Title	**Demonstrate and apply knowledge of advanced heavy fabrication trade practice**		
Level	**4**	**Credits**	**12**

Purpose	This unit standard is intended for off job delivery and is for experienced heavy fabrication trainees in the metal industries. People credited with this unit standard are able to demonstrate knowledge of advanced heavy fabrication trade practice; and fabricate complex objects using heavy fabrication materials.

Classification	Mechanical Engineering > Engineering - Fabrication

Available grade	Achieved

Guidance Information

1 References
Health and Safety at Work Act 2015.
Accident Compensation Corporation and Department of Labour. *Metal Industry Guidelines for Safe Work*. Wellington: ACC, 2007. Available from http://www.acc.co.nz.

2 Definitions
Accepted industry practice – approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.
Advanced heavy fabrication trade practice – trade knowledge and practical skills expected by industry of a qualified heavy fabricator.
Workplace procedures – procedures used by the organisation carrying out the work and applicable to the tasks being carried out. Examples are – standard operating procedures, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.

3 Recommended for entry
Unit 25707, *Demonstrate and apply knowledge of intermediate heavy fabrication trade practice.*

4 Assessment information
Heavy fabrication components are metal plates, sections, pipes and tubes over 4mm in thickness.

5 This unit standard is one of a fabrication set:
- Unit 29670, *Demonstrate knowledge of fabrication machinery, materials, and processes* (Level 2), an introductory knowledge standard to provide foundation awareness.
- Unit 29730, *Apply good work practices when performing basic fabrication operations under supervision* (Level 2), an introductory practical unit standard.
- Unit 30263, *Perform fabrication operations* (Level 3), a progressing practical unit standard intended to be assessed in an industry workshop environment.
- Unit 25706, *Demonstrate and apply knowledge of intermediate light fabrication trade practice* or 25707, *Demonstrate and apply knowledge of intermediate heavy fabrication trade practice* (Level 3), light or heavy specific unit standards to measure trade level fabrication competence.
- Unit 25708, *Demonstrate and apply knowledge of advanced light fabrication trade practice* or 25709, *Demonstrate and apply knowledge of advanced heavy fabrication trade practice* (Level 4), light or heavy specific unit standards to measure advanced trade level fabrication competence.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of advanced heavy fabrication trade practice.

Performance criteria

1.1 Technical processes and practices used are described in accordance with accepted industry practice.

Range distortion control, damage minimisation, fabrication allowances, fabrication technique, welding sequence, principles and use of jigs and fixtures.

1.2 Operating principles and material handling capability of fabrication machinery is described in accordance with accepted industry practice.

Range laser cutters, plasma cutters, water-jet cutters, sheet metal benders, punching machines, shears/guillotines, press brakes, powered rollers.

1.3 Heavy fabrication job management processes are described from an efficiency perspective.

Range job scheduling, time management, quality control, warehousing, ordering, inventory control, resource management.

Outcome 2

Fabricate complex objects using heavy fabrication materials.

Range complex objects – four complex objects, each based on two or more of unequal diameter and offset cylindrical, pyramidal, conical, square or rectangular shapes between inclined planes; one assembly incorporating at least two of the complex objects;
materials – two different metals; two metal thicknesses, 4 mm minimum, including plate; two structural shapes (examples are – flat bar, rod, pipe, rectangular hollow section, channel, angle).

Performance criteria

2.1 Workplace safety procedures are followed.

Range examples are – use of personal protective equipment, checking of equipment for faults, use of fume extraction equipment, elimination of risk of fire or explosion, protection from arc radiation.

2.2 Specifications are interpreted and the work planned in accordance with accepted industry practice.

2.3 Fabrication and assembly allowances are calculated and applied in accordance with accepted industry practice.

2.4 Alignment marks and datum points are marked in accordance with specifications and accepted industry practice.

2.5 Machine settings are checked and set in accordance with workplace procedures.

2.6 Fabrication processes are demonstrated in accordance with accepted industry practice.

Range laying out, marking, cutting, forming;
may include assembling, use of jigs and fixtures.

2.7 Fabrications are inspected and measured for compliance with specifications and any deviations are identified.

2.8 Any deviations in fabrications are corrected in accordance with accepted industry practice.

Planned review date	31 December 2022

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 July 2009	31 December 2022
Review	2	17 August 2017	N/A

Consent and Moderation Requirements (CMR) reference	0013

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

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.