

FIELD ENGINEERING AND TECHNOLOGY**Review of *Industrial Measurement and Control* unit standards**

Subfield	Domain	Id
Industrial Measurement and Control	Industrial Measurement and Control - Maintenance	2631, 2633, 2635, 2637, 2639, 2640, 2642-2648, 2651, 2652, 2656, 2657, 2664, 2667, 4356, 4357, 9180
	Industrial Measurement and Control - Theory	2630, 2632, 2634, 2636, 2638, 2641, 2649, 2650, 2653-2655, 2659-2663, 2665, 2666, 2668

The ElectroTechnology Industry Training Organisation (ETITO) has completed the review of the unit standards listed above.

Date new versions published

May 2008

Planned review date

December 2013

Summary of review and consultation process

Meetings involving ETITO, industry representatives and other key stakeholders were convened from 2005 through to late 2007 to undertake the review of Industrial Measurement and Control unit standards that make up the National Certificate in Industrial Measurement and Control (Level 4) [Ref: 0410].

The consultation groups were asked to consider the following:

- The currency of the unit standards and their suitability for existing and future qualifications.
- The appropriateness of unit standards to their domain.
- The accuracy and appropriateness of their content.
- Whether levels and credits were commensurate with performance outcomes and training needs.
- Any gaps in skills and/or knowledge that could be captured by the development of new unit standards.
- The assessability of the unit standards.

Main changes resulting from the review

- Some unit standard titles were updated to better reflect the content.
- Elements and performance criteria were amended to improve clarity and consistency and bring the unit standards up to date.
- Purpose statements were amended to accommodate changes to the elements.
- Special notes were amended to update references and legislation.
- Range statements were amended to clarify evidence requirements.
- Four new standards were developed to cover gaps in skills and knowledge (24885, 24887-24889).
- Unit standard 24884 replaced unit standards 2651 and 2656.
- Unit standard 24886 replaced unit standards 2650 and 2652.

The unit standards categorised as category C expire at the end of December 2010.

Impact on existing provider accreditations

None.

Impact on Accreditation and Moderation Action Plan (AMAP)

AMAP 0003 has been updated to reflect the changes.

Impact on existing qualifications

Qualifications that contain the reviewed standards are tabled below.

Affected	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
Not materially affected	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

In the following tables qualifications that contain unit standards in both categories are identified in the *Affected* table, with the items that generated the *Affected* status in bold.

The following ETITO qualification is affected by the outcome of this review and will be reviewed in 2008.

Qualification Title	Classification or standard in the qualification
National Certificate in Industrial Measurement and Control (Level 4) [Ref 0410]	2630 , 2631-2648, 2649-2652 , 2653-2655, 2656 , 2657, 2659 , 2660-2664, 2665 , 2666-2668, 4356, 4357, 9180

The following qualifications are also affected by the outcome of this review. The standard setting bodies (SSBs) have been advised that they require revision.

Qualification title	Classification or standard in the qualification	SSB Name
National Certificate in Electricity Supply (Technician) (Level 3) with strands in Control and Instrumentation, Power Technician, and HVDC Technician [Ref: 0922]	2630 , 2631-2638, 2640, 2649 , 2659 , 2663, 2665 , 2666, 2668, 4357	Electricity Supply Industry Training Organisation
National Certificate in Electricity Supply (Technician) (Level 4) with strands in Control and Instrumentation, Power Technician, and HVDC Technician; and an optional strand in Electrical Services [Ref: 0917]	2640, 2650-2652 , 2654, 2655, 2656 , 2662, 2667, 9180	
National Certificate in Gas Industry (Gas Engineering) with strands in Gas Network Operations, Gas Network Planning and Development, and Gas Utilisation [Ref: 0635]	2630 , 2636	NZ Extractive Industries Training Organisation
National Certificate in Gas Industry (Gas Transmission) (Level 4) with strands in Pipeline Operation, and Instrumentation and Electrical [Ref: 0979]	2630 , 2631-2632, 2634-2638, 2640, 2648, 2649-2652 , 2656 , 2657, 2663, 2665 , 2666-2668, 4356, 4357	
National Certificate in Gas Measurement (Level 3) [Ref: 0399]	2630 , 2631, 2636, 2637, 2653, 2665	

Review Categories and changes to classification, title, level and credits

All changes are in bold

Key to review category	
A	Dates changed, but no other changes are made - the replacement standard carries the same Id and a new version number
B	Changes made, but the overall outcome remains the same - the replacement standard carries the same Id and a new version number
C	Major changes that necessitate the registration of a replacement standard with a new Id
D	Standard will expire and not be replaced

Engineering and Technology > Electronic Engineering > Core Electronics

Id	Title	Level	Credit	Review Category
24885	Demonstrate and apply knowledge of A/D and D/A conversion	3	3	New

Engineering and Technology > Industrial Measurement and Control > Industrial Measurement and Control - Maintenance

Id	Title	Level	Credit	Review Category
2631	Maintain pressure measurement devices	3	10	B
2633	Maintain level measurement devices used in industry	3	10	B
2635	Maintain temperature measurement devices used in industry	3	10	B
2637	Maintain flow measurement devices used in industry	3	10	B
2639	Maintain and repair control valves or self actuating valves Maintain and service control valves in accordance with industry requirements	3	10	B
2640	Maintain control valve actuators and positioners	3	5	B
2642	Maintain a pH measuring system for chemical analysis	4	4	B
2643	Maintain a conductivity measuring system	4	4	B
2644	Maintain a dissolved oxygen measuring system	4	4	B
2645	Maintain a consistency or a viscosity measuring system	4	4	B
2646	Maintain stack monitoring equipment Maintain analytical monitoring equipment	4	4	B
2647	Maintain humidity or dewpoint monitoring equipment	4	4	B
2648	Maintain density monitoring equipment Maintain and calibrate density monitoring equipment	4	4	B
2651	Maintain signal conditioning equipment, recorder, and alarm module	3	6	C
2656	Maintain electronic or microprocessor based controllers	4	2	C
24884	Maintain conditioning modules and electronic or microprocessor based controllers	4	6	

Id	Title	Level	Credit	Review Category
2657	Maintain pneumatic controllers	4	5	B
2664	Install and maintain hydraulic or electro-hydraulic equipment Maintain hydraulic or electro-hydraulic equipment	3	3	B
2667	Install and maintain pneumatic or electro-pneumatic equipment Install and service pneumatic or electro-pneumatic equipment	3	5	B
4356	Maintain chromatographs	4	4	B
4357	Tune or adjust a plant control loop	4	2	B
9180	Install, test, and commission industrial instrumentation Install or replace, test, and commission industrial instrumentation	4	10	B

Engineering and Technology > Industrial Measurement and Control > Industrial Measurement and Control - Theory

Id	Title	Level	Credit	Review Category
2630	Demonstrate an understanding of pressure measurement systems used in industry Demonstrate knowledge of pressure measurement systems used in industry	3	8 6	B
2632	Demonstrate an understanding of level measurement systems used in industry Demonstrate knowledge of level measurement systems used in industry	3	4	B
2634	Demonstrate an understanding of temperature measurement systems used in industry Demonstrate knowledge of temperature measurement systems used in industry	3	5	B
2636	Demonstrate an understanding of flow measurement systems used in industry Demonstrate knowledge of flow measurement systems used in industry	3	6	B
2638	Demonstrate an understanding of control valves, actuators, and positioners Demonstrate knowledge of control valves, actuators, and positioners	3	4	B
2641	Demonstrate an understanding of analytical measurement systems Demonstrate knowledge of analytical measurement systems	4	6	B
2649	Demonstrate an understanding of signal conditioning equipment, recorders, and alarm modules Demonstrate knowledge of signal conditioning equipment, recorders, and alarm modules	3 4	3	B

Id	Title	Level	Credit	Review Category
2650	Demonstrate an understanding of smart instruments and loops used in industry	4	2	C
2652	Maintain smart instruments and loops used in industry	4	2	C
24886	Demonstrate and apply knowledge of electronic configurable (smart) instruments and loops used in industry	4	3	
2653	Demonstrate an understanding of strain gauges, and weighing systems Demonstrate knowledge of strain gauges and weighing systems	3	2	B
2654	Demonstrate an understanding of on/off and PID control theory and controllers Demonstrate knowledge of on/off and proportional integral derivative mode control theory and controllers	4	8	B
2655	Tune control loops	4	6	B
2659	Demonstrate an understanding of transducers and their applications in industrial measurement Demonstrate knowledge of transducers and their applications in industrial measurement	3	4 5	B
2660	Demonstrate an understanding of advanced control loop methods Demonstrate knowledge of advanced control loop methods	4	3	B
2661	Configure and tune advanced control loops	4	4	B
2662	Demonstrate an understanding of distributed control systems Demonstrate knowledge of distributed control systems	4	2	B
2663	Demonstrate an understanding of hydraulic control equipment used in industry Demonstrate knowledge of hydraulic control equipment used in industry	3	4	B
2665	Demonstrate an understanding of instrumentation calibration terminology and standards Demonstrate knowledge of instrumentation calibration terminology and standards	3	2 3	B
2666	Demonstrate an understanding of pneumatic control equipment used in industry Demonstrate knowledge of pneumatic control equipment used in industry	3	4	B
2668	Demonstrate an understanding of flame, gas, smoke, and heat detectors Demonstrate knowledge of flame, gas, smoke, and heat detectors	3	2	B
24887	Demonstrate knowledge of electronic variable speed drives	4	3	New

Id	Title	Level	Credit	Review Category
24888	Prepare and interpret diagrams for instrumentation and control systems	3	3	New
24889	Demonstrate knowledge of industrial instrumentation installation	4	8	New