



Australian Government

AVIY0021 Operate helicopter at low level

Release: 1

AVIY0021 Operate helicopter at low level

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 a helicopter at low level, in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority and national operating standards.

It includes planning low-level operations, manoeuvring a helicopter at low level, and performing quick stop manoeuvres. It also includes executing reversal turns, executing a forced landing from below 200 feet (ft) above ground level (AGL), and operating at low level in hilly terrain.

This unit addresses aviation technical skill requirements (physical, mental and task-management abilities) related to aircraft operational duties of flight crew, 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 within a single-pilot or multi-crew environment.

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

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

Pre-requisite Unit

Not applicable.

Competency Field

Y – Aircraft Operation and Traffic Management

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

1 Plan low-level operations

- 1.1 Requirement to operate at low level is identified and justified in accordance with workplace procedures and regulatory requirements
- 1.2 Low-level operational hazards are identified, evaluated and risk managed, and appropriate decision is made concerning the safe conduct of these operations
- 1.3 Aircraft type and performance is assessed as appropriate for low-level operations
- 1.4 Consultation with all relevant stakeholders involved in a low-level operation is completed to confirm task/operating requirements
- 1.5 Pre-flight inspection is correctly performed, and aircraft serviceability type and performance are determined as appropriate for the task
- 1.6 Actual and forecast weather conditions are analysed for effects on low-level operations
- 1.7 Area of low-level operations is identified using chart and geographical features, including the boundary where low flying may commence and normal flight altitude is required
- 1.8 Action plans for the operation are formulated to ensure safe and effective operation of a helicopter at low level
- 1.9 Unplanned manoeuvres are avoided
- 1.10 Compliance is maintained with air traffic control (ATC) instructions, regulatory and reporting requirements

2 Manoeuvre helicopter at low level

- 2.1 Low-level flight manoeuvres are performed safely using pre-planned manoeuvres at planned altitudes
- 2.2 Effects of wind velocity, false horizons, rising ground and mountainous terrain are managed, and control of helicopter is correctly maintained
- 2.3 Visual attention is focused outside the cockpit

- 2.4 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility and/or terrain
- 2.5 Natural horizon is used as primary attitude reference
- 2.6 Nose of aircraft is cleared to ensure forward visibility when appropriate
- 2.7 Situational awareness is maintained at all times during low-level manoeuvres
- 2.8 Helicopter is safely manoeuvred adjacent to power lines and wires
- 2.9 All obstacles are identified, and are appropriately and safely avoided
- 2.10 Personnel, animals, vehicles and buildings are identified, and are appropriately and safely avoided
- 2.11 Height is maintained by visual reference to earth's surface when below 500 ft AGL
- 2.12 Weather conditions are monitored and appropriate responses are made
- 2.13 Fuel status is monitored and appropriate responses are made
- 2.14 Local and published noise abatement requirements and curfews are observed
- 3 Perform quick stop manoeuvre**
 - 3.1 Deceleration of helicopter from forward flight is initiated into wind, maintaining height to terminate to the hover at nominated hover point
 - 3.2 Aircraft is turned and decelerated or decelerated and turned, maintaining height by controlled action, to terminate to the hover at nominated hover point, into wind
 - 3.3 Deceleration/acceleration manoeuvres are conducted within the time and distance limitations specified while maintaining a constant height above the surface
 - 3.4 Wind velocity is estimated and is appropriately taken into account in manoeuvres
 - 3.5 Helicopter inertia is anticipated and appropriate allowance is made in manoeuvres

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| | 3.6 | Situation awareness is maintained at all times during a quick stop manoeuvre |
| | 3.7 | Obstructions are identified, and are appropriately and safely avoided |
| 4 Execute forced landing from 200 ft AGL | 4.1 | Emergency situations requiring a forced landing are identified |
| | 4.2 | Appropriate immediate actions are performed |
| | 4.3 | Landing area within autorotative distance is selected and appropriate action plan is formulated |
| | 4.4 | Emergency procedures are performed |
| | 4.5 | Emergency radio messages of intentions are transmitted |
| | 4.6 | Helicopter is landed and shut down as required |
| 5 Operate at low level in hilly terrain | 5.1 | Helicopter is safely manoeuvred at low level in hilly terrain |
| | 5.2 | Safe operating heights relevant to low-level operation type are established and maintained |
| | 5.3 | Terrain flight following techniques are applied during low-level operations |
| | 5.4 | Appropriate geographical features and markers are identified and selected to aid situational awareness |
| | 5.5 | Rising and falling ground/terrain is identified and approached using safe flying techniques, including identifying abort points and escape routes |
| | 5.6 | Effects of wind and turbulence in hilly terrain, including lee effects are identified and managed |
| | 5.7 | Spatial disorientation factors relevant to low-level operations are identified and applied to low-level manoeuvres |

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

This unit replaces and is not equivalent to AVIY4019B Operate helicopter at low level.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816>

Assessment Requirements for AVIY0021 Operate helicopter at low level

Modification History

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

Performance 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 on at least one occasion and include:

- adapting to differences in equipment and operating environment in accordance with standard operating procedures
- applying awareness of wind effect in the vicinity of obstructions, mountainous terrain and illusions
- applying correct navigation techniques and procedures at low level
- applying knowledge of the effect of false horizons
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant helicopter aeronautical knowledge
- applying relevant legislation and workplace procedures
- communicating effectively with others
- completing relevant documentation
- complying with airspace requirements and procedures
- conducting procedure turns from a fixed ground reference point
- flying at various speed and configurations not below safe single-engine speed (+15 KIAS for multi-engine aircraft)
- identifying and avoiding power lines and wires by a minimum of 15 feet (ft) when crossing overhead
- identifying and correctly using relevant equipment
- identifying and justifying a decision to operate a helicopter at low level
- identifying escape routes and rising ground
- identifying poles, cross trees, wires and insulators to assist power line and wire location
- identifying the requirement to operate in the vicinity of power lines and wires and assessing associated risk
- implementing contingency plans
- implementing work health and safety (WHS)/occupational health and safety (OHS) procedures and relevant regulations
- interpreting and following operational instructions and prioritising work
- maintaining a constant altitude over featureless terrain or water
- managing the aircraft energy state:
 - identifying high kinetic energy situations

- identifying low kinetic energy situations
- identifying high potential energy situations
- identifying low potential energy situations
- 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
- navigating to a predetermined destination at altitude below 500 ft AGL
- operating adjacent to power lines and wires
- operating electronic communications equipment to required protocol
- performing flight at various speed and configurations
- performing low-level circuit and landing
- performing quick stop manoeuvres:
 - into wind entry
 - downwind entry
- performing straight flight
- performing turns at various bank angles up to 60° angle of bank at normal cruise speed
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- recognising and controlling the illusion of slipping and skidding during turns close to the ground
- recognising and managing the impact of sun glare on increased risk of collision with obstacles
- recognising the effect of rising and descending terrain on aircraft performance
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using required personal protective equipment conforming to industry and WHS/OHS standards
- setting local or area barometric pressure adjusted for sea level (QNH) at appropriate stages of flight
- using instruments to monitor helicopter performance when operating a helicopter at low level
- 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 and performance criteria and include knowledge of:

- air traffic requirements

- application of the height/velocity diagram/graph
- CASR Part 61 Manual of Standards Schedule 3 Aeronautical Knowledge relevant to low level helicopter operations
- critical operational conditions, including retreating blade stall, vortex ring, overpitching, loss of anti-torque effectiveness, negative g effects
- effect of aircraft inertia at low level
- effect of wind velocity on low-level operations
- effects of illusions
- flight rules and legislation related to low-level ratings
- functions and effects of all helicopter controls, including rotor RPM (RRPM) management (governors) and engine acceleration response
- human factors during low-level operations:
 - dehydration
 - fatigue
 - stress and short/long term impacts
 - drugs impact
 - spatial disorientation and illusions
- local air traffic control procedures and instructions
- low-level operational techniques
- maximum rate and minimum rate turn criteria
- meteorological factors affecting helicopter flight performance during low-level flight
- obstruction avoidance techniques
- operational inspections
- operations on, or in vicinity of, non-controlled and controlled aerodromes or airstrips:
 - aerial inspections
- planning and aviation risk management processes
- pre-flight and after-flight inspections
- problems that may occur when operating a helicopter at low level and appropriate action that should be taken in each case
- procedures for using performance charts
- purpose and functions of helicopter systems
- relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- relevant WHS/OHS and environmental procedures and regulations
- safety hazards and risks of low-level helicopter operations and precautions for controlling risks
- terrain following techniques
- use of escape routes and rising ground
- weather effects on low-level operations.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

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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.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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 personal protective equipment currently used in industry.

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