



Australian Government

UEGNSG121 Prepare safe design specifications of a gas system

Release: 1

UEGNSG121 Prepare safe design specifications of a gas system

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 prepare safe design specifications of a gas system.

It includes identifying safe system/installation design specifications, preparing gas system input and output performance criteria, and assessing environment impact of gas the system. It also includes identifying and evaluating gas system options, and preparing system specifications for natural or liquefied petroleum gas (LPG).

This unit applies to 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 work health and safety (WHS)/occupational health and safety (OHS) and duty of care requirements being met for the workplace.

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

Pre-requisite Unit

Not applicable.

Competency Field

Cross Discipline

Unit Sector

Gas Industry

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

- | | |
|---|--|
| 1 Prepare gas system input and output performance criteria | <ul style="list-style-type: none">1.1 WHS/OHS principles and practices and environmental and sustainable energy workplace procedures which may influence the systems are reviewed and determined1.2 Proposed gas system usage is analysed and technical requirements of the system are investigated and expected outcomes of design work are confirmed with the appropriate persons1.3 Organisational procedures on policies and specifications for the gas system design are obtained or determined with appropriate persons1.4 Testing parameters are determined from organisational workplace procedures on policies and gas system specifications and discussed with appropriate person/s to ascertain the gas system project brief1.5 Equipment, tools and personal protective equipment (PPE) are selected and coordinated based on specified requirements and workplace procedures1.6 Work roles and tasks are allocated in accordance with design requirements and person/s competency1.7 Work is prioritised and sequenced for the most effective outcome, completed within an acceptable timeframe to an industry quality standard and in accordance with workplace procedures1.8 Liaison and communication with authorised persons, authorities, clients and land owners are undertaken to resolve gas system issues and coordinate design work activities1.9 Risk control measures are identified, prioritised and evaluated against the work schedule1.10 Relevant work permits are secured to coordinate the performance of work in accordance with requirements and workplace procedures |
| 2 Assess impact of gas system on the environment | <ul style="list-style-type: none">2.1 Gas system logistics are determined and environmental impact on interconnected systems is assessed2.2 WHS/OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimise waste are incorporated into the |

- gas system project in accordance with workplace requirements and procedures
- 2.3 Practicable design decisions are made on basis of safety and effective outcomes in accordance with workplace requirements and procedures
 - 2.4 Mathematical modelling is used to analyse the effectiveness of the design specification in accordance with workplace requirements and procedures
 - 2.5 Technical advice is obtained related to hazards, assessed risks and reasonably practicable risk control measures so that monitoring can be undertaken and appropriate authorities consulted, as required, in accordance with workplace requirements and procedures
 - 2.6 Specific data is analysed and compared with compliance specifications to ensure completion of the project within an agreed timeframe in accordance with requirements
 - 2.7 Environmental testing is undertaken in accordance with workplace requirements and procedures
 - 2.8 Work teams are arranged to ensure design planned goals are met in accordance with workplace procedures
 - 2.9 Solutions to unplanned events are responded to in accordance with workplace procedures, in a manner that minimises risk to personnel and equipment
 - 2.10 Quality of work is monitored against performance agreement and workplace organisational and industry standards
 - 2.11 Environmental strategic plans are developed incorporating organisational initiatives in accordance with workplace procedures
- 3 Identify and evaluate gas system options and prepare specifications**
- 3.1 Review of gas system are undertaken to ensure design complies with requirements and includes specifications and documentation needed to complete the gas project
 - 3.2 Design and construction resources option/s are identified, availability and price is determined, and maintenance requirements are documented
 - 3.3 Cost-benefit analysis is prepared and evaluation criteria are determined, any shortfalls in recommended option/s

are justified and compliance requirements are met

- 3.4 Appropriate persons are notified of design completion and gas system reports and completion documents are finalised
- 3.5 Reports and completion documents are submitted to relevant persons for approval and as required, statutory or regulatory approval
- 3.6 Approved copies of documents are issued and records are updated 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.

constants and variables must include:

- gas system
- environmental hazards
- system logistics
- resources
- relevant documentation
- legislative compliance
- safe design principles
- relevant authorities

gas systems must include at least six (6) of the following (at least the first three, OR the last three):

- natural gas systems
- transmission and distribution pipelines
- control systems
- custody transfer stations
- odourising plant
- corrosion control
- interconnecting system
- LPG storage greater than 50 kL
- underground storage
- tankers and ships

environmental hazards must include at least

- hazards associated with LPG

three (3) of the following:

- hazards associated with natural gas
- geological features
- soil types
- neighbouring plants
- residential areas
- separation distances and emission and contamination hazards

gas system logistics must include at least one (1) of the following:

- land and sea transport routes and equipment
- transmission and distribution pipelines
- land ownership and easements

relevant persons must include at least two (2) of the following:

- company planners and marketers
- department heads
- business unit managers
- company engineers and consultant engineers
- technical specialists
- statutory authorities and environmental specialists

legislative requirements must include at least two (2) of the following:

- WHS/OHS legislation
- relevant government acts, regulations and codes of practice
- local government traffic management

relevant authorities must include at least two (2) of the following:

- local and shire councils
- local government authorities
- emergency transport authorities
- rail departments
- landowners/traditional land owners

relevant documentation must include at least eight (8) of the following:

- contracts
- specifications/drawings/plans
- manufacturer specifications
- work permits
- company standard operation and safety procedures
- company management plans and policies
- hot work permits
- company forms and files
- WHS/OHS legislation and codes of practice
- other government legislation
- pipeline licenses
- quality assurance
- commercial agreements

Unit Mapping Information

This unit replaces and is equivalent to UEGNSG121B Prepare safe design specifications of a gas system.

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 UEGNSG121 Prepare safe design specifications of a gas system

Modification History

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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 using of risk control measures
- applying sustainable energy principles and practices
- assessing the impact of the gas system on the external environment
- dealing effectively with unplanned events in accordance with workplace procedures, in a manner that minimises risk to personnel and equipment
- evaluating gas system options
- identifying options for the gas system
- preparing design specifications, input and output performance criteria for the gas system.

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:

- applicable gas chemistry, properties and characteristics
- appropriate environmental requirements
- chemical and physical behaviours of natural and liquefied petroleum gas (LPG)
- correctly read, analyse, interpret and record data
- engineering principles and operating principles of pipeline systems
- environmental impacts of gas installations and infrastructure on the environment
- gas system design specifications
- gas system environmental compliance
- relevant environmental legislative compliance and regulation
- relevant job safety assessments or risk mitigation processes
- relevant mathematical techniques and principles
- relevant WHS/OHS legislated, industry standards and codes of practice for the gas industry

requirements

- relevant workplace documentation
- relevant workplace policies and procedures
- safe design principles
- theory and study of hazard and operability (HAZOP) and hazard analysis (HAZAN).

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.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of 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 personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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