Title	**Demonstrate knowledge of and perform boiler plant operations**		
Level	**4**	**Credits**	**15**

Purpose	This unit standard is intended for people working as boiler operators under the Approved Code of Practice for the Design, Safe Operation, Maintenance and Servicing of Boilers. People credited with this unit standard are able to demonstrate knowledge of: the requirements of the Code; a boiler plant; and operational procedures for a boiler plant. They are also able to: operate; monitor, and control a boiler plant.

Classification	Energy and Chemical Plant > Operation of Energy and Chemical Plant

Available grade	Achieved

Guidance Information

1 Legislation and codes relevant to this unit standard include but are not limited to:
- Health and Safety at Work Act 2015;
- Hazardous Substances and New Organisms Act 1996;
- Resource Management Act 1991;
- *Approved Code of Practice for The Design, Safe Operation, Maintenance and Servicing of Boilers*; https://worksafe.govt.nz/dmsdocument/1571-acop-the-design-safe-operation-maintenance-and-service-of-boilers;
- *Approved Code of Practice for the Management of Substances Hazardous to Health (MOSHH) in the Place of Work, Occupational Safety and Health Service, 1997*; https://shop.standards.govt.nz/default.htm?action=legislation&legid=31&mod=catalog;
  and any subsequent amendments.

2 Definitions
Boiler – device comprising an arrangement of mainly pressure containment parts such as drums, vessels, tubes, coils, and interconnecting parts used, or intended to be used, to generate steam at temperatures above 100 degrees centigrade by the use of a directly applied combustion process, or by the application of heated gases. It includes all combustion equipment, fans, feed and circulating pumps, pressure fittings, superheaters, reheaters, economisers, boiler piping, supports, mountings, valves, gauges, controls, water level and combustion management systems as are necessary to ensure the pressure integrity of the boiler, or are necessary for its safe operation.

Code – the current *Approved Code of Practice for the Design, Safe Operation, Maintenance and Servicing of Boilers*, Occupational Safety and Health Service, 2000.
Energy and chemical plant may be in – petrochemical, agri-nutrient, power generation, dairy processing, meat processing, and wood fibre manufacturing, or other plants that operate with a combination of high temperatures, pressures, steam and/or chemicals in gas, liquid or solid form.
Organisational requirements – documented policies and procedures. These may include: equipment manufacturers' procedures; plant procedures; suppliers' instructions; site signage; codes of practice; company health and safety plans; on site briefings; and supervisor's instructions. This includes all regulatory and legislative obligations that apply to the plant.
Plant – the operational unit, equipment and/or workplace at which the person is working.

3 For the purposes of assessment:
- evidence for the practical components of this unit standard must be supplied from the workplace.
- evidence is required for a boiler up to 20 MW liquid and gas fuel, or up to 6 MW solid fuel.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the requirements of the Code.

Performance criteria

1.1 Describe boiler classifications in terms of the Code.

Range classifications include but are not limited to – attended, limited attendance, unattended.

1.2 Identify the site boiler classification and describe the compliance requirements to operate the site boiler in terms of the Code.

Outcome 2

Demonstrate knowledge of a boiler plant.

Performance criteria

2.1 Identify and describe boiler equipment in terms of its operating principles and purpose.

Range equipment may include but is not limited to – instrumentation, fuel system, burners, fans, valves, dosing system, feedwater system, combustion air system.

2.2 Describe returned condensate systems in terms of benefits and hazards.

Range evidence of two benefits and two hazards is required.

2.3 Identify and describe data on the boiler visual display panel in terms of the boiler and auxiliary equipment operating status.

2.4 Identify and describe inputs to the boiler alarms and trips in terms of their purpose and settings.

Outcome 3

Demonstrate knowledge of operational procedures for a boiler plant.

Performance criteria

3.1 Describe the operational steps and techniques used to optimise boiler efficiency in terms of responses to plant factors.

Range plant factors may include but are not limited to – fuel supply and quality, water supply and quality, downstream demand variation, combustion, flue gas temperature and composition.

3.2 Identify and describe emergency shutdown devices in terms of their use.

3.3 Describe boiler plant isolation for maintenance in terms of the process.

Outcome 4

Operate a boiler plant.

Performance criteria

4.1 Operate a boiler plant using safe work practices in accordance with organisational requirements.

4.2 Complete pre-start checks in accordance with organisational requirements.

4.3 Start up the boiler plant and bring online in accordance with organisational requirements.

4.4 Identify boiler gauge glasses and carry out the gauge glass blowdown procedure in accordance with organisational requirements.

4.5 Carry out checks and routine procedures in accordance with organisational requirements.

4.6 Handle and prepare boiler water chemicals in accordance with organisational requirements.

4.7 Carry out boiler water chemical treatment in accordance with organisational requirements.

Outcome 5

Monitor and control boiler plant.

Performance criteria

5.1 Monitor boiler and auxiliary equipment, and document and interpret information in accordance with organisational requirements.

5.2 Identify and record deviations from normal operating conditions in accordance with organisational requirements.

Range evidence of three deviations is required.

5.3 Take corrective actions to return to normal operating conditions and record actions in accordance with organisational requirements.

5.4 Take analyse and record boiler water samples in accordance with organisational requirements.

Replacement information	This unit standard was replaced by skill standard 40443.

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	27 June 2005	31 December 2014
Rollover and Revision	2	25 July 2006	31 December 2014
Revision	3	26 March 2007	31 December 2014
Review	4	22 May 2009	31 December 2016
Review	5	24 October 2014	31 December 2022
Review	6	27 February 2020	31 December 2026
Review	7	24 April 2025	31 December 2026

Consent and Moderation Requirements (CMR) reference	0079

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