

Title	Demonstrate knowledge of the principles of flight and aircraft performance for air traffic services		
Level	5	Credits	12

Purpose	People credited with this unit standard are able to: identify the types of aircraft that operate relevant to the air traffic services operating environment; demonstrate knowledge of the aerodynamic principles of flight and aircraft performance; describe the main operating systems of modern day aircraft; describe the changes in aircraft performance as atmospheric conditions change; and demonstrate knowledge of atmospheric and man-made phenomena to aircraft, and their effect on performance.
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Classification	Aviation > Air Traffic Services
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Available grade	Achieved
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Guidance Information

- 1 The Civil Aviation Act 1990 and Civil Aviation Rule Part 65 detail the legislative requirements in relation to this unit standard. This unit standard is aligned to the Civil Aviation Act 1990, Civil Aviation Rule Part 65, which reflects International Civil Aviation Organisation (ICAO) Standards and Recommended Practices as adopted by New Zealand. This unit standard is also aligned to the associated Civil Aviation Advisory Circular (AC) 65 series containing the syllabus for Air Traffic Services Personnel Licences and Ratings, and Parts 65.103(a)(5)(iii) and 65.303(a)(2). Information relating to Civil Aviation Authority of New Zealand (CAA of NZ) Rules can be obtained from the CAA of NZ website on <http://www.caa.govt.nz/>.
- 2 Evidence presented for assessment against this unit standard must be in accordance with standard industry texts.
- 3 *Standard industry texts* include but are not limited to:
 - State approved documentation,
 - air traffic services (ATS) provider exposition,
 - aerodrome emergency plans,
 - published aviation training manuals or textbooks (including electronic resources).
- 4 Definition
Aircraft used in this unit standard relates to fixed wing and rotary aircraft.

Outcomes and performance criteria

Outcome 1

Identify the types of aircraft that operate relevant to the air traffic services operating environment.

Range a minimum of 20 aircraft.

Performance criteria

1.1 Aircraft that operate within the relevant operating environment are identified either by ICAO designators or manufacturer names.

1.2 Aircraft that operate within the relevant operating environment are visually identified.

Range may include but is not limited to – light single engine trainers, single and multi-engine passenger, agricultural aircraft, helicopters.

Outcome 2

Demonstrate knowledge of the aerodynamic principles of flight and aircraft performance.

Performance criteria

2.1 Basic aerodynamic theory and its associated principles for aviation are described.

2.2 Lift and its associated principles for aviation are described.

2.3 Drag and its associated principles for aviation are described.

2.4 Lift augmentation and its principles and effects on flight are explained.

Range may include but is not limited to – lift augmentation devices.

2.5 Flight controls and their principles of operation are described.

2.6 Climbing, cruise, and descending, and the factors affecting climb, cruise, and descend performance, are described.

2.7 Turning is described.

2.8 The principles of aircraft propulsion systems are described.

Range piston, jet, turboprop.

2.9 The interrelationship of aerodynamic forces and aircraft configuration is described in terms of impact.

Range may include but is not limited to – airspeed, angle of attack, flaps, slats, slots, cyclic, collective, rudder, elevator, ailerons, propellers.

Outcome 3

Describe the main operating systems of modern-day aircraft.

Performance criteria

3.1 The main operating systems are described.

Range may include but is not limited to – auxiliary power unit (APU), anti-icing/de-icing equipment, navigation and autopilot systems, collision protection systems, communication systems.

Outcome 4

Describe the changes in aircraft performance as atmospheric conditions change.

Performance criteria

4.1 Changes in atmospheric conditions that impact on aircraft instruments and aircraft performance are described.

Range may include but is not limited to – airspeed indicator, altimeter, temperature, pressure.

Outcome 5

Demonstrate knowledge of atmospheric and man-made phenomena to aircraft, and their effect on performance.

Performance criteria

5.1 Wake turbulence in relation to the forces involved and the ramifications for aircraft is described.

5.2 Problems associated with aquaplaning and how controllers describe the phenomena are explained.

5.3 Types of windshear and how they are formed are described.

5.4 Types of aircraft icing and the ramifications these have for aircraft are described.

5.5 Atmospheric conditions that produce hazards to aircraft are described.

Range includes but is not limited to – wake turbulence, windshear, icing, crosswind.

Replacement information	This unit standard replaced unit standard 23466.
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Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 November 2013	31 December 2026
Review	2	30 March 2023	N/A

Consent and Moderation Requirements (CMR) reference	0028
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Ringa Hora Services Workforce Development Council qualifications@ringahora.nz if you wish to suggest changes to the content of this unit standard.