



Australian Government

Department of Education, Employment and Workplace Relations

AVIW5018A Operate and manage aircraft systems

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to operate as pilot-in-command of an aircraft during visual, instrument and night conditions. This includes operating and managing aircraft systems, sub-systems (equipment) and devices. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA); relevant airspace control requirements and Visual Flight Rules (VFR) / Night Visual Flight Rules (NVFR) / Instrument Flight Rules (IFR); and aircraft control principles, regulations, safety codes, protocols and procedures required to operate and manage aircraft systems.

Use for ADF Aviation is to be in accordance with relevant Defence Orders and Instructions and applicable CASA compliance.

Operations are conducted across a variety of operational contexts within the Australian aviation industry.

Work is performed under limited supervision.

This unit of competency is packaged at AQF V.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Operate and manage aircraft systems during normal flight	1.1 Aircraft systems, sub-systems (equipment) and devices applicable to the aircraft type are operated in accordance with manufacturer's Pilot Operator's Handbook(POH)/Flight Manual and company operations manual 1.2 Aircraft systems, sub-systems (equipment) and devices are monitored using a systematic scan technique 1.3 Aircraft systems and flight environment information is analysed to identify actual and potential threats or errors 1.4 Automated aircraft systems are utilised to manage cockpit workload 1.5 Checklist procedures are completed as appropriate to the aircraft system
2 Manage aircraft systems during abnormal and emergency procedures	2.1 Non-normal or emergency situations are recognised 2.2 Aircraft control is maintained 2.3 Affected aircraft system is identified and confirmed 2.4 From memory, recall items are stated and performed in accordance manufacturer's Pilot Operator's Handbook(POH)/Flight Manual or company operations manual 2.5 Appropriate non-normal or emergency procedures are performed in accordance with relevant workplace and emergency procedures and regulatory requirements 2.6 Course of action is decided, implemented, evaluated and revised to achieve safest outcomes 2.7 Location and operation of emergency systems applicable to aircraft type are demonstrated and explained

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Aircraft systems as applicable to aircraft rating/endorsement requirements may include:
- Fuel system including:
 - use of a schematic diagram of the fuel system to explain layout and normal operating procedures
 - likely faults that may affect the fuel system
 - emergency operating procedures for the fuel system
 - operation of fuel selector panel
 - use of cross-feed if applicable
 - fuel-dumping procedures if applicable
 - full fuel capacity and fuel grade
 - normal, minimum and maximum fuel pressures
- Hydraulic system (if applicable) including:
 - use of a schematic diagram of the hydraulic system to explain layout and normal operating procedures
 - likely faults that may affect the hydraulic system
 - emergency operating procedures for the hydraulic system
 - units or services operated by hydraulics
 - type of hydraulic fluid, operating pressure and capacity of reservoir
- Electrical system including:
 - use of a schematic diagram of the electrical system to explain type(s) of electrical system (AC/DC)
 - likely faults that may affect the electrical system
 - emergency operating procedures for the electrical system
 - voltage and amperage of battery
 - number and output of generators
 - methods of circuit protection
 - location of fuses and circuit breakers
 - precautions to be taken when operating electrical service
 - instruments operated by electrics
- Oil system including:
 - use of a schematic diagram of the oil system to explain functions of the oil system
 - likely faults that may affect the oil system

REQUIRED KNOWLEDGE AND SKILLS

- emergency operating procedures for the oil system
- number of tanks, capacity and oil grade
- oil sources of auxiliary systems such as CSU, propeller feathering if fitted
- normal, minimum and maximum oil pressure and temperature
- operation of oil cooling system
- Autopilot (if applicable) including:
 - principles of operation of the autopilot system
 - likely faults that may affect the autopilot system
 - emergency operating procedures for the autopilot system
- identification of power sources, voltage or pressure
- procedure to determine gyros are operating normally
- procedure to engage autopilot
- normal and emergency procedure to disengage autopilot
- limits of gyro units
- Anti-icing and de-icing systems (if applicable) including:
 - method of de-icing aerofoils, propeller and carburettor
 - heat or power source of de-icing/anti-icing equipment
 - anti-icing and de-icing system limitations
 - operation and control of the anti-icing and de-icing systems
 - likely faults that may affect the anti-icing and de-icing systems
 - emergency operating procedures for the anti-icing and de-icing systems
- Heating, ventilation and pressurisation systems (if applicable) including:
 - normal procedures to operate and control system
 - likely faults that may affect the heating, ventilation and pressurisation system
 - emergency procedures for operation of system
 - precautions to be complied with
- Pitot/static system including:
 - use of a schematic diagram to explain the layout and operation of the pitot/static system
 - heating source of pitot system if applicable
 - operating procedure for pitot/static system
 - methods of detecting pitot/static system problems
 - procedures to rectify static system problems
 - location of pitot and static pressure source
 - location of static drain points if applicable
- Enhanced Ground Proximity Warning System/Terrain Awareness and Warning System (EGPWS/TAWS) (if applicable):

REQUIRED KNOWLEDGE AND SKILLS

- identification and demonstration or explanation of the function of all cockpit EGPWS/TAWS controls
- information the Terrain Awareness Display shows
- warnings given by the fitted EGPWS/TAWS, including what each warning indicates is happening to the aircraft in flight
- Traffic and Collision Avoidance Systems (TCAS) (if applicable):
 - surveillance and collision avoidance functions of TCAS II
 - system limitations, selectivity and inhibits
 - basic components of TCAS II
- identification and demonstration or explanation of the function of cockpit controls
- TCAS II visual displays and symbology
- functions of audio alerts and annunciations
- appropriate crew response to multiple TCAS II events, and parallel runway approach conflicts
- recall of the radiotelephone procedures following a TCAS II alert
- requirements for a written report of a TCAS II alert and to whom it must be submitted
- Pressurisation systems (if applicable):
 - pressurisation failure warning indications fitted to the aircraft type flown
 - function of bleed air with respect to an aircraft pressurisation system
 - procedure for manual control of cabin pressurisation applicable to the aircraft type flown
 - recall of the maximum pressure differential for the aircraft type flown
 - symptoms, indications and warnings that may indicate failure of the pressurisation system
 - automatic depressurisation system operation procedures after landing
 - physiological symptoms of hypoxia
 - physical and psychological hazards that could occur during a rapid decompression
 - cabin altitude above which supplementary oxygen must be used by crew and passengers
- Retractable undercarriage (if applicable):
 - method of preventing retraction of the undercarriage on the ground
 - cockpit indications for undercarriage down and locked
 - cockpit indications for undercarriage retracted
 - emergency procedures to extend and lock the undercarriage down
- Suction system (if applicable):
 - use of a schematic diagram of the suction system to explain the function of the suction system
 - source of suction pressure
 - normal operating pressure
 - instruments that are operated by suction pressure
 - warning system to indicate suction pump failure

REQUIRED KNOWLEDGE AND SKILLS

- Automated systems (if applicable):
- limitations of automated systems
- operating procedures for systems such as: Flight Management System, auto throttle/engine control, Flight Director System, automated aircraft navigation systems, automated engine condition and monitoring system
- workload management procedures for utilising automated systems
- warning systems/indicators to identify automated systems failure
- Aircraft system checklists:
- explanation of the normal system operating procedures of the aircraft systems, subsystems and devices used to operate the specific aircraft type including: use of published scans and checklists, immediate action items, warnings, limitations

Required skills:

- Perform systematic scan technique for monitoring aircraft systems, sub-systems (equipment) and devices
- Operate manual and automated aircraft systems where applicable
- Interpret aircraft system displays (where applicable)
- Undertake fault finding in aircraft systems
- Use automated systems to manage workload
- Communicate effectively with others when operating and managing aircraft systems
- Read and interpret instructions, regulations, procedures and other information relevant to operating and managing aircraft systems
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to operating and managing aircraft systems
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when operating and managing aircraft systems
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may occur when operating and managing aircraft systems in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when operating and managing aircraft systems
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when operating and managing aircraft systems
- Monitor and anticipate operational problems and hazards and take appropriate action
- Monitor work activities in terms of planned schedule
- Modify activities dependent on differing workplace contingencies, situations and environments

REQUIRED KNOWLEDGE AND SKILLS

- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Adapt to differences in equipment and operating environment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Implement OH&S procedures and relevant regulations
- Identify and correctly use equipment required when operating and managing aircraft systems

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
 - the underpinning knowledge and skills
 - relevant legislation and workplace procedures
 - other relevant aspects of the range statement

Context of and specific resources for assessment

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
 - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
 - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
 - relevant and appropriate materials and equipment, and
 - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
 - through activities in an appropriately simulated environment at the registered training organisation, and/or
 - in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Tasks may be undertaken in:	• VFR • NVFR • IMC • VMC with simulated IMC conditions
Performance may be demonstrated in:	• single engine aircraft • multi engine aircraft • synthetic training device approved by the relevant authority • variable air traffic conditions • variable weather conditions • variable flight situations • abnormal situations • classes of airspace as designated by the Civil Aviation Safety Authority
Aircraft may include:	• fixed wing • helicopter • other commercial or military aircraft
Crew may include:	• single pilot • multi crew
Instruments may be:	• flight instruments suitable flight • head up display suitable flight
Limitations may be imposed by:	• local noise abatement requirements and curfews • airspace endorsements
Classes of airspace may be:	• as designated by the regulator • restricted and danger areas • military control zones • Air Defence Identification Zones
Conditions may include:	• a method of simulating IMC • simulated icing conditions • moderate turbulence • simulated hazardous weather • Autopilot/Flight Director • FMS/other NAV system • simulation of emergency and abnormal procedures
Dependent on the type of organisation concerned and the	• company procedures • enterprise procedures

RANGE STATEMENT

local terminology used, workplace procedures may include:

- organisational procedures
- established procedures
- standard operating procedures

Information/documents may include:

- relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- in Defence context, relevant Defence Orders and Instructions
- Flight Manual/Pilot's Operating Handbook (POH)
- Manual of Standards - Pilot Licensing (MOS-PL)
- Aeronautical Information Publication (AIP)
- En Route Supplement Australia (ERSA)
- charts
- operations manuals
- approved checklists
- workplace procedures and instructions and job specification
- induction and training materials
- conditions of service, legislation and industrial agreements including workplace agreements and awards

Applicable regulations and legislation may include:

- relevant Civil Aviation Safety Regulations and Civil Aviation Orders
- in Defence context, relevant Defence Orders and Instructions
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation
- relevant Australian Standards

Performance includes tolerances specified in either of:

- relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA) such as:
- Manual of Standards
- relevant Defence documentation such as:
- Defence Orders and Instructions
- approved curricula and training documentation

Unit Sector(s)

Not applicable.

Competency field

Competency Field

W - Equipment and Systems Operations