



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **UEGNSG204B Coordinate and conduct gas distribution pipeline repair and modifications**

Release: 1

## **UEGNSG204B Coordinate and conduct gas distribution pipeline repair and modifications**

### **Modification History**

Not applicable.

### **Unit Descriptor**

#### **Unit Descriptor**

#### **1) Scope:**

##### **1.1) Descriptor**

This Competency Standard Unit covers the coordination of gas distribution pipeline repair and modifications. Inspection and testing techniques are included for this competency standard. It encompasses identifying and attending to leaks as classified in AS4645.

### **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, telecommunications, anti discrimination and training.

**License to practice**                    **3)**  
Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of those 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    3                    Writing    3                    Numeracy    3

## **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 Prepare and plan for coordination of repairs and modifications of a gas distribution pipeline	<p>1.1 Information concerning the identified repair/modification is conveyed to all parties and work schedule(s), including drawings, plans, requirements, established procedures; and material lists are received, analysed and confirmed if necessary by site inspection</p> <p>1.2 Necessary plans, specifications and other relevant information and established procedures for the work are communicated to all persons and identified for all work sites</p> <p>1.3 OHS, environmental and sustainable energy policies and procedures related to the coordinating of gas distribution pipeline repairs and modifications are obtained and confirmed for the purposes of the work performed and communicated</p> <p>1.4 Work is prioritised and sequenced following consultation with others for completion within acceptable timeframes and in accordance with established procedures</p> <p>1.5 Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and monitored including emergency exits kept clear according to established procedures</p> <p>1.6 Relevant work permits are obtained to access, isolate/de-energise systems and perform work according to requirements and established procedures</p> <p>1.7 Resources including persons, equipment, tools and personal protective equipment required for</p>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
	the job are identified, scheduled, obtained and confirmed in working order
	1.8 Relevant persons at worksite are confirmed to be current in First Aid and other related work procedures according to requirements
	1.9 Liaison and communication issues with other authorised persons, authorities, clients and land-owners is completed so work can be carried out where necessary
	1.10 Site is prepared according to the work schedule and to minimise risk and damage to property, commerce and individuals in accordance with established procedures
	1.11 Persons participating in the work, including plant operators and contractors are fully briefed and respective responsibilities confirmed where applicable in accordance with established procedures
	1.12 Road signs, barriers and warning devices are positioned in accordance with requirements including traffic management plans
2 Coordinate pipeline repairs or modifications for gas distribution pipelines and notify completion of work	2.1 OHS policies and procedures and safe work practices are followed to eliminate or minimise incidents and hazards
	2.2 Lifting, climbing, working in confined spaces, excavations, trenches, or aloft, and use of power tools, techniques and practices are safely followed and currency according to requirements confirmed
	2.3 Essential Knowledge and Associated Skills are applied to the coordinating of gas distribution pipeline repairs and modifications to ensure completion in an agreed timeframe and to quality standards with a minimum of waste according to requirements

**ELEMENT**

**PERFORMANCE CRITERIA**

- |   |  |   |
|---|--|---|
|   | 2.4  | Coordination of gas distribution pipeline repairs and modifications is carried out in accordance with the work schedule and to established procedures   |
|   | 2.5  | Hazard warnings and safety signs are recognised and hazards are assessed and OHS risks are reported to the authorised persons for directions according to established procedures  |
|   | 2.6  | Repair work is monitored and unplanned events and amendments and modifications in the coordinating pipeline repair and modifications are undertaken within the scope of established procedures  |
|   | 2.7  | Known solutions to a variety of problems are applied using acquired Essential Knowledge and Associated Skills   |
|   | 2.8  | All required testing procedures are followed and ongoing checks of work quality are undertaken in accordance with given instructions and established procedures   |
| 3 | Re-establish distribution pipeline to operational conditions and notify completion of work |   |
|   | 3.1  | System is re-established in order to meet distribution pipeline requirements and the work undertaken is checked against works schedule for conformance with requirements and anomalies reported in accordance with established procedures |
|   | 3.2  | Accidents and injuries are reported in accordance with established procedures where applicable  |
|   | 3.3  | Work site is rehabilitated, cleaned up and made safe in accordance with given instructions and established procedures   |
|   | 3.4  | Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures   |
|   | 3.5  | Relevant work permit(s) are signed off and equipment is returned to service in accordance   |

**ELEMENT**

**PERFORMANCE CRITERIA**

with requirements

- 3.6 Records and drawings are updated to reflect repair, modifications and work completion records, reports as installed and documentation finalised and processed and appropriate persons notified

## 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 the coordination of gas distribution pipeline repair and modifications.

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

#### **KS01- G204B**                      **Distribution pipeline repair and modification**

G 2.2.14 Cut out, repair and replace damaged nylon or PVC pipe  
Evidence shall show an understanding of requirements to repair a damaged nylon pipe in a Gas Industry workplace, indicated by the following:

- Undertake procedures for disconnecting and terminating nylon or PVC Pipe
- Selection and application of various squeeze off equipment for Nylon including Hydraulic squeezers
- Undertake repair methods for nylon or PVC pipeline, trace wire and marker tape
- Demonstrate procedures for cutting out and replacing nylon or PVC pipe of various diameters and in various locations including fixed connection points.
- Demonstrate procedures for accessing inserted nylon or PVC pipe including breaking out Cast Iron conduits and cutting out Steel conduit
- Apply procedures for ensuring continuity of supply including checking of network maps, gauging, fitting of bypasses and purging.
- Undertake joining and testing of trace wire and marker tape
- Static Electricity in gas pipes

G 2.2.19 Repair damaged PE pipeline  
Evidence shall show an understanding of the requirements to repair damaged PE pipe on a Gas Industry pipeline, indicated by the following:

- Identify Environmental and Safety Hazards, assess risks and implement control measures
- Dangers of working with live gas



- Undertake procedures for disconnecting and terminating PE pipe
- Selection and application of various squeeze off and stop off equipment including Hydraulic squeezers
- Undertake repair methods for PE pipeline, saddles, trace wire and marker tape
- Demonstrate procedures for cutting out and replacing PE pipe of various diameters and in various locations including fixed connection points
- Gas leak testing
- Pressure testing procedures
- Apply procedures for ensuring continuity of supply including checking of network maps, Gauging, fitting of bypasses and purging
- Jointing methods for repair work
- Undertake joining and testing of trace wire and marker tape

#### G 2.2.22 Cut out, repair and replace cast iron pipeline

Evidence shall show an understanding of how to repair or replace a cast iron pipeline on a Gas Industry workplace, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Dangers of working with live gas
- Stop off equipment for cast iron
- Cutting methods for cast iron
- Undertake procedures for disconnecting and terminating cast iron pipe
- Undertake repair methods for cast iron pipeline, saddles, trace wire and marker tape
- Demonstrate procedures for cutting out and replacing cast iron pipe of various diameters and in various locations including fixed connection points
- External injection of Anaerobic sealants
- Gas leak testing
- Pressure testing procedures
- Apply procedures for ensuring continuity of supply including checking of network maps, Gauging, fitting of bypasses and purging.
- Undertake joining and testing of trace wire and marker tape
- Use of cross-bonding leads and neon testers

#### G 2.2.25 Cut out, repair and replace steel pipeline

Evidence shall show an understanding of the processes

required for the cutting out and replacing of steel pipeline on a Gas Industry workplace (distribution) pipeline, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Dangers of working with live gas
- Purpose and function of equipment, tools and materials, including but not limited to, cutting and stopping equipment
- Demonstrate the correct use of stop off equipment and cutting equipment
- Requirements of Australian Standards and gas industry standards for working with steel pipe and fittings
- Safety requirements and procedures for using equipment, tools and materials
- Gas leak testing
- Pressure testing procedures
- Apply procedures for ensuring continuity of supply including checking of network maps, gauging, fitting of bypasses and purging.
- Replace marker tape
- Coating types and repair
- Use of cross-bonding leads and neon testers

#### G 2.2.29 Cut out, repair and replace damaged copper pipe

Evidence shall show an understanding of how to repair a damaged copper pipe on a Gas Industry pipeline, indicated by the following:

- Equipment, tools and materials required for joining copper pipeline and fittings
- Purpose and function of equipment, tools and materials
- Safety requirements and procedures for cutting and joining copper pipeline including mechanical and soldered or welded joints
- Procedures for cutting and tapping copper pipeline
- Procedures for pressure testing a pipeline
- Procedures and safety requirements for joining copper pipeline to other pipeline
- Procedures for joining copper pipeline
- Use of cross-bonding leads and neon testers

#### G 3.2.11 Prepare for testing and inspection of pipeline system

Evidence shall show an understanding of the requirements to test and inspect Gas Industry pipeline (Distribution) systems, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Interpret and apply enterprise policies and procedures
- Interpret and apply environmental and safety regulations
- Knowledge of the properties and characteristics of gas relevant to the pipeline systems to be tested
- Knowledge of the different classification of leaks and relevant procedures associated with each class of leak

G 3.2.12 Select and use appropriate tools and equipment to inspect and test the pipeline system in accordance with procedures and legislative requirements

Evidence shall show an understanding of the requirement to select the appropriate tools and equipment required to undertake the testing of Gas Industry pipeline (Distribution), systems, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Interpret and apply enterprise policies and procedures
- Range of testing and inspection methods appropriate to the system under test
- Correct and appropriate use of test and inspection equipment such as:
  - Gas detectors
  - Pressure measuring and monitoring equipment
  - Snoop for leaks on flanges and fittings
  - Measuring devices
- Interpret SI units such for pressure, temperature etc.
- Procedures to ensure that supply pressure is maintained
- Procedures required to monitor gaseous atmosphere

G 3.2.13 Record and interpret test data

Evidence shall show an understanding of the requirements to record and interpret test data for Gas Industry pipeline (Distribution) systems, indicated by the following:

- Interpret SI units such for pressure, temperature etc
- Record information and test data on completion of testing/inspection procedures
- Analyse test data to identify system defects and faults
- Use test data to correctly classify leaks for prioritising repairs
- Report results to relevant third parties using a range of reporting methods (forms, reports etc)

G 3.2.14 Monitor pipeline system during repair work

Evidence shall show an understanding of the requirements to

monitor pipeline system during repair work on a Gas Industry pipeline (Distribution), indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Interpret and apply enterprise policies and procedures
- Procedures to conduct gas pressure and flow monitoring
- Interpret and apply manufacturer's maintenance specifications
- Coordinate resources to prevent outages during repair work
- Monitor impact of the work on environment, people and equipment

**G 3.2.15 Conduct repairs and make amendments or modifications as required**

Evidence shall show an understanding of the requirements to conduct repairs and make amendments or modifications as necessary on a Gas Industry pipeline (Distribution) systems, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Interpret and apply enterprise policies and procedures
- Conduct repairs with appropriate tools and equipment according to established work procedures
- Comply with procedures when evaluating and implementing amendments or modifications
- Comply with procedures to assess the quality of work and ensure compliance with procedures, legislative and environmental requirements

**G 3.2.16 Re-establish system and restore site**

Evidence shall show an understanding of the re-establishment of the system and the restoration of the site on Gas Industry pipeline (Distribution) systems, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Interpret and apply enterprise policies and procedures
- Confirmation that repairs and modifications are complete
- Identify relevant third parties for notification purposes
- Complete work permits
- Effectively communicate results to relevant third parties

**G 3.2.17 Maintain records**

Evidence shall show an ability to maintain of records for the repair and modification of Gas Industry pipelines

(Distribution) systems, indicated by the following:

- Interpret and apply enterprise policies and procedures
- Collate all relevant data
- Identify and complete the relevant records, drawings, documents and forms
- Store records in a secure manner consistent with enterprise policies and procedures

G 3.2.18 Obtain information relevant to pipeline repair and modification

Evidence shall show an ability to obtain information and procedures for repairing or modifying Gas Industry pipelines (Distribution) systems, indicated by the following:

- Source relevant documentation including plans, drawings, maps and specifications
- Identify any potential issues associated with the relevant documentation like missing or incorrect information
- Assess the scope of the repair or modifications required
- Determine affects on customer supply and extent of the repair or modification
- Determine materials and equipment required

G 3.2.19 Liaise and communicate with relevant parties

Evidence shall show an understanding of liaising and communicating with relevant parties involved in repair or modification of Gas Industry pipelines (Distribution), specifically:

- Interpret and apply enterprise policies and procedures
- Identify key stakeholders
- Identify specialists that can assist in repair/modification work
- Identify responsibilities and reporting requirements of third parties
- Establish communication lines with parties that require notification of repairs/modifications

G 3.2.20 Prepare work site for repairs/modifications work

Evidence shall show an understanding of the preparation of Gas Industry (Distribution) workplaces for repairs/modifications work, indicated by the following:

- Identify environmental and safety hazards, assess risks and implement control measures
- Interpret and apply enterprise policies and procedures
- Determine strategies for maintaining supply
- Comply with procedures for locating services on the worksite

- Identify and control possible sources of ignition
- Identify communications protocols and requirements
- Prepare procedures for the coordination of site activities
- Maintain records of communications with relevant third parties

#### G 3.2.21 Organise required equipment, materials and persons

Evidence shall show an understanding of the requirements to organise required equipment, materials and persons for Gas Industry pipeline (Distribution) work activities, indicated by the following:

- Identify Environmental and Safety Hazards, assess risks and implement control measures associated with obtaining equipment and materials
- Interpret and apply enterprise policies and procedures relevant to obtaining equipment and materials
- Identify and comply with legislative requirements relevant to obtaining equipment and materials
- Locate and comply with all relevant MSDS' associated with obtaining equipment and materials
- Interpret documentation to ensure correct equipment and materials are sourced
- Coordinate the deployment of required equipment, materials and persons to a worksite

## 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 assessment 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 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, polices and workplace procedures
- Demonstrate performance across a representative range of contexts from the prescribed items below.
- Competency is demonstrated across the range of variables highlighted in the range of variables guideline A, B, C, D, E, F, G, H, I for the coordination of gas distribution pipeline repair and modifications.
- Group A and B must be done
- At least 3 groups must be completed from C, D, E, F, G, H
- Group I must be completed

<b>Range of tools/equipment/procedures/workplace</b>		
<b>Group No</b>	<b>The minimum number of items on which skill is to be demonstrated</b>	<b>Item List</b>
A	All	Interpret technical drawings and symbols Ensure emergency response procedures in place Communicate with other



		<p>authorities and stakeholders</p> <p>Communicate schedules /coordinate to persons</p> <p>Carry out job safety analysis</p> <p>Obtain work permit</p> <p>Use and interpret Dial Before You Dig report</p>
B	At least 3	<p>Excavation</p> <p>Trenching</p> <p>Shoring</p> <p>Stitch bore</p> <p>Horizontal drilling</p> <p>Directional drilling</p>
C	At least 3	<p>Nylon (polymide) pipeline laying techniques</p> <p>Nylon gluing</p> <p>Nylon stop off</p>
D	At least 5	<p>PE pipeline laying techniques</p> <p>Large diameter PE</p> <p>PE electro fusion</p> <p>PE butt fusion</p> <p>Saddle fusion</p> <p>Socket fusion</p> <p>PE stop off</p> <p>Compression couplings or flanges</p> <p>Connection of PE to nylon</p> <p>Practical application of AS3723 Installation and Maintenance of plastic pipe systems</p>
E	At least 4	<p>UPVC pipeline laying techniques</p> <p>UPVC solvent cemented joints</p> <p>UPVC moulded joints</p> <p>UPVC stop off</p> <p>UPVC couplings or flanges</p> <p>Connection of UPVC to steel</p> <p>Practical application of</p>

		AS3723 Installation and maintenance of plastic pipe systems
F	At least 2	Steel pipeline coating repair Steel pipeline coating testing (Jeeper) Steel, field joint coating
G	At least 3	Connection of PE to steel mains Steel mains welding Steel mains repair Sleeve application Clamp application Hot tap and stopple
H	At least 2	High pressure stop off — 312 Bagtube Squash off jacks Squash off pliers
I	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.
- 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 working:

Assessment of this competency must also be undertaken in either an actual workplace or under a simulated work environment.

**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.

UEGNSG102B Carry out work activities in a utilities industry work environment

UEENEEE101 Apply Occupational Health and Safety regulations, codes and practices in the workplace  
A

UEGNSG104B Comply with environmental policies and procedures

UEGNSG105B Establish the work site

BSBFLM312B Contribute to team effectiveness

BSBFLM303C Contribute to effective workplace relationships

## 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 to the coordination of gas distribution pipeline repair and modifications.

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:

Inspection and testing techniques (3)

Leaks (3)

Repair and maintenance equipment (3)

Repair/modification techniques (3)

Documentation/records (3)

Tools, materials and equipment

Pipeline systems

Pipeline control systems

Appropriate authorities

Appropriate person

## **Unit Sector(s)**

Not applicable.

## **Competency Field**

**Competency Field**            **11)**  
Distribution.