Title	**Assemble, install, test, and commission a complex gas pressure control and metering station**		
Level	**5**	**Credits**	**30**

Purpose	People credited with this unit standard are able to, for a complex gas pressure control and metering station: demonstrate knowledge of complex gas pressure control and metering station equipment design, function and operation; company procedures, documentation, hazards and equipment to assemble, install, test and commission complex gas pressure control and metering station equipment; prepare to assemble a complex gas pressure control and metering station; assemble and test a complex gas pressure control and metering station; install and commission a complex gas pressure control and metering station; and complete reporting and documentation.

Classification	Gas Industry > Gas Network Operations

Available grade	Achieved
Prerequisites	Unit 19555, *Assemble, install, test and commission a standard gas pressure control and metering station,* or equivalent knowledge and skills.

Guidance Information

1 This unit standard is intended for, but not limited to, workplace assessment. The range statements relate to enterprise specific equipment, procedures, and processes.

2 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable manufacturer's specifications, company procedures and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

3 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of:
Health and Safety at Work Act 2015;
Health and Safety in Employment (Pipelines) Regulations 1999;
Gas Act 1992;
Gas (Safety and Measurement) Regulations 2010;
Resource Management Act 1991;
Hazardous Substances and New Organisms Act 1996;
AS/NZS 4645.1:2018 *Gas distribution networks – Network management*;

AS/NZS 4645.2:2018 *Gas distribution networks – Steel pipe systems*;
AS/NZS 4645.3:2018 *Gas distribution networks – Plastics pipe systems*;
AS 2885.1-2018 *Pipelines – Gas and liquid petroleum Design and construction*;
AS 2885.3-2012 *Pipelines – Gas and liquid petroleum Operation and maintenance*;
NZS 5259:2015 *Gas measurement;*
and any subsequent amendments and replacements.

4 References
Australian standards (AS) may be found at www.standards.org.au;
Australian/New Zealand standards (AS/NZS) may be found at www.standards.govt.nz;
New Zealand standards (NZS) may be found at www.standards.govt.nz.

5 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

6 Definitions
Company procedures mean the documented methods for performing work activities, and include health and safety, operational, environmental, and quality management requirements. They may refer to legislation, regulations, guidelines, standard operating procedures, manuals, codes of practice, or policy statements.
Complex gas pressure control and metering stations include twin stream, active-monitor and automatic stream selection configurations.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of complex gas pressure control and metering station equipment design, function and operation.

Performance criteria

1.1 Design considerations for complex gas pressure control and metering station equipment are described according to system requirements.

Range valve types, filtration, inlet pressure, outlet pressure, maximum operating pressure, maximum flow rate, minimum flow rate, temperature drop, regulator configuration, regulator lock-up, overpressure protection, velocity, meter type, meter position, flow volume correction, redundancy, insulation joints, auxiliary piping.

1.2 The function of complex gas pressure control and metering station equipment is described.

Range manual valve, pre-heater, main filter/separator, actuated valve, flow control valve, main regulator, slam shut, relief valve, auxiliary filter, pilot regulator, non-return valve, orifice meter, turbine meter, rotary meter, ultrasonic meter, Coriolis meter, meter bypass, corrector.

1.3 The principle of operation of complex gas pressure control and metering station equipment configurations is described

Range active/monitor, active/monitor/slam, pressure reduction, first stage and second stage cut, monitor override, twin stream, automatic stream selection.

Outcome 2

Demonstrate knowledge of company procedures, documentation, hazards and equipment to assemble, install, test and commission complex gas pressure control and metering station equipment.

Performance criteria

2.1 Company procedures and documentation to assemble, install, test and commission complex gas pressure control and metering station equipment are located and interpreted.

Range may include – network standard, equipment operating manuals, standard operating procedure, safe work procedure, work instruction, job hazard analysis, job risk assessment.

2.2 Documentation and instructions for a specified job are obtained.

Range may include – job card, location drawing, test certificates, pressure settings, hazard identification, utility plans, permit, network plans, piping and instrumentation drawing.

2.3 Potential environmental and safety hazards and controls to assemble, install, test and commission complex gas pressure control and metering station equipment are described.

Range hazards may include – gas release, pneumatic pressure, excavations, other utilities, confined spaces, vehicles and public, electrical, contaminants, ignition source;
controls may include – gas detection equipment, safe access and egress, temporary traffic control, signage, barriers, personal protective equipment, continuity bond, earthing, waste removal and disposal, fire extinguisher,
evidence of six hazards and controls are required.

2.4 Types and function of equipment, components, and materials to assemble, install, test and commission complex gas pressure control and metering stations are described.

Range valving, piping, auxiliary piping, pipe supports, gaskets, bolts, gauges, instrumentation, test points, paint, test equipment, sealing compound, tags and labels.

2.5 Potential hazards of incorrect application and operation of equipment and procedures are described.

Range uncontrolled release of gas, supply interruption, damage to equipment, overpressure downstream, upstream impact.

Outcome 3

Prepare to assemble a complex gas pressure control and metering station.

Performance criteria

3.1 Safety and environmental hazards are identified and controlled.

Range hazards may include – gas release, pneumatic pressure, excavations, other utilities, confined spaces, vehicles and public, electrical, contaminants, ignition source;
controls may include – gas detection equipment, safe access and egress, temporary traffic control, signage, barriers, personal protective equipment, continuity bond, earthing, waste removal and disposal, fire extinguisher.

3.2 Equipment is prepared, laid out and checked against design.

Range may include – direction of flow on regulators, meter direction, meter size, telemetry, flange class rating, gaskets, thread compatibility, pipe alignment, pipe spools, spacing of equipment, auxiliary piping configuration, insulation joints, corrosion protection.

3.3 Site is prepared for installation.

Range may include – inlet and outlet connections, equipment support, access for maintenance, site security, terrain, foundations, earthing, ducting.

Outcome 4

Assemble and test a complex gas pressure control and metering station.

Performance criteria

4.1 Equipment is used to assemble complex pressure control station, regulators, meters, and ancillary equipment.

4.2 Complex gas pressure control and metering station is checked and tested for leakage and strength.

Range may include – non-destructive test, hydrostatic test, pneumatic test, material and equipment certification, test pressure, test certificate.

4.3 Station is prepared for installation.

Outcome 5

Install and commission a complex gas pressure control and metering station.

Performance criteria

5.1 Complex gas pressure control and metering station is installed.

Range may include – isolation valves, filters, main regulators, pilot regulators, control valves, relief valves, meter, meter bypass, flow volume corrector, gauges, auxiliary piping, tags/labels, equipment orientation.

5.2 Complex gas pressure control and metering station is purged and commissioned.

Range may include – purge equipment, gas detection equipment, calibrated pressure gauge, equipment set points, equipment functional tests, flow indications, alarm indications, odourant test, meter reading.

5.3 Integrity test is carried out to check for leakage.

Outcome 6

Complete reporting and documentation.

Performance criteria

6.1 Records and documents are completed and processed, and information is communicated to internal or external parties as required.

Range may include – completion notice, additional work, as-built drawings, serial numbers, test certificates, meter data, pressure settings, materials used, inspection, odourant, tags, cathodic protection, torque.

Replacement information	This unit standard replaced unit standard 19554 and unit standard 19556.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 August 2017	31 December 2023
Review	2	27 May 2021	N/A

Consent and Moderation Requirements (CMR) reference	0014

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.