Title	**Demonstrate knowledge of level measurement systems used in industry**		
Level	**3**	**Credits**	**3**

Purpose	People credited with this unit standard are able to: – demonstrate knowledge of pressure measurement devices used for level measurement; – calibrate level measurement devices; and – demonstrate knowledge of calibration methods for a level measurement system.

Classification	Industrial Measurement and Control > Industrial Measurement and Control - Theory

Available grade	Achieved

Guidance Information

1 Reference
ANSI/ISA-51.1-1979 (R1993) *Process Instrumentation Terminology*; and all subsequent amendments and replacements.

2 Definition
Industry requirements – includes all asset owner requirements; manufacturers' specifications; enterprise requirements which cover the documented workplace policies, procedures, specifications, and business requirements; and quality management requirements relevant to the assessment being carried out.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of pressure measurement devices used for level measurement.

Performance criteria

1.1 Describe differential pressure transmitters and their installation, as used for tank liquid level measurement systems.

Range open tank, closed tank (wet leg, dry leg), diaphragm seals, bubble tube.

1.2 Describe measurement methods for liquid levels.

Range float, sight glass, displacer, ultrasonic, radar, nuclear radiation, capacitive, resistive, conductive.

1.3 Describe level measurement methods for solids and powder.

Range ultrasonic, radar, nuclear radiation, capacitive.

1.4 Outline alternative applications of level measurement devices.

Range differential pressure transmitters used for density measurement.

1.5 Explain non-linear tank level measurement applications.

Outcome 2

Calibrate level measurement devices.

Range pressure transmitters.

Performance criteria

2.1 Explain and follow safe work procedures.

Range isolation, filled systems, chemical (oxygen or oil), pressure, mercury.

2.2 Select test equipment according to the accuracy and range of the device.

Range deadweight tester, manometer, comparator.

2.3 Identify types and cause of typical measurement errors.

Range temperature, vibration, wear, selection of device.

2.4 Calibrate devices by making appropriate adjustments.

Range zero, span, linearity, head correction.

2.5 Record test results in accordance with industry requirements.

Outcome 3

Demonstrate knowledge of calibration methods for a level measurement system.

Range level measurement systems may include – displacer, ultrasonic, radar, nuclear radiation, capacitive, resistive, conductive;
evidence of one level measurement system is required.

Performance criteria

3.1 Explain and follow safe work procedures.

Range pressure, radiation, tank products.

3.2 Describe calibration procedures with reference to calibration principles and manufacturer's instructions.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	31 October 1995	31 December 2013
Revision	2	30 October 1997	31 December 2013
Revision	3	3 April 2001	31 December 2013
Review	4	22 June 2001	31 December 2013
Review	5	19 May 2008	31 December 2019
Review	6	28 November 2013	31 December 2027
Rollover	7	28 June 2018	31 December 2027
Review	8	30 January 2025	31 December 2027

Consent and Moderation Requirements (CMR) reference	0003

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