Title	**Demonstrate knowledge of instruments and navigation aids for an airline transport pilot licence (aeroplane)**		
Level	**6**	**Credits**	**10**

Purpose	People credited with this unit standard are able, for an airline transport pilot licence (aeroplane) in accordance with Subject No 44, to demonstrate knowledge of: air data instruments; integrated flight instrument systems; warning systems; recorder systems; navigation aids; and FANS (CNS/ATM).

Classification	Aviation > Aircraft Operation

Available grade	Achieved

Guidance Information

1 This unit standard is aligned with the relevant parts of the prescribed syllabi of the Civil Aviation Authority of New Zealand (CAA) for Subject No 44, for an airline transport pilot licence (aeroplane). Credit will be awarded upon meeting the requirements of the CAA-approved assessment or examination.

2 An airline transport pilot licence permits the holder to conduct aircraft operations as pilot-in-command in an aircraft requiring a co-pilot.

3 Definitions, abbreviations, and acronyms used in this unit standard are to be found in:
- a *Civil Aviation Rules Part 1* on the CAA website at https://www.caa.govt.nz, and
- b *Aeronautical Information Publication (AIP)* published by Aeronautical Information Management (AIM), PO Box 294, Wellington 6140 or on the AIM website at http://www.aip.net.nz.

4 All references to the CAA refer specifically to the Civil Aviation Authority of New Zealand.

5 Industry standards and recommended practices are those set in place by the CAA.

6 Industry texts may include but are not limited to – aircraft flight manuals, CAA Rules, CAA Advisory Circulars, NZCAA Flight Test Standard Guides, operator exposition.

7 For the purpose of this unit standard, *knowledge* refers to knowledge, understanding, and application of the subject matter.

8 Industry requirements are that the candidate must meet the eligibility requirements of the Civil Aviation Act 1990 and the Civil Aviation Rules Part 61 for an airline transport pilot licence (aeroplane).

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of air data instruments in accordance with Subject No 44.

Performance criteria

1.1 The principle of operation of a machmeter and its usage are described in accordance with industry texts and standards.

1.2 The purpose and principle of operation of the air data computer are described and explained in accordance with industry texts and standards.

1.3 The principle of operation and operation an air temperature gauge are explained, and results are calculated, in accordance with industry texts and standards.

Outcome 2

Demonstrate knowledge of integrated flight instrument systems in accordance with Subject No 44.

Performance criteria

2.1 The principle of operation and purpose of the flight director are explained and interpreted in accordance with industry texts and standards.

2.2 The Electronic Flight Instrument System, its principle of operation, and use, are explained and described in accordance with industry texts and standards.

2.3 The Electronic Engine Displays (ECAM, EICAS), their purpose, and outputs are explained in accordance with industry texts and standards.

Outcome 3

Demonstrate knowledge of warning systems in accordance with Subject No 44.

Performance criteria

3.1 The function and principle of operation of the master warning system are explained in accordance with industry texts and standards.

3.2 The function of an altitude alerter system is explained in accordance with industry texts and standards.

3.3 The function and principle of operation of a radar altimeter are stated and explained in accordance with industry texts and standards.

3.4 The function and principle of operation of a terrain awareness warning system are described and explained in accordance with industry texts and standards.

3.5 The function and principle of operation of the Aircraft Collision Avoidance System (ACAS) are described and explained in accordance with industry texts and standards.

3.6 The purpose and principle of operation of the takeoff configuration warning system are explained in accordance with industry texts and standards.

3.7 The function and principle of operation of the overspeed warning are explained in accordance with industry texts and standards.

3.8 The function and principle of operation of the stall warning system are described and explained in accordance with industry texts and standards.

3.9 The function and principle of operation of the windshear warning system are described and explained in accordance with industry texts and standards.

Outcome 4

Demonstrate knowledge of recorder systems in accordance with Subject No 44.

Performance criteria

4.1 The purpose and components of the cockpit voice recorder are identified and explained in accordance with industry texts and standards.

4.2 The flight data recorder is described and explained in accordance with industry texts and standards in accordance with industry texts and standards.

Outcome 5

Demonstrate knowledge of navigation aids in accordance with Subject No 44.

Performance criteria

5.1 The primary functions of a Flight Management System (FMS) are described and explained in accordance with industry texts and standards.

Range may include but is not limited to – two primary functions.

5.2 The ring laser gyro and it principle of operation are described and explained in accordance with industry texts and standards.

5.3 The function and basic operating principle of an Inertial Navigation/Reference System (INS/IRS) are described and explained in accordance with industry texts and standards.

5.4 The purpose, components, and basic operating principles of a lateral (LNAV) and vertical (VNAV) navigation system, are described and explained in accordance with industry texts and standards.

Range may include but is not limited to – inputs, outputs, operating modes, limitations.

Outcome 6

Demonstrate knowledge of FANS (CNS/ATM) in accordance with Subject No 44.

Performance criteria

6.1 The function and basic operating principles of communications systems are explained in accordance with industry texts and standards.

Range may include but is not limited to – ACARS, CPDLC, SATCOM.

6.2 Navigation capability requirements are explained in accordance with industry texts and standards.

Range types of airspace may include but are not limited to – RNP4, RNP10, B–RNAV.

6.3 The functions and basic operating principles of surveillance devices are described and explained in accordance with industry texts and standards.

Range includes but is not limited to – ADS–B (broadcast), ADS–C (contract), multilateration;
inputs, outputs, limitations.

Replacement information	This unit standard replaced unit standard 15365.

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	21 January 2011	31 December 2018
Review	2	20 October 2016	31 December 2027
Review	3	28 September 2023	31 December 2027

Consent and Moderation Requirements (CMR) reference	0169

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