



**Australian Government**

# **AVIW3038A Operate and manage remote pilot aircraft systems (RPAS)**

**Release 1**

# **AVIW3038A Operate and manage remote pilot aircraft systems (RPAS)**

## **Modification History**

Release 1. This is the first release of this unit.

This unit replaces and is equivalent to AVIW3036A Operate and manage remote pilot aircraft systems (RPAS).

## **Unit Descriptor**

This unit involves the skills and knowledge required to operate as a remote pilot of a remote pilot aircraft system (RPAS) during visual meteorological conditions (VMC). This includes operating and managing aircraft systems, sub-systems (equipment) and devices.

## **Application of the Unit**

Work must be carried out in compliance with the relevant licence and RPAS rating requirements of the Civil Aviation Safety Authority (CASA); relevant airspace control requirements; Visual Meteorological Conditions (VMC); regulations, safety codes, protocols and procedures required to operate and manage RPAS.

Use for Defence Aviation is to be in accordance with relevant Defence Orders and Instructions.

Operations are conducted across a variety of operational contexts within the Australian Aviation Industry.

Work is performed under limited supervision.

## **Licensing/Regulatory Information**

Refer to Application of the Unit.

## **Pre-Requisites**

Nil.

## **Employability Skills Information**

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

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

## Required Skills and Knowledge

This section describes the knowledge and skills required for this unit.

### Required knowledge:

- Risk identification, analysis and control
- Error management, including error types, causes and consequences as relevant to this unit
- Human performance and its limitations, including the senses, memory and situational awareness as relevant to this unit
- The decision making process as relevant to this unit
- Management of fatigue as relevant to this unit
- Stress, workload and time pressure management in relation to this unit
- Effective communication as relevant to this unit.
- RPA systems as applicable to rating/endorsement requirements may include:
  - battery/fuel/power system including:
    - use of a schematic diagram of the battery/fuel/power system to explain layout and normal operating procedures
    - likely faults that may affect the battery/fuel/power system
    - emergency operating procedures for the battery/fuel/power system
    - operation of /battery/fuel/power selector panel or display as applicable
    - use of cross-feed or power distribution if applicable
    - fuel-dumping procedures if applicable
    - full battery/fuel capacity and fuel grade
    - normal, minimum and maximum fuel pressures or battery/power levels and power draw as applicable
  - 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
  - likely faults that may affect the electrical system
  - emergency operating procedures for the electrical system
  - voltage and amperage of battery or power cell
  - number and output of generators if applicable
  - methods of circuit protection if applicable
  - location of fuses and circuit breakers if applicable
  - precautions to be taken when operating electrical devices
  - instruments and displays operated by electrics
- Oil/Lubrication 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
  - emergency operating procedures for the oil system
  - number of tanks, capacity and oil grade
  - 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 and precautions
  - 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

- 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
- Detection and Avoidance Systems:
  - surveillance and collision avoidance functions of Detection and Avoidance Systems
  - system limitations, selectivity and inhibits
  - basic components of Detection and Avoidance Systems
  - identification and demonstration of controls or explanation of the function of the RPA control Station
  - detection and Avoidance Systems visual displays and symbology
  - functions of audio alerts and annunciations
  - appropriate crew response to multiple Detection and Avoidance Systems events
  - recall of the radiotelephone procedures following a Detection and Avoidance System alert
  - requirements for a written report of a Detection and Avoidance Systems alert and to whom it must be submitted
- Automated systems (if applicable):
  - limitations of automated systems
  - operating procedures for systems such as: Flight Management System, auto throttle/engine/thrust 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
- RPA system checklists:
  - explanation of the normal system operating procedures of the RPA systems, subsystems and devices used to operate the specific RPAS including: use of published scans and checklists, immediate action items, warnings, limitations

**Required skills:**

- Perform systematic scan technique for monitoring RPA systems, sub-systems (equipment) and devices
- Operate manual and automated RPA systems where applicable
- Interpret RPA system displays (where applicable)
- Undertake fault finding in RPA systems

- Use automated systems to manage workload
- Communicate effectively with others when operating and managing RPA systems
- Read and interpret instructions, regulations, procedures and other information relevant to operating and managing RPA systems
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to operating and managing RPA systems
- Operate electronic communication equipment to required protocol
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when operating and managing RPA 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 RPA systems in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when operating and managing remote pilot aircraft systems
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when operating and managing remote pilot 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
- 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
- Work health and safety (WHS)/occupational health and safety (OHS) standards
- Implement WHS/OHS procedures and relevant regulations
- Identify and correctly use equipment required when operating and managing remote pilot aircraft systems

## 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 competence in this unit must be relevant to and satisfy all of the requirements of the Elements, Performance Criteria, Required Skills, Required Knowledge and include:

- risk management
- human factors
- safety management systems and:
- required 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 time and in a suitable range of contexts.

Resources for assessment include access to:

- 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**

Practical assessment must occur in a:

- real or appropriately simulated environment.

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate to this unit:

- knowledge and performance questions and direct observation.

## 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 must be undertaken in:                                                                                      | <ul style="list-style-type: none"> <li>• Visual Line of Sight,</li> <li>• Visual Metrological Conditions (VMC)</li> </ul>                                                                                                                                                                         |
| Performance may be demonstrated in:                                                                               | <ul style="list-style-type: none"> <li>• single engine RPA</li> <li>• multi engine RPA</li> <li>• variable weather conditions</li> <li>• variable flight situations</li> <li>• abnormal situations</li> </ul>                                                                                     |
| Aircraft may include:                                                                                             | <ul style="list-style-type: none"> <li>• Remotely Piloted Aircraft (RPA)/Unmanned aircraft</li> </ul>                                                                                                                                                                                             |
| Crew may include:                                                                                                 | <ul style="list-style-type: none"> <li>• Remote Pilot</li> <li>• Remote Observers</li> <li>• Payload, Sensor operators and technicians</li> </ul>                                                                                                                                                 |
| Instruments may be:                                                                                               | <ul style="list-style-type: none"> <li>• flight instruments suitable for flight</li> <li>• head up display suitable for flight</li> </ul>                                                                                                                                                         |
| Limitations may be imposed by:                                                                                    | <ul style="list-style-type: none"> <li>• local noise abatement requirements and curfews</li> </ul>                                                                                                                                                                                                |
| Classes of airspace must be:                                                                                      | <ul style="list-style-type: none"> <li>• in Class G airspace as designated by the regulator, and may be in:             <ul style="list-style-type: none"> <li>• restricted and danger areas</li> <li>• military control zones</li> </ul> </li> </ul>                                             |
| Conditions may include:                                                                                           | <ul style="list-style-type: none"> <li>• Autopilot/Flight Director</li> <li>• FMS/other NAV system</li> <li>• simulation of emergency and abnormal procedures</li> </ul>                                                                                                                          |
| Dependent on the type of organisation concerned and the local terminology used, workplace procedures may include: | <ul style="list-style-type: none"> <li>• company procedures</li> <li>• enterprise procedures</li> <li>• organisational procedures</li> <li>• established procedures</li> <li>• standard operating procedures</li> </ul>                                                                           |
| Information/documents may include:                                                                                | <ul style="list-style-type: none"> <li>• relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders</li> <li>• in Defence context, relevant Defence Orders and Instructions</li> <li>• Manual of Standards</li> <li>• Aeronautical Information Publication (AIP)</li> </ul> |

Applicable regulations and legislation may include:

Performance includes tolerances specified in either of:

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

## Unit Sector(s)

Not applicable.

## Competency Field

W - Equipment and Systems Operations