.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- anode beds
- cathodic protection system design, components, operation, types and applications
- cathodic protection systems maintenance and monitoring requirements
- corrosion process and cathodic protection on a gas industry pipeline
- effective communication techniques
- electrical fundamentals, equipment, risks and licensing requirements relevant to the gas industry
- fault finding and repair/replacement requirements
- fault-finding and troubleshooting techniques
- hazardous activities, including lifting, climbing, working in confined spaces and aloft, and use of power tools
- quality and safety checks
- relevant cathodic protection monitoring equipment
- relevant documentation, records and reports
- relevant gas industry documentation
- relevant gas systems design, planning and operations
- relevant industry standards, guidelines, codes of practice and regulations
- relevant manufacturer specifications
- relevant technical drawings, diagrams, plans and maps
- relevant WHS/OHS legislated requirements, including:
 - hazards, risk assessment and control measures
 - environmental and sustainable energy principles and practices
 - hazard warnings and safety signs
 - hazardous materials
 - PPE
- relevant work permits and/or notifications
- relevant workplace policies and procedures
- requirements and procedures for referring low voltage electrical work to relevant licensed persons
- requirements and procedures for referring major repairs to supervisor
- site preparation, safety plans, job requirements and work schedules
- techniques to identify system faults and operational conditions
- third-party issues.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include

requirements in the Standards for Registered Training Organisations current at the time of assessment.

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Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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