



Australian Government

AVIY3078A Manage remote pilot aircraft systems (RPA) energy source requirements

Release 1

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Modification History

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

This unit replaces and is equivalent to AVIY3072A Manage remote pilot aircraft systems (RPA) energy source.

Unit Descriptor

This unit involves the skills and knowledge required to manage remote pilot aircraft systems (RPA) energy source, including determining RPA energy source requirements and performing the necessary calculations, refueling the RPA where appropriate and ensuring the energy source system is configured and operated for maximum safety and efficiency in the prevailing flight conditions.

It also includes calculating requirements, configuring the energy source system and making adjustments to achieve best range and best endurance within prescribed safety parameters.

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 relevant to managing an RPA energy source.

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

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| 1 Plan energy source requirements | 1.1 Total en route and reserve energy source requirements are calculated and determined in accordance with RPA type specific requirements |
| | 1.2 Adjusted allowances are made for possible abnormal or emergency situations |
| | 1.3 Energy source calculations are documented in accordance with workplace procedures |
| 2 Manage energy source system | 2.1 Energy source contents and quality are inspected and confirmed before launch |
| | 2.2 RPA is configured to achieve desired profile, range or endurance status |
| | 2.3 Potential hazards are anticipated and relevant controls are implemented |
| | 2.4 Energy source system is operated in accordance with Flight Manual/Pilot's Operating Handbook (POH) |
| | 2.5 Energy source status is monitored throughout flight and modified appropriately as circumstances change |
| | 2.6 Workplace work health and safety (WHS)/ occupational health and safety (OHS) procedures are followed at all times when carrying out energy source management procedures |
| 3 Refuel/recharge RPA | 3.1 Appropriate precautions are undertaken to ensure the safety of personnel and property during refueling/recharging operations |
| | 3.2 RPA is correctly refueled/recharged in accordance with Flight Manual/POH, WHS/OHS requirements, regulatory requirements and workplace procedures |

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
- Stress, workload and time pressure management in relation to this unit
- Effective communication as relevant to this unit
- Energy source principles relating to RPAS
- Relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- In Defence context, relevant Defence Orders and Instructions
- Relevant WHS/OHS and environmental procedures and regulations
- Principles of RPA energy source systems
- The energy source consumption of the RPA at varying propulsion and systems power settings
- Factors affecting energy source consumption
- Calculation of conversion between imperial, United States and metric measures
- Mixture leaning or power conservation techniques
- The energy source reserve requirement for RPA
- Regulations and procedures for refueling/recharging RPA
- Methods of identifying applicable grade of fuel/ fuel cell/battery for RPA type
- The dangers of using the incorrect grade of fuel/fuel cell/battery
- The operation of the specific RPA energy source system according to manufacturer instructions
- Aerodynamic, engine and airframe requirements for RPA to achieve best range and endurance
- Hazards that exist when refueling/recharging RPA and related hazard control procedures and precautions
- Problems that may occur when managing RPA energy source and appropriate action that should be taken in each case

Required skills:

- Plan RPA energy source requirements
- Refuel/recharge an RPAS energy sources
- Manage the operation of an RPAS energy source systems
- Calculate energy source allowances, consumption and endurance

- Recognise deteriorating situations impacting on energy source requirements
- Monitor energy source usage to achieve desired profile, range or endurance following configuration changes
- Implement safety precautions during RPA refueling/recharging
- Maintain compliance with regulatory requirements
- Maintain workplace records relevant to RPA energy source management
- Read and interpret instructions, regulations, procedures and other information relevant to managing RPAS energy sources
- Identify applicable grade of fuel/fuel cell/battery for RPAS type
- Perform energy source quality control checks
- Apply relevant safety practices and regulations
- Communicate effectively with others when managing RPAS energy source
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to managing RPAS energy source
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when managing RPAS energy source
- 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 managing RPAS energy source in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when managing RPAS energy source
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when managing RPAS energy source
- 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 WHS/OHS standards
- Implement WHS/OHS procedures and relevant regulations
- Identify and correctly use equipment required when managing RPAS energy source

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 may be undertaken in:
- visual line of sight
 - visual meteorological conditions
- Performance may be demonstrated in:
- single engine RPA
 - multi engine RPA
- Performance may be demonstrated on an RPA with:
- fully functioning controls
 - the use of a suitable simulator
- RPA may include:
- remotely piloted RPA/unmanned RPA
- Crew may include:
- remote pilot
 - remote observers
 - sensor and payload operators/managers or technicians
- Instruments may be:
- fitted flight instruments
 - head up displays
 - displays
- Limitations may be imposed by:
- local noise abatement requirements and curfews
 - local aviation limitations / procedures
- Classes of airspace must be:
- in Class G airspace, as designated by the regulator, and may be in:
 - restricted and danger areas
 - military control zones
- Equipment for energy source transfer will be:
- as appropriate for the type of RPA and the energy source being used
- energy source may include:
- power producing sources that power the on-board systems and thrust producing components of the specific RPA
 - liquid fuel
 - battery charger
 - gas
 - solar
 - other renewable energy
 - other power producing source
- Energy source allowances may be made for:
- fixed energy source reserves
 - en route and destination meteorological forecasts
 - holding requirements
- Dependent on the type of organisation
- company procedures

concerned and the local terminology used, workplace procedures may include:

Information/documents may include:

Applicable regulations and legislation may include:

Performance includes tolerances specified in either of:

- enterprise procedures
- organisational procedures
- established procedures
- standard operating procedures
- relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders including Day Visual Flight Rules (Day VFR)
- in Defence context, relevant Defence Orders and Instructions
- Flight Manual/Pilot's Operating Handbook (POH)
- RPA performance manual
- Manual of Standards
- Aeronautical Information Publication (AIP)
- En Route Supplement Australia (ERSA) or equivalent
- charts
- operations manuals
- approved checklists
- energy source log
- 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 OH&S legislation
- relevant state/territory environmental protection legislation
- relevant Australian Standards
- relevant licence and RPA 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

Y - Aircraft Operation and Traffic Management