AUSTRALIAN GOVERNMENT
Civil Aviation Safety Authority

CASR Part 61

Manual of Standards

GYROPLANE CATEGORY STANDARDS

Flight Crew Licensing Competency Standards

Document Identification	
Classification	UNCLASSIFIED
Document Category	Manual of Standards
Document Revision Number	0.2
Document Issue Date	[Publish Date]
Document Status	Draft
System Identifier	FCL Standards
Document Identification	Part 61 MOS – Gyroplane standards

Document Control

This is a managed document.

Version control is managed by track changes and details below. A new version only contains changes made since the previous version was released.

For identification purposes, each page contains a version number and a page number. Changes will only be issued as a complete replacement document. Recipients should remove superseded versions from circulation.

This document is authorised for release once all signatures have been obtained.

Amendment list				
Version	Date	Prepared by	Status	Comments
0.1	[Publish Date]	Roger Crosthwaite	draft	
0.2	13/07/2020	Brenda Cattle	draft	

Amendment summary	
Section	Description

Distribution			
Name	Title	Date	Version

Endorsement			
Name	Title	Date	Version

Location of document

TRIM EF20/11480-3

D20/145562

TABLE OF CONTENTS

INDEX TO CODES

INTRODUCTION

Schedule 2 of the Part 61 Manual of Standards prescribes the units of competency that are required to be satisfied through training and assessment for the grant of flight crew licences, ratings and endorsements, which are specified in Part 61 of the *Civil Aviation Safety Regulations 1998* (CASR).

Those units highlighted in yellow are existing units but also apply to pilots seeking gyroplane authorisation.

SCHEDULE OF STANDARDS

SCHEDULE 1

SECTION G: RECREATIONAL PILOT LICENCE (RPL)

APPENDIX G.3: GYROPLANE CATEGORY RATING (RPL)

Aeronautical knowledge standards

Unit code	Unit of knowledge
BAKC	Basic aeronautical knowledge
RFRC	RPL Flight rules and air law
PHFC	PPL Human factors
RBKG	Basic aeronautical knowledge – gyroplane

Practical flight standards – gyroplane category

Unit code	Unit of competency
C1	Communicating in the aviation environment
C2	Perform pre- and post-flight actions and procedures
C4	Manage fuel
C5	Manage passengers and cargo
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
G1	Control gyroplane on the ground
G2	Take off gyroplane
G3	Control gyroplane in normal flight
G4	Land a gyroplane
G5	Gyroplane advanced manoeuvres
G6	Manage abnormal situations – single-engine gyroplanes

SECTION H: PRIVATE PILOT LICENCE (PPL)

APPENDIX H.4: GYROPLANE CATEGORY RATING (PPL)

Aeronautical knowledge standards

Unit code	Unit of knowledge
BAKC	Basic aeronautical knowledge
RFRC	RPL Flight rules and air law
RMTC	RPL Meteorology
PHFC	PPL Human factors
RBKG	Basic aeronautical knowledge – gyroplane
PAKC	PPL Aeronautical knowledge
PFRC	PPL Flight rules and air law
PHFC	PPL Human factors
PNVC	PPL Navigation
PMTC	PPL Meteorology
POPC	PPL Ops, performance and planning
PAKG	PPL Aeronautical knowledge – gyroplane
PFRG	PPL Flight rules and air law – gyroplane
POPG	PPL Ops, performance and planning – gyroplane

Practical flight standards

Unit code	Unit of competency
C1	Communicating in the aviation environment
C2	Perform pre- and post-flight actions and procedures
C3	Operate aeronautical radio
C4	Manage fuel
C5	Manage passengers and cargo
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2

Unit code	Unit of competency
NAV	Navigate aircraft
G1	Control gyroplane on the ground
G2	Take off gyroplane
G3	Control gyroplane in normal flight
G4	Land a gyroplane
G5	Gyroplane advanced manoeuvres
G6	Manage abnormal situations – single-engine gyroplanes
ONTA	Operate at non-towered aerodrome
OGA	Operate in Class G airspace
OCA	Operate at a controlled aerodrome
CTA	Operate in controlled airspace

SECTION I: COMMERCIAL PILOT LICENCE (CPL)

APPENDIX I.4: GYROPLANE CATEGORY RATING (CPL)

Aeronautical knowledge standards

Unit code	Unit of knowledge
BAKC	Basic aeronautical knowledge
RFRC	RPL Flight rules and air law
RMTC	RPL Meteorology
PHFC	PPL Human factors
RBKG	Basic aeronautical knowledge – gyroplane
PAKC	PPL Aeronautical knowledge
PFRC	PPL Flight rules and air law
PHFC	PPL Human factors
PNVC	PPL Navigation
PMTC	PPL Meteorology

POPC	PPL Ops, performance and planning
PAKG	PPL Aeronautical knowledge – gyroplane
PFRG	PPL Flight rules and air law – gyroplane
POPG	PPL Ops, performance and planning – gyroplane
CAKC	CPL Aeronautical knowledge
CADC	CPL Aerodynamics
CFRC	CPL Flight rules and air law
CHFC	CPL Human factors
CNVC	CPL Navigation
CMTC	CPL Meteorology
COPC	CPL Ops, performance and planning
CAKG	CPL Aeronautical knowledge – gyroplane
CADG	CPL Aerodynamics – gyroplane
CFRG	CPL Flight rules and air law – gyroplane
COPG	CPL Ops, performance and planning – gyroplane

Practical flight standards

Unit code	Unit of competency
C1	Communicating in the aviation environment
C2	Perform pre- and post-flight actions and procedures
C3	Operate aeronautical radio
C4	Manage fuel
C5	Manage passengers and cargo
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
NAV	Navigate aircraft
G1	Control gyroplane on the ground
G2	Take-off gyroplane

Unit code	Unit of competency
G3	Control gyroplane in normal flight
G4	Land a gyroplane
G5	Gyroplane advanced manoeuvres
G6	Manage abnormal situations – single-engine gyroplane
ONTA	Operate at non-towered aerodrome
OGA	Operate in Class G airspace
OCA	Operate at a controlled aerodrome
CTA	Operate in controlled airspace

SECTION L: AIRCRAFT RATINGS AND ENDORSEMENTS

Pilot class ratings and design feature endorsements

APPENDIX L.3: SINGLE-ENGINE GYROPLANE CLASS RATING

Practical flight standards

Unit code	Unit of competency
C2	Perform pre and post flight actions and procedures
C4	Manage fuel
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
G1	Control gyroplane on the ground
G2	Take-off gyroplane
G3	Control gyroplane in normal flight
G4	Land gyroplane
G5	Gyroplane advanced manoeuvres
G6	Manage abnormal situations – single-engine gyroplanes

SECTION O: NIGHT VFR (NVFR) RATING AND ENDORSEMENTS

APPENDIX O.1: NVFR RATING

Aeronautical knowledge standards

Unit code	Unit of knowledge
NVFR	Night VFR rating

APPENDIX O.6: GYROPLANE NVFR ENDORSEMENT

Practical flight standards

Unit code	Unit of competency
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
IFF	Full instrument panel manoeuvres
IFL	Limited instrument panel manoeuvres
NVR1	Conduct a traffic pattern at night
NVR2	Night VFR — single-engine aircraft

SECTION Q: LOW-LEVEL RATING AND ENDORSEMENTS

APPENDIX Q.0: LOW-LEVEL RATING

Aeronautical knowledge standards

Unit code	Unit of knowledge
LLLR	Low-level rating

APPENDIX Q.4: GYROPLANE LOW-LEVEL ENDORSEMENT

Practical flight standards

Unit code	Unit of competency
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
LL-G	Gyroplane low-level operations

APPENDIX Q.7: AERIAL MUSTERING – GYROPLANE ENDORSEMENT

Practical flight standards

Unit code	Unit of competency
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
LL-G	Gyroplane low-level operations
LL-M	Aerial mustering operations

SECTION R: AERIAL APPLICATION RATING AND ENDORSEMENTS

APPENDIX R.0: AERIAL APPLICATION RATING

Aeronautical knowledge standards

Unit code	Unit of knowledge
AAGR	Aerial application rating

APPENDIX R.3: GYROPLANE AERIAL APPLICATION ENDORSEMENT

Practical flight standards

Unit code	Unit of competency
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
AA3	Gyroplane aerial application operation

APPENDIX R.8: NIGHT GYROPLANE AERIAL APPLICATION ENDORSEMENT

Practical flight standards

Unit code	Unit of competency
NTS1	Non-technical skills 1
NTS2	Non-technical skills 2
NVR2	Night VFR — single-engine aircraft
AA6	Night aerial application operation

Schedule 2 Competency standards

SECTION 4: GYROPLANE CATEGORY RATING STANDARDS

Gyroplane Category G1: CONTROL GYROPLANE ON THE GROUND

1. Unit description

This unit describes the skills and knowledge required to operate a gyroplane on the ground.

2. Elements and performance criteria

G1.1 – Prepare for start

(a)determine take-off distance and obstacle clearance;

(b)using an orderly procedure with checklists, inspect and prepare the gyroplane, including those items recommended by the manufacturer, for flight;

(c)identify and verify switches, circuit breakers;

(d)fuses, and spare fuses pertinent for day and night operations;

(e)confirm that there is sufficient fuel and oil for the intended flight;

(f)identify and verify the required equipment for the flight is on board and serviceable;

(g)ensure baggage, freight and required equipment is secured;

(h) organise, stow and arrange documents and equipment that will need to be accessed

(i)during the flight to make them readily available;

(j)perform an effective passenger safety briefing.

G1.2 Start and stop engine

The person must be able to demonstrate their ability to do the following safely:

(a)ensure gyroplane is located in a suitable location clear of obstructions, buildings and persons for starting engine;

(b)considers ground surface in relation to contamination and propeller care during engine start and stop activities.

(c)use the appropriate checklist provided by the gyroplane manufacturer to perform pre-start checks;

(d)ensure propeller area clear prior to start;

(e)demonstrate knowledge of recommended starting procedures;

(f)demonstrate hot and cold engine starts in accordance with appropriate checklists;

(g)manage engine start and shutdown malfunctions and emergencies in accordance with appropriate checklists;

(h)complete engine and gyroplane systems after-start checks;

(i)engine warm-up conducted in accordance with appropriate checklist (if applicable);

(j)control gyroplane movement during and after engine start.

G1.3 - Conduct pre-rotation

The person must be able to demonstrate their ability to do the following safely:

(a)position gyroplane with safe rotor clearance from obstructions;

(b)operate rotor brake (if fitted) in accordance with the Aircraft Flight Manual;

(c)conduct pre-rotation in accordance with appropriate Aircraft Flight Manual;

(d)demonstrate knowledge to prevent blade flap;

(e)apply correct handling techniques in the event of blade flap;

(f)maintain rotor disc position within limits during pre-rotation and ground manoeuvring.

G1.4 Taxi gyroplane

The person must be able to demonstrate their ability to do the following whilst taxiing a gyroplane:

(a)obtain taxi clearance (if required);

(b)check and confirm proper functioning of the wheel brake system;

(c)taxi gyroplane in accordance with prevailing aerodrome conditions;

(d)use aerodrome or landing area charts to taxi aircraft;

(e)comply with taxiway and other aerodrome markings, right-of-way rules and ATC or marshalling instructions when applicable;

(f)perform applicable taxi checks including the following:

(i)steering function normal and take appropriate action in the event of a malfunction ;

(ii)instruments for correct readings;

(iii)altimeter setting;

(g)maintain safe taxi speed and control of the aircraft;

(h)apply elements of runway incursion avoidance;

(i)anticipate and allow for effects of prevailing weather conditions;

(j)operate engine on ground and rotors managed IAW Aircraft Flight Manual;

(k)maintain safe rotor clearance from other aircraft, obstructions, and persons;

(l)maintain the aircraft on the taxiway centreline;

(m)avoid causing a hazard to other aircraft, objects or persons;

(n)correct handling techniques are applied to take into account wind from all 4 quadrants;

(o)correctly manage the engine during taxi manoeuvres;

(p)coordinate taxi speed and rotor disc position to control rotor RPM and prevent blade flap;

(q)apply correct handling techniques in the event of blade flap.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)windsock located on aerodrome;

(c)sufficient wind that requires control adjustment (may be simulated);

(d)hazardous weather (may be simulated);

(e)day VFR conditions;

(f)local area operational limitations such as noise abatement and aerodrome curfews (may be simulated);

4. Underpinning knowledge of the following

(a)typical single-engine gyroplane aircraft systems;

(b)differences between normally aspirated and fuel-injected systems;

(c)carburettor icing;

(d)cause and effect of fuel vaporisation;

(e)typical aircraft performance characteristics of single-engine gyroplanes and the effects of local weather conditions on performance;

(f)aircraft weight and balance and the how to calculate aircraft centre of gravity;

(g)the contents of the Aircraft Flight Manual applicable to the aircraft being flown;

(h)the environmental conditions that represent VMC and day VFR flight rules;

(i)propeller wash, rotor wash and jet blast and how they affect other aircraft;

(j)effects of wind on rotor blades;

(k)meaning of:

(i)light and marshalling signals;

(ii)aerodrome markings, signals and local procedures;

(l)care of propellers and rotors;

(m)the actions to be taken in the event of a brake or tyre or steering failure;

(n)the relevant sections of the AIP;

(o)rotor pre-rotation procedures;

(p)correct handling techniques in the event of blade flap.

G2: TAKE-OFF GYROPLANE

1. Unit description

This unit describes the skills and knowledge required to complete pre-take-off checks, take-off gyroplane into wind and in cross-wind conditions and perform after take-off checks in a gyroplane.

2. Elements and performance criteria

G2.1 Carry out pre-take-off procedures

(a)correctly identifies critical airspeeds, configurations, and emergency and abnormal procedures for normal and cross-wind take-offs;

(b)self-brief on plan of action, in advance, to ensure the safest outcome in the event of abnormal or emergency operations;

(c)verify and correctly apply correction for the existing wind component to the take-off performance;

(d)performs all pre-take-off and line-up checks required by the aircraft checklist;

(e)ensure approach path is clear of conflicting traffic and other hazards before lining up for take-off;

(f)align the gyroplane on the runway centreline in take-off direction;

(g)perform line-up checks in accordance with aircraft checklists.

G2.2 Take-off gyroplane

(a)apply the controls correctly to maintain longitudinal alignment on the centreline of the runway, if appropriate, prior to initiating and during the take-off;

(b)adjust the power controls taking into account the existing conditions;

(c)monitor power controls, settings, and instruments during take-off to ensure all predetermined parameters are achieved and maintained;

(d)apply power to accelerate gyroplane and achieve flying rotor RPM in accordance with appropriate Aircraft Flight Manual;

(e)prevent blade flap;

(f)adjust the controls to attain the desired pitch attitude at the predetermined airspeed to attain the desired performance;

(g)compensate for engine torque roll;

(h)use throttle and controls to balance gyroplane on main gear at recommended speed;

(i)achieve desired rotor RPM for flight not later than minimum power speed;

(j)perform the take-off applying the required pitch, roll and yaw inputs as appropriate in a smooth, coordinated manner;

(k)balance gyroplane;

(l)trim the gyroplane accurately (if applicable);

(m)perform gear retractions, power adjustments (as applicable) and other required pilot-related activities;

(n)maintain flight path along the runway extended centreline as required;

(o)maintain climb speed at best angle or best rate;

(p)apply the applicable noise abatement and wake turbulence avoidance procedures as applicable;

(q)recognise take-off abnormalities and take appropriate action to reject take-off (can be simulated).

(r)reduce take-off power to climb power;

(s)balance gyroplane;

(t)conduct normal take-off.

G2.3 Take-off gyroplane in a cross-wind

(a)apply competencies for take-off gyroplane;

(b)ensure cross-wind component within manufacturer’s limitations;

(c)configure gyroplane for cross-wind take-off;

(d)initial lift-off on downwind wheel;

(e)maintain the runway centreline and extended centreline;

G2.4 Carry out after take-off procedures

(a)perform after take-off checklist by memory recall;

(b)maintain the appropriate climb segment at the nominated heading and airspeed;

(c)manoeuvre according to local and standard procedures;

(d)maintain traffic separation.

G2.5 Take-off gyroplane from 'short field'

(a)calculate take-off and landing performance in accordance with the gyroplane's performance charts;

(b)perform take-off in gyroplane to achieve the minimum length take-off performance;

(c)perform take-off in gyroplane to achieve the obstacle clearance parameters.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)gyroplane with fixed or retractable undercarriage;

(c)sealed, gravel or grass runways and taxiways;

(d)windsock located on aerodrome;

(e)engine start and shutdown malfunctions and emergencies covered by the Aircraft Flight Manual;

(f)simulated hazardous weather;

(g)day VFR conditions;

(h)for take-off in cross-wind, the cross-wind component must be:

(i)for RPL, not more than 10 kts;

(ii)otherwise, 70% of the maximum permitted for the type of gyroplane being flown;

(j) local area operational limitations such as noise abatement and aerodrome curfews.

4. Underpinning knowledge of the following

(a)obtaining or calculating the cross-wind and down or up wind components;

(b)factors affecting take-off and initial climb performance;

(c)interpreting windsock indications and determining wind direction and speed;

(d)take-off distance required calculation;

(e)aerodrome charts and an ability to interpret them;

(f)local topographical charts to identify safe areas for engine-failure purposes and noise-abatement considerations.

G3: CONTROL GYROPLANE IN NORMAL FLIGHT

1. Unit description

This unit describes the skills and knowledge required to control a gyroplane while performing normal flight manoeuvres.

2. Elements and performance criteria

G3.1 Climb gyroplane

(a)clear airspace above:

(b)set and maintain climb power as altitude is increased and attitude (cyclic pitch);

(c)operate and monitor all aircraft systems when commencing, during, and completing a climbing flight manoeuvre;

(d)identify and avoid terrain and traffic;

(e)for the following climbing manoeuvres select power, attitude and configuration as required for the flight path, balance and trim (if applicable) the gyroplane accurately, and apply smooth, coordinated control inputs to achieve the required flight tolerances that apply to the manoeuvre:

(i)demonstrate normal climb;

(ii)demonstrate best angle of climb (Vx);

(iii)demonstrate best rate of climb (Vy);

(f)anticipate level-off altitude and achieve straight and level flight.

G3.2 Maintain straight and level flight

(a)operate and monitor all aircraft systems during straight and level flight manoeuvres;

(b)identify and avoid terrain and traffic;

(c)for the following straight and level manoeuvres select power, attitude and configuration as required for the flight path, balance and trim the gyroplane accurately (if applicable), apply carburettor heat as applicable and apply smooth, coordinated control inputs to achieve the required flight tolerances that apply to the manoeuvre:

(i)at slow speed;

(ii)at normal cruise;

(iii)at high-speed cruise;

(iv)during acceleration and deceleration;

(v)except for the RPL, at maximum range;

(vi)except for the RPL, at maximum endurance:

(d)maintain altitude;

(e)maintain desired speed.

G3.3 Descend gyroplane

(a)set and maintain power and attitude to achieve normal descent performance during straight flight;

(b)operate and monitor all aircraft systems during descending flight manoeuvres;

(c)for the following descending manoeuvres select power, attitude and configuration as required for the flight path, balance and trim (if applicable) the gyroplane accurately, apply carburettor heat as applicable and apply smooth, coordinated control inputs to achieve the required flight tolerances that apply to the manoeuvre:

(i)glide;

(ii)powered;

(iii)approach configuration descent ;

(d)monitor and control engine temperature;

(e)apply carburettor heat when applicable;

(f)maintain traffic clearance ahead and below;

(g)anticipate level-off altitude and achieve straight and level flight.

G3.4 Turn gyroplane

(a)perform airspace cleared procedure;

(b)operate and monitor all aircraft systems during turning flight manoeuvres;

(c)for the following turning manoeuvres select power, attitude and configuration as required for the flight path, balance and trim (if applicable) the gyroplane accurately, apply carburettor heat as applicable and apply smooth, coordinated control inputs to achieve the required flight tolerances that apply to the manoeuvre:

(i)level turn;

(ii)climbing turn;

(iii)climbing turn at best angle;

(iv)climbing turn at best rate;

(v)powered descending turn;

(vi)gliding descending turn

(vii)descending turn in approach and landing configuration;

G3.5 Perform circuits and approaches

(a)operate and monitor all aircraft systems when operating the gyroplane in the circuit;

(b)allow for wind effect on all legs of the circuit;

(c)in accordance with specific local procedures, safely perform a full circuit pattern (5 legs) by balancing and trimming the gyroplane accurately (if applicable) while applying smooth, coordinated control inputs to achieve the required flight tolerances specified for the flight path flown during traffic pattern manoeuvres as follows:

(i)track upwind along extended centreline to 500 ft AGL;

(ii)establish and maintain cross-wind leg tracking 90° to the runway;

(iii)establish and maintain downwind leg tracking parallel to, and at a specified distance from, the runway at circuit height;

(iv)establish base leg tracking 90° to the runway at a specified distance from the runway threshold;

(d)perform checks as required throughout circuit;

(e)establish the approach and landing configuration appropriate for the runway and meteorological conditions, and adjust the engine controls as required for the following:

(i)commence and control approach descent path;

(ii)adjust descent commencement point to take account of extended downwind leg or traffic adjustments;

(iii)align and maintain aircraft on final approach flight path with specified or appropriate runway;

(iv)set and maintain approach configuration not below 500 ft AAL;

(v)identify and maintain the nominated aiming point;

(vi)maintain a stabilised approach angle at the nominated airspeed to the round-out height;

(vii)verify existing wind conditions, make proper correction for drift, and maintain a precise ground track;

(viii)apply airspeed allowances for wind gusts;

(ix)configure gyroplane for landing;

(f)maintain lookout, aircraft separation and position in the circuit with reference to other aircraft traffic in the circuit area.

G3.6 Local area airspace

(a)using an appropriate chart, for the local area and circuit area:

(i)identify geographical features;

(ii)identify geographical limits;

(iii)identify restricted, controlled and uncontrolled airspace areas;

(iv)state local airspace limits;

(v)identify the transit route between the departure aerodrome and training area;

(vi)identify the geographical limits of the training area;

(vii)identify aerodromes and landing areas within the local area;

(b)maintain orientation and pinpoint location by using geographical features and a local area chart;

(c)transit from the circuit area and transit to the designated training area;

(d)operate safely within a transit lane (if applicable);

(e)remain clear of restricted, controlled and other appropriately designated airspace;

(f)operate safely in the vicinity of local aerodromes and landing areas;

(g)transit from the designated training area to the circuit area;

(h)set QNH appropriately;

(i)correctly determine which runway is to be used for landing;

(j)ensure runway is serviceable and available;

(k)position gyroplane for arrival into the circuit.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)gyroplane with fixed or retractable undercarriage;

(c)simulated hazardous weather;

(d)approach and landing configurations:

(i)normal;

(ii)glide;

(e)circuit patterns:

(i)normal 1,000 ft AGL circuit;

(ii)low-level 500 ft AGL circuit;

(iii)full circuit pattern, including 5 legs;

(iv)shortened circuit pattern;

(f)day VFR conditions;

(g)local area airspace limitations.

4. Underpinning knowledge of the following

(a)operation of the controls;

(b)aircraft systems;

(c)aircraft performance;

(d)aircraft weight and balance;

(e)hazards when performing performance manoeuvres;

(f)turning using a magnetic compass;

(g)relationship between angle of bank and load factor;

(h)relationship between induced drag and operating at slow airspeed;

(i)dangers associated with mechanical and wake turbulence;

(j)engine considerations during prolonged climbing and descending;

(k)contents of the Aircraft Flight Manual or Pilot's Operating Handbook;

(l)environmental conditions that represent VMC;

(m)day VFR flight rules;

(n)local area operating procedures;

(o)relevant sections of the AIP.

G4: LAND GYROPLANE

1. Unit description

This unit describes the skills and knowledge required to conduct a landing in a gyroplane.

2. Elements and performance criteria

G4.1 Land gyroplane

(a)maintain a constant landing position aim point;

(b)achieve a smooth, positively controlled transition from final approach to touchdown, including the following:

(i)control ballooning during flare;

(ii)touchdown at a controlled rate of descent, in the specified touchdown zone within tolerances;

(iii)control bouncing after touchdown;

(iv)touchdown aligned with the centreline within tolerances;

(c)ensure separation is maintained;

(d)maintain positive directional control and cross-wind correction during the after-landing roll;

(e)use drag techniques and braking devices, as applicable, in such a manner to bring the gyroplane to a safe stop;

(f)complete the applicable after-landing checklist items in a timely manner.

G4.2 Land gyroplane in a cross-wind

(a)apply competencies for landing gyroplane;

(b)ensure cross-wind component within manufacturer's limitations;

(c)make proper correction for drift, and maintain a precise ground track;

(d)configure the gyroplane for the cross-wind landing;

(e)maintain the runway centreline;

(f)control the gyroplane during the transition from final approach to touchdown and during after-landing roll to compensate for the cross-wind conditions;

(g)initial touch down and downwind wheel.

G4.3 Conduct a missed approach

(a)recognise the conditions when a missed approach should be executed;

(b)make the timely decision to execute a missed approach when it is safe to do so;

(c)make a smooth, positively-controlled transition from approach to missed approach, including the following:

(i)select power, pitch attitude and configuration to safely control gyroplane;

(ii)manoeuvre gyroplane clear of the ground and conduct after take-off procedures;

(iii)make allowance for wind velocity during go-around;

(iv)avoid wake turbulence;

(v)complete after take-off checks.

G4.4 Perform recovery from missed landing

(a)recognise when a missed landing is occurring and when it is appropriate to take recovery action;

(b)make the decision to execute recovery from a missed landing only when it is safe to do so;

(c)make a smooth, positively-controlled transition from missed landing to missed approach, including the following:

(i)select power, attitude and configuration to safely control gyroplane;

(ii)manoeuvre gyroplane clear of the ground and conduct after take-off procedures;

(iii)make allowance for wind velocity during go-around;

(iv)avoid wake turbulence.

G4.5 Short landing

(a)calculate landing performance in accordance with the gyroplane's performance charts;

(b)land gyroplane to achieve the obstacle clearance parameters;

(c)land gyroplane at nominated touchdown point at minimum speed to achieve the minimum length landing performance;

(d)control ballooning during flare;

(e)control bouncing after touchdown;

(f)maintain direction after touchdown;

(g)apply maximum braking without locking up wheels;

(h)stop gyroplane within landing distance available.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)gyroplane with fixed or retractable undercarriage;

(c)sealed, gravel or grass runways and taxiways;

(d)windsock located on aerodrome;

(e)simulated hazardous weather;

(f)day VFR conditions;

(g)for landing an gyroplane in cross-wind, the cross-wind component must be:

(i)for RPL, not more than 10 kts;

(ii)otherwise, 70% of the maximum permitted for the type of gyroplane being flown;

(iii)local area operational limitations such as noise abatement and aerodrome curfews.

4. Underpinning knowledge of the following

(a)typical single-engine gyroplane aircraft systems;

(b)gyroplane performance;

(c)gyroplane limitations;

(d)gyroplane weight and balance;

(e)options when local conditions are not suitable for landing;

(f)causes of loss of control of gyroplane on landing;

(g)contents of the Aircraft Flight Manual and Pilot's Operating Handbook;

(h)environmental conditions that represent VMC;

(i)day VFR flight rules;

(j)propeller wash, rotor wash and jet blast;

(k)relevant sections of the AIP.

G5. GYROPLANE ADVANCED MANOEUVRES

1. Unit description

This unit describes the skills and knowledge required to perform advanced manoeuvres in a gyroplane.

2. Elements and performance criteria

G5.1 Recover gyroplane from flight behind the power curve

(a)perform airspace cleared procedure;

(b)complete pre-manoeuvre checks;

(c)operate and monitor all aircraft systems when operating the gyroplane at slow speed;

(d)maintain minimum altitude 1,000 ft AGL when manoeuvring below minimum level flight speed;

(e)for the following slow flight manoeuvres select power, attitude and configuration as required for the flight path, balance and trim the gyroplane accurately (if applicable), apply carburettor heat as applicable and apply smooth, coordinated control inputs to achieve the required flight tolerances that apply to the manoeuvres:

(i)minimum level flight speed;
(ii)maintain forward speed below minimum level flight speed;

(f)recover from flight below minimum flight speed;

(g)coordinate use of throttle and cyclic to increase airspeed above minimum level flight speed;

(h)regain level flight by nominated altitude.

G5.2 Turn gyroplane steeply

(a)perform airspace cleared procedure

(b)complete pre-manoeuvre checks for steep turning;

(c)perform steep level turn using a nominated bank angle, ending on a nominated heading or geographical feature, without altitude change;

(d)perform steep descending turn using a nominated bank angle, ending on a nominated heading or geographical feature through a minimum of 500ft;

(e)balance gyroplane;

(f)gyroplane operating limits are not exceeded.

G5.3 Sideslip gyroplane (where Aircraft Flight Manual permits)

(a)pre-manoeuvre checks for sideslip;

(b)operate and monitor all aircraft systems when operating the gyroplane in a sideslip;

(c)perform straight sideslip maintaining speed and track:

(i) induce slip to achieve increased rate of descent while maintaining track and airspeed; and

(ii) adjust rate of descent by coordinating angle of bank and applied rudder;

(d) perform sideslipping turn by adjusting the bank angle to turn through minimum heading change of 90° at constant airspeed using sideslip, and exiting the turn on a specified heading or geographical feature, within tolerance;

(e) recover from a sideslip and return the gyroplane to balanced flight.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)manoeuvres are performed within operating limits of gyroplane;

(c)gyroplane with fixed or retractable undercarriage;

(d)sealed, gravel or grass runways and taxiways;

(e)windsock located on aerodrome;

(f)simulated hazardous weather;

(g)day VFR conditions;

(h)local area operational limitations such as noise abatement and aerodrome curfews.

4. Underpinning knowledge of the following

(a)operational circumstances where steep turns are required;

(b)aerodynamic and gyroplane operational considerations related to slow flight, sideslipping, steep turns, upset gyroplane states, including but not limited to the following:

(i)effects of sideslip on gyroplane fuel and pitot systems;

(ii)effects of weight and ‘g’ force during turns;

(c)contents of the Aircraft Flight Manual and Pilot Operating Handbook;

(d)environmental conditions that represent VMC;

(e)day VFR flight rules;

(f)relevant sections of the AIP.

G6: MANAGE ABNORMAL SITUATIONS – SINGLE-ENGINE GYROPLANES

1. Unit description

This unit describes the skills and knowledge required to accurately assess an abnormal situation, reconfigure the gyroplane, control the gyroplane and execute appropriate manoeuvres to achieve a safe outcome with no injury to personnel or damage to the gyroplane or property.

2. Elements and performance criteria

G6.1 Manage engine failure – take-off (simulated)

(a) apply the highest priority to taking action to control the gyroplane;

(b) establish and maintain best gliding speed;

(c) perform emergency actions from recall actions as time permits;

(d) manoeuvre the gyroplane to achieve the safest possible outcome;

(e) brief and ensure passengers adopt brace position and harness security;

(f) advise others such as ATS and other aircraft of intentions if time permits;

(g) land gyroplane to achieve safest outcome;

G6.2 Manage engine failure in the circuit area (simulated)

(a)apply the highest priority to taking action to control the gyroplane;

(b)establish and maintain best gliding speed;

(c)perform emergency actions from recall actions as time permits;

(d)select a suitable landing area within gliding distance, on the aerodrome or elsewhere;

(e)perform emergency procedures and land the gyroplane if the engine cannot be restarted as time permits;

(f)advise ATS or other agencies capable of providing assistance of situation and intentions;

(g)re-brief passengers about flight situation, brace position and harness security;

(h)land the gyroplane ensuring safest outcome stimulating engine restart is not achieved.

G6.3 Perform forced landing (simulated)

(a) after a simulated complete engine failure has occurred, without prior indications, carryout the

  (i) identify complete power failure condition and control gyroplane;

  (ii) perform immediate actions;

  (iii) formulate and describe a recovery plan, including selecting the most suitable landing area;

  (iv) establish optimal gliding flight path to position the gyroplane for a landing on the selected landing area;

  (v) perform emergency procedures and land the gyroplane if the engine cannot be restarted as time permits;

(vi) declare Mayday advising ATS or other agencies capable of providing assistance of situation and intentions;

(vii) re-brief passengers about flight situation, brace position and harness security;

(viii) land the gyroplane ensuring safest outcome stimulated engine restart is not achieved;

(b) after a simulated partial engine failure has occurred, without prior indications, carryout the following:

(i) identify partial power failure condition;

(ii) perform recall actions;

(iii) adjust flight controls to re-establish flight path that maximises performance for partial power condition and maintain a safe airspeed;

(iv) establish radio communications where possible;

(v) perform partial engine failure actions;

(vi) formulate a plan to recover gyroplane to a safe landing area or aerodrome, taking into account that partial failure might lead to a full power failure at any time;

(vii) manoeuvre the gyroplane to a selected landing area or aerodrome using the remaining power to establish an optimal aircraft position for a safe landing;

(viii) advise ATS, or other agencies capable of providing assistance of situation and intentions;

(ix) re-brief passengers about flight situation, brace position and harness security;

(x) maintain a contingency plan for coping with a full power failure throughout the manoeuvre;

(xi) when a safe landing position is established, shut down and secure engine and gyroplane.

G6.4 Conduct precautionary search and landing (simulated condition)

(a) assess flight circumstances and make an appropriate decision when to perform precautionary landing in time available;

(b) declare PAN and communicate intentions;

(c) configure gyroplane for reduced visibility manoeuvring, if applicable;

(d) perform precautionary search procedure;

(e) select landing area, carryout an inspection and assess its suitability for landing, taking into account:

(i) unobstructed approach and overshoot paths;

(ii) landing area length adequate for landing;

(iii) landing area surface is suitable for gyroplane type and clear of hazards;

(f) maintain orientation and visual contact with the landing area;

(g) declare PAN and advise ATS or other agencies capable of providing assistance, of situation and intentions;

(h)re-brief passengers about flight situation, brace position and harness security;

(i)land and secure aircraft and manage passengers.

G6.5 Manage other abnormal and adverse and aerodynamic situations

(a)correctly identify the situation and maintain safe control of the gyroplane at all times;

(b)manage abnormal and emergency situations in accordance with relevant emergency procedures and regulatory requirements;

(c)follow appropriate emergency procedures while maintaining control of the gyroplane;

(d)identify and conduct flight with an unreliable airspeed indication;

(e)correctly identify when an emergency evacuation of a gyroplane is required;

(f)execute a simulated emergency evacuation of a gyroplane;

(g)advise ATS, or other agencies capable of providing assistance, of situation and intentions.

(h)explain causes and effect of, and avoidance and recovery actions of Pilot Induced Oscillation (PIO);

(i)explain causes and effect of Gust Induced Oscillation (GIO);

(j)explain the causes and effects of negative ‘g’ and power pushover;

(k)explain causes and avoidance of loss of directional control;

(l)explain causes and effects of and recall actions in the event of ground resonance;

G6.6 Recover from unusual flight attitudes

(a)identify nose-high or nose-low unusual attitude flight condition;

(b)recover from nose-low or nose-high unusual attitudes by adjusting pitch, bank and power to resume controlled and balanced flight;

(c)apply controlled corrective action while maintaining aircraft performance within limits.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)discontinue simulated manoeuvres that would be terminated by a forced landing when the assessor is satisfied that the landing standard would be achieved;

(c)day VFR conditions.

(d)approved gyroplane with dual controls, electronic intercom and dual control brakes, if fitted;

(e)aerodromes or landing areas;

(f)sealed, gravel or grass surfaces;

(g)wake, orographic or mechanical turbulence;

(h)classes of airspace designated by the regulator;

(i)limitations, such as those imposed by local noise abatement procedures and curfews;

(j) operational hazards, which may include variable surfaces, loose objects, personnel, birds and propeller wash, rotor wash and jet blast;

(k) simulated abnormal and emergency situations;

(l) simulated hazardous weather.

4. Underpinning knowledge of the following

(a) engine failure scenarios and procedures for partial and complete power loss;

(b) forced landing scenarios and procedures;

(c) suitable fields for forced landings and precautionary landings;

(d) considerations when practicing emergencies and non-normal operations;

(e) causes leading to precautionary landings and precautionary search procedures;

(f) judging descent profiles in various configurations;

(g) forces acting on a gyroplane during descent;

(h) prioritising activities during emergencies and non-normal situations;

(i) cause and effect of, and avoidance and recovery actions of Pilot Induced Oscillation (PIO);

(j) cause and effect of, and avoidance of Gust Induced Oscillation (GIO);

(k) ditching;

(l) aircraft performance in a glide (straight and turning);

(m) effects of partial engine power on performance, flight profile, range and landing options;

(n) passenger control and briefing;

(o) VMC and day VFR flight rules;

(p) low-flying hazards;

(q) the fuel system and causes and effects of fuel vaporisation;

(r) rotor pre-rotation procedures;

(s) the effects of wind on rotor blades;

(t) performing weight and balance calculations;

(u) loading within specified limitations;

(v) ground resonance;

(w) gyroplane operational and starter motor limitations;

(x) all gyroplane limitations;

(y) aerodrome markings;

(z) light and marshalling signals;

(aa) calculating cross-wind components;

(bb) calculating take-off and landing performance;

(cc) factors affecting take-off performance;

(dd) factors affecting initial climb performance;

(ee) principles of aerodynamics;

(ff) function of primary controls;

(gg) theory and application of best rate and angle of climb;

(hh) forces and moments in straight and level and climbing flight;

(ii) relationship of attitude and power to trim;

(jj) use of trim controls;

(kk) effects of excessive cooling on engine performance during descent and methods to counter these effects;

(ll) use of carburettor heat (if fitted to the gyroplane);

(mm) hazards during maximum-rate descents;

(nn) forces acting on a gyroplane in a turn;

(oo) effect of angle of bank on load factor;

(pp) effects of turn on magnetic compass performance;

(qq) dangers of turbulence and wake turbulence when flying at high speed;

(rr) circuit patterns and procedures;

(ss) dangers of wind shear, turbulence and wake turbulence;

(tt) aerodrome light signals;

(uu) aircraft systems;

(vv) aircraft performance;

(ww) contents of the Aircraft Flight Manual and Pilot Operating Handbook

(xx) relevant sections of the AIP;

(yy) effects of ‘g forces’ during turns;

(zz) effects of induced drag;

(aaa) effects of a sideslip on gyroplane performance and hazard at low altitude;

(bbb) effects of sideslipping on gyroplane fuel and pitot systems;

(ccc) ground hazards associated with minimum ground roll and soft-surface operations;

(ddd) principles of maximum rate and minimum radius turn;

(eee) causes of and corrective actions to manage adverse aerodynamic situations.

SECTION 5 OPERATIONAL RATING AND ENDORSEMENT STANDARDS

LL-G: GYROPLANE LOW-LEVEL OPERATIONS

1. Unit description

This unit describes the skills and knowledge required to manoeuvre a gyroplane safely and effectively at low level, in accordance with the following provisions.

2. Elements and performance criteria

LL-G.1 Plan low-level operations

(a) identifies, evaluates and manages risks at low level;

(b) complete consultation with all stake holders involved in the low-level operation to confirm task requirements;

(c) ensures aircraft type and performance is appropriate for the task;

(d) assesses and allows for the effects of fatigue and physical health on pilot performance;

(e) analyses and applies actual and forecast weather conditions to low-level operations;

(f) identifies area of operations using chart and geographical features;

(g) assesses geographical characteristics of the area of flying operations to ensure safe completion of the task;

(h) identifies and avoids all significant obstructions;

(i) identifies and avoids buildings, personnel, vehicles, animals, vegetation and nuisance areas.

LL-G.2 Flight component

(a) correctly performs pre-flight inspection and determine aircraft serviceability for intended flight;

(b) initialises and checks data validity of area navigation system (if fitted);

(c) correctly operates aircraft;

(d) correctly performs take-off.

LL-G.3 Aircraft handling

(a) at an altitude above 1,500 ft AGL:

- (i) conducts pre-manoeuvre checks;
- (ii) performs an effective lookout;
- (iii) demonstrates level flight, climbing and descending turns up to 60° angle of bank:
  - (A) visual references utilised;
  - (B) airspeed monitored;
  - (C) bank attitude maintained;
  - (D) pitch attitude adjusted for bank angle;

(E)desired altitude maintained;

(F)lookout performed;

(G)rollout and level off anticipated;

(H)knows maximum performance turning criteria;

(I)area cleared;

(J)maximum power applied;

(K)maximum bank applied for turning performance commensurate with speed;

(L)maximum permitted 'g' applied commensurate with speed;

(M)achieves turning at maximum AOB;

(N)aircraft does not exceed permitted 'g' limits;

(O)performs lookout;

(P)anticipates rollout;

(Q)releases 'g' force during roll out of turn;

(iv) demonstrates minimum radius turning:

(A)knows minimum radius turning criteria;

(B)area cleared;

(C)maximum power applied;

(D)height as low as practical (1,500 ft AGL);

(E)maximum AOB maintained;

(F)performs lookout;

(G)anticipates rollout;

(H)releases 'g' forces while rolling out of the turn;

(v) demonstrates methods of losing height in a turn and straight flight;

(vi) manages the energy state of the aircraft:

(A)identifies high kinetic energy situations;

(B)identifies low kinetic energy situations;

(C)identifies high potential energy situations;

(D)identifies low potential energy situations.

LL-G.4 Low level handling

(a)at an altitude of 200 ft AGL but not below 50 ft AGL:

(i) manage the aircraft energy state;

(ii) perform straight flight:

(A) adjust height according to terrain to maintain assigned height above ground level;

(B)recognise and manage the effect of rising and descending terrain on aircraft performance;

(C)compensate for drift;

(iii) perform turning at various bank angles up to 60° angle of bank at normal cruise speed:

(A)adjust power as required;

(B)recognise and manage the effect of rising and descending terrain on aircraft performance;

(C)compensate for the effect of gradient wind;

(D)anticipate rollout;

(iv) demonstrate use of escape routes and rising ground;

(v) demonstrate flight at various speed and configurations not below minimum safe speed + 15 KIAS;

(vi) operate adjacent to powerlines and wires;

(vii) demonstrate awareness of wind effect in the vicinity of obstructions, mountainous terrain and illusions;

(viii) recognise and control the illusion of slipping and skidding during turns in windy conditions;

(ix) recognise the effect of rising and descending terrain on aircraft performance;

(x) maintain a constant altitude over featureless terrain or water;

(xi) conduct procedure turns from a fixed ground reference point;

(xii) demonstrate knowledge of the effect of false horizons;

(xiii) recognise and manage impact of sun glare on increased risk of collision with obstacles;

(xiv) identify the requirement to operate in the vicinity of powerlines and wires and assesses risk;

(xv) identify and avoid powerlines (wires) by a minimum of 15 ft (-0 ft) when crossed overhead by an aircraft;

(xvi) identify and avoid all powerlines and wires;

(xvii) identify poles, cross trees, wires and insulators to assist powerline and wire location;

(xviii) identify and avoid pole stay wires;

(xix) navigate to a predetermined destination at altitude below 500 ft AGL;

(xx) maintain a constant altitude over featureless terrain or water;

(xxi) conduct procedure turns from a fixed ground reference point;

(xxii) comply with airspace requirements and procedures;

(xxiii) demonstrate correct navigation techniques and procedures at low level;

(xxiv) correctly perform low-level circuit and landing;

(xxv) correctly perform after landing and shutdown checks.

LL-G.5 Execute forced landing (simulated) from below 500 ft AGL (single-engine gyroplane only)

(a) identify potential forced-landing areas prior to and during low-level operations;

(b) recognise engine failure or any other emergency requiring a forced landing and conduct recall actions;

(c) maintain control of the aircraft – select the most appropriate landing area within gliding distance while avoiding any powerlines or obstructions;

(d) manoeuvre the aircraft to a landing area that achieves the safest outcome;

(a) explain plan of action and the landing techniques that would ensure the safest outcome when committed to a forced landing on unfavourable terrain or water.

LL-G.6 Operate at low level in hilly terrain

(a) safely manipulate the gyroplane at low level in hilly terrain;

(b) establish and maintain safe height relevant to application type;

(c) demonstrate safe contour flying;

(d) identify and select appropriate natural markers to aid situational awareness;

(e) demonstrate safe approaches to higher ground, including identification of escape routes;

(f) demonstrate safe turns in hilly terrain;

(g) demonstrate awareness and management of the effects of wind and turbulence in hilly terrain, including lee effects;

(h) demonstrate awareness of illusions in hilly terrain, including false horizon effect and shadows.

3. Range of variables

(a) activities are performed in accordance with published procedures;

(b) day VFR;

(c) approved gyroplane dual controls, electronic intercom and dual control brakes if fitted;

(d) aerodromes or landing areas;

(e) hazards may include variable terrain and weather, surface conditions, other aircraft, lose objects, personnel, animals, birds propeller wash, rotor wash, jet blast and negative ‘g’ in teetering rotor systems;

(f) limitations may be imposed by local noise abatement procedures and curfews.

4. Underpinning knowledge of the following:

(a) the topics mentioned in Section 2.5, Low-level rating in Schedule 3 of this MOS;

(b) maximum rate and minimum rate turn criteria;

(c) the effect of wind velocity in low-level operations;

(d) the effect of aircraft inertia at low level;

(e) effects of illusions;

(f) obstruction avoidance techniques;

(g)critical operational conditions, including retreating blade stall, blade flap, and negative ‘g’ effects;

(h)meteorological factors affecting performance at low level;

(i)terrain following techniques;

(j)safety hazards and risks of low-level operations and methods of control.

AA3: GYROPLANE AERIAL APPLICATION OPERATION

1. Unit description

This unit describes the skills and knowledge required to conduct aerial application operations other than firefighting operations in gyroplanes.

2. Elements and performance criteria

AA3.1 Pre-flight actions

(a)conduct self-assessment fit for flight and planned operation;

(b)determine suitability of aircraft for type of operation;

(c)conduct a thorough pre-flight of aircraft and role equipment to determine serviceability for planned operations;

(d)check and correctly complete required maintenance documentation as applicable;

(e)confirm minimum equipment and minimum crew and instrumentation requirements for planned operations are met;

(f)check safe operation of role equipment, including the serviceability of the jettison (dump) door;

(g)check and adjust role equipment calibration;

(h)planning and risk management;

(i)determine the requirement to operate at low level;

(j)identifies hazards, analyses the risks and implement a decision to safely conduct low-level operations – ensures gyroplane type and performance is appropriate for the task;

(k)assesses and allows for the effects of fatigue and physical health on pilot performance;

(l)analyses and applies actual and forecast weather conditions to low-level operations;

(m)develop an Application Management Plan;

(n)correctly interpret treatment area map;

(o)understands that all aircraft limitations, except those exempted by CASA (maximum take-off weight), are applicable to the operation;

(p)adequately identify potential hazards and operational requirements, assess risks and apply appropriate risk controls, including powerlines, houses, susceptible crops and environmentally sensitive areas;

(q)demonstrate an ability to make a command decision on the safety or otherwise of the proposed application, including refusing to undertake an application where the risks are considered to be too high;

(r)make appropriate selection of application pattern and direction of treatment taking into consideration safety, efficiency, hazards and terrain;

(s)carefully plans fuel requirements;

(t)confirms acceptable aircraft performance for conditions;

(u)confirms location of ground support personnel when available;

(v)confirms normal and abnormal ops communications and signals;

(w)confirms appropriate logistical considerations, including local airstrip condition, fuel, products, ground support and access to strip, SARWATCH, water, and personal supplies, including adequate water and food.

AA3.2 Fly to, assess, land and take-off from an operational airstrip

(a)performs low-level navigation to an operational airstrip at an appropriate height;

(b)performs appropriate assessment of an operational airstrip, including strip length, conditions, direction, identification of hazards, meteorological conditions;

(c)selects the most suitable loading area;

(d)correctly performs pre-landing and pre-take-off checks;

(e)selects a 'no go, go around, commitment' point for landings;

(f)selects a touchdown point for landings;

(g)identifies and manages issues relating to aircraft weight, performance, strip length, slope, surface, direction, load, surrounds, hazards and meteorological conditions;

(h)demonstrates appropriate short-field landing and take-off techniques, including having her or his hand on the dump door handle for take-offs and being prepared to dump if required;

(i)identifies an appropriate dumping point for each take-off, including adequate safety buffers;

(j)demonstrates safe operations from a 1-way airstrip.

AA3.3 Fly between operational airstrip and application area

(a)performs low-level navigation from an operational airstrip to an application area;

(b)selects the most appropriate route and height between the operational strip and application area with considerations to terrain, stock, populated areas, housing and hazards.

AA3.4 Conduct operations at a certified or registered aerodrome

Performs operations in accordance with the requirements published regulations.

AA3.5 – Conduct an aerial survey of a treatment area

(a)develops an appropriate and safe plan for conduct of an aerial survey;

(b)accurately identifies the treatment area boundaries;

(c)confirms the map;

(d)identifies susceptible crops and environmentally sensitive areas;

(e)identifies hazards on the map;

(f)identifies potential emergency landing area(s);

(g)checks and identifies any hazards not on the map, including sun glare and shadows from hills;

(h)accurately assesses wind speed and direction;

(i)identifies clean-up runs required;

(j)confirms or appropriately amends the Application Management Plan, including pattern type and direction of treatment and possible suspension of application if conditions are not appropriate.

AA3.6 Fly aircraft at low level

Identifies and avoids buildings, personnel, vehicles, animals, vegetation and nuisance areas.

AA3.7 Perform steep turns and procedure turns at or below 500 ft AGL

(a)performs airspace cleared procedure;

(b)conducts a balanced steep turn level (± 100 ft) climbing and descending turn at a nominated speed;

(c)conducts procedure turns with varying power settings.

AA3.8 Manoeuvre and navigate at low level

(a)manoeuvres gyroplane at a height below 500 ft AGL;

(b)navigates a gyroplane to a predetermined destination at altitudes at or below 500 ft AGL;

(c)awareness of wind effect in the vicinity obstructions, mountainous terrain and illusions;

(d)identifies wind velocity;

(e)recognises and controls the illusions of slipping and skidding during turns in windy conditions;

(f)recognises and manages impact of sun glare on increased risk of collision with obstacles;

(g)operate adjacent to powerlines and wires;

(h)identifies the requirement to operate in the vicinity of powerlines and wires and assesses risk;

(i)identifies poles, cross trees, wires and insulators to assist powerline and wire location;

(j)recognises and manages the effect of rising and descending terrain on gyroplane performance;

(k)demonstrate safe operation from non-certified or registered landing areas;

(l)accurately re-enters treatment area with aircraft aligned for treatment run;

(m)accurately identifies and monitors wind speed and direction;

(n)recognises and manages the adverse effects of wind caused by terrain and obstructions;

(o)recognises and manages false horizon illusions;

(p)maintains a constant altitude over featureless terrain or water;

(q)establishes and maintains an appropriate height and speed over treatment area.

AA3.9 Manage flight at low speed and flight behind the power curve

(a)recognises the approach to minimum level flight speed during any phase of flight;

(b)maintains forward speed not less than 20 kts below minimum level flight speed;

(c)resumes normal balanced flight before entering flight behind the power curve;

(d)recovers from flight behind the power curve – demonstrated not below altitude of 1,000 ft AGL.

AA3.10 Execute forced landing from below 500 ft AGL

(a)identifies potential forced-landing areas prior to and during low-level operations;

(b)recognises engine failure or any other emergency requiring a forced landing and conducts recall actions;

(c)maintains control of the aircraft – selects the most appropriate landing area within gliding distance while avoiding any powerlines or obstructions;

(d)manoeuvres the aircraft to a landing area that achieves the safest outcome;

(e)explains plan of action and the landing techniques that would ensure the safest outcome when committed to a forced landing on unfavourable terrain or water.

AA3.11 Conduct operations over and under powerlines

(a)identifies powerlines both in and outside the treatment area during an aerial survey;

(b)demonstrates an ability to interpret powerline infrastructure cues so as to aid wire run identification;

(c)demonstrates safe technique for accurately assessing wire height, including safe flying parallel to wires;

(d)identifies and manages other hazards relevant to operations near powerlines, such as pole stays, crop height, fences or machinery that may pose a risk;

(e)demonstrates safe command decisions whether to fly over or under a wire;

(f)conducts safe treatment over wires, including adequate safety buffers for pull-up and let-down and accurate cut-off and on of application equipment;

(g)conducts safe treatment under wires, including safe clearance;

(h)terminates approaches towards powerlines when passage beneath is unachievable;

(i)can explain the relevant human factors that may affect operations near powerlines, particularly distraction, short-term memory limitations and in attentional blindness.

AA3.12 Apply substances

(a)safely applies substances in accordance with application management plan;

(b)establishes and maintains correct application height relevant to terrain, application type and meteorological conditions;

(c)controls airspeed and flight profile appropriately on entry/re-entry to treatment area;

(d)engages and shuts off application equipment at appropriate points;

(e)manoeuvres around and over hazards in the treatment area with adequate safety buffers;

(f)regularly uses aircraft smoker to identify and monitor wind direction;

(g)monitors application flow rate, pressure and product remaining;

(h)conducts clean-up runs, including extra safety check for hazards;

(i)demonstrates safe command decisions to continue with, amend or suspend operations due to changing conditions.

AA3.13 Operate aircraft safely and effectively using GNSS swath guidance equipment

(a)demonstrates basic familiarity with at least 1 GNSS system;

(b)demonstrates sound judgement in selecting the correct pattern relevant to the treatment area and terrain;

(c)selects correct swath relevant to the aircraft, aircraft configuration and the substance to be applied;

(d)accurately places an AB line and C point if required;

(e)manoeuvres the aircraft accurately on the correct swath line with reference to the light bar and natural features;

(f)operate aircraft at maximum permissible weights for aerial application operations;

(g)determines take-off weight within legal requirements and relevant to strip length and conditions;

(h)operates safely and effectively at maximum weights during:

i. taxi;

ii. take off and climb;

iii. approach and landing (including safe command decisions on dumping and strip selection);

iv. application;

v. turns;

vi. obstacle avoidance.

AA3.14 Operate at low level in hilly terrain

(a)safely manipulate the gyroplane at low level in hilly terrain;

(b)establish and maintain safe height relevant to application type;

(c)demonstrate safe contour flying;

(d)identify and select appropriate natural markers to aid situational awareness;

(e)demonstrate safe approaches to higher ground, including identification of escape routes;

(f)demonstrate safe turns in hilly terrain;

(g)demonstrate awareness and management of the effects of wind and turbulence in hilly terrain, including lee effects;

(h)demonstrate awareness of illusions in hilly terrain, including false horizon effect and shadows.

AA3.15 Manage abnormal and emergency situations during low-level operations

(a)identifies potential forced-landing areas prior to and during aerial application operations;

(b)identifies abnormal or emergency situation;

(c)conducts appropriate abnormal or emergency procedures during application operations;

(d)maintains control of the aircraft, jettisons load if required, and avoids any powerlines or hazards;

(e)successfully conducts a practice forced landing from 500 ft.

AA3.16 Jettison load

(a)jettisons a full liquid load during take-off prior to lift off, and maintains control of the gyroplane;

(b)jettison a full liquid load immediately after take-off and maintains control of the gyroplane;

(c)jettisons a full liquid load during flight and controls pitch changes to ensure maintenance of altitude (+100/-0 ft) by adjustments of cyclic and power.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)day VFR in variable weather conditions;

(c)approved aircraft;

(d)approved low-flying areas;

(e)operational airstrips;

(f)man-made or natural obstacles;

(g)undulating, hilly or mountainous terrain;

(h)emergency and abnormal situations;

(i)hazardous weather conditions;

(j)mental and physical fatigue;

(k)heat stress and dehydration;

(l)maintaining situational awareness;

(m)in-flight distractions.

4. Underpinning knowledge of the following

(n)CASA exemptions with regards to maximum take-off weight and applicability of other aircraft limitations;

(o)applicable regulations that relate to the conduct of a safe operation;

(p)low level meteorology;

(q)relevant aerodynamics and aircraft performance;

(r)aircraft flight manual, performance, engine and systems;

(s)human factors;

(t)safety hazards and risks of flight at low level;

(u)role equipment;

(v)factors to be considered when determining the payload weight for each application;

(w)aircraft configuration for the aircraft being flown, when jettisoning a full load;

(x)characteristics of the aircraft being flown when jettisoning a full load;

(y)flight control and throttle actions required to maintain control of the aircraft being flown when jettisoning a full load.

SECTION 6 FLIGHT ACTIVITY ENDORSEMENT STANDARDS

FAE-10: FORMATION FLYING — GYROPLANE

This unit describes the skills and knowledge required to safely fly a gyroplane in formation, plan a formation flight, brief all participants and lead a formation.

1. Elements and performance criteria

FAE-10.1 Fly echelon formation

(a)maintain the specified echelon right and left formation stations while remaining in the lateral plane of the lead aircraft during all manoeuvres and phases of flight;

(b)balance aircraft;

(c)apply standard clear and concise radiotelephony phraseology to ensure precise advice to formation lead and other formation aircraft;

(d)perform pairs take-off;

(e)perform pairs stream take-off and join up;

(f)apply specified procedures and hand signals (non-verbal) for take-off;

(g)maintain the specified echelon position during take-off.

FAE-10.2 Fly line astern formation

(a)maintain the specified line astern formation station while remaining stepped down and in line astern with the lead aircraft during all manoeuvres and phases of flight;

(b)maintain in line with lead aircraft;

(c)balance aircraft.

FAE-10.3 Perform station changes

Manoeuvre the gyroplane safely to specified alternative formation stations during all phases of flight in the briefed sequence, while remaining clear of all other formation aircraft.

FAE-10.4 Perform manoeuvres in echelon and line astern

(a)straight and level at various airspeeds;

(b)level turns at various airspeeds;

(c)climbing:

(i)straight;

(ii)turning;

(d)descending at various speeds:

(i)straight;

(ii)turning;

(g)flight in various aircraft configurations:

(i)straight and level;

(ii)turning and level;

(iii)descending in straight flight;

(iv)descending and turning;

(h)perform break and rejoin:

(i)recognise loss of contact with formation or any other requirement to break away and implement a decision to break away from the formation;

(ii)break away from formation lead by creating positive track and height separation with the remaining formation aircraft;

(iii)notify formation leader of break away;

(iv)maintain track and height separation until cleared by formation leader to rejoin the formation;

(v)regain visual contact with leader;

(vi)transmit rejoin intentions;

(vii)maintain vertical separation with the remaining formation aircraft;

(viii)establish and manage overtaking speed while maintaining vertical separation;

(i)establish a flight path that will ensure the aircraft will pass behind and below the formation in the event of a join-up overshoot:

(i)position the aircraft into the recognised formation position;

(j)perform circuit and stream landing:

(i)conduct formation break into the circuit;

(ii)maintain separation with other formation aircraft;

(iii)manage wake turbulence;

(iv)land in turn;

(v)perform formation landing:

(g) maintain formation position; and

(h) carry out pre-landing checks;

(i) configure aircraft on leader’s call;

(j) land aircraft;

(i)after landing, ensure horizontal and lateral separation is established;

(ii)after clearing runway establish formation taxiing position;

(iii)conduct after-landing checks;

(k)perform formation overshoot:

(i)maintain formation position;

(ii)configure aircraft on instructions from leader;

(iii)complete after take-off checks.

FAE-10.5 Plan a formation flight

(a)identify the task requirements for the flight;

(b)arrange crews, briefing venue and time, and coordinate aircraft availability;

(c)analyse the tasks to be achieved and determine the manoeuvres and formations that ensure safe achievement of the task;

(d)plan flight route to allow task achievement in the time available and within performance capabilities of the flight, while complying with all air traffic, area limitations and navigation requirements;

(e)plan actions in the event of abnormal or emergency situations involving the formation.

FAE10.6 Brief and de-brief formation pilots

(a)explain and confirm the ground and flight manoeuvres to be conducted;

(b)explain and confirm timings, route(s), speeds and altitudes to be flown;

(c)identify and nominate deputy leader and explain and confirm responsibilities;

(d)explain and confirm communication procedures, in-flight minimum fuel, abnormal and emergency procedures and method of return for landing;

(e)identify achievements and any faults or errors that occurred during the formation flight and provides guidance and feedback to other formation members during the post-flight de-brief.

FAE-10.7 Lead a formation flight

(a)manoeuvre lead aircraft using controlled corrective action to ensure a stable platform for pilots flying in formation stations;

(b)manoeuvre the formation safely anticipating and allowing for formation size, proximity to obstructions, terrain, airspace limitations, weather conditions and air traffic, while ensuring compliance with regulatory requirements;

(c)direct and control the formation using precise standard radio phraseology, hand and other signal procedures;

(d)manage lost contact procedures in accordance with standard operating procedures;

(e)monitor formation member’s flight performances and reacts appropriately to any problems.

FAE-10.8 Manage abnormal and emergency situations during formation flight

(a)control aircraft and formation when leading;

(b)manage abnormal or emergency situations in accordance with standard operating procedures or AFM and POH, both as flight leader and as pilot in command of a non-lead aircraft.

3. Range of variables

(a)activities are performed in accordance with published procedures;

(b)day VFR;

(c)two or more aircraft.

4. Underpinning knowledge of the following

(a)left and right echelon positions for the gyroplane being flown;

(b)the reference points that are used to achieve a specified formation position;

(c)line astern position for the gyroplane being flown;

(d)how to manoeuvre from echelon to line astern;

(e)how to manoeuvre from echelon right to echelon left;

(f)how to manoeuvre from line astern to echelon;

(g)the verbal and non-verbal signals for:

(i)commence take off roll;

(ii)position changes;

(iii)radio receiver failure;

(iv)radio transmitter failure;

(h)lost contact procedure;

(i)formation rejoin procedures.

SCHEDULE 3: AERONAUTICAL KNOWLEDGE STANDARDS

RBKG: BASIC AERONAUTICAL KNOWLEDGE – GYROPLANE

1. Power plants and systems

1.1 Prerotation systems

1.1.1 Describe types of prerotation systems and their operation.

2. Aerodynamics

2.1 Lift and drag

2.1.1 Match each of the following terms with an appropriate definition in relation to a gyroplane rotor:

(a)production of lift by rotor;

(b)advancing and retreating blades;

(c)autorotation;

(d)rotor disc area;

(e)blade coning;

(f)tip path plane;

(g)disc loading;

(h)translational lift;

(i)retreating blade stall;

(j)dissymmetry of lift;

(k)teetering hinge;

(l)centrifugal force;

(m)effect of engine torque;

(n)self-governing aspect.

3. Rotor systems

(a)Describe the operation of the cyclic control

(b)Describe the operation and application of the following:

(i)trim devices;

(ii)rotor RPM gauge;

(iii)rotor brake;

(iv)prerotator/spin-up control;

(v)achieving rotor rigidity;

(vi)securing rotor blades;

(vii)ground effect.

4. Operations and performance

4.1 Take-off and landing performance

4.1.1 Describe the effect of a cross-wind during taxi, take-off and landing;

4.1.2 Describe use of height/velocity diagram;

4.1.3 State the effect (increase/decrease) of the following factors on take-off, landing, and take-off climb performance:

(a)strength of headwind/tailwind component;

(b)air temperature;

(c)QNH;

(d)density height (non-standard conditions);

(e)airfield elevation;

(f)runway slope and surface, including wet and soft runways;

(g)ground effect and windshear;

(h)long and/or wet grass.

4.2. Descents

4.2.1 State the effect on rate, angle of descent and attitude resulting from changes in the following:

(a)power – constant IAS;

(b)Idle power – constant IAS.

4.2.2 describe methods of losing height:

(a)maximum rate descent;

(b)zero airspeed descent.

4.2.3 State the effect of headwind/tailwind on the glide path and glide distance (relevant to the earth's surface).

4.3 Turning

(a)Describe rotor disc position in a turn:

(b)Describe what is meant by a balanced turn in relation to the yaw string;

(c)Explain why a gyroplane executing balanced level turns at low level may appear to slip or skid when turning from downwind and into wind and from into wind to downwind;

(d)State use of power in maintaining a level turn;

(e)Describe method of losing height in a turn.

4.4 Landing

4.4.1 Explain slowing rotor RPM post landing.

4.5 Gyroplane limitations

4.5.1 Understand the causes and/or effect, avoidance and recovery procedure of the following:

(a)power pushover;

(b)pilot induced oscillation (PIO);

(c)gust Induced Oscillation (GIO);

(d)fast taxi/low rotor RPM;

(e)turning limitations during taxi in windy conditions;

(f)rapid acceleration on take-off;

(g)rotor shake on take-off;

(h)lift off low airspeed/high angle of attack;

(i)blade flapping/overhinging;

(j)negative flight load manoeuvres;

(k)high speed flight;

(l)spiral;

(m)extending the glide;

(n)extreme turbulence;

(o)wheel barrow effect;

(p)ground resonance;

(q)behind power curve/minimum level flight speed;

(r)taxiing on rough terrain;

(s)unsecured rotor blades;

(t)rotor blade contamination.

4.6 Other

4.6.1 Explain why gliding at any indicated airspeed other than the speed for minimum rate of descent will reduce the distance that can be achieved in still air.

4.6.2 Describe the possible effect of structural damage, including bird strikes on controllability.

4.6.3 Describe the power available and power required curves and their relationship to the following:

(a)best speed for range;

(b)best speed for endurance.

UNIT 1.2.6 PAKG: PPL AERONAUTICAL KNOWLEDGE – GYROPLANE

1. Power plants and systems

1.1 Rotor systems

1.1.1 Describe the differences between the following rotor systems:

(a)semirigid rotor;

(b)articulated rotor.

1.1.2 Explain each of the following terms in relation to a gyroplane rotor:

(a)vectors acting on various sections of a rotor blade in flight;

(b)rotational velocity;

(c)pitch angle;

(d)rotor force;

(e)reverse flow;

(f)axis of rotation;

(g)state the relationship between CofG position, rotor force and stability;

(h)relationship of thrust line profile and centre of gravity.

1.2 Take-off and landing performance

1.2.1 Differentiate between pressure height and density height.

1.2.2 Describe how to use an altimeter to obtain:

(a)local QNH at an aerodrome;

(b)pressure height of an aerodrome;

(c)elevation of an aerodrome.

1.2.3 Explain the following terms:

(a)maximum structural take-off and landing weight;

(b)climb weight limit.

1.2.4 State the likely results of exceeding gyroplane weight limits.

UNIT 1.2.12 CAKG: CPL AERONAUTICAL KNOWLEDGE – GYROPLANE

1. Propellers

1.1 Compare the performance characteristics of various propeller and engine systems, including the following:

(a)gyroplanes with fixed pitch propellers and those fitted with a variable pitch propeller;

(b)engine operation (within limits) at high MP/low RPM and low MP/high RPM;

(c)normally aspirated and turbocharged/supercharged engines.

1.2 Explain the following with regard to a variable pitch propeller adopting either a full fine or full coarse pitch when the propeller oil pressure is lost:

(a)centrifugal twisting moment (CTM) tends to reduce (fine) pitch;

(b)counter weights, when used, increase (coarsen) pitch;

(c)oil pressure is used to decrease pitch if counterweights are fitted;

(d)oil pressure is used to increase pitch if counterweights are not fitted.

1.3 Describe the following terms:

(a)blade angle, helix angle/pitch;

(b)propeller thrust and torque;

(c)thrust horsepower (THP);

(d)brake horsepower (BHP);

1.4 Describe how a propeller converts engine power into thrust and explain what is meant by fine and coarse pitch stops.

2. Constant speed units (CSU)

(a)explain the principle of operation of a CSU;

(b)describe the effect of a CSU malfunction on engine operation;

(c)explain the method of using engine controls in the event of a malfunction of a CS;

(d)describe the cockpit indications in a gyroplane fitted with a variable pitch propeller which could signify:

(i)the presence of engine ice; and

(ii)when engine ice has been cleared after application of ‘carb heat’.

(e)explain the effect of using carburettor heat on gyroplanes fitted with a CSU.

(f)describe how power output is controlled when operating gyroplanes fitted with a variable pitch propeller and describe how engine instruments are used to monitor power.

(g)list the precautions necessary if operating a variable pitch propeller when:

(iii)conducting ground checks; and

(iv)changing power (i.e. use of throttle/RPM levers).

3. Undercarriage system

(a)describe the purpose and function of the following:

(i)oleos/shock struts;

(ii)shimmy dampers;

(iii)nose wheel steering/castering;

(b)describe the purpose and function of the following retractable undercarriage components:

(i)uplocks/downlocks;

(ii)anti-retraction devices;

(iii)aural/visual warning devices;

(iv)emergency systems;

(v)free fall;

(i)electric, hydraulic, pneumatic.

UNIT 1.3.4 CADA: CPL AERODYNAMICS – GYROPLANE

1. Aerodynamics

1.1 Rotorblade aerodynamics

1.1.1 Explain the aerodynamic properties of a rotor blade in respect to the following:

(a)aerofoil shape;

(b)blade twist.

1.1.2 Explain the meaning following terms:

(a)rotor force;

(b)rotor drag;

(c)total resultant;

(d)relative wind;

(e)rotational airflow;

(f)dissymmetry of lift;

(g)centrifugal force;

(h)blade coning;

(i)blade flapping/hinging;

(j)retreating blade stall;

(k)translational lift.

1.1.3 Explain the vectors acting on a rotor blade in flight.

1.1.4 Calculate rotor disc loading.

1.1.5 Explain the causes and/or effect, avoidance and correct recovery procedure of the following:

(a)power pushover;

(b)flight behind power curve;

(c)rotor shake on take-off;

(d)negative flight load manoeuvres;

(e)high speed flight;

(f)ground resonance;

(g)spiral.

2. Autorotative flight

2.1 Explain the meaning of the following terms:

(a)autorotation in forward flight;

(b)vertical autorotation.

3. Manoeuvres

3.1 Explain the relationship between speed, bank angle, radius and rate of turn during a balanced level turn.

3.2 For a given IAS, determine the approximate angle of bank to achieve a rate 1 turn (360 in 2 minutes).

FLIGHT RULES AND AIR LAW

SECTION 1.5 FLIGHT RULES AND AIR LAW (FR)

UNIT 1.5.5 PFRG: PPL FLIGHT RULES AND AIR LAW – GYROPLANE CATEGORY

1. Flight Rules

1.1 Documentation

1.1.1 Given an item of operational significance:

(a)select the appropriate reference document – CAR, CAO, AIP (Book), CAAP; and

(b)extract relevant and current information from these documents.

1.1.2 Decode information contained in ERSA, NOTAM and AIP supplements.

1.1.3 Understand the terms and abbreviations in AIP GEN that are relevant to flight in accordance with VFR.

2. Licence privileges and limitations.

2.1 State the privileges and limitations of the Private Pilot Licence, Gyroplane.

2.1.2 For the PPL with gyroplane category rating, describe:

(a)recent experience requirements;

(b)classification of operations.

3. Flight rules and conditions of flight

3.1 Describe which documents must be carried on board an aircraft during flight in Australian airspace.

3.2 Apply the relevant rules that relate to the following:

(a)carriage and discharge of firearms;

(b)aerodromes where operations are not restricted to runways;

(c)the conditions relating to flight in PRD areas.

3.3 Apply the relevant rules that relate to the following:

(a)aerodrome meteorological minima;

(b)flights over water;

(c)carriage of:

- (i) cargo;
- (ii) sick and disabled persons;
- (iii) parachutists;
- (iv) dangerous goods;
- (v) animals;
- (vi) flotation and survival equipment.

3.4 State the requirements to test radio equipment prior to taxi and maintain a listening watch.

3.5 Extract the restrictions pertaining to the carriage of passengers on certain flights.

3.6 Recall the precautions pertaining to the security of safety harnesses and other equipment prior to solo flight in dual control aircraft.

4. Aerodromes

4.1 State a pilot's responsibilities with regard to the use of aerodromes.

5. Airspace

5.1 Differentiate between the various classifications of airspace.

5.2 With respect to the following terms listed in (a) to (g), explain each term and, if applicable, identify airspace boundaries on appropriate charts, and extract vertical limits of designated airspace from charts or ERSA:

(a)flight information service FIR, FIA, OCTA;

(b)ATC service CTA, CTR;

(c)radio 'reports' and 'broadcasts';

(d)VFR route and lanes of entry;

(e)PRD areas;

(f)CTAF areas;

(g)controlled aerodromes.

6. Altimetry

(a)recall the datum from which an altimeter indicates height when the following are set on the subscale:

- (i) area QNH;
- (ii) local QNH;
- (iii) QFE;
- (iv) standard pressure setting;

(b)recall the procedures that are carried out with the altimeter at the transition altitude and the transition layer on climb and descent;

(c)derive from AIP the transition layer for any given area QNH;

(d)recall the method of using an altimeter to derive Local QNH;

(e)recall the meaning of the following:

- (i) height;
- (ii) altitude;
- (iii) flight level;

(f) recall the following parameters from the ICAO standard atmosphere:

- (i) MSL temperature;
- (ii) pressure lapse rate.

7. Emergencies

7.1 Extract emergency procedures from the ERSA.

7.2 State the conditions under which a pilot may declare a mercy flight and select occasions when a mercy flight must not be undertaken.

7.3 Describe examples of 'hazards to navigation' that must be reported by pilots.

8. Security

8.1 Explain the term ADIZ and extract:

(a)general requirements for operations in this zone; and

(b)action by the pilot of the intercepted aircraft.

8.2 State the powers vested in a pilot in command.

UNIT 1.5.11 CFRG: CPL FLIGHT RULES AND AIR LAW – GYROPLANE

1. Licensing Privileges

1.1 **Limitations**

1.1.1 Describe the requirements for holding flight crew licences, ratings and endorsements that apply to gyroplane operations.

1.2.1 Describe the obligations gyroplane pilots must comply with in relation to general competency, flight reviews and proficiency checks.

1.3.1 Describe the rules pertaining to flight and duty time limitations for CPL licence holders.

2. Air operations

2.1 Describe circuit procedures for gyroplane operations;

2.2 Describe the requirements for operating in Class C and D airspace and special VFR clearance provisions;

2.3 State the minimum flight instruments required to operate an gyroplane under VFR;

2.4 State the rules for placarding unserviceable instruments.

UNIT 1.9.4 POPG: PPL OPERATIONS, PERFORMANCE AND PLANNING – GYROPLANE

1. General flight planning and performance

1.1. Determine whether a given ALA is suitable for an gyroplane to take-off and land safety in accordance with guidelines contained in CAAP 92.1.

2. Take-off and landing performance

2.1 State the effect (increase/decrease) of the following factors on take-off, landing, and take-off climb performance:

(a)strength of headwind/tailwind component;

(b)air temperature;

(c)QNH;

(d)density height (non-standard conditions);

(e)airfield elevation;

(f)runway slope and surface, including wet and slushy runways;

(g)ground effect and windshear;

(h)frost on an aircraft.

2.2 Differentiate between pressure height and density height

2.3 Explain the terms:

(a)maximum structural take-off and landing weight; and

(b)climb weight limit.

2.4 State the likely results of exceeding aircraft weight limits.

3. Density height

3.1 Using the methods under subsection 3.2, determine density height, given the following:

(a)OAT and pressure height;

(b)using cockpit temperature and an altimeter setting of 1013.2 hPa.

3.2 For subsection 3.1, the methods are the following:

(a)density altitude charts;

(b)manual computer;

(c)flight manual charts;

(d)mathematics.

4. Take-off and landing performance

4.1 Use the aircraft flight manual to extract maximum structural take-off and landing weights.

4.2 Given a typical flight scenario, use performance charts to extract:

(a)maximum take-off weight A;

(b)maximum landing weight A;

(c)take-off distance required (TODR) B;

(d)landing distance required (LDR) B;

(e)climb weight limit;

5. Climb, cruise and descent performance

5.1 From typical charts or tables extract/determine the following data for climb, cruise and descent:

(a)time, speed, distance, fuel flow/quantity;

(b)appropriate engine settings;

(c)rates of climb/descent;

(d)the conditions under which an gyroplane will achieve maximum range and endurance.

UNIT 1.9.8 COPG: CPL OPERATIONS, PERFORMANCE AND PLANNING – GYROPLANE

1. Operational knowledge

1.1 Aerodromes and gyroplane landing areas (ALAs)

1.1.1 ALAs are included as a topic in this syllabus pursuant to a pilot's responsibilities in accordance with CASA regulations.

1.1.2 Explain and apply the following terms used in CASA publications and documents:

(a)take-off distance available (TODA);

(b)take-off distance required (TODR);

(c)landing distance available (LDA);

(d)landing distance required (LDR).

1.1.3 Determine whether a given aerodrome or ALA is suitable for a gyroplane to take-off and land safety in accordance with guidelines contained in CASA guidance material.

2. Climb, cruise and descent performance

2.1 From typical charts or tables extract/determine the following data for climb, cruise and descent:

(a)time, speed, distance, fuel flow/quantity;

(b)appropriate engine settings;

(c)rates of climb/descent;

(d)the conditions under which a gyroplane will achieve maximum range and endurance.

2.1.2 Determine the:

(a)best air and ground nm/unit of fuel (for example, 2.5 nm/kg);

(b)least fuel/air or ground nm (for example, 0.4 kg/nm).

3. Fuel units

3.1 Using US Gal, kg and litres, estimate:

(a)mid-zone weight;

(b)landing weight;

(c)take-off weight at an intermediate landing point.

4. Forward climb performance

4.1 Given graphical or tabular information typical of that provided in an Aircraft Flight Manual for a single-engine gyroplane extract:

(a)the best rate of climb for various conditions of pressure altitude, temperature and weight;

(b)the service ceiling for various conditions of pressure altitude, temperature and weight.

5. Cruise performance

5.1 Given graphical or tabular information typical of that provided in an Aircraft Flight Manual for a single-engine gyroplane, calculate:

(a)maximum payload which may be carried after determining the fuel requirements and the nature of the operation;

(b)endurance for holding or search for various combinations of helicopter weight and fuel;

(c)the maximum range, given weight, fuel carried and cruising altitude.

6. Weight and balance

6.1 Explain the meaning of the following terms used in the computation of weight and balance data:

(a)datum;

(b)arm;

(c)moment;

(d)station;

(e)centre of gravity range;

(f)empty weight;

(g)operating weight;

(h)maximum take-off weight (MTOW).

6.2 Given a typical Aircraft Flight Manual for a single-engine gyroplane:

(a)extract the following weight and balance information:

(i) MTOW;

(ii) capacity and arm of the baggage lockers;

(iii) capacity, arm, grade and specific gravity of the fuel;

(iv) location and arms of the seating.

(b)determine the forward, aft and lateral limits of the CG for a given weight in the case of the above gyroplane;

(c)determine whether the gyroplane is safely loaded for flight given various combinations of weight and balance data using arithmetical methods or the specified loading system for the gyroplane;

(d)calculate the adjustment of load required to achieve a CG within specified limits if previously determined to be outside limits;

(e)calculate where to position additional load items so that the CG is retained within the specific limits.

7. Flight plan preparation

7.1 Apply the responsibilities of a pilot in command with regard to weather and operational briefing prior to planning a VFR flight.

7.2 Given a route, select appropriate charts for the flight and list the operations for which it is mandatory to obtain a weather briefing.

7.3 List the weather services available, and nominate the sources and methods of obtaining this information.

7.4 State the minimum flight notification required, the method(s) of submitting this notification, and identify the flight plan details that must be submitted.

UNIT 2.7.1 NVFR: NVFR rating – all aircraft categories

1. Flight Rules

1.1 Describe the privileges and limitations of the rating;

1.2 Describe the minimum NVFR aircraft equipment requirements;

1.3 Describe the ALA/HLS dimension and lighting requirements as applicable;

1.4 Flight planning requirements (including notification and weather forecast requirements);

1.5 Requirements for determining LSALT;

1.4 Requirements for descent below LSALT;

1.5 Alternate aerodrome planning requirements (including night circuit training flights).

2. Flight at Night

2.1 Operations

2.1.1 Describe the principles of operations, limitations and errors for the radio navigation systems used;

2.1.2 Explain the requirements for departure and descent for clearance from terrain;

2.1.3 Describe the operation of PAL.

2.2 Human factors

2.2.1 Explain the human factors and physiological limitations for the conduct of operations at night as described in CASA guidance material for NVFR operations.

SECTION 3.2: TYPE RATINGS

UNIT 3.2.3 TYPG: PILOT TYPE RATING – GYROPLANE

1. General note: for this unit

The following knowledge standards may not be relevant for all aircraft type ratings and can be ignored if not applicable to an aircraft type.

2. Gyroplane limitations and documentation

(a)identify aircraft limitations and able to locate information contained in the aircraft flight manual and pilots operating handbook;

(b)perform pre-flight inspection and determine serviceability of the aircraft for flight;

(c)apply MEL and CDL, where applicable;

(d)determine the effects of ADs, ASB/SB where pilot action may be required, as applicable to type;

(e)aware of licensing obligations for variants, where applicable.

3. Weight and balance

(a)calculate CG for aircraft and determine if within prescribed limits;

(b)determine trim settings, where applicable;

(c)describe the effects of fuel use and management on CG, if any;

(d)describe the effects of changes to CG on aircraft performance;

(e)awareness of aircraft weight limitations, loading limits, cargo hold limitations, and any load/weight limitations for operational equipment contained in the flight manual supplement.

4. Meteorology and adverse weather operations

(a)interpret weather forecasts typically required to conduct a flight in the gyroplane;

(b)state the requirements for low-visibility operations;

(c)describe the effect on aircraft operations for the following conditions:

- (i) ice, slush or snow (as applicable);
- (ii) turbulence penetration;
- (iii) heavy rain or falling snow;
- (iv) windshear techniques during take-off, approach and landing (as applicable);
- (v) cold weather operations (as applicable);
- (vi) low-visibility operations (as applicable).

5. Aerodynamics and performance

(a)describe basic aerodynamics for single main rotor;

(b)describe the following aerodynamic effects as they apply to the particular gyroplane:

- (i) blade flap;
- (ii) retreating blade stall;

(iii) effect of engine torque;

(iv) ground resonance;

(v) retreating blade stall;

(c) determine the airspeeds to meet performance requirements for different configurations and phases of flight;

(d) describe limits of normal operating envelope;

(e) discuss the meteorological performance limiting factors;

(f) discuss any unique operational characteristics, including terrain and environment;

(g) describe the operation and application of the following:

(i) trim devices;

(ii) rotor RPM gauge;

(iii) rotor brake;

(iv) prerotator/spin-up control;

(v) height/velocity diagram:

(vi) securing rotor blades;

(h) determine the airspeeds to meet performance requirements for different phases of flight;

(i) describe manoeuvring below minimum level speed and recovery;

(j) discuss the meteorological performance limiting factors;

(k) discuss any unique operational characteristics, including runway requirements/limitations.

6. Fuel and engine oil systems

(a) describe the following in relation to the aircraft's fuel system:

(i) location of fuel tank/s and capacity;

(ii) normal and non-normal fuel system operation and distribution;

(iii) location and type of pumps used;

(iv) vents system and location of vents and drains;

(v) system controls and indicators;

(vi) minimum grades, colour and additives required, if any;

(vii) minimum fuel temperature;

(viii) indications of reduced or loss of fuel flow.

(ix) determine level of engine oil;

(x) describe oil system indicators and grade of oil required;

(xi) describe fuel and oil system limitations.

7. Engines

(a) describe type of engine/s installed, the main components, rated thrust or horsepower and indicators required for operation;

(b) state engine start limits, as applicable;

(c) describe engine controls and their function;

(d)describe normal and non-normal engine operation;

(e)describe operation of the ignition system;

(f)describe the method of feathering and unfeathering the propeller/s, where applicable.

8. Electrical system

(a)describe core components of the aircraft's electrical system;

(b)describe the system design and operation, including use of AC or DC power, as applicable;

(c)explain the methods of power generation;

(d)describe the electrical system protections and locations of key components;

(e)explain the indications of normal and degraded system operation;

(f)describe the location of connections for external sources of power, if applicable;

(g)describe the use of the APU when used to provide a source of electrical power.

9. Hydraulic system

(a)describe core components of the aircraft hydraulic system/s and their method of operation, including alternative sources of operation;

(b)describe normal system operating pressure and system protections to prevent damage to components or system;

(c)explain method of determining sufficient system capacity, indicators and controls;

(d)describe systems operated by the hydraulic system/s.

10. Undercarriage and brakes

(a)describe the undercarriage system components and safety systems;

(b)explain normal and alternative method of undercarriage operation;

(c)describe operation of the nosewheel steering system, if installed;

(d)describe the brake system components and normal and non-normal operation;

(e)explain operation of the anti-skid system and limitations;

(f)determine brake energy limits and brake cooling requirements.

11. Pneumatic system

(a)describe the aircraft pneumatic system components and methods of operation;

(b)describe system limitations and safety devices.

12. Environmental system

Explain the operation of aircraft heating, demisting, and air-conditioning systems, normal and emergency modes of operation and limitations.

13. Flight controls

(a)describe flight controls and their method of operation;

(b)knowledge of limitations and safety features that prevent structural damage to the aircraft.

14. Ice and rain protection

(a)describe the aircraft ice protection system/s, detection systems and explain their operation, if applicable;

(b)describe anti-ice system limitations, if applicable.

15. Fire and overheat protection

(a)describe the fire and overheat protection system/s installed on the aircraft, including indicators and extinguishing agents used;

(b)can determine the serviceability of the system/s;

(c)describe the power sources required for system operation.

16. Flight instruments

(a)describe the system/s that provides data to the primary flight instruments;

(b)describe the power sources for the primary flight instruments/displays;

(c)describe the operation of the warning systems;

(d)knowledge of alternative sources of flight instrument operation;

(e)describe the operation of EFIS system and redundant modes of operation.

17. Navigation and radar systems

(a)knowledge of the operation of the aircraft navigation, communication and surveillance system/s;

(b)describe the operation of the aircraft navigation receivers and how to determine their operational status and integrity;

(c)knowledge of the aircraft's weather detection system/s and safety precautions;

(d)explain operation of the aircraft FMS and integration with other aircraft systems;

(e)determine ANP for RNP operations;

(f)describe the operation of the aircraft windshear detection system.

18. Autoflight system

(a)explain the operation of the autopilot and autothrottle, if installed, in flight operation in all modes;

(b)describe failure annunciations, pilot actions and limitations;

(c)explain the integration of aircraft navigation systems with the autoflight system.

19. Communications

(a)can operate all the aircraft communication systems, voice and data when installed;

(b)describe operation of aircraft intercommunication systems;

(c)describe operation of the communications system in the event of changes in power source;

(d)explain operation of the CVR and FDR and requirements for operation.

20. Airframe

(a)describe airframe construction, materials, cowling and firewalls, as applicable;

(b)describe rotor system;

(c)describe operation of the doors, exits, windows and monitoring systems.

21. Miscellaneous systems

(a)describe other systems installed in the aircraft that are likely to be used by the flight crew to operate the aircraft;

(b)describe the location and operation of emergency equipment installed on the aircraft.

SCHEDULE 5 FLIGHT TEST STANDARDS

SECTION G RECREATIONAL PILOT LICENCE (RPL)

APPENDIX G.3 RPL GYROPLANE CATEGORY RATING FLIGHT TEST

1. Flight test requirements

1.1 An applicant for a recreational pilot licence with gyroplane category rating flight test must demonstrate the following:

(a)knowledge of the topics listed in clause 2;

(b)ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards required under section 12 of this MOS which are relevant to the flight test.

2. Knowledge requirements

2.1 For paragraph 1 (a), the topics are the following:

(a)privileges and limitations of the recreational pilot licence with gyroplane category rating;

(b)applicability of drug and alcohol regulations;

(c)aircraft instrument requirements for VFR operations;

(d)emergency equipment requirements;

(e)fuel planning and oil requirements for the flight;

(f)managing passengers and the carriage of cargo;

(g)aircraft speed limitations;

(h)aircraft systems.

3. Activities and manoeuvres

Note For paragraph 1.1 (b), the flight test includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes C2 and C4.

(a)perform pre-flight actions and procedures;

(b)perform pre-flight inspection;

(c)refuel a gyroplane (may be assessed by questioning).

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes G1, G2, G3, C3 and IFF.

(a)complete all relevant checks and procedures;

(b)perform pre-rotation;

(c)taxi a gyroplane;

(d)plan, brief and conduct take-off and departure procedures;

(e)conduct a cross-wind take-off;

(f)conduct a short field take-off;

(g)conduct climbs on a constant heading and climbing turns, including at least two (2) of the following:

(i) maximum rate climb;

(ii) maximum angle climb;

(iii) cruise climb.

3.3 En route cruise

Note The relevant competency standards are in unit code G3.

(a)maintain straight and level flight, and turn a gyroplane;

(b)navigate and transit from a circuit area to a training area and return;

(c)operate safely in local area airspace;

(d)establish and maintain cruise flight for at least one (1) of the following configurations:

(i) turbulence;

(ii) high speed.

3.4 Test specific activities and manoeuvres

Note The relevant competency standards are in unit codes G1, G5, G6 and IFF.

(a)enter and recover from each of the following flight conditions:

(b)a spiral descent;

(c)flight behind the power curve/minimum level flight speed;

(d)a sideslip where flight manual permits;

(e)conduct steep level turns of at least 45˚ angle of bank;

(f)manage an engine failure after take-off;

(g)manage the following malfunctions:

(h)a malfunction during start or shutdown; and

(i)any one (1) of the following that is not performed under subparagraph (i):

(i) an aircraft system malfunction;

(ii) engine or cabin fire;

(iii) radio failure;

(j) perform a forced landing.

3.5 Descent and arrival

Note The relevant competency standards are in unit code G3.

(a)conduct descents maintaining a constant heading and descending turns;

(b)plan and conduct aerodrome arrival and circuit joining procedures.

3.6 Circuit, approach and landing

Note The relevant competency standards are in unit codes G3, G4 and G6.

(a)conduct a normal circuit pattern, approach and landing;

(b)conduct a cross-wind landing;

(c)conduct short field;

(d)perform a go-around procedure;

(e)perform after-landing actions and procedures.

3.7 Shut down and post-flight

Note The relevant competency standards are in unit codes G1 and C2.

(a)park, shutdown, and secure a gyroplane;

(b)complete post-flight administration.

3.8 General requirements

Note The relevant competency standards are in unit codes G3, C1, C3, C4, C5, NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks effectively;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h)recognise and manage undesired aircraft states;

(i)communicate effectively using appropriate procedures for the airspace being used during the test;

(j)manage the aircraft systems required for the flight;

(k)manage the fuel system and monitor the fuel plan and fuel usage during the flight;

(l)manage passengers and the carriage of cargo.

4. Operational scope and conditions

4.1 The following operational scope applies to the flight test:

(a)managing an aircraft system, which is not required for the flight, is not an assessable item unless the applicant uses the system during the flight;

(b)simulated carriage of passengers and cargo;

(c)a simulated private local area operation;

(d)operating in Class G airspace, at a non-towered aerodrome;

(e)emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the aircraft flight manual.

4.2 The following conditions apply to the flight test:

(a) activities and manoeuvres are performed in accordance with published procedures;

(b) conducted in a gyroplane;

(c) conducted by day under the VFR;

(d) operating at a non-towered aerodrome may be simulated if the test is conducted at a controlled aerodrome;

(e) if the aerodrome cross-wind conditions for the runway used during the test are less than 70% of the maximum in the aircraft flight manual, evidence that the applicant has demonstrated competency performing cross-wind take-off and landing manoeuvres can be taken from the applicant's training records.

SECTION H PRIVATE PILOT LICENCE (PPL)

APPENDIX H.4 PPL GYROPLANE CATEGORY RATING FLIGHT TEST

1. Flight test requirements

1.1 An applicant for a private pilot licence with gyroplane category rating flight test must demonstrate the following:

(a) knowledge of the topics listed in clause 2;

(b) ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards required under section 12 of this MOS which are relevant to the flight test.

2. Knowledge requirements

2.1 For paragraph 1 (a), the topics are the following:

(a) privileges and limitations of the private pilot licence with gyroplane category rating;

(b) applicability of drug and alcohol regulations;

(c) aircraft instrument requirements for VFR operations;

(d) emergency equipment requirements;

(e) requirements for landing areas and aerodromes;

(f) GNSS and its use in VFR navigation;

(g) fuel planning and oil requirements for the flight;

(h) loading and unloading fuel;

(i) managing passengers and the carriage of cargo;

(j) aircraft loading system;

(k) aircraft performance and landing calculations;

(l) pilot maintenance authorisations;

(m) aircraft speed limitations;

(n) aircraft systems.

(o) Activities and manoeuvres

Note For paragraph 1 (b), the flight test includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes C2, C4 and NAV.

(a) perform pre-flight actions and procedures;

(b) perform the pre-flight inspection;

(c) refuel a gyroplane (may be assessed by questioning).

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes G1, G2, G3, C3, IFF and NAV.

(a)complete all relevant checks and procedures;

(b)taxi a gyroplane;

(c)plan, brief and conduct take-off and departure procedures;

(d)conduct a cross-wind take-off;

(e)conduct a short field take-off;

(f)conduct climbs on a constant heading and climbing turns, including at least two (2) of the following:

(i) maximum rate climb;

(ii) maximum angle climb;

(iii) cruise climb.

3.3 En route cruise

Note The relevant competency standards are in unit codes G3, NAV and RNE.

(a)maintain straight and level flight, and turn gyroplane;

(b)navigate en route;

(c)establish and maintain cruise flight for at least one (1) of the following conditions:

(i) turbulence;

(ii) holding;

(iii) range;

(d)navigate at low level;

(e)perform a lost recovery procedure;

(f)perform a diversion procedure;

(g)navigate using instrument navigation systems.

3.4 Test specific activities and manoeuvres

Note The relevant competency standards are in unit codes G1, G5, G6 and C3.

(a)enter and recover from each of the following:

(i) a spiral descent;

(ii) flight behind the power curve/minimum level flight speed;

(iii) a sideslip where aircraft flight manual permits;

(b)conduct steep level turns of at least 45˚ angle of bank;

(c)manage an engine failure after take-off;

(d)conduct a precautionary search;

(g)manage the following malfunctions:

(h)a malfunction during start or shutdown; and

(i)any one (1) of the following that is not performed under subparagraph (i):

(i) an aircraft system malfunction;

(ii) engine or cabin fire;

(iii) radio failure;

(j)perform a forced landing.

3.5 Descent and arrival

Note The relevant competency standards are in unit codes G3 and NAV.

(a)conduct descents maintaining a constant heading and descending turns;

(b)plan and conduct aerodrome arrival and circuit joining procedures.

3.6 Circuit, approach and landing

Note The relevant competency standards are in unit codes G3, G4 and G6.

(a)conduct a normal circuit pattern, approach and landing;

(b)conduct a cross-wind landing;

(c)conduct short field approaches and landings;

(d)perform a go-around procedure;

(e)perform after-landing actions and procedures.

3.7 Shut down and post-flight

Note The relevant competency standards are in unit codes G1 and C2.

(a)park, shutdown and secure a gyroplane;

(b)complete post-flight administration.

3.8 General requirements

Note The relevant competency standards are in unit codes C1, C3, C4, C5, CTA, CTR, OGA, ONTA, NAV. NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks effectively;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h)recognise and manage undesired aircraft states;

(i)operate in controlled airspace;

(j)operate in Class G airspace;

(k)operate at a controlled aerodrome;

(l)operate at a non-towered aerodrome;

(m)communicate effectively using appropriate procedures for the airspace being used during the test;

(n)manage the aircraft systems required for the flight;

(o)manage the fuel system and monitor the fuel plan and fuel usage during the flight;

(p)manage passengers and the carriage of cargo.

4. Operational scope and conditions

4.1 The following operational scope applies to the flight test:

(a)managing an aircraft system, which is not required for the flight, is not an assessable item unless the applicant uses the system during the flight;

(b)simulated carriage of passengers and cargo;

(c)a simulated private cross-country operation;

(d)operating in Class G and controlled airspace;

(e)operating at a non-towered and a controlled aerodrome;

(f)emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the aircraft flight manual.

4.2 The following conditions apply to the flight test:

(a)activities and manoeuvres are performed in accordance with published procedures;

(b)conducted in a gyroplane;

(c)conducted by day under the VFR;

(d)the flight must include:

(i)operating in Class G airspace and in controlled airspace; and

(ii)operating at a non-towered aerodrome and a controlled aerodrome;

(e)if the area where the test is conducted does not have controlled airspace or a controlled aerodrome, or they are unavailable, operating in controlled airspace or at a controlled aerodrome may be simulated as applicable;

(f)if the aerodrome cross-wind conditions for the runway used during the test are less than 70% of the maximum in the Aircraft Flight Manual, evidence that the applicant has demonstrated competency performing cross-wind take-off and landing manoeuvres can be taken from the applicant’s training records.

SECTION I COMMERCIAL PILOT LICENCE (CPL)

Appendix I.4 CPL Gyroplane category rating flight test

1. Flight test requirements

An applicant for a commercial pilot licence with gyroplane category rating flight test must demonstrate the following:

(a) knowledge of the topics listed in clause 2;

(b) ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards required under section 12 of this MOS which are relevant to the flight test.

2. Knowledge requirements

For paragraph 1 (a), the topics are the following:

(a) privileges and limitations of the commercial pilot licence with gyroplane category rating;

(b) requirements for an AOC;

(c) classification of operations;

(d) type of information contained in an Aircraft Operations Manual;

(a) flight and duty time limits;

(b) applicability of drug and alcohol regulations;

(c) aircraft instrument requirements for day VFR commercial operations;

(d) emergency equipment requirements;

(e) requirements for landing areas and aerodromes;

(f) GNSS and its use in VFR navigation;

(g) fuel planning and oil requirements for the flight;

(h) loading and unloading fuel;

(i) managing passengers and the carriage of cargo;

(j) aircraft loading system;

(k) normal and non-normal operation of the propeller system fitted to the gyroplane that is being used for the test;

(l) aircraft performance and landing calculations;

(m) pilot maintenance authorisations;

(n) aircraft speed limitations;

(o) aircraft systems.

3. Activities and manoeuvres

Note For paragraph 1 (b), the flight test includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes C2, C4 and NAV.

(a)perform pre-flight actions and procedures;

(b)perform a pre-flight inspection;

(c)refuel a gyroplane (may be assessed by questioning).

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes G1, G2, G3, C3,nd NAV.

(a)complete all the relevant checks and procedures;

(b)taxi a gyroplane;

(c)plan, brief and conduct take-off and departure procedures;

(d)conduct a cross-wind take-off;

(e)conduct a short field take-off;

(f)conduct climbs on a constant heading and climbing turns including at least two (2) of the following:

(i)maximum rate climb;

(ii)maximum angle climb;

(iii)cruise climb.

3.3 En route cruise

Note The relevant competency standards are in unit codes G3, NAV and RNE.

(a)maintain straight and level flight, and turn gyroplane;

(b)navigate en route;

(c)establish and maintain cruise flight for at least one (1) of the following conditions:

(i)turbulence;

(ii)holding;

(iii)range;

(d)navigate at low level;

(e)perform a lost recovery procedure;

(f)perform a diversion procedure;

(g)navigate using instrument navigation systems.

3.4 Test specific activities and manoeuvres

Note The relevant competency standards are in unit codes G1, G5, G6 and C3.enter and recover from the following:

(a)a spiral descent;

(b)flight behind the power curve/minimum level flight speed;

(c)a slideslip (where flight manual permits);

(d)conduct steep level turns of at least 45˚ angle of bank;

(e)manage an engine failure after take-off;

(f)conduct a precautionary search;

(g)manage the following malfunctions:

(i)a malfunction during start or shutdown; and

(ii)any one (1) of the following that is not performed under subparagraph (i):

(A)an aircraft system malfunction;

(B)engine or cabin fire;

(C)radio failure;

(h)manage an engine failure.

3.5 Descent and arrival

Note The relevant competency standards are in unit codes G3 and NAV.

(a)conduct descents maintaining a constant heading and descending turns;

(b)plan and conduct aerodrome arrival and circuit joining procedures.

3.6 Circuit, approach and landing

Note The relevant competency standards are in unit codes G3, G4 and G6.

(a)conduct a normal circuit pattern, approach and landing;

(b)conduct a cross-wind landing;

(c)conduct short field landing;

(d)perform a go-around procedure;

(e)perform after-landing actions and procedures.

3.7 Shut down and post-flight

Note The relevant competency standards are in unit codes G1 and C2.

(a)park, shutdown and secure a gyroplane;

(b)complete post-flight administration.

3.8 General requirements

Note The relevant competency standards are in unit codes G3, C1, C3, C4, C5, CTA, CTR, OGA, ONTA, NAV; NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks effectively;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h) recognise and manage undesired aircraft states;

(i) operate in controlled airspace;

(j) operate in Class G airspace;

(k) operate at a controlled aerodrome;

(l) operate at a non-towered aerodrome;

(m) communicate effectively using appropriate procedures for the airspace being used during the test;

(n) manage the aircraft systems required for the flight;

(o) manage the fuel system and monitor the fuel plan and fuel usage during the flight;

(p) manage passengers and the carriage of cargo.

4. Operational scope and conditions

4.1 The following operational scope applies to the flight test:

(a) managing an aircraft system, which is not required for the flight, is not an assessable item unless the applicant uses the system during the flight;

(b) simulated carriage of passengers and cargo;

(c) a simulated charter cross-country operation with one sector to a small feature turning point or remote aerodrome;

(d) operating in Class G and controlled airspace;

(e) operating at a non-towered and a controlled aerodrome;

(f) emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the aircraft flight manual.

4.2 The following conditions apply to the flight test:

(a) activities and manoeuvres are performed in accordance with published procedures;

(b) the gyroplane used for the flight test must have the following characteristics:

(c) a powerplant with one of the following:

(i) turbine engine with propeller; or

(ii) piston engine with variable pitch propeller.

(d) conducted by day under the VFR;

(e) the flight must include:

(i) operating in Class G airspace and in controlled airspace; and

(ii) operating at a non-towered aerodrome and a controlled aerodrome;

(f) if the area where the test is conducted does not have controlled airspace or a controlled aerodrome, or they are unavailable, operating in controlled airspace or at a controlled aerodrome may be simulated as applicable;

(g) if the aerodrome cross-wind conditions for the runway used during the test are less than 70% of the maximum in the aircraft flight manual, evidence that the applicant has demonstrated competency performing cross-wind take-off and landing manoeuvres can be taken from the applicant's training records.

SECTION L AIRCRAFT RATINGS

APPENDIX L.3: SINGLE-ENGINE GYROPLANE CLASS RATING FLIGHT TEST

1. Flight test requirements

1.1 An applicant for a single-engine gyroplane class rating flight test must demonstrate the following:

(a)knowledge of the topics listed in clause 2;

(b)ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards required under section 12 of this MOS which are relevant to the flight test.

1.2 An applicant who completes a flight test in a gyroplane covered by the single-engine gyroplane class rating and meets the flight test standard for the grant of a pilot licence with gyroplane category rating is taken to meet these flight test requirements.

2. Knowledge requirements

2.1 For paragraph 1 (a), the topics are the following:

(a)privileges and limitations of the class rating;

(b)flight review requirements;

(c)navigation and operating systems;

(d)normal, abnormal and emergency flight procedures;

(e)operating limitations;

(f)weight and balance limitations;

(g)aircraft performance data, including take-off and landing performance data;

(h)flight planning.

3. Activities and manoeuvres

Note For paragraph 1 (b), the flight test includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes C2 and C4.

(a)perform pre-flight actions and procedures;

(b)perform a pre-flight inspection;

(c)refuel a gyroplane (may be assessed by questioning).

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes G1, G2 and G3

(a)complete all relevant checks and procedures;

(b)taxi a gyroplane;

(c)plan, brief and conduct take-off and departure procedures;

(d)conduct a cross-wind take-off;

(e)conduct a short field take-off;

(f)conduct climbs on a constant heading and climbing turns in at least two (2) of the following performance configurations:

(i)cruise climb;

(ii)maximum rate climb;

(iii)maximum angle climb.

3.4 En route cruise

Note The relevant competency standards are in unit code G3.

(a)maintain straight and level flight, and turn a gyroplane;

(b)navigate and transit from an aerodrome circuit area to a training area and return;

(c)operate safely in local area airspace;

(d)establish and maintain cruise flight for at least one (1) of the following conditions:

(i)turbulence;

(ii)high speed.

3.5 Test specific activities and manoeuvres

Note The relevant competency standards are in unit codes G1, G5, G6 and IFF.

(a)enter and recover from each of the following, one (1) of which must be in the approach configuration:

(i)a spiral descent;

(ii)flight behind the power curve/minimum level flight speed;

(iii)a sideslip where flight manual permits;

(b)conduct steep level turns of at least 45˚ angle of bank;

(c)manage an engine failure after take-off;

(d)manage the following malfunctions:

(i)a malfunction during start or shutdown;

(ii)any one (1) of the following that is not performed under subparagraph (i):

(A)an aircraft system malfunction;

(B)engine or cabin fire;

(C)radio failure;

(e) perform a forced landing.

3.6 Descent and arrival

Note The relevant competency standards are in unit code G3.

(a)conduct descents and descending turns;

(b)plan and conduct aerodrome arrival and circuit joining procedures.

3.7 Circuit, approach and landing

Note The relevant competency standards are in unit codes G3, G4 and G6.

(a)conduct a normal circuit pattern, approach and landing;

(b)conduct a cross-wind landing;

(c)conduct short field landings;

(d)perform a go-around procedure;

(e)perform after-landing actions and procedures.

3.8 Shut down and post-flight

Note The relevant competency standards are in unit codes G1 and C2.

(a)park, shutdown and secure a gyroplane;

(b)complete post-flight administration.

3.9 General requirements

Note The relevant competency standards are in unit codes G3, C1, C4, C5, NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks effectively;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h)recognise and manage undesired aircraft states;

(i)communicate effectively using appropriate procedures for airspace being used during the test;

(j)manage the aircraft systems required for the flight;

(k)manage the fuel system and monitor the fuel plan and fuel usage during the test;

(l)manage passengers and the carriage of cargo.

4. Operational scope and conditions

4.1 The following operational scope applies to the flight test:

(a)managing an aircraft system, which is not required for the flight, is not an assessable item unless the applicant uses the system during the flight;

(b)simulated carriage of passengers and cargo;

(c)emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the aircraft flight manual.

4.2 The following conditions apply to the flight test:

(a)activities and manoeuvres are performed in accordance with published procedures;

(b)conducted in:

(i) a gyroplane that is covered by the single-engine gyroplane class rating, except where the flight test must be conducted in an approved flight simulator in accordance with subregulation 61.245 (2); or

(ii) a flight simulator approved for the purpose;

(c) conducted by day under the VFR;

(d) if the aerodrome cross-wind conditions for the runway used during the test are less than 70% of the maximum in the aircraft flight manual, evidence that the applicant has demonstrated competency performing cross-wind take-off and landing manoeuvres can be taken from the applicant's training records.

SECTION Q LOW-LEVEL RATING

APPENDIX Q.1: LOW-LEVEL RATING - FLIGHT TEST

1. Flight test requirements

1.1 An applicant for a low-level rating flight test must demonstrate the following:

(a) knowledge of the topics listed in clause 2, which are relevant to the endorsements that are being assessed during the test;

(b) ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards under section 12 of this MOS that are relevant to the endorsements that are being assessed during the test.

2. Knowledge requirements

2.1 For paragraph 1 (a), the topics are the following topics:

(a) privileges and limitations of a low-level rating and each of the endorsements included in the test;

(b) flight review requirements;

(c) the limitations of GNSS;

(d) wind effect at low level and associated flying conditions;

(e) analysis of actual and forecast weather relevant to low-level operations;

(f) effect of mountainous terrain on airflow and associated flying conditions;

(g) assessment of the geographical characteristics of an area where flying operations are to be conducted to ensure the task can be completed safely;

(h) hazards associated with low flying and how to identify them prior to and during a low-level operation;

(i) effects of extreme environmental conditions on pilot health and performance;

(j) effects of fatigue and physical health on pilot performance;

(k) risk assessment techniques;

(l) managing risks at low level;

(m) aircraft performance, including:

(i) maximum rate turning;

(ii) minimum radius turning;

(iii) best angle of climb;

(iv) best rate of climb;

(v) one engine inoperative performance and helicopter manoeuvring (if applicable).

3. Activities and manoeuvres

Note For paragraph 1 (b), the flight test includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes C2 and LL-G.

(a)plan a low-level operation;

(b)identify hazards and manage risks;

(c)ensure performance capability of the aircraft;

(d)consult and brief all stakeholders about the proposed operation;

(e)perform pre-flight actions and procedures.

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes G1, G2, G3, G4, G5, C3, and NAV.

(a)complete all relevant checks and procedures;

(b)plan, brief and conduct take-off and departure procedures.

3.3 En route cruise

Note The relevant competency standards are in unit codes G3, G5, LL-G and NAV.

Conduct appropriate checks and procedures before descending below 500ft AGL.

3.4 Test specific activities and manoeuvres

Note The relevant competency standards are in unit codes LL-G, LL-M, LL-SO and LL-WR (as required).

(a)navigate at low level;

(b)identify and use escape routes;

(c)identify, and operate in the vicinity of, powerlines and wires;

(d)operate in hilly terrain;

(e)manage wind effects, sloping terrain, false horizons and sun glare;

(f)for the aeroplane low-level endorsement, do the following:

(i) conduct steep turns, maximum rate turn and minimum radius turn;

(ii) conduct procedure turns;

(iii) recover from approach to stalls – level and turning;

(iv) recover from high energy and low energy unusual attitudes;

(v) for a test that is conducted in a single-engine aeroplane:

(vi) recover from an wing drop at the stall; and

(vii) perform a forced landing;

(viii) for a test that is conducted in a multi-engine aeroplane, manage an engine failure;

(h)for the helicopter low-level endorsement, do the following:

(i) conduct steep turns;

(ii) manoeuvre the helicopter at low level and conduct flight at various speed and configurations;

(iii) for a flight test that is conducted in a single-engine helicopter, perform a forced landing;

(iv) for a flight test that is conducted in a multi-engine helicopter, manage an engine failure;

(v) perform quick stop manoeuvres into wind and downwind;

(vi) recover from high energy and low energy unusual attitudes;

(i) for the gyroplane low-level endorsement, demonstrate the following:

(i) enter and recover from the following:

(A) a spiral descent;

(B) flight behind the power curve/minimum level flight speed;

(C) a sideslip (where aircraft flight manual permits);

(ii) perform a forced landing;

(j) for the aerial mustering endorsement, do the following:

(i) plan a stock mustering operation;

(ii) manoeuvre the aircraft in all planes below 500ft AGL;

(iii) perform climbing, descending, low speed and high-speed manoeuvres;

(iv) perform reversal turns, decelerations and steep turns;

(v) conduct stock mustering operations;

(k) for the sling operations endorsement, do the following:

(i) prepare for an external sling load operation;

(ii) plan an external sling load operation and conduct pre-flight briefings;

(iii) operate the aircraft during external load operations;

(iv) manage abnormal and emergency situations during external load operations.

(l) for the winch and rappelling operations endorsement, do the following:

(i) plan a winch or rappelling operation and conduct pre-flight briefings;

(ii) operate the helicopter during a winch or rappelling operations;

(iii) manage abnormal and emergency situations during a winch or rappelling operation;

(iv) conduct post flight activities.

3.5 Descent and arrival

Note The relevant competency standards are in unit codes G3, G5 and NAV.

Plan and conduct an arrival and circuit joining procedures.

3.6 Circuit, approach and landing

Note The relevant competency standards are in unit codes G2, G3 and G4.

(a)conduct a low-level circuit, approach and landing;

(b)perform after landing actions and procedures.

3.7 Shut down and post-flight

Note The relevant competency standards are in unit codes G1 and C2.

(a)park, shut down and secure the aircraft;

(b)complete post-flight administration.

3.8 General requirements

Note The relevant competency standards are in unit codes LL-G, NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h)recognise and manage undesired aircraft state;

(i)communicate effectively using appropriate procedures for the airspace being used for the test;

(j)manage the aircraft systems required for the flight;

(k)manage the fuel system and monitor the fuel plan and fuel usage during the test.

4. Operational scope and conditions

4.1 The following operational scope applies to the flight test:

(a)managing an aircraft system that is not required for the flight it not an assessable item unless it is used by the applicant;

(b)conduct a low-level operation;

(c)the applicant is only required to demonstrate competency in the activities and manoeuvres mentioned in paragraphs 3.4 (f) to (j) that are applicable to the endorsements covered by the flight test;

(d)emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the aircraft flight manual.

4.2 The following conditions apply to the flight test:

(a)activities and manoeuvres are performed in accordance with published procedures;

(b)the aircraft must be certified for the operations that apply to the endorsement the flight test is for;

(c)conducted by day under the VFR.

SECTION R AERIAL APPLICATION RATING

APPENDIX R.1: AERIAL APPLICATION RATING AERIAL APPLICATION ENDORSEMENT FLIGHT TEST

1. Flight test requirements

1.1 An applicant for an aerial application rating flight test must demonstrate the following:

(a) knowledge of the topics listed in clause 2, which are relevant to the endorsements that are being assessed during the test;

(b) ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards under section 12 of this MOS, which are relevant to the endorsements that are being assessed during the test.

2. Knowledge requirements

2.1 For paragraph 1 (a), the topics are the following topics:

(a) privileges and limitations of an aerial application rating and the aerial application endorsement included in the test;

(b) proficiency check requirements;

(c) limitations of GNSS;

(d) wind effect at low level and associated flying conditions;

(e) analysis of actual and forecast weather relevant to application operations;

(f) the effect of mountainous terrain on airflow and associated flying conditions;

(g) assessment of the geographical characteristics of the area of flying operations to ensure safe completion of the task;

(h) the hazards associated with low flying and how to identify them prior to and during a low-level operation;

(i) the effects of extreme environmental conditions on pilot health and performance;

(j) the effects of fatigue and physical health on pilot performance;

(k) risk assessment techniques;

(l) managing risks at low level;

(m) aircraft performance, including where appropriate for the category of the aircraft used for the test:

- (i) maximum rate turning;
- (ii) minimum radius turning;
- (iii) best angle of climb;
- (iv) best rate of climb;
- (v) one engine inoperative performance and helicopter manoeuvring (if applicable).

3. Activities and manoeuvres

Note For paragraph 1 (b), the flight test includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes AA1, and AA2.

(a)plan an application operation;

(b)identify hazards and manage risks;

(c)ensure the performance capability of the aircraft being used is adequate for the operation;

(d)consult with and brief stakeholders;

(e)perform pre-flight actions and procedures.

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

(a)complete all relevant checks and procedures;

(b)plan, brief and conduct take-off and departure procedures.

3.3 En route cruise

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

Conduct appropriate checks and procedures before descending below 500ft AGL.

3.4 Test specific activities and manoeuvres

Note The relevant competency standards are in unit codes AA1, AA2, and LL-A, LL-G or LL-H (as applicable).

(a)for a day aerial application endorsement (all aircraft categories) at low level do the following:

(i) perform straight flight, steep turns and procedure turns;

(ii) navigate;

(iii) manage wind effects, sloping and hilly terrain, false horizons and sun glare;

(iv) demonstrate the use of escape routes;

(v) recover from high energy and low energy unusual attitude conditions;

(vi) for the following:

(A)if the test is conducted in a single-engine aircraft, perform a forced landing;

(B)if the test is conducted in a multi-engine aircraft, manage an engine failure;

(vii) fly to, assess, land and take-off from an operational airstrip or HLS;

(viii) fly between an operational airstrip or HLS and an application area;

(ix) conduct an aerial survey of an application area;

(x) conduct operations over and under power lines;

(xi) apply substances;

(xii) operate aircraft safely and effectively using GNSS swath guidance equipment;

(xiii) operate at low level in hilly terrain;

(xiv) jettison a load safely;

(b)for an aeroplane aerial application endorsement, at low level, do the following in an aeroplane:

(i) conduct maximum rate turns and minimum radius turns;

(ii) recognise and avoid the stall and recover from a simulated low altitude stall;

(iii) for single-engine aeroplanes, recover from incipient spin;

(iv) conduct an application operation at a certified or registered aerodrome (if available);

(v) manage abnormal and emergency situations;

(c)for a helicopter aerial application endorsement, do the following:

(i) manoeuvre the helicopter at low level and conduct flight at various speed and configurations;

(ii) perform quick stop manoeuvres into wind and downwind;

(iii) manage risks associated with operating a helicopter during application operations;

(d)for a gyroplane aerial application endorsement, demonstrate the following:

(i) enter and recover from the following:

(A)maximum rate turns and minimum radius turns;

(B)a spiral descent;

(C)flight behind the power curve/minimum level flight speed;

(D)a sideslip where flight manual permits;

(ii) manoeuvre the gyroplane at low level and conduct flight at various speed and configurations;

(e)for a firefighting endorsement (all categories), do the following:

(i) demonstrate awareness of relevant human factors;

(ii) perform pre-flight actions relevant to firefighting operations;

(iii) demonstrate understanding of fire agency procedures, fire traffic management and other aircraft separation procedures that apply to firefighting operations;

(iv) plan for and manage applicable operational risks;

(v) fly to, assess, land and take off from an operational airstrip or HLS or pick-up point;

(vi) fly between operational airstrip or HLS and drop zone;

(vii) conduct an aerial survey of a fire area;

(viii) apply substances;

(ix) operate aircraft at maximum permissible weights for fire operations;

(x) operate at low level in hilly terrain;

(xi) operate in high winds, high density altitude and high turbulence;

(xii) conduct low-visibility operations;

(xiii) manage abnormal and emergency situations during a firebombing operation in the vicinity of a fire ground;

(xiv) jettison load safely;

(f)for a helicopter firefighting endorsement, do the following:

(i) replenish helicopter load with snorkel or bucket;

(ii) manage known helicopter risks during firefighting operations;

(g)for a night aerial application operation endorsement, do the following in a relevant aircraft (as applicable):

(i) check the serviceability of the aircraft and the equipment to be used;

(ii) conduct a risk assessment for the operation;

(iii) conduct the pre-flight actions;

(iv) determine whether an airstrip or HLS is suitable for night operations;

(v) conduct a take-off and landing at night at an airstrip or HLS remote from ground lighting;

(vi) conduct a safe transit from an airstrip to the treatment area;

(vii) operate work lights to illuminate the treatment area.

3.5 Descent and arrival

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

Plan and conduct an arrival and circuit joining procedures.

3.6 Circuit, approach and landing

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

(a)conduct a low-level circuit, approach and landing (day only);

(b)perform after-landing actions and procedures.

3.7 Shut down and post flight

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

(c)park, shutdown and secure the aircraft;

(d)complete post-flight administration.

3.8 General requirements

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable), NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks effectively;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h)recognise and manage undesired aircraft states;

(i)communicate effectively using appropriate procedures for the airspace being used during the test;

(j)manage the aircraft systems required for the flight;

(k)manage the fuel system and monitor the fuel plan and fuel usage during the flight.

4. Operational scope and conditions

4.1 The following operational scope applies to the flight test:

(a)managing an aircraft system, which is not required for the flight, is not an assessable item unless the applicant uses the system during the flight;

(b)conduct operations that are relevant to the endorsements being assessed;

(c)emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the aircraft flight manual.

4.2 The following conditions apply to the aerial application rating flight test:

(a)conducted in an aircraft that is suitable for the endorsements being assessed in the test (refer 61.1115 (2));

(b)conducted by day under the VFR except where the test is for a night endorsement;

(c)the aircraft used for an aerial application rating flight test must be of the appropriate category and be capable of being operated for the kind of operations that are covered by the endorsement or endorsements which the flight test is for.

SCHEDULE 6 PROFICIENCY CHECK STANDARDS

Appendix 4 Aerial application rating proficiency check

1. Proficiency check requirements

An applicant for an aerial application rating proficiency check must demonstrate the following:

(a)knowledge of the topics listed in clause 2, which are relevant to the endorsement(s) that are being assessed during the check;

(b)ability to conduct the activities and manoeuvres mentioned in clause 3, within the operational scope and under the conditions mentioned in clause 4, to the competency standards required under section 13 of this MOS, which are relevant to the endorsements that are being assessed during the check.

2. Knowledge requirements

For paragraph 1 (a), the topics are the following topics:

(a)privileges and limitations of an aerial application rating and the endorsements held by the applicant;

(b)proficiency check requirements;

(c)limitations of GNSS;

(d)wind affect at low level and associated flying conditions;

(e)analysis of actual and forecast weather relevant to application operations;

(f)the effect of mountainous terrain on airflow and associated flying conditions;

(g)assessment of the geographical characteristics of the area of flying operations to ensure safe completion of the task;

(h)the hazards associated with low flying and how to identify them prior to and during a low-level operation;

(i)the effects of extreme environmental conditions on pilot health and performance;

(j)the effects of fatigue and physical health on pilot performance;

(k)risk assessment techniques;

(l)managing risks at low level;

(m) aircraft performance, including where appropriate for the category of the aircraft used for the check:

(i) maximum rate turning;

(ii) minimum radius turning;

(iii) best angle of climb;

(iv) best rate of climb;

(v) one (1) engine inoperative performance (if applicable);

(vi) helicopter manoeuvring (if applicable).

3. Activities and manoeuvres

Note For paragraph 1 (b), the proficiency check includes all of the following activities and manoeuvres. The sequence set out here is not necessarily intended to direct the order of activities and manoeuvres.

3.1 Pre-flight

Note The relevant competency standards are in unit codes AA1, and AA2.

(a)perform pre-flight actions and procedures;

(b)plan an application operation;

(c)identify hazards and manage risks;

(d)ensure the performance capability of the aircraft being used is adequate for the operation.

3.2 Ground operations, take-off, departure and climb

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

(a)complete all relevant checks and procedures;

(b)plan, brief and conduct take-off, departure procedure.

3.3 En route cruise

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

Conduct appropriate checks and procedures before descending below 500 ft AGL.

3.4 Check specific activities and manoeuvres

Note The relevant competency standards are in unit codes AA1, AA2, and LL-A, LL-G or LL-H (as applicable).

(a)at low level, do the following:

(i) manoeuvre at various speeds and configurations;

(ii) navigate;

(iii) apply substances;

(iv) jettison load;

(b)for the aeroplane aerial application endorsement, at low level, do the following:

(i) perform steep turns and procedure turns at or below 500 ft AGL;

(ii) recognise and avoid the stall and recover from a simulated low altitude stall;

(c)for a check conducted in a single-engine aeroplane, perform a forced landing from below 500 ft AGL;

(d)manage abnormal and emergency situations during low-level operations;

(e)for the firefighting endorsements (all categories), do the following:

(i) demonstrate a thorough understanding of fire agency procedures, fire traffic management and other aircraft separation procedures that apply to firefighting operations;

(ii) conduct an aerial survey of a fire area;

(iii) apply firebombing substances;

(iv) operate aircraft at maximum permissible weights for fire operations;

(v) manage abnormal and emergency situations during a firebombing operation;

(f)for the helicopter firefighting endorsement, replenish the helicopter load with snorkel or bucket (as applicable).

(g)for the gyroplane aerial application endorsement, at low level, do the following:

(i) steep turns and procedure turns at or below 500 ft AGL;

(ii) a spiral descent;

(iii) flight at minimum level flight speed;

(iv) a sideslip (where permitted);

(v) manage abnormal and emergency situations;

3.5 Descent and arrival

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

Plan and conduct descent, arrival and circuit joining procedures.

3.6 Circuit, approach and landing

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

(a)conduct a low-level circuit, approach and landing (day only);

(b)perform after-landing actions and procedures.

3.7 Shut down and post flight

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable).

(a)park, shutdown and secure the aircraft;

(b)complete post-flight administration.

3.8 General requirements

Note The relevant competency standards are in unit codes LL-A, LL-G or LL-H (as applicable), NTS1 and NTS2.

(a)maintain an effective lookout;

(b)maintain situational awareness;

(c)assess situations and make appropriate decisions;

(d)set priorities and manage tasks effectively;

(e)maintain effective communication and interpersonal relationships;

(f)recognise and manage threats;

(g)recognise and manage errors;

(h)recognise and manage undesired aircraft states;

(i)communicate effectively using appropriate procedures for the airspace being used during the test;

(j)manage the aircraft systems required for the flight;

(k)manage the fuel system and monitor the fuel plan and fuel usage during the flight.

4. Operational scope and conditions

4.1 The following operational scope applies to the proficiency check:

(a)managing an aircraft system, which is not required for the flight, is not an assessable item unless the applicant uses the system during the flight;

(b)conducting operations that are relevant to the endorsements being assessed;

(c)the check may be conducted by observation if the check is conducted in a single-seat aircraft;

(d)emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe are simulated and limited to those described in the AFM.

4.2 The following conditions apply to the aerial application rating proficiency check:

(a)conducted in an aircraft that is suitable for the endorsements being assessed in the test (see paragraph 61.1110 (4) (a));

(b)conducted by day under the VFR.

SCHEDULE 7 FLIGHT REVIEW STANDARDS

Appendix O Night VFR rating flight review

1. Flight review requirements

1.1 An applicant for a night VFR rating flight review must demonstrate her or his competency, in the units of competency mentioned in clause 3, by doing the following:

(a)conducting an operation at night under the VFR;

(b)for manoeuvres in an aeroplane — performing operations within the flight tolerances specified in table 1 in Section 1 of Schedule 8 of this MOS;

(c)for manoeuvres in a helicopter — performing operations within the flight tolerances specified in table 3 in Section 1 of Schedule 8 of this MOS.

(d) for manoeuvres in a gyroplane — performing operations within the flight tolerances specified in table 6 in Section 1 of Schedule 8 of this MOS.

1.2 For paragraphs 1.1 (b) and (c), a sustained deviation outside of the applicable flight tolerance is not permitted.

2. Knowledge requirements

2.1 The applicant is required to demonstrate her or his knowledge of the topics of the following topics except where the topic is not relevant to the flight test:

(a)the privileges and limitations of the NVFR rating;

(b)flight review requirements;

(c)night recency requirements;

(d)NVFR operations;

(e)the interpretation of operational and meteorological information;

(f)ground and aircraft lighting requirements;

(g)use of instrument and navigation systems;

(h)take-off minima;

(i)holding and alternate requirements;

(j)operational requirements and procedures for all airspace classifications;

(k)operations below LSALT for night operations;

(l)hazardous weather and conditions;

(m) ERSA normal and emergency procedures.

3. Practical flight standards

Unit Code	Unit of competency	Modifications
NTS1	Non-technical skills 1	Nil
NTS2	Non-technical skills 2	Nil
IFF	Full instrument panel manoeuvres	Nil
IFL	Limited instrument panel manoeuvres	Nil
NVR1	Conduct a traffic pattern at night	Nil

Unit Code	Unit of competency	Modifications
NVR2	Night VFR – single-engine aircraft	This unit is only required if the flight review is conducted in a single-engine aircraft. The following elements are not required: (a) NVR2.13 – *Conduct a diversion to revised route or alternate aerodrome at night*; (b) NVR2.15 – *Perform a go-round*. The following elements are not required if the applicant completed a Night VFR rating flight review within the previous 24 months and these elements were included in that flight review: (a) NVR2.2 – *Obtain and use current operational documents*; (b) NVR2.3 – *Prepare flight plan for NVFR flight*; (c) NVR2.4 – *Determine operational requirements*; (d) NVR2.5 – *Make flight notification*; (e) NVR2.6 – *Program navigation system*; (f) NVR2.11 – *Manage hazardous weather conditions*; For element NVR2.9 – *Navigate the aircraft in night VFR*, the performance criteria are the following: (a) cockpit and instrument lighting is adjusted to allow reference to documentation, instruments and lookout; (b) fixes aircraft position using navigation systems; (c) tracks are intercepted and maintained to and from stations or navigation positions.

Appendix Q Low-level rating flight review

1. Flight review requirements

1.1 A low-level rating flight review must include an assessment of competency of at least 1 low-level endorsement.

1.2 An applicant for a low-level rating flight review must demonstrate her or his competency, in the units of competency mentioned in clause 3, by doing the following:

(a) conducting low-level operations;

(b) for manoeuvres in an aeroplane — performing operations within the flight tolerances specified in table 2 in Section 1 of Schedule 8 of this MOS;

(c) for manoeuvres in a helicopter — performing operations within the flight tolerances specified in table 4 in Section 1 of Schedule 8 of this MOS.

(d) for manoeuvres in a gyroplane — performing operations within the flight tolerances specified in table 6 in Section 1 of Schedule 8 of this MOS.

1.3 For paragraphs 1.2(b) and (c), a sustained deviation outside of the applicable flight tolerance is not permitted.

2. Knowledge requirements

2.1 The applicant is required to demonstrate her or his knowledge of the following topics:

(a) the privileges and limitations of the low-level rating and low-level endorsements held by the applicant;

(b) flight review requirements;

(c) operating the aircraft's navigation and operating systems;

(d) applying operating limitations;

(e) weight and balance requirements;

(f) the interpretation of operational and meteorological information;

(g) applying aircraft performance data, including take-off and landing performance data for the class of aircraft;

(h) operational requirements and procedures – all airspace classifications;

(i) airworthiness requirements;

(j) reporting requirements;

(k) ERSA normal and emergency procedures;

(l) recent changes to legislation and procedures;

(m) wind affect at low level and associated flying conditions;

(n) the effect of mountainous terrain on airflow and associated flying conditions;

(o) the hazards of, and managing the risks associated with, low flying;

(p) operating in hilly terrain;

(q) aircraft performance, including:

(i) maximum rate turning;

(ii) minimum radius turning;

(iii) best angle of climb;

(iv) best rate of climb;

(v) 1 engine inoperative performance (if applicable);

(r) the effects of typical and extreme environmental conditions on pilot health and performance that are relevant to aerial application operations;

(s) the effects of fatigue and physical health on pilot performance;

(t) analysis of actual and forecast weather relevant to low-level operations;

(u) assessment of the geographical characteristics of the area of flying operations to ensure safe completion of the task.

3. Practical flight standards

Unit Code	Unit of competency	Modifications
C1	Communicating in aviation environment	Nil
C2	Perform pre- and post-flight actions and procedures	Nil
LL-A	Aeroplane low-level operations	For this unit, the following elements are not required: (a) LL-A.2 – *Flight component*; (b) LL-A.3 – *Aircraft handing*; (c) LL-A.8 – *Operate at low level in hilly terrain*. If the flight review is conducted in a single-engine aeroplane, element LL-A.7 – *Execute engine failure (simulated) from below 500 ft AGL* (multi-engine aeroplane only) is not required. If the flight review is conducted in a multi-engine aeroplane, element LL-A.6 – *Execute forced landing (simulated) from below 500 ft AGL* (single-engine aeroplane only) is not required.
LL-H	Helicopter low-level operations	For this unit, the following elements are not required: (a) LL-H.2 – *Flight component*; (b) LL-H.3 – *Aircraft handing*; (c) LL-H.7 – *Operate at low level in hilly terrain*. If the flight review is conducted in a single-engine helicopter, element LL-H.6 – *Execute engine failure (simulated) from below 500 ft AGL* (multi-engine aeroplane only) is not required. If the flight review is conducted in a multi-engine helicopter, element LL-H.5 – *Execute autorotative forced landing (simulated) from below 500 ft AGL* (single-engine aeroplane only) is not required.

LL-G	Gyroplane low-level operations	For this unit, the following elements are not required: (a) LL-G.2 – *Flight component*; (b) LL-G.3 – *Aircraft handing*; (c) LL-G.6 – *Operate at low level in hilly terrain*.
LL-M	Aerial mustering operations	Nil
LL-SO	Sling operations	Nil
LL-WR	Winch and rappelling operations	Nil

SCHEDULE 6 PROFICIENCY CHECK STANDARDS

Table 6: Gyroplane class rating tolerances – private

1. Applicability

1.1 The flight tolerances in this subsection apply to the following licences and ratings:

(a) recreational pilot licence;

(b) private pilot licence;

(c) aircraft class rating;

(d) NVFR rating.

2. Requirements

2.1 A person is required to perform flight manoeuvres within the flight tolerances mentioned in this table to be assessed as competent in the associated unit of competency.

3. Flight tolerances

Flight path manoeuvre		Flight Tolerances
Ground taxi and manoeuvring		±1.5 metres of track/centreline
Climbing	Best rate	-0+5kts of nominated airspeed
	Best angle	±5kts of nominated airspeed
	Heading	±5° of nominated heading
Level off from climb and descent		±100ft of nominated altitude
Straight and level	Altitude	±100ft
	IAS	±5ts
	Heading	± 5° of nominated heading
Power descent airspeed	IAS	±10kts
	Heading	±10° of nominated heading
	Rate of descent	±150 ft/min
Turns	Angle of bank	Angle of bank ±5°
	Altitude	±100 ft of nominated altitude
Exit turn onto a heading	Initial	
	Sustained	
Final approach airspeed		

Touchdown	
Landing (normal)	

Table 7: Gyroplane class rating tolerances – professional

1. Applicability

1.1 The flight tolerances in this subsection apply to the following licences and ratings:

(a) commercial pilot licence;

(b) pilot instructor rating;

(c) instrument rating;

(d) private IFR rating;

(e) flight examiner rating;

(f) aerial application rating;

(g) low-level rating;

(h) aircraft type rating.

2. Requirements

2.1 A person is required to perform flight manoeuvres within the flight tolerances mentioned in this table to be assessed as competent in the associated unit of competency.

3. Flight tolerances

Flight path manoeuvre		Flight Tolerances
Ground taxi and manoeuvring		±1.5 metres of track/centreline
Climbing	Best rate	-0+5kts of nominated airspeed
	Best angle	±5kts of nominated airspeed
	Heading	±5° of nominated heading
Level off from climb and descent		±100ft of nominated altitude
Straight and level	Altitude	±100ft
	IAS	±10ts
	Heading	± 10° of nominated heading
Power descent airspeed	IAS	±10kts
	Heading	±10° of nominated heading
	Rate of descent	±150 ft/min

Turns	Angle of bank	Angle of bank ±5°
	Altitude	±100 ft of nominated altitude
Exit turn onto a heading	Initial	±15° of heading
	Sustained	±10° of heading
Final approach airspeed		±5kts
Touchdown		±2 metres of centreline
Landing (normal)		±50 metres of selected touchdown point