



Australian Government

AVIY4018 Manage abnormal and emergency helicopter flight situations

Release: 1

AVIY4018 Manage abnormal and emergency helicopter flight situations

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 application of skills and knowledge required to manage abnormal and emergency helicopter flight situations, in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority and national operating standards.

It includes managing a forced landing from level flight after take-off or on approach, managing an engine failure at the hover or during taxi, managing a tail rotor malfunction, and managing a jammed flight control system. It also includes managing adverse aerodynamic conditions and managing a malfunction of the helicopter operating systems.

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 Manage a forced landing from level flight, after take-off or on approach

- 1.1 Emergency situation requiring a forced landing is correctly identified
- 1.2 Autorotative flight is entered and established at nominated speed and heading in balanced flight
- 1.3 Required immediate actions are performed
- 1.4 Rotor speed (RRPM) is controlled within limitations
- 1.5 Landing area within autorotative distance is selected and appropriate action plan is formulated to ensure safety of helicopter
- 1.6 Emergency procedures are implemented and task priorities are allocated to all actions to ensure aircraft, flight crew and passenger safety
- 1.7 Emergency radio messages of intentions are transmitted
- 1.8 Helicopter is landed into wind with as slow as practical ground speed while maintaining control of helicopter
- 1.9 Situational awareness is maintained at all times during forced landing manoeuvres

2 Manage an engine failure at the hover or during taxi

- 2.1 Hover and taxi surfaces are suitably selected to maximise options in an engine failure
- 2.2 Emergency situation involving an engine failure is correctly identified
- 2.3 Required immediate actions are performed
- 2.4 Controlled touchdown is performed

3 Manage a tail rotor malfunction in flight and at the hover

- 3.1 Hover heights and surfaces are selected to maximise options in a tail rotor malfunction
- 3.2 Tail rotor malfunction is correctly identified
- 3.3 Required immediate actions are performed

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| | 3.4 | Control of helicopter is established and suitable landing area is selected |
| | 3.5 | All emergency checks are performed and plan is formulated to achieve an approach and landing |
| | 3.6 | Emergency radio messages of intentions are transmitted |
| | 3.7 | Controlled emergency landing with a malfunctioning tail rotor is performed |
| | 3.8 | Situational awareness is maintained at all times during tail rotor malfunction handling manoeuvres |
| 4 | Manage a jammed flight control system | |
| | 4.1 | Jammed or malfunctioning flight control system malfunction is correctly identified |
| | 4.2 | Control of helicopter is established and suitable landing area is selected |
| | 4.3 | All emergency checks are performed and a plan is formulated to achieve approach and landing |
| | 4.4 | Emergency radio messages of intentions are transmitted |
| | 4.5 | Controlled emergency landing with a jammed flight control is performed |
| | 4.6 | Situational awareness is maintained at all times during flight control handling manoeuvres |
| 5 | Manage a malfunction of a helicopter operating system | |
| | 5.1 | Abnormal situations involving a helicopter system/s malfunction are correctly identified and confirmed |
| | 5.2 | Appropriate emergency procedures are conducted while maintaining control of helicopter flight path |
| | 5.3 | System malfunctions are managed and situational awareness is maintained at all times during a system malfunction |
| 6 | Manage upset recovery | |
| | 6.1 | Correct techniques for upset recovery in various configurations are applied |
| | 6.2 | Aircraft is configured appropriately |
| | 6.3 | Upset conditions are recognised |
| | 6.4 | Aircraft is recovered to level flight conditions |

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 equivalent to AVIY4018B Manage abnormal and emergency helicopter flight situations.

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 AVIY4018 Manage abnormal and emergency helicopter flight situations

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 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
- identifying and correctly using relevant equipment
- implementing contingency plans
- implementing work health and safety (WHS)/occupational health and safety (OHS) procedures and relevant regulations
- interpreting/using a helicopter manufacturer height/velocity diagram/graph
- 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
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using relevant equipment
- 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
- solving problems associated with managing a helicopter in abnormal and emergency situations
- using instruments to monitor helicopter performance
- 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:

- actions to be conducted following a forced landing
- aerodynamic factors affecting helicopter flight performance
- all applicable checklist items
- applicable helicopter system malfunctions:
 - cautions, warnings and indications
 - engine failure/s
 - tail rotor malfunction
 - jammed or malfunctioning flight controls
 - critical flight controls:
 - fuel systems
 - hydraulics
 - flight instruments
- application of a height/velocity diagram/graph
- basic principles of aerodynamics
- CASR Part 61 Manual of Standards Schedule 3 Aeronautical Knowledge relevant to aeroplane or helicopter operations
- emergency procedures
- emergency radio procedures
- functions and effects of all helicopter controls
- hazards and risks when managing a helicopter in abnormal and emergency flight situations and precautions for controlling the risks
- impact of high gross weight and high density altitude on key hazards
- key hazards and typical causal factors and contributing operational situations, avoidance and recognition of symptoms and recovery techniques:
 - vortex ring state
 - ground resonance
 - loss of tail rotor effectiveness (LTE)
 - low 'g' force and mast bumping
 - overpitching or low RRPM – rotor stall
 - retreating blade stall

- recirculation
- dynamic rollover
- local air traffic control procedures and instructions
- low level weather and topography effects
- managing system malfunctions
- practical action plans for use in an engine failure
- prioritising tasks when managing malfunctions
- problems that may occur when managing a helicopter in abnormal and emergency flight situations 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 pertaining to abnormal flight situations
- relevant WHS/OHS and environmental procedures and regulations
- threat and error management:
 - flight planning to avoid hazardous or adverse aerodynamic flight conditions and regimes
 - techniques to avoid a potentially hazardous situation developing while in flight.

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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