



Australian Government

AVIY0098 Operate multirotor remotely piloted aircraft systems

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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 multirotor 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 an RPA; determining impacts of weight and balance; determining impacts on aerodynamics and understanding principles of operation of a RPA. It also includes launching and landing a multirotor RPA safely.

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
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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Identify components of an RPA	1.1	Identify and locate typical components on a multirotor RPA
		1.2	Identify and locate electrical components of a multirotor 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 during cruise and hover
4	Demonstrate understanding of principles of operation	4.1	Use flight controls on RPA and demonstrate the effect on movement
		4.2	Demonstrate various manoeuvres whilst in control of an RPA
5	Launch, cruise and land multirotor RPA	5.1	Complete pre-launch checks on RPA
		5.2	Launch RPA during various environmental conditions
		5.3	Turn and operate RPA while maintaining control
		5.4	Hover RPA according to manufacturer instructions
		5.5	Land RPA safely according to workplace procedures and relevant regulations
		5.6	Complete post-flight actions on RPA according to workplace procedures

6	Manage multirotor 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 AVIY0098 Operate multirotor 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:

- demonstrate the loss of command and control link procedures in accordance with the RPA operator's documented practices and procedures
- demonstrating a baulked landing procedure to a nominated hold point
- demonstrating control of the multirotor on the ground and has its rotors spinning
- demonstrating flight to the left and right and towards and away from the remote pilot in different orientations
- demonstrating operating the RPA to avoid a vortex ring state
- demonstrating or simulating a parachute deployment recovery system if such a system is fitted to the RPA
- demonstrating the "return-to-home" fail-safe function if such a function is fitted to the RPA
- identifying conditions likely to lead to a vortex ring state
- landing the RPA from a 45-degree sideways descent
- launching the RPA to above eye-level and hovering for 10 seconds
- performing a 360-degree level turn without GPS hold
- performing a figure 8 at a constant altitude with a crossover point in front of the remote pilot and even-sized loops with the nose pointing in the direction of travel
- performing a full pirouette, and then reversing to stop facing a predetermined direction
- performing a horizontal rectangular circuit of a reasonable width, within visual line of sight, and at a reasonable distance, sufficient to show competency in carrying out such a manoeuvre; the manoeuvre itself must include a 45-degree climb and descent on the take-off and final legs of the circuit, and end with a landing
- performing a landing from a height of 10 m directly above the landing point
- performing a landing in a cross- or tail-wind conditions
- performing a nose-in turn about the nose
- performing a nose-out turn about the "tail"
- performing a straight and level forwards operation to a 100 m distant marker, hover, turn 180 degrees, and fly back nose-in

- performing a vertical circle, as if inspecting the span of a bridge, turning 180 degrees at the top
- performing a vertical rectangle, at least 5 m high and 20 m wide, with clockwise and counter clockwise 360-degree pirouettes at each alternate corner
- performing an 8-point pirouette pausing at each point without GPS hold
- performing an approach and landing with the RPA moving towards the remote pilot who is operating the RPA
- performing straight and level forwards operation to a 20 m distant marker, hold for 10 seconds and return “tail” first
- reorienting the RPA from a simulated loss of orientation
- simulating a recovery from a vortex ring state to a safe landing
- simulating emergency manoeuvres.

Knowledge Evidence

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

- aerodynamic properties of rotor blades
- components of a remotely piloted aircraft
- definitions of the relevant terms
- descending, landing and recovery impacts
- direction of rotation of rotor and the implications of incorrect installation on aerodynamics
- effects of hovering and forward flight on the following:
 - drag in forward flight
 - ground effect
 - recirculation
 - translational lift
- effects of changes to performance of the RPA
- effect on climb rate and angle from changes in the following:
 - airspeed
 - altitude
 - bank angle
 - headwind or tailwind or windshear
 - power
 - temperature

- weight
- effects on the operation of the RPA if a motor fails
- flight control operations and how they affect the movement of a multirotor about its longitudinal, lateral and normal vertical axes
- flight control operations
- launch checks
- location and function of relevant electrical components of a remotely piloted aircraft
- types of turning.

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:

- 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
AVIY0027 Operate multi-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>.

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