

<b>Title</b>	<b>Describe and carry out process start-up and shutdown in an energy and chemical plant</b>		
<b>Level</b>	<b>5</b>	<b>Credits</b>	<b>20</b>

<b>Purpose</b>	<p>This unit standard is intended for experienced people working as boiler operators and energy and chemical process operators in an energy and chemical plant.</p> <p>People credited with this unit standard are able to describe: systems for routine process start-up, and common deviations from operating parameter changes; systems for routine process shutdown, and expected parameter deviations during shutdown; and causes, impacts of, and systems for emergency or unplanned process shutdown, in an energy and chemical plant. They are also able to carry out a process start-up and shutdown, in an energy and chemical plant.</p>
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<b>Classification</b>	Energy and Chemical Plant > Operation of Energy and Chemical Plant
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<b>Available grade</b>	Achieved
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### Guidance Information

- Legislation relevant to this unit standard includes but is not limited to:
  - Health and Safety at Work Act 2015;
  - Hazardous Substances and New Organisms Act 1996;
  - Resource Management Act 1991;
  - and any subsequent amendments.
- Definitions
 

*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.

*Process* – a complex and integrated set of actions in an energy and chemical plant supplying product(s) to customers.

3 For the purposes of assessment:

- evidence for the practical components of this unit standard must be supplied from the workplace.
- evidence for all outcomes must be presented in accordance with organisational requirements.

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## Outcomes and performance criteria

### Outcome 1

Describe systems for routine process start-up in an energy and chemical plant, and common deviations from operating parameter changes.

#### Performance criteria

- 1.1 Describe routine start-up process in terms of the steps.
- 1.2 Identify and describe indicators or authorities required to commence process start-up.
- 1.3 Describe common deviations from expected operating parameter changes during process start-up in terms of their causes and corrective actions.

Range evidence of two deviations is required.

### Outcome 2

Describe systems for routine process shutdown in an energy and chemical plant, and expected parameter deviations during shutdown.

#### Performance criteria

- 2.1 Identify and describe routine process shutdown steps.
- 2.2 Describe indicators or authorities required to commence process shutdown.
- 2.3 Describe expected parameter deviations during process shutdown in terms of their causes and corrective actions.

Range evidence of two deviations is required.

2.4 Identify and describe post-shutdown checks in terms of their purpose.

2.5 Identify and describe post-shutdown reporting and documentation.

### Outcome 3

Describe causes, impacts of, and systems for emergency or unplanned process shutdown in an energy and chemical plant.

**Performance criteria**

- 3.1 Identify and describe events that may cause an emergency or unplanned process shutdown for the process.
- 3.2 Describe impacts of an emergency or unplanned process shutdown on upstream and downstream operations.
- Range evidence of two impacts is required.
- 3.3 Identify and describe communication systems used in an emergency or unplanned process shutdown.
- 3.4 Identify and describe an emergency or unplanned process shutdown in terms of the steps.

**Outcome 4**

Carry out a process start-up and shutdown in an energy and chemical plant.

**Performance criteria**

- 4.1 Communicate responsibilities during start-up and shutdown to relevant personnel.
- 4.2 Complete process steps for start-up and shutdown.
- 4.3 Monitor plant parameters during the start-up and shutdown and undertake any corrective actions to maintain the plant within control parameters and operating consents.
- 4.4 Check the plant end state condition to ensure operational requirements are met and report any variances.

<b>Planned review date</b>	31 December 2024
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	24 October 2014	31 December 2022
Review	2	27 February 2020	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0079
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

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**Comments on this unit standard**

Please contact the Primary Industry Training Organisation [standards@primaryito.ac.nz](mailto:standards@primaryito.ac.nz) if you wish to suggest changes to the content of this unit standard.