



Australian Government

Department of Education, Employment and Workplace Relations

AVIY4017B Execute advanced helicopter manoeuvres and procedures

Revision Number: 1

AVIY4017B Execute advanced helicopter manoeuvres and procedures

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to control the helicopter in a range of situations by the application of advanced manoeuvres and procedures, including turning a helicopter steeply; performing autorotative flight; and executing limited power take-offs, approaches and landings. The situations may also include take-offs and landings on sloping ground or at a pinnacle or ridge line; and take-offs, landings and manoeuvres in confined areas. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA) and/or ADF; airspace control requirements and Day Visual Flight Rules (Day VFR); and aircraft control principles, regulations, safety codes, protocols and procedures required when executing advanced helicopter manoeuvres and procedures.

Use for ADF Aviation is to be in accordance with relevant Defence Orders and Instructions and applicable CASA compliance.

Operations are conducted as part of commercial or military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed under limited supervision.

This unit is nominally packaged at Certificate IV.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills 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

ELEMENT	PERFORMANCE CRITERIA
1 Turn helicopter steeply	<ul style="list-style-type: none">1.1 'Airspace cleared' procedure is carried out before and during turn1.2 Level turn of nominated bank angle is achieved without altitude change to nominated heading1.3 Descending turn of nominated bank angle is achieved to a nominated heading1.4 Awareness of higher stall speed in turns is demonstrated1.5 Helicopter operating limits are not exceeded
2 Perform autorotative flight	<ul style="list-style-type: none">2.1 An appropriate action plan is formulated that ensures the safe completion of autorotative manoeuvres2.2 Priorities are set to ensure the safe completion of autorotative manoeuvres2.3 Autorotative flight is entered and maintained at a nominated speed and heading in balanced flight2.4 Heading is altered with the helicopter in balanced flight at a nominated speed2.5 Helicopter is transitioned from autorotative flight to a climb at nominated heading and speed2.6 Autorotative landing is performed into the wind in accordance with Flight Manual/POH, workplace procedures and regulatory requirements2.7 Helicopter is terminated to the hover from autorotative flight, using appropriate power2.8 Autorotative flight is performed at the optimum range and minimum descent rate speeds2.9 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility and terrain2.10 Situation awareness is maintained at all times during autorotative flight
3 Lift off and land on sloping ground	<ul style="list-style-type: none">3.1 Surface conditions are confirmed to be suitable for the helicopter type3.2 Stakeholders are briefed to ensure safe operations in the vicinity of helicopter3.3 Helicopter is lifted off from sloping ground to a hover in accordance with Flight Manual/POH, workplace procedures and regulatory requirements3.4 Helicopter is landed from the hover onto sloping ground in accordance with Flight Manual/POH, workplace procedures and regulatory requirements3.5 Any abnormal situations are recognised and appropriate

ELEMENT**PERFORMANCE CRITERIA**

- controlled corrective action is implemented
- 3.6 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility or terrain
- 3.7 Situation awareness is maintained at all times during lift-offs and landings on sloping ground
- 4 Land, take off and manoeuvre in a confined area**
- 4.1 Confined area is assessed, an action plan is formulated and a decision is made to operate in the area
- 4.2 Awareness is demonstrated of pilot's own capabilities and limitations and decisions to take off or land are adjusted accordingly
- 4.3 Helicopter is safely landed in a confined area in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 4.4 Helicopter is safely taken off from a confined area in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 4.5 Helicopter is manoeuvred in a confined area while remaining clear of obstructions
- 4.6 Situation awareness is maintained at all times during manoeuvres in a confined area
- 4.7 Appropriate allowance is made for the effects of wind during manoeuvres in a confined area
- 5 Execute limited power take-off, approach and landing**
- 5.1 Need for limited power manoeuvres is established
- 5.2 A decision to conduct limited power manoeuvres is implemented and an appropriate action plan is formulated to conduct limited power operations
- 5.3 An appropriate area for a safe take-off and landing suitable for the limited power available is selected in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 5.4 Awareness is demonstrated of pilot's own capabilities and limitations and decisions to take off, approach or land are adjusted accordingly
- 5.5 Situation awareness is maintained at all times during limited power manoeuvres
- 5.6 Appropriate allowance is made for the effects of wind during limited power manoeuvres
- 6 Take off and land at a pinnacle or ridge line**
- 6.1 Select and assess a suitable pinnacle or ridge line, formulate a plan and make a decision to operate onto the area
- 6.2 Awareness is demonstrated of pilot's own capabilities and limitations and decisions to take off or land are adjusted accordingly

ELEMENT**PERFORMANCE CRITERIA**

- 6.3 Helicopter is safely landed on a pinnacle or ridge line in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 6.4 Helicopter is safely lifted and taken off from a pinnacle or ridge line in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 6.5 Situation awareness is maintained at all times during take-offs, approaches and landings at a pinnacle or ridge line
- 6.6 Appropriate allowance is made for the effects of wind during take-off, approach and landing at a pinnacle or ridge line

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders
- Relevant OH&S and environmental procedures and regulations
- Basic principles of aerodynamics
- Purpose and functions of helicopter systems
- Functions and effects of all helicopter controls
- Aerodynamic factors affecting helicopter flight performance, including:
 - aerodynamic forces
 - dynamic rollover
 - settling with power
 - recirculation
 - loss of tail rotor (anti-torque) effectiveness
- All applicable checklist items
- The cross wind loss of rotor control limits for the helicopter type flown
- Power required and power available curves
- Pressure altitude and density considerations
- Wind and terrain effects
- Procedures for the use of performance charts
- Application of the height/velocity diagram/graph
- Local air traffic control procedures and instructions
- Emergency radio procedures
- Actions to be conducted following a forced landing
- Hazards and risks when executing advanced helicopter manoeuvres and procedures and precautions for controlling the risks
- Problems that may occur when executing advanced helicopter manoeuvres and procedures and appropriate action that should be taken in each case

Required skills:

- Apply the knowledge to the execution of advanced helicopter manoeuvres and procedures
- Select and use relevant equipment for the execution of advanced helicopter manoeuvres and procedures
- Read and interpret instructions, procedures and information relevant to the execution of advanced helicopter manoeuvres and procedures

REQUIRED KNOWLEDGE AND SKILLS

- Use instruments to monitor helicopter performance
- Interpret/use a helicopter manufacturers height-velocity diagram/graph
- Solve problems associated with the execution of advanced helicopter manoeuvres and procedures
- Follow air traffic control procedures and instructions
- Communicate effectively with others when executing advanced helicopter manoeuvres and procedures
- Read and interpret instructions, regulations, procedures and other information relevant to advanced helicopter manoeuvres and procedures
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to executing advanced helicopter manoeuvres and procedures
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when executing advanced helicopter manoeuvres and procedures
- 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 executing advanced helicopter manoeuvres and procedures in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when executing advanced helicopter manoeuvres and procedures
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during advanced helicopter manoeuvres and procedures
- 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 OH&S standards
- Implement OH&S procedures and relevant regulations
- Identify and correctly use equipment required to conduct advanced helicopter manoeuvres and procedures

Evidence Guide

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 competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
 - the underpinning 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 a period of time and in a suitable range of contexts
- Resources for assessment include:
 - 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

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
 - through activities in an appropriately simulated environment at the registered training organisation, and/or
 - in an appropriate range of situations in the workplace

Range Statement

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:
- variable weather conditions in accordance with Day Visual Flight Rules
- Performance may be demonstrated in:
- single engine helicopter
 - multi engine helicopter
 - single main rotor helicopter
 - multi main rotor helicopter
 - variable air traffic conditions
 - variable flight situations
 - abnormal situations
- Performance may be demonstrated on an helicopter with:
- fully functioning dual controls
 - an electronic intercom system
 - dual control brakes
 - wheeled or skidded undercarriage
- Crew may include:
- single pilot
 - multi crew
- Limitations may be imposed by:
- local noise abatement requirements and curfews
- Classes of airspace are:
- those designated by the Civil Aviation Safety Authority
- Operational hazards during advanced helicopter manoeuvres may include:
- variable surface conditions
 - other aircraft
 - loose objects
 - personnel
 - animals
 - birds
 - propeller/tail rotor/rotor wash and jet blast
- Guidance during advanced helicopter manoeuvres may be provided by:
- air traffic control instructions
 - light signals
 - aerodrome markings
- Advanced manoeuvres may include:
- turning a helicopter steeply
 - performing autorotative flight
 - executing limited power take-offs, approaches and landings
 - take-offs, landings and manoeuvres in confined areas
 - take-offs and landings on sloping ground
 - take-offs and landings at a pinnacle or ridge line

RANGE STATEMENT

Checklists may include:

- pre-flight
- pre-start
- engine start
- pre-taxi
- take-off
- after take-off
- approach and landing
- shutdown
- post-flight

Circuit height may include:

- standard
- low-level

Dependent on the type of organisation concerned and the local terminology used, workplace procedures may include:

- company procedures
- enterprise procedures
- organisational procedures
- established procedures
- standard operating procedures

Procedures maintaining compliance with airspace requirements are:

- geographical limits of the flight area is demonstrated on a chart
- prominent geographical features are identified using a chart
- the limits of the flight area are identified on the ground
- the position of controlled airspace is determined using a chart and geographical features
- restricted areas are identified using a chart and geographical features
- departure from the circuit area and transition to the flight area is completed without incident
- departure from the flight area and transition to the circuit area is completed without incident

Information/documents may include:

- 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)
- Manual of Standards - Pilot Licensing (MOS-PL)
- Aeronautical Information Publication (AIP)
- En Route Supplement Australia (ERSA)
- charts
- operations manuals
- approved checklists

RANGE STATEMENT

- Applicable regulations and legislation may include:
- 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
- Performance includes tolerances specified in either of:
- relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA) such as:
 - Day VFR Syllabus
 - Manual of Standards
 - relevant Defence documentation such as:
 - Defence Orders and Instructions
 - approved curricula and training documentation

Unit Sector(s)

Not applicable.

Competency field

Competency Field Y - Aircraft Operation and Traffic Management