Field Manufacturing

Review of *Energy and Chemical Plant* unit standards and CMR [Ref: 0079]

Subfield	Domain	ID
Energy and Chemical Plant	Monitoring of Energy and Chemical Plant	3054, 3058, 3060, 21452, 21453
	Operation of Energy and Chemical Plant	3032, 3035, 3036, 3037, 3040, 3045, 3047, 3048, 3051, 3052, 3053, 4553, 4559, 17603-17611, 21454-21466
	Safety and Legislation for Energy and Chemical Plant	3046, 3064, 3068, 21468, 21469, 21470

The New Zealand Industry Training Organisation (NZITO) completed the review of the unit standards and consent and moderation requirements (CMR) listed above, prior to its merger with the Primary Industry Training Organisation.

Date new versions published **October 2014**

Planned review date **December 2019**

Summary

The standard setting body function has moved from NZ Motor Industry Training Organisation (MITO) to the Primary Industry Training Organisation (Primary ITO) and is reflected in this review. The change has been agreed by NZQA and TEC and is supported by the following Steam and Hazardous Gases Advisory Group (SHAG) member organisations:

- NZ Motor Industry Training Organisation (MITO)
- Primary Industry Training Organisation (Primary ITO)
- Competenz
- Infrastructure Industry Training Organisation (Connexis).

Advisory Group meetings were held in June and July 2011 to review these standards. On commencement of the targeted review of the qualifications in August 2011, it was determined that the review could not be successfully completed until the structure and content of the proposed qualifications had been determined.

The review was completed by the advisory group in September 2013, once the qualifications structure and content had been confirmed. The advisory group endorsed the reviewed standards at meetings in April and August 2013.

Main changes

- Nine new unit standards were developed to cover skills and knowledge required by the sector.
- Four unit standards were designated expiring and replaced to address issues of delivery and evidence gathering identified through the consultation.
- Eight unit standards were designated as expiring without replacement as they were no

longer relevant to the sector.
- Titles, purpose statements, evidence requirements and range statements, where relevant, have been reworded to reflect changes in the sector, or to clarify or simplify.
- Levels and credits have been updated to better reflect the content of the unit standards.
- Standard setting body details have been amended.

The last date for assessment of superseded versions of these standards is 31 December 2016, for the immediately previous versions, or 31 December 2014 for all earlier versions. Results will not be accepted where the assessment date is after the last date for assessment of the superseded version of the standard.

Category C and D unit standards will expire at the end of December 2016

Impact on existing organisations with consent to assess

Current consent for			Consent extended to		
Nature of consent	**Classification or ID**	**Level**	**Nature of consent**	**Classification or ID**	**Level**
Subfield	Energy and Chemical Plant	4	Standard	3035, 3037	5
Domain	Operation of Energy and Chemical Plant	4	Standard	3035, 3037	5

Impact on Consent and Moderation Requirements (CMR)

CMR [Ref: 0079] has been reviewed following the standard setting responsibility changing from the NZ Motor Industry Training Organisation to Primary ITO.

Compliance with new requirements

Requirements for consent to assess will apply with effect from December 2014.

Moderation system requirements will apply with effect from December 2014.

Organisations with consent to assess will be expected to be able to demonstrate compliance with the CMR from July 2015 onwards.

Moderation Requirements (MR)

The Moderation system section was amended to indicate that, for Level 1 and 2 standards, only an annual report on internal moderation from each organisation with consent to assess was required. The moderation system has not been changed for standards at Level 3 and above.

Impact on registered qualifications

Key to type of impact	
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

The following sector qualifications are affected by the outcome of this review. These

qualifications are part of the review of Energy and Chemical Plant qualifications that began in 2012. Expiring versions will be published when the review is complete and to show the change to SSB. The classifications and/or standards that generated the status *Affected* are listed in **bold**.

Ref	Qualification Title	Classification or ID
1342	National Certificate in Energy and Chemical Plant (Boiler Operation) (Level 2)	**3032, 3054, 17603,** 21452, **21460-21464, 21468-21470**
1343	National Certificate in Energy and Chemical Plant (Process Operation) (Level 2) with optional strands in Petrochemical Industry; Kraft Pulp and Chemical Operations; and Kraft Liquor Evaporation	**3032, 3047, 3054, 3060, 4553,** 21452, **21456, 21459, 21464, 21468, 21469**
1344	National Certificate in Energy and Chemical Plant (Process Operation) with optional strands in Steam Generation; Turbine Operations; Waste Treatment; Refrigeration; Chemical Continuous Process; Chemical Batch Process; Solid Handling; Petrochemical Field Operations; Petrochemical Control Room Operations; Petrochemical Production Storage; Kraft Cycle Operations; Kraft Bleach and Chemical Operations; and Kraft Pulping and Chemical Plant	**3035-3037,** 3045, **3048, 3051-3053, 3058, 3064,** 17604, **17607,** 17608, **17609,** 17611, **21453,** 21454, **21455- 21458, 21463,** 21465, 21466

The following table identifies qualifications developed by other SSBs that are impacted by the outcome of this review. The SSBs have been advised that the qualifications require revision. The classifications and/or standards that generated the status *Affected* are listed in **bold**.

Ref	Qualification Title	Classification or ID	SSB Name
0894	National Certificate in Electricity Supply (Thermal Operator) (Level 4) with strands in Thermal Operations, Combined Cycle Operations, and Geothermal Operations	**17607, 17609**	Infrastructure ITO
1575	National Certificate in Gas Transmission Operations (Pipeline) (Level 3)	**3054**	NZ Motor Industry Training Organisation (MITO)
1576	National Certificate in Gas Transmission Operations (Mechanical) (Level 3)	**3054**	
1578	National Certificate in Gas Transmission Operations (Instrumentation and Electrical) (Level 3)	**3054**	
1572	National Certificate in Wood Fibre Manufacturing (Pulp and Paper) (Level 3) with strands in Mechanical Pulping, Pulp and Paper Dry End, and Pulp and Paper Wet End	**17608, 17611**	Competenz -FITEC

Detailed list of unit standards – classification, title, level, and credits

All changes are in **bold**.

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the 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

Manufacturing > Energy and Chemical Plant > Monitoring of Energy and Chemical Plant

ID	Title	Level	Credit	Review Category
3054 **28157**	Read and interpret instruments used on energy and chemical plant **Demonstrate knowledge of types of instrumentation used in the energy and chemical industry**	3 **3**	5 **5**	C
3058	Perform gas tests for an energy and chemical plant	4	5	B
3060	Take product samples for energy and chemical plant **Take and process product samples in an energy and chemical plant**	2 **3**	3	B
21452	Monitor energy and chemical plant operations **Monitor routine energy and chemical plant operations**	3	5	B
21453 **28158**	Demonstrate knowledge of control systems on energy and chemical plant **Operate control systems in an energy and chemical plant**	4 **4**	10 **15**	C

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

ID	Title	Level	Credit	Review Category
3032	Operate valves on energy and chemical plant **Operate valves in an energy and chemical plant**	4	8 **10**	B
3035	Operate fired pressure equipment on energy and chemical plant **Operate fired pressure equipment in an energy and chemical plant**	4 **5**	10	B
3036	Operate unfired pressure equipment on energy and chemical plant **Operate unfired pressure equipment in an energy and chemical plant**	2 **4**	4 **8**	B
3037	Operate and monitor advanced boiler plant **Operate and monitor an advanced steam generation process**	4 **5**	14 **15**	B
3040	Operate raw water treatment systems in an energy and chemical environment	4	12	D
3045	Operate solid handling systems on energy and chemical plant **Operate solid handling systems in an energy and chemical plant**	3	5	B

ID	Title	Level	Credit	Review Category
3047	Interpret, use, and sketch process drawings for energy and chemical plant **Interpret, use, and sketch process drawings for an energy and chemical plant**	3	2 **5**	B
3048	Operate product storage equipment on energy and chemical plant **Operate product storage equipment in an energy and chemical plant**	4	4 **8**	B
3051	Operate heat exchange equipment on energy and chemical plant **Operate heat exchange equipment in an energy and chemical plant**	4	6 **7**	B
3052	Operate an auxiliary internal combustion engine on energy and chemical plant	2	4	D
3053	Operate a gas turbine on energy and chemical plant **Operate a gas turbine in an energy and chemical plant**	3 **4**	3 **10**	B
4553	Operate common pumps, compressors and fans on energy and chemical plant **Operate equipment used in an energy and chemical plant**	2 **3**	5	B
4559	Operate common valves on energy and chemical plant	2	3	D
17603	Demonstrate knowledge of properties of raw water and its uses in energy and chemical plant	2	6	D
17604	Operate primary treatment systems for effluent water from energy and chemical plant **Operate primary treatment systems for effluent water in an energy and chemical plant**	4	8	B
17605	Demonstrate knowledge of air conditioning systems on energy and chemical plant	2	8	D
17606	Operate and maintain refrigerated air conditioning equipment on energy and chemical plant	4	10	D
17607 **28159** **28160**	Operate geothermal steamfield equipment and processes **Demonstrate knowledge of geothermal processes and equipment in an energy and chemical plant** **Operate geothermal steam-field equipment and processes in an energy and chemical plant**	2 **4** **4**	9 **15** **20**	C
17608	Operate sludge treatment systems for effluent water from energy and chemical plant **Operate sludge treatment systems for effluent water in an energy and chemical plant**	4	8	B

ID	Title	Level	Credit	Review Category
17609	Operate geothermal binary turbines on energy and chemical plant **Operate geothermal binary plant in the energy and chemical industry**	2 **4**	8 **20**	B
17610	Operate pre-treatment systems for effluent water from energy and chemical plant **Operate pre-treatment systems for effluent water in an energy and chemical plant**	4	8	B
17611	Operate biological treatment systems for effluent water from energy and chemical plant **Operate biological treatment systems for effluent water in an energy and chemical plant**	4	8	B
21454	Operate refrigeration equipment on energy and chemical plant **Operate refrigeration equipment in an energy and chemical plant**	4	10	B
21455	Purge a system on energy and chemical plant **Purge systems in an energy and chemical plant**	4	4 **10**	B
21456	Operate systems for boiler feedwater treatment	4	12 **15**	B
21457	Isolate and reinstate a section of energy and chemical plant **Isolate and reinstate a section of an energy and chemical plant**	4	4 **6**	B
21458	Operate a steam turbine **Operate a steam turbine in an energy and chemical plant**	4	14 **20**	B
21459	Demonstrate knowledge of pipework and fittings on energy and chemical plant **Demonstrate knowledge of pipework and fittings used in an energy and chemical plant**	2	4 **5**	B
21460	Meet requirements of person responsible for an unattended boiler	3	8	D
21461	Demonstrate knowledge of the basic principles of steam generation and of combustion theory relating to boiler operation	2 **3**	6 **5**	B
21462	Demonstrate knowledge of the basic equipment and systems used for steam generation in boiler operation **Demonstrate knowledge of the basic equipment and systems used for steam generation in a boiler operation**	2 **3**	8	B
21463	Perform boiler plant operations **Perform boiler plant operations**	3 **4**	6 **15**	B

ID	Title	Level	Credit	Review Category
21464	Demonstrate knowledge of basic thermodynamics and measurement relevant to energy and chemical plant **Demonstrate knowledge of basic thermodynamics relevant to the energy and chemical industry**	3	6 **5**	B
21465	Operate pumps on energy and chemical plant **Operate pumps in an energy and chemical plant**	4	8	B
21466	Operate compressors and fans on energy and chemical plant **Operate compressors in an energy and chemical plant**	4	8	B
28161	**Demonstrate knowledge of unfired pressure equipment used in the energy and chemical industry**	**3**	**5**	**New**
28162	**Operate systems for process start-up and shutdown in an energy and chemical plant**	**5**	**20**	**New**
28163	**Control process conditions in an energy and chemical plant**	**5**	**30**	**New**
28164	**Apply a safe work management system in an energy and chemical plant**	**5**	**20**	**New**
28165	**Coordinate an outage in a complex energy and chemical plant**	**6**	**30**	**New**
28166	**Analyse energy and chemical plant operations to determine compliance and risk implications**	**5**	**10**	**New**
28167	**Review process safety incidents in an energy and chemical plant**	**5**	**10**	**New**
28283	**Coordinate and monitor health and safety and risk assessment procedures used in an energy and chemical plant**	**4**	**10**	**New**
28284	**Apply hazard management and risk assessment procedures used in an energy and chemical plant**	**3**	**10**	**New**

Manufacturing > Energy and Chemical Plant > Safety and Legislation for Energy and Chemical Plant

ID	Title	Level	Credit	Review Category
3046	Operate energy and chemical plant fire safety equipment	3	5	B
3064	Control a chemical reaction in energy and chemical plant **Control a chemical reaction in an energy and chemical plant**	4	3 **8**	B
3068	Demonstrate knowledge of specified legislation in an energy and chemical environment	2	4	D

ID	Title	Level	Credit	Review Category
21468	Demonstrate knowledge of energy and chemical plant pollutants and their control measures	2 **3**	5	B
21469	Identify, use, and monitor safety equipment in energy and chemical plant **Identify, use, and monitor safety equipment in an energy and chemical plant**	2 **3**	5	B
21470 **28168**	Identify boiler house chemicals and explain the required safety procedures **Use boiler house chemicals in an energy and chemical plant**	2 **3**	3 **5**	C