



Australian Government

Department of Education, Employment and Workplace Relations

AVIY4018B Manage abnormal and emergency helicopter flight situations

Revision Number: 1

AVIY4018B Manage abnormal and emergency helicopter flight situations

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to correctly manage abnormal situations that may occur during a helicopter flight. Abnormal situations may include a forced landing from level flight, after take-off or on approach; or an engine failure at the hover or during taxi. Abnormal situations also include a tail rotor malfunction, jammed flight control system, adverse aerodynamic conditions, or a malfunction of one of the helicopter's operating systems. 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 to manage abnormal and emergency helicopter flight situations.

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 and military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed under limited supervision.

This unit of competency is nominally packaged at Certificate IV.

Note:

Where an abnormal situation might potentially cause damage to the aircraft and/or be harmful to personnel, evidence for assessment purposes should be obtained from other than observation of performance in an actual abnormal operational situation (e.g. through using an appropriate simulator and/or structured questioning, or termination of a simulated forced landing at a point where the assessment of an outcome can be made).

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 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 Immediate actions are performed in accordance with Flight Manual/Pilot's Operating Handbook (POH) 1.4 A landing area within autorotative distance is selected and an appropriate action plan is formulated to ensure safety of helicopter 1.5 Priorities are allocated to all actions to ensure the safety of helicopter and its passengers 1.6 Emergency procedures are performed in accordance with Flight Manual/POH and established action plan 1.7 Emergency radio transmissions are executed in accordance with workplace procedures, Flight Manual/POH and regulatory requirements 1.8 Helicopter is landed into wind with as slow as practical ground speed while maintaining control of helicopter
2 Manage an engine failure at the hover or during taxi	2.1 Hover and taxi surfaces are suitably selected to maximise options in the event of an engine failure 2.2 Emergency situation involving an engine failure is correctly identified 2.3 Immediate actions are performed in accordance with Flight Manual/POH 2.4 A landing area within autorotative distance is selected and an appropriate pre-determined action plan is implemented to ensure safety of helicopter 2.5 Actions comply with established procedures 2.6 Priorities are allocated to all actions to ensure safety of helicopter 2.7 Emergency procedures are performed in accordance with Flight Manual/POH and established action plan 2.8 Air Traffic Service and other traffic are advised of intentions 2.9 Helicopter is operated outside the height/velocity diagram avoid area 2.10 Situation awareness is maintained at all times during helicopter manoeuvres
3 Manage a tail rotor malfunction	3.1 Hover heights and surfaces are selected to maximise options in the event of tail rotor malfunction 3.2 A tail rotor malfunction is correctly identified in accordance

ELEMENT**PERFORMANCE CRITERIA**

- with workplace procedures and manufacturers instructions
- 3.3 In the event of a tail rotor malfunction, immediate actions are performed in accordance with Flight Manual/POH
- 3.4 In a tail rotor emergency during the hover or taxi, the helicopter is landed in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 3.5 In a tail rotor emergency during flight, control of the helicopter is established and a suitable landing area is selected
- 3.6 All emergency checks are performed in accordance with the Flight Manual/POH and a plan is formulated to achieve an approach and landing
- 3.7 Emergency radio messages of intentions are transmitted
- 3.8 A controlled emergency landing with a malfunctioning tail rotor is performed in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 4 Manage a jammed flight control system**
- 4.1 The jammed flight control malfunction is correctly identified in accordance with workplace procedures and manufacturers instructions
- 4.2 Control of helicopter is maintained
- 4.3 All emergency checks are performed in accordance with the Flight Manual/POH
- 4.4 An appropriate plan is formulated to achieve an approach and landing
- 4.5 Emergency radiotelephone procedures are correctly followed
- 4.6 A controlled landing with a jammed flight control is in accordance with Flight Manual/POH, workplace procedures and regulatory requirements
- 4.7 Situation awareness is maintained at all times during helicopter manoeuvres
- 5 Manage adverse aerodynamic conditions**
- 5.1 Adverse aerodynamic conditions affecting the helicopter are correctly identified
- 5.2 Control of the helicopter is regained in accordance with Flight Manual/POH, workplace procedures and manufacturers instructions
- 5.3 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility or terrain
- 5.4 Situation awareness is maintained at all times during helicopter manoeuvres
- 6 Manage a malfunction of a helicopter operating system**
- 6.1 Abnormal situations involving a helicopter systems malfunction are correctly identified
- 6.2 Appropriate emergency procedures are conducted in accordance with Flight Manual/POH and published procedures while

ELEMENT**PERFORMANCE CRITERIA**

maintaining control of the helicopter

6.3 Approved Flight Manual/POH and published procedures are consistently applied when managing systems malfunctions

6.4 Situation awareness is maintained at all times during a system malfunction

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 pertaining to abnormal flight situations
- 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
- Low level weather and topography effects
- Emergency procedures
- All applicable checklist items
- Practical action plans for use in the event of an engine failure
- 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 managing a helicopter in abnormal and emergency flight situations and precautions for controlling the risks
- Problems that may occur when managing a helicopter in abnormal and emergency flight situations and appropriate action that should be taken in each case

Required skills:

- Apply the knowledge to the management of a helicopter in abnormal and emergency situations
- Select and use relevant equipment for the management of a helicopter in abnormal and emergency situations
- Read and interpret instructions, procedures and information relevant to the management of a helicopter in abnormal and emergency situations
- Use instruments to monitor helicopter performance
- Interpret/use a helicopter manufacturers height/velocity diagram/graph
- Solve problems associated with the management of a helicopter in abnormal and emergency situations
- Communicate effectively with others when managing abnormal and emergency helicopter flight situations

REQUIRED KNOWLEDGE AND SKILLS

- Read and interpret instructions, regulations, procedures and other information relevant to abnormal and emergency helicopter flight situations
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to abnormal and emergency helicopter flight situations
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when managing abnormal and emergency helicopter flight situations
- 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 abnormal and emergency helicopter flight situations in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when managing abnormal and emergency helicopter flight situations
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during abnormal and emergency helicopter flight situations
- 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 manage abnormal and emergency helicopter flight situations

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.

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| Tasks may be undertaken in: | <ul style="list-style-type: none">• variable weather conditions in accordance with Day Visual Flight Rules |
| Performance may be demonstrated in: | <ul style="list-style-type: none">• 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: | <ul style="list-style-type: none">• fully functioning dual controls• an electronic intercom system• dual control brakes• wheeled or skidded undercarriage |
| Crew may include: | <ul style="list-style-type: none">• single pilot• multi crew |
| Limitations may be imposed by: | <ul style="list-style-type: none">• local noise abatement requirements and curfews |
| Classes of airspace are: | <ul style="list-style-type: none">• those designated by the Civil Aviation Safety Authority |
| Landing areas may include: | <ul style="list-style-type: none">• sealed• gravel• grass• confined area• sloping ground• sand |
| Abnormal conditions may include: | <ul style="list-style-type: none">• a forced landing from level flight, after take-off or on approach• an engine failure at the hover or during taxi• a tail rotor malfunction• a jammed flight control system• adverse aerodynamic conditions• a malfunction of one of the helicopter's operating systems |
| Adverse aerodynamic conditions affecting the helicopter may include: | <ul style="list-style-type: none">• vortex ring state• overpitching• retreating blade stall• loss of tail rotor effectiveness• ground resonance |

RANGE STATEMENT

Systems malfunctions may include:

- mast bumping
- dynamic roll over
- fuel
- electrical
- helicopter airframe
- flight instrument
- flight control
- engine
- radio/navigation aid
- fire
- smoke and fumes
- hydro mechanical systems

Operational hazards during abnormal and emergency helicopter flight situations may include:

- variable surface conditions
- other aircraft
- loose objects
- personnel
- animals
- birds
- propeller/tail rotor/rotor wash and jet blast
- air traffic control instructions
- light signals
- aerodrome markings

Guidance during abnormal and emergency helicopter flight situations may be provided by:

Checklists may include:

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

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

RANGE STATEMENT

	- 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 - workplace procedures and instructions and job specification - induction and training materials - conditions of service, legislation and industrial agreements including workplace agreements and awards
Applicable regulations and legislation may include:	- 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
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