



Australian Government

UEGNSG412 Install cathodic protection systems

Release: 1

UEGNSG412 Install cathodic protection systems

Modification History

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

Application

This unit involves the skills and knowledge required to install cathodic protection systems to prevent corrosion of steel pipelines, test and commission cathodic protection system, and complete relevant documentation in accordance with relevant legislation, code, regulations and workplace procedures.

It includes the correct installation locations for cathodic protection system and system components, interpreting drawings and specifications, testing equipment and identifying cathodic protection faults.

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 Plan installation of cathodic protection system

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 cathodic protection system installation in accordance with workplace procedures

- 1.2** Job requirements and workplace procedures for the work are identified for all work sites and communicated to all relevant person/s
- 1.3** Relevant work health and safety (WHS)/occupational health and safety (OHS) workplace procedures and environmental and sustainable energy policies and procedures are obtained, applied and communicated to relevant person/s
- 1.4** Data from completed cathodic protection surveys is analysed and work prioritised and sequenced for completion within acceptable timeframes following consultation with relevant person/s in accordance with workplace procedures and industry standards
- 1.5** WHS/OHS risk control measures for identified hazards are prioritised, implemented and monitored against the work schedule in accordance with workplace procedures
- 1.6** Relevant work permit/s are obtained to access and perform the installation work, in accordance with job requirements, workplace procedures and industry standards
- 1.7** Technical specifications and drawings are prepared from the analysed cathodic protection survey data and approved 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** Communication is established with relevant stakeholders to carry out the installation work in accordance with work schedule and workplace procedures
- 1.10** Site is prepared to minimise risk and damage to property, commerce and individuals in accordance with the work schedule and workplace procedures
- 1.11** Third-party issues are referred to appropriate person/s in accordance with workplace procedures
- 1.12** Person/s participating in the work are briefed and responsibilities coordinated and confirmed in

- accordance with job requirements and workplace procedures
- 1.13** Road signs, barriers and warning devices are positioned in accordance with job requirements, workplace procedures and traffic management plans
- 2 Install cathodic protection system**
- 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** Approved specifications and drawings are reviewed and the cathodic protection system installed in accordance with the work schedule, 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 in the installation are identified and actioned in accordance with workplace procedures
- 2.6** Fault-finding and troubleshooting techniques are applied to identify any problems with the installation in accordance with job requirements and workplace procedures
- 2.7** Quality and safety checks of the work are conducted in accordance with job requirements, industry standards and workplace procedures
- 3 Test and commission cathodic protection system and complete relevant documentation**
- 3.1** Installed cathodic protection system and components are commissioned and tested for conformance and anomalies reported in accordance with regulatory requirements and 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 stored in accordance

with workplace procedures

- 3.5 Relevant work permit/s are signed off and equipment is returned to service in accordance with job requirements and workplace procedures
- 3.6 Cathodic protection system is tested and adjusted, additional survey data collected, and work completion records and documentation completed, processed and appropriate person/s notified in accordance with workplace procedures
- 3.7 As built/as installed drawings are checked, updated and returned to the relevant cathodic protection engineering person/s 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 components and systems must include at least five (5) of the following:

- solar powered supply systems
- 240 Volt power supply systems
- insulation, flange insulation kit (FIK's) and monolithic joints
- sacrificial and impressed current anode beds
- battery banks — acid and lead acid battery maintenance including sg measurement
- transformer rectifiers and central processing units (CPUs)
- lighting protection equipment
- cathodic protection test points
- installation of insulated joint protectors and testing

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

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

Unit Mapping Information

This unit replaces and is equivalent to UEGNSG412A Install 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 UEGNSG412 Install cathodic protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UEG Gas Industry 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
- analysing cathodic protection survey data
- applying relevant industry standards, guidelines, codes of practice and regulations
- applying sustainable energy and environmental principles and practices
- communicating effectively with others
- completing relevant records, reports and documentation
- dealing with unplanned events
- following work schedule, safety plan and job requirements
- following workplace procedures
- implementing cathodic protection tests
- installing cathodic protection sites and systems
- interpreting cathodic protection data system surveys and readings
- interpreting technical drawings, plan, maps and specifications
- locating and repairing faults
- planning installation of cathodic protection system
- positioning road signs, barriers and warning devices
- rehabilitating and maintaining a clean work site
- reporting anomalies, proposed solutions, incidents and injuries
- selecting and using correct personal protective equipment (PPE)
- testing and commissioning cathodic protection system
- 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:

- as built/as installed drawings, technical specifications, drawings, maps and plans
- cathodic protection survey data
- cathodic protection systems installation
- cathodic protection systems operation on a gas industry pipeline
- corrosion process
- corrosion processes on a gas industry pipeline
- effective communication techniques
- fault finding and repair/replacement requirements and procedures
- fault-finding and troubleshooting techniques
- gas system design, planning and operation
- hazardous activities, including lifting, climbing, working in confined spaces and aloft, and use of power tools
- quality and safety checks
- relevant equipment and components
- relevant gas industry documentation
- relevant industry standards, guidelines, codes of practice and regulations
- relevant stakeholders, including authorised persons, authorities, landowners and clients
- 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 documentation, records and reports
- relevant workplace policies and procedures
- site preparation, safety plans, job requirements and work schedules
- testing and commissioning requirements and procedures
- traffic management plans.

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.

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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