

FIELD ENGINEERING AND TECHNOLOGY**Review of *Aeronautical Engineering* unit standards**

Subfield	Domain	Id
Aeronautical Engineering	Aeronautical Armament	4037, 4038, 4040, 4042, 4043, 4045, 17642-17667
	Aeronautical Composites	4020, 4021, 4023, 4024
	Aeronautical Machining	4025, 4027, 4029-4031, 4066
	Aircraft Structures	4026, 4032, 4033, 4035, 4067-4073, 4076, 4077, 4079-4083

The Aviation, Tourism and Travel Training Organisation (ATTTO) has completed the review of the unit standards listed above.

Date new versions published

March 2007

Planned review date

December 2012

Summary of review and consultation process

The ATTTO carried out the review following indications from industry that, as there had been no formal review of the unit standards since their original registration, the content might not be accurate. Expert panels, drawn from representatives from Air New Zealand, the Royal New Zealand Air Force, Christchurch Engine Centre, Safe Air Limited and Nelson Marlborough Institute of Technology, were selected to determine the skills and knowledge required for the Aeronautical Armament, Aeronautical Composites, Aeronautical Machining, and Aircraft Structures domains; discuss whether the existing unit standards were still fit for purpose; and to identify any gaps where further unit standards needed to be developed due to the advancement of technology.

The opportunity to develop a new domain with associated unit standards within the Aeronautical Electroplating trade specialisation was identified during the course of this review, as those in the trade were previously unable to have their skills formally recognised.

Drafts of new and reviewed unit standards were circulated, through the expert panel, to wider industry for feedback. All feedback was considered, and where appropriate, incorporated into the unit standards. Several drafts were developed in order to accommodate the needs of as many stakeholders as possible; the Aeronautical Engineering Advisory Group then endorsed these. The review was used to address issues of currency, accuracy, and changes in technology.

Please note that this is the sixth stage of several to review all of the unit standards in the Aeronautical Engineering subfield.

Main changes resulting from the review

The review process has resulted in the following changes to the unit standards.

- Unit standards 17642, 17646, 17648, 17653, 17655, 17661, and 17664 have been designated expiring and will not be replaced due to the equipment no longer being in service.
- Unit standard 17644 has been designated expiring and will not be replaced due to the equipment becoming too modular to disassemble.
- Unit standard 4040 has increased from level 3 to 4 due to the responsibility and scope of knowledge.
- Unit standards 17652, 17654, and 17662 have had their credit values increased due to the scope of knowledge.
- Unit standard 17666 has had its credit value decreased due to the less accessible technology available.
- Unit standard 23601 has been developed for areas of industry that are required to carry out repair tasks as opposed to larger fabrication tasks.
- Unit standard 23653 has been developed to replace unit standard 4035, to better represent industry requirements for aeronautical welding, removing the current general welding prerequisites, allowing for a broader scope across the knowledge and skills base, specifically for aeronautical engineering.
- Unit standard 4070 has increased in level from 3 to 4, and the credit value has reduced from 10 to 5 to more accurately reflect the time to learn the skills.
- The title and contents of unit standard 4083 have been amended to allow for additional aeronautical sheet metals to be formed by wheeling.
- Unit standards 23594-23600 have been developed in the new domain of Aeronautical Electroplating to cover gaps in skill and knowledge requirements identified by the review.
- Amendments have been made to titles, elements, performance criteria, and special notes.
- Unit standards have been updated to incorporate industry and technological advances.

Unit standards categorised as category C or D expire at the end of December 2009.

Impact on existing provider accreditations

None.

Impact on Accreditation and Moderation Action Plan (AMAP)

None.

Impact on existing qualifications

Qualifications that contain the reviewed standards or classifications 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 table, qualifications that contain unit standards and classifications in both categories are identified in the *Affected* table, with the items that generated the *Affected* status in **bold**.

The following Aviation, Tourism and Travel Training Organisation qualifications are affected by the outcome of this review and will be reviewed in 2007 following the completion of the review of the unit standards in the Aeronautical Engineering subfield.

Qualification title	Standards in the qualification
National Certificate in Aeronautical Engineering (Related Technology) [Ref: 0381]	4072
National Certificate in Aeronautical Engineering (Aircraft Manufacture) [Ref: 0742]	4026, 4033, 4035, 4070 , 4072, 4079, 4083

Summary of main changes

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

Subfield Aeronautical Engineering
Domain Aeronautical Armament

Id	Title	Level	Credit	Review Category
4037	Dispose of explosive ordnance	6	15	B
4038	Maintain aircraft explosive escape systems	4	10	B
4040	Receive, store, and issue explosive ordnance	3 4	8	B
4042	Maintain aircraft armament pneumatic systems	4	10	B
4043	Inspect explosive ordnance	6	15	B
4045	Operate an air-to-ground weapons range	6	6	B
17642	Assemble and disassemble aircraft gun ammunition	3	2	D
17643	Assemble and disassemble aircraft bombs	3	4	B
17644	Assemble and disassemble aircraft countermeasure stores	3	2	D
17645	Assemble and disassemble aircraft missiles	4	4	B
17646	Assemble and disassemble aircraft rockets	3	3	D
17647	Assemble and disassemble aircraft torpedoes	4	4	B
17648	Load and unload, arm and disarm aircraft fixed forward firing guns	3	3	D
17649	Load and unload, arm and disarm aircraft pintle mounted guns Load and unload, and arm and disarm aircraft pintle mounted firing guns	3	2	B

Id	Title	Level	Credit	Review Category
17650	Load and unload, arm and disarm aircraft bombs Load and unload, and arm and disarm aircraft bombs	3	2	B
17651	Load and unload, arm and disarm aircraft countermeasure stores Load and unload, and arm and disarm aircraft countermeasure stores	3	2	B
17652	Load and unload, arm and disarm aircraft missiles Load and unload, and arm and disarm aircraft missiles	3	2 4	B
17653	Load and unload, arm and disarm aircraft rockets	3	2	D
17654	Load and unload, arm and disarm aircraft torpedoes Load and unload, and arm and disarm aircraft torpedoes	3	2 4	B
17655	Maintain aircraft fixed forward firing gun systems	4	8	D
17656	Maintain aircraft pintle mounted gun systems	4	3	B
17657	Maintain aircraft countermeasure systems	4	8	B
17658	Maintain aircraft missiles	4	16	B
17659	Maintain aircraft torpedoes	4	10	B
17660	Maintain aircraft missile launching systems	4	5	B
17661	Maintain aircraft rocket launching systems	4	5	D
17662	Maintain aircraft weapons release systems	4	5 6	B
17663	Repair and/or overhaul aircraft crew escape system components	4	32	B
17664	Repair and/or overhaul aircraft gun system components	4	10	D
17665	Repair and/or overhaul aircraft weapons release units	4	24	B
17666	Repair and/or overhaul aircraft missile launching system components	4	45 35	B
17667	Repair and/or overhaul aircraft armament pneumatic system components	4	12	B

Domain Aeronautical Composites

Id	Title	Level	Credit	Review Category
4020	Design tooling used to fabricate and repair aeronautical composite components	4	25	B
4021	Manufacture tooling used to fabricate and repair aeronautical composite components	4	35	B
4023	Fabricate and repair composite aeronautical components at room temperature	4	40	B
4024	Fabricate and repair composite aeronautical components at elevated temperatures	4	42	B
23601	Repair composite aeronautical components	4	20	New

Domain **Aeronautical Electroplating**

Id	Title	Level	Credit	Review Category
23594	Clean aircraft components for aeronautical electroplating	4	5	New
23595	Hard anodise aeronautical grade aluminium components	4	15	New
23596	Apply metallic coatings to flight critical aircraft components	4	15	New
23597	Apply alloy coatings to aircraft components	4	15	New
23598	Apply nickel-cadmium to aeronautical components	4	10	New
23599	Apply metals to conductive aeronautical substrates using the selective (brush) plating process	4	10	New
23600	Analyse aeronautical electroplating solutions	5	15	New

Domain **Aeronautical Machining**

Id	Title	Level	Credit	Review Category
4025	Repair and/or fabricate aeronautical components using boring machines	4	15	B
4027	Repair aeronautical components by flame spraying	4	15	B
4029	Repair and/or fabricate aeronautical components using milling machines	4	15	B
4030	Use optical tooling to inspect and calibrate aeronautical components, tooling, and machine tools	5	15	B
4031	Use optical tooling to establish and maintain reference lines of sight and planes	4	15	B
4066	Peen aeronautical components	4	10	B

Domain **Aircraft Structures**

Id	Title	Level	Credit	Review Category
4026	Repair and/or fabricate aeronautical component parts by brazing and soldering Repair and fabricate aeronautical component parts by brazing and soldering	4	6	B
4032	Shape aeronautical component parts by punching	3	3	B
4033	Form aeronautical sheet metal by rolling Form aeronautical sheet metals by rolling	3	3	B
4035	Fabricate and/or repair aeronautical components by welding	5	8	C
23653	Fabricate and repair aeronautical components by welding	4	42	
4067	Balance aircraft flight control surfaces	3	10	B
4068	Form aeronautical sheet aluminium alloys by slapping and beating	3	6	B
4069	Cold work holes in aeronautical aluminium alloys	3	4	B

Id	Title	Level	Credit	Review Category
4070	Shape aeronautical sheet metal by cutting Shape aeronautical sheet metals by cutting	3 4	10 5	B
4071	Apply and/or repair aircraft external fabric covering Apply and/or repair aircraft external fabric coverings	4	15	B
4072	Fold aeronautical sheet metal Fold aeronautical sheet metals	4	3	B
4073	Heat treat aeronautical metals and components	4	15	B
4076	Repair and fabricate aeronautical wooden structural components	4	10	B
4077	Rig aircraft flying bracing wires	3	4	B
4079	Form aeronautical sheet metal by rubber pressing Form aeronautical sheet metal items by rubber pressing	4	15	B
4080	Assemble aeronautical metal components by bonding	4	10	B
4081	Form aeronautical sheet metals by shrinking and stretching	3	8	B
4082	Repair aircraft plastic transparencies	4	10	B
4083	Form aeronautical sheet aluminium alloys by wheeling Form aeronautical sheet metals by wheeling	3	8	B