



Australian Government

AVIW0006 Perform infrastructure inspections using remote operated systems

Release: 1

AVIW0006 Perform infrastructure inspections using remote operated systems

Modification History

Release 1. This is the first release of this unit of competency in the AVI Aviation Training Package.

Application

This unit involves the skills and knowledge required to operate and manage remote pilot aircraft systems (RPAS) when inspecting infrastructure in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority (CASA) and national operating standards.

Infrastructure includes but is not limited to electricity pylons, gas pipelines, cables, roads and rail infrastructure.

It includes operating and managing RPAS during normal flight, and managing RPAS during abnormal and emergency procedures.

This unit addresses aviation technical skill requirements (physical, mental and task-management abilities) related to equipment and system operations of flight or ground operations personnel and contributes to safe and effective performance in complex aviation operational environments.

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 independently or under limited supervision within a single-pilot or multi-crew RPAS environment.

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

Pre-requisite Unit

Not applicable.

Competency Field

W – Equipment and Systems Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Conduct pre-flight actions

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Own fitness for flight and planned operations is self-assessed
- 1.2** Operational aircraft type is determined for suitability for type of aerial infrastructure inspection operation
- 1.3** Aircraft and role equipment are checked and assessed for serviceability prior to commencing flight operations
- 1.4** Required applicable maintenance documentation is compiled and checked for accuracy and completeness
- 1.5** Role equipment calibration is checked and adjusted as required
- 1.6** Planned aerial infrastructure inspection operations are assessed for potential or actual hazards
- 1.7** Fuel/power requirements are determined and established within aerial operational plans
- 1.8** Issues relating to aircraft weight, performance, dimensions, load and meteorological conditions are identified and managed

2 Conduct planning and risk management

- 2.1** Suitability of current and forecast weather is determined
- 2.2** Infrastructure inspection plan is developed and used as the basis for aerial application operations
- 2.3** Potential and actual hazards and operational requirements are identified, risks to aerial infrastructure inspection operations are assessed and appropriate risk controls implemented in accordance with the application management plan
- 2.4** Area map is correctly interpreted
- 2.5** Acceptable aircraft performance for aerial infrastructure inspection operational conditions is confirmed through performance planning

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| | 2.6 | Normal and abnormal operational communications and signals are confirmed |
| 3 | Conduct aerial mapping and modelling | |
| | 3.1 | Appropriate aerial survey plans are developed for conducting safe aerial mapping and modelling operations |
| | 3.2 | Operating area boundaries are established and environmentally sensitive areas identified, including areas that are noise sensitive, biologically susceptible, populated and urban, and restricted or dangerous |
| | 3.3 | Potential emergency or alternate landing areas are identified and/or established for contingency operations |
| | 3.4 | Environmental hazard factors affecting aerial mapping and modelling operations are considered |
| | 3.5 | Wind velocity and direction are assessed for effect on operations |
| | 3.6 | Infrastructure inspection operations is conducted safely in accordance with the application management plan |
| | 3.7 | Infrastructure inspection equipment is operated within scope of the plan |
| | 3.8 | Decisions to suspend or continue safe aerial infrastructure inspection are taken based on planned or actual operating conditions |
| | 3.9 | Power lines within and outside the treatment area during an aerial survey are identified and accurately assessed to support safe operations in vicinity of power lines, including safe flying parallel to wires |
| 4 | Perform infrastructure inspections | |
| | 4.1 | Infrastructure and condition assessment criteria are verified and understood prior to the inspection |
| | 4.2 | Data capture process is selected based on the type of infrastructure |
| | 4.3 | Various types of structural failures are recognised and recorded |
| | 4.4 | Infrastructure data and records are provided in accordance with client requirements |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

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

Unit Mapping Information

No equivalent unit.

Links

AVI Training Package Companion Volume Implementation Guide available on VET Net: - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816>

Assessment Requirements for AVIW0006 Perform infrastructure inspections using remote operated systems

Modification History

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Performance Evidence

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

- adapting to differences in equipment and operating environment in accordance with standard operating procedures (SOPs)
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant legislation and workplace procedures
- communicating effectively with others
- completing relevant documentation
- identifying and correctly using relevant equipment
- implementing contingency plans
- implementing work health and safety (WHS) procedures and relevant regulations
- interpreting and following operational instructions and prioritising work
- interpreting remote pilot aircraft systems (RPAS) displays
- modifying activities depending on workplace contingencies, situations and environments
- monitoring and anticipating operational problems and hazards and taking appropriate action
- monitoring work activities in terms of planned schedule
- operating electronic communications equipment to required protocol
- performing systematic scan technique for monitoring RPAS, sub-systems (equipment) and devices
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- reporting and/or rectifying problems, faults or malfunctions promptly in accordance with workplace procedures
- selecting and using required personal protective equipment (PPE) conforming to industry and WHS standards
- undertaking fault finding in RPAS
- using automated systems to manage workload
- working collaboratively with others
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

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

- aeronautical decision-making processes relevant to RPAS operations
- effective communication
- error management, including error types, causes and consequences
- fatigue risk management
- human factors relevant to RPAS operations
- human performance and its limitations, including the senses, memory and situational awareness
- normal, minimum and maximum fuel pressures or battery/power levels and power draw
- risk identification, analysis and control
- RPAS as applicable to rating/endorsement requirements, including:
 - battery/fuel/power system:
 - use of a schematic diagram of battery/fuel/power system to explain layout and normal operating procedures
 - likely faults that may affect battery/fuel/power system
 - emergency operating procedures for battery/fuel/power system
 - operation of /battery/fuel/power selector panel or display
 - use of cross-feed or power distribution
 - full battery/fuel capacity and fuel grade
 - flight environment information, including :
 - head-up display (HUD) suitable for flight
 - RPAS control systems suitable for flight indications, including height, speed, direction and location
 - electrical system, including:
 - use of a schematic diagram of electrical system to explain type/s of electrical system
 - structural failures
 - likely faults that may affect electrical system
 - emergency operating procedures for electrical system
 - voltage and amperage of battery or power cell
 - number and output of generators
 - methods of circuit protection
 - location of fuses and circuit breakers
 - precautions to be taken when operating electrical devices
 - instruments and displays operated by electrics
 - detection and avoidance systems, including:
 - 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 function of RPAS 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 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, including:
 - 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, and automated engine condition and monitoring system
 - workload management procedures for utilising automated systems
 - warning systems/indicators to identify automated systems failure
- RPAS checklists, including:
 - explanation of the normal system operating procedures of RPAS, sub-systems and devices used to operate specific RPAS, including use of published scans and checklists, immediate action items, warnings and limitations
- stress, workload and time pressure management.

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 this is not appropriate, assessment must occur in simulated workplace operational situations that reflect 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
- acceptable means of simulation assessment
- applicable documentation, including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and PPE currently used in industry.

Links

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