Australian Government

Department of Education, Employment and Workplace Relations

AVIY5023A Operate multi-engine fixed wing aeroplane

Revision Number: 1

AVIY5023A Operate multi-engine fixed wing aeroplane

Modification History

Not applicable.

Unit Descriptor

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This unit involves the skills and knowledge required to carry out take-off and departure procedures as pilot-in-command of a multi-engine aeroplane during visual, instrument and night conditions in normal, abnormal and emergency situations. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

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Work must be carried out in compliance with the relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA); and/or ADF, airspace control requirements and VFR, Instrument Flight Rules (IFR); and aircraft control principles, regulations, safety codes, protocols and procedures required when operating a multi-engine fixed wing aeroplane.

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

Operations are conducted as part of commercial and military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed under limited supervision.

This unit is nominally packaged at Certificate 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 a multi-engine aeroplane in all phases of flight	1.1 Normal operations of multi-engine aeroplane type on the ground and in flight are conducted in accordance with the aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures
	1.2 Asymmetric operations for all phases of flight are anticipated and contingencies are planned
	1.3 A plan of action is self-briefed or briefed to crew members that will ensure the safest outcome in the event of asymmetric operations
2 Manage engine failure /malfunction in flight	2.1 (In simulated conditions) Maintain and/or re-gain control of aeroplane
	2.2 Failed/malfunctioning engine is identified and confirmed
	2.3 Power set on serviceable engine/s and aeroplane configuration is adjusted to achieve desired aeroplane performance
	2.4 Failed/malfunctioning engine is managed in accordance with the aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures
	2.5 Indicated airspeed is maintained above V_{MCA}
	2.6 ATC or another agency capable of assistance are advised of situation and intentions
	2.7 Recovery to aerodrome is evaluated and conducted in accordance with the aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures
3 Manage engine failure/malfunction after take-off	3.1 (In simulated conditions) Engine failure/malfunction is managed in accordance with the aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures after take-off while heading is maintained
	3.2 Initial climb not less than best engine out angle of climb speed (V_X) or best engine out rate of climb speed (V_Y) until clear of obstacles, then V_Y is maintained
	3.3 Recovery to aerodrome is evaluated and conducted in accordance with the aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures
4 Perform rejected take-off	4.1 Take-off is aborted prior to V_1 or at a point during the take-off where the abort procedure can be initiated and the aeroplane stopped on the remaining runway/stopway
	4.2 Power is reduced smoothly and promptly
	4.3 Spoilers, prop fine/reverse, thrust reverse, wheel brakes and other drag and braking devices are activated
	4.4 Positive control is maintained to bring the aeroplane to a safe

ELEMENT	PERFORMANCE CRITERIA
	stop
	4.5 Engine failure procedures and/or checklists are initiated and completed
5 Manage engine failure /malfunction during approach/landing	5.1 (In simulated conditions) Control of aeroplane is maintained
	5.2 Engine inoperative approach is performed in accordance with the aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures
	5.3 Decision is made to continue or abort approach/landing
	5.4 Decision height for landing is nominated
	5.5 ATS or other agencies capable of providing assistance are advised of situation and intentions
	5.6 Flight profile is flown from which a controlled landing could be achieved
6 Conduct go-around or missed approach with engine failure	6.1 (In simulated conditions) Engine failure in a multi-engine aeroplane during a go-around or missed approach is identified and confirmed
	6.2 Control of aeroplane is maintained
	6.3 Engine inoperative go-around is performed from decision height in accordance with aeroplane Flight Manual, Pilot's Operating Handbook (POH) and company operating procedures

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

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

Required knowledge:

- Airspeed limitations including: V_{NO}, V_A, V_X and V_Y, V_{NE}, V_{FE}, V_{LO}, V_{LE}, V_{LO2} (landing gear operations down), maximum crosswind, turbulence penetration speed and maximum load factor
- Emergency airspeeds including: V_{MCA}, V_{SSE}, engine(s) inoperative climb, approach and final speed, emergency descent and best glide range speeds
- Emergency procedures for: engine failure after take-off, engine fire on the ground and airborne, engine failure in the cruise, waste gate failure (if applicable) and propeller/turbine over-speed
- Safety implications of asymmetric flight below V_{MCA}
- Power, flight and configuration requirements that apply to V_{MCA}
- Methods of regaining control of an aeroplane with a failed engine that is flying at a speed less than V_{MCA}
- Conditions that would increase V_1
- Performance the aeroplane can achieve after reaching V_Y or V_2 during asymmetric flight
- Markings on the airspeed indicator that apply to failed engine operations
- Relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- In ADF context, relevant Defence Orders and Instructions
- Relevant OH&S procedures and regulations
- Normal and crosswind take-off/landing procedures: climb, cruise, descent procedures including, airspeeds, configurations, method of drift allowance, setting of flight instruments and non-normal/emergency procedures
- Technique and procedures used during engine failure on take-off, the appropriate reference airspeeds, and the specific pilot actions required
- Technique and procedure for carrying out a rejected take-off after a engine/system(s) failure/warnings, including related safety factors
- Technique and procedures used to conduct a go-around or missed approach during engine failure on take-off, the appropriate reference airspeeds, and the specific pilot actions required

Required skills:

- Calculate accelerate/stop distance
- Calculate V_1 for any specified take-off conditions
- Calculate initial rate of climb and climb gradient for one engine inoperative after take-off
- Calculate fuel flow and true airspeed with one engine inoperative
- Determine if the range of the aeroplane increases or decreases following an engine failure

REQUIRED KNOWLEDGE AND SKILLS

- Calculate PNR and ETP/CP for one engine inoperative with maximum fuel
- Extract, calculate and apply all performance information applicable to the aeroplane
- Identify, and manage emergency and abnormal situations while maintaining control of the aeroplane, in accordance with Flight Manual/POH
- Identify the critical engine
- Control and manage the aeroplane during flight with failed engine(s), in accordance with Flight Manual/POH
- Maintain compliance with relevant regulatory requirements
- Set priorities and manage workload to ensure safe task completion in the time available
- Apply relevant air safety practices and regulations
- Communicate effectively with others when operating a multi-engine fixed wing aeroplane
- Read and interpret instructions, regulations, procedures and other information relevant to operating a multi-engine fixed wing aeroplane
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to operating a multi-engine fixed wing aeroplane
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when operating a multi-engine fixed wing aeroplane
- 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 a multi-engine fixed wing aeroplane in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when operating a multi-engine fixed wing aeroplane
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when operating a multi-engine fixed wing aeroplane
- 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
- 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 to operate a multi-engine fixed wing aeroplane

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:	• VMC • IMC • VMC with simulated IMC conditions
Performance may be demonstrated in:	• multi-engine aeroplane • multi-engine synthetic training device approved by appropriate authority • variable air traffic conditions • variable weather conditions • variable flight situations • abnormal situations • classes of airspace as designated by the Civil Aviation Safety Authority
Crew may include:	• single pilot • multi crew
Instruments may be:	• fitted flight instruments • head up display
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 local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures • standard operating procedures
Information/documents may	• relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders

RANGE STATEMENT

include:	• in ADF context, relevant Defence Orders and Instructions • Manual of Standards - Pilot Licensing (MOS-PL) • Flight Manual/ Pilot's Operating Handbook (POH) • Aeronautical Information Publication (AIP) • relevant sections of the Civil Aviation Advisory Publications (CAAP) • performance 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 ADF context, relevant Defence Orders and Instructions • relevant state/territory OH&S 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: • Day VFR Syllabus • 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 Y - Aircraft Operation and Traffic Management