



Australian Government

AVIY0097 Operate powered-lift remotely piloted aircraft systems

AVIY0097 Operate powered-lift remotely piloted aircraft systems

Modification History

Release	Comments
1	This unit of competency was first released in AVI Aviation Training Package Release 12.0.

Application

This unit involves the skills and knowledge required to operated powered-lift remotely piloted aircraft systems (RPAS) operations, in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority (CASA) and national operating standards.

It includes identifying components of a powered-lift RPA, determining impacts of weight and balance and determining impacts on aerodynamics for the stages of flight. It also includes understanding principles of operation, launching, cruising and landing powered-lift RPAs and managing powered lift RPA during abnormal and emergency procedures.

This unit incorporates aviation non-technical skill requirements (mental, social and personal-management abilities) related to safety management duties of flight operations personnel, and contributes to safe and effective performance in complex aviation operational environments.

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

Work is performed independently or under limited supervision as a single operator or within a team environment.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

Y - Aircraft Operation and Traffic Management

Unit sector(s)

Not applicable

Elements and Performance Criteria

Elements		Performance criteria	
Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Identify components of a powered-lift RPA	1.1	Identify and locate typical components on a powered-lift RPA
		1.2	Identify and locate electrical components of a powered-lift RPA
2	Determine impacts of weight and balance	2.1	Identify impacts of changes to weight and balance on launching, landing and recovery of RPA
		2.2	Identify the causes of changes to performance of RPA
3	Determine impacts on aerodynamics for the stages of flight	3.1	Identify the effects of aerodynamic during take off and landing
		3.2	Identify effects of aerodynamics whilst transitioning to and from forward flight
		3.3	Identify effects of aerodynamics during cruise and loiter
4	Demonstrate understanding of principles of operation	4.1	Use flight controls on RPA and demonstrate the effect on its movement
		4.2	Demonstrate various manoeuvres whilst in control of RPA
5	Launch, cruise and land powered-lift RPA	5.1	Complete pre-launch checks on RPA
		5.2	Launch RPA and demonstrate the effect on climb rate during various environmental conditions
		5.3	Turn and operate RPA while maintaining control
		5.4	Transition to and from fixed wing mode

		5.5	Loiter RPA according to manufacturer instructions
		5.6	Demonstrate the effect on descent during various environmental conditions
		5.7	Land RPA safely according to workplace procedures and relevant regulations
		5.8	Complete post-flight actions on RPA according to workplace procedures
6	Manage powered lift RPA during abnormal and emergency procedures	6.1	Identify, diagnose and communicate abnormal or emergency situations
		6.2	Maintain control of RPA at all times
		6.3	Implement RPA abnormal or emergency checklist procedures to maintain safety of flight
		6.4	Decide, implement, evaluate and revise a course of action to achieve the safest outcomes
		6.5	Explain location and operation of emergency systems applicable to RPA

Range of conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Refer to the AVI Aviation Companion Volume Implementation Guide for non-essential items for this unit of competency.

Assessment Requirements for AVIY0097 Operate powered-lift remotely piloted aircraft systems

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- accurately and safely transitioning the RPA from horizontal flight to vertical flight
- accurately and safely transitioning the RPA from vertical flight to horizontal flight
- controlling RPA powered lift on the ground
- demonstrating a baulked landing procedure nominated hold point
- demonstrating a landing in cross- or tail-wind conditions
- demonstrating within visual line of sight, accurately controlling and navigating a RPA
- demonstrating pirouettes while in hover
- descending the RPA at a constant angle of descent
- descending the RPA at a constant rate of descent
- describing a suitable and achievable plan to recover the RPA from abnormal manual and automated transition
- entering and recovering from stall in other than vertical flight whilst:
 - performing pre-maneuvring checks for stalling the RPA
 - performing stall recovery with the RPA whilst:
 - positively reducing angle of attack
 - recovering using vertical power
 - using power available and excess height to increase the RPA energy state
- recognising stall symptoms when operating the RPA
- recovering from the following conditions including:
 - incipient stall
 - stall during other flight phases
 - stall with full power
 - stall without power

- identifying and avoiding simulated terrain, obstacles and traffic when operating the RPA
- identifying conditions that may lead to a vortex ring state
- landing the RPA safely in a confined landing area
- launching the RPA safely above eye level and hovering for a minimum of 10 seconds
- managing abnormal situations
- managing loss of thrust in other than vertical flight
- operating the RPA while demonstrating the lost link procedure
- operating the RPA at a constant angle of climb
- operating the RPA at a constant rate of climb
- operating the RPA in straight and level flight
- operating the RPA to perform co-ordinated turns in horizontal flight
- operating the RPA to perform co-ordinated turns within a nominated area
- operating the RPA so that level turns are at a constant altitude
- operating the RPA whilst demonstrating a figure 8 without loss of height and with the crossover directly in front of the operator and even sized loops
- performing a landing from approach, when the RPA is in a sideways orientation
- performing a straight forward sideslip by:
 - adjusting the rate of descent by coordinating the angle of back and applied rudder
 - inducing slip to achieve increased rate of descent while maintaining track and airspeed
- performing an approach and landing
- performing a safe gliding forced landing of the RPA
- performing an approach and landing whilst the RPA is moving towards the remote pilot
- performing emergency manoeuvres with the RPA to avoid a simulated collision with another aircraft or obstacle
- performing within visual line of sight, a horizontal rectangular circuit of reasonable width
- recovering from unusual aircraft attitudes in other than vertical flight whilst:
 - applying controlled corrective action while maintaining the RPA within performance limits
 - identifying unusual attitude of the RPA during an operation

- recovering the RPA from nose-low or excessive bank angle
- recovering the RPA from a sideslip and returning it to controlled and balanced flight
- recovering the RPA from abnormal transition from horizontal to vertical flight in both manual and automated transitional flight
- recovering the RPA from abnormal transition from vertical to horizontal flight in both manual and automated transitional flight
- reorienting the RPA after a simulated loss of orientation
- simulating a parachute deployment recovery system if it is fitted to the RPA
- trimming the RPA to maintain the desired flight path for an operation
- using lift and drag devices appropriately during descent of the RPA.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- aerodynamics of transition from horizontal flight/descent to vertical flight
- aerodynamics of transition from vertical flight to horizontal/climbing flight
- aircraft configuration changes during transitional flight
- airspeed and ground speed
- angle of descent and attitude
- avoiding vortex ring state when launching/landing the RPA
- characteristics of a stall
- characteristics of an aerofoil
- concept of balanced turns
- differences between a spin and a spiral dive
- direction of rotation of a rotor and the implication of incorrect installation
- drag in forward flight
- effect of headwind/tailwind
- effect of increasing or decreasing bank angle
- effect on climb rate and angle
- effects of changes to the following on the performance of the RPA:
 - ground effect
 - power
 - pre-launch and pre-landing

- translational lift
- weight
- wind and windshear
- effects on the operation of the RPA if a motor of the RPA fails
- effects on the stall airspeed
- location and function of electrical components of the RPA
- manoeuvres during which the RPA may stall at an angle which appears to be different to the true stalling angle
- physical components of an RPA
- precautions during steep turns
- primary flight controls and how they affect the movement of the aircraft about its longitudinal, lateral and vertical axes
- recovery actions to escape vortex ring state
- relationship between attitude, angle of attack and airspeed in level flight
- rotations or flat turns in vertical mode
- spin and spiral dive recovery
- typical features of the wings of the RPA
- visual illusions during balanced level turns at low level when turning downwind or into wind
- visual signs from the ground when the RPA is approaching a stall.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- applicable documentation, including workplace procedures, regulations, codes of practice and operation manuals

- relevant materials, tools, equipment and PPE currently used in industry.

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
AVIY0025 Operate powerlift and tilt rotor remote pilot aircraft systems	Not equivalent	

Links

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816>.